



**Application, Appendix,  
DEQ Supplement, Routing  
Study, Direct Testimony  
and Exhibits of Virginia  
Electric and Power  
Company**

**Before the State Corporation  
Commission of Virginia**

**230 kV Nebula-Raines Line  
#2399, 230 kV Nebula Switching  
Station, and 230 kV Cloud-  
Nebula Line #2402**

**Application No. 346**

**Case No. PUR-2025-00014**

**Filed: January 24, 2025**

**Volume 2 of 3**

COMMONWEALTH OF VIRGINIA  
BEFORE THE  
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION  
OF ELECTRIC TRANSMISSION FACILITIES

230 kV Nebula-Raines Line #2399, 230 kV Nebula  
Switching Station, and 230 kV Cloud-Nebula Line #2402

Application No. 346

DEQ Supplement

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Based on consultations with the Virginia Department of Environmental Quality (“DEQ”), Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”) has developed this DEQ Supplement to facilitate review and analysis of the proposed Project by DEQ and other relevant agencies.

## 1. Project Description

In order to provide service requested by Old Dominion Electric Cooperative (“ODEC”) on behalf of Mecklenburg Electric Cooperative (“MEC” or the “Customer”) for MEC to provide service to its data center customer in Mecklenburg County, Virginia; to relieve identified violations of mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards; and to maintain the structural integrity and reliability of the transmission system, Dominion Energy Virginia proposes in Mecklenburg County, Virginia, to:

- (i) Construct a new overhead single circuit 230 kilovolt (“kV”) transmission line from the Company’s future Raines Substation to a proposed switching station, resulting in 230 kV Nebula-Raines Line #2399 (or “Nebula-Raines Line”). Specifically, Line #2399 will extend approximately 14.4 miles within a new 100-foot-wide right-of-way, supported primarily by weathering steel double circuit monopoles with an idle conductor, and utilizing three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength (“ACSS/TW/HS”) conductor with a summer transfer capability of 1,573 MVA.
- (ii) Construct a new 230 kV switching station in Mecklenburg County, Virginia on property owned by the Customer (the “Nebula Switching Station” or “Nebula Station”).
- (iii) Construct a new overhead single circuit 230 kV transmission line from the Company’s existing 230-115 kV Cloud Switching Station to the proposed 230 kV Nebula Station, resulting in 230 kV Cloud-Nebula Line #2402 (or “Cloud-Nebula Line”). Specifically, Line #2402 will extend approximately 0.9 mile within a new 100-foot-wide right-of-way, supported primarily by weathering steel double circuit monopoles with an idle conductor, and utilizing three-phase twin-bundled 768.2 ACSS/TW/HS conductor with a summer transfer capability of 1,573 MVA.
- (iv) Perform minor station-related work at the future Raines Substation and existing Cloud Switching Station.

The Nebula-Raines Line, the Nebula Switching Station, the Cloud-Nebula Line, and station-related work are collectively referred to as the “Cloud-Nebula-Raines Transmission Project” or “Project.”

The Project is needed to ensure that Dominion Energy Virginia can provide service requested by MEC to serve its data center customer in Mecklenburg County, Virginia; and to relieve identified violations of mandatory NERC Reliability Standards in order to maintain reliable electric service to customers in the load area, which, for purposes of this Application, is defined as the area extending generally east from the Town of Boydton, Virginia (the “Boydton Load Area”), and also includes customers in the load area surrounding the Company’s existing South Hill Substation, inclusive of the Town of South Hill in Mecklenburg County, Virginia (the “South Hill Load Area”), to the extent described herein.

For the Nebula-Raines Line, the Company identified an approximately 14.4-mile overhead proposed route (“Nebula-Raines Proposed Route” or “Nebula-Raines Route 5”) as well as an approximately 15.4-mile overhead alternative route (“Nebula-Raines Alternative Route 1” or

“Nebula-Raines Route 1”), an approximately 14.9-mile overhead alternative route (“Nebula-Raines Alternative Route 3” or “Nebula-Raines Route 3”), and an approximately 15.0-mile overhead alternative route (“Nebula-Raines Alternative Route 4” or “Nebula-Raines Route 4”).

For the Cloud-Nebula Line, the Company identified an approximately 0.9-mile overhead proposed route (“Cloud-Nebula Proposed Route”).

The Company is proposing all of the Proposed and Alternative Routes identified above for notice and Commission consideration. Discussion of the routes is provided in Section II of the Appendix and in the Environmental Routing Study (or “Routing Study”) included with the Application.

The proposed 230 kV Nebula Switching Station will be constructed with fourteen 230 kV 4000 ampere (“A”) breakers with an ultimate design of six rows of breakers arranged in a breaker-and-a-half configuration. The Nebula Switching Station will be designed to provide six 230 kV feeds to serve MEC’s Visor DP. The total area of the Nebula Station is approximately 11.3 acres.

For this Project, the Company retained the services of Environmental Resources Management (“ERM”) to help collect information within the study area, identify potential routes, perform a routing analysis comparing the route alternatives, and document the routing efforts in an Environmental Routing Study.

A description of the Proposed and Alternative Routes and the proposed Nebula Station are as follows:

### **Nebula-Raines Line #2399**

#### **Proposed Route (Route 5)**

The Nebula-Raines Proposed Route (Route 5) is approximately 14.4 miles in length. Beginning at the future Raines Substation, located near the intersection of Raines Street and Butts Street in South Hill, the Proposed Route heads west for about 2.5 miles, collocating with the south side of US 58 before crossing US 58 and US 1 and continuing west. At this point, the route turns north-northwest for about 0.6 mile crossing Plank Road. From here, the route angles southwest for about 3.6 miles, crossing Miles Creek, Union Level Road, and Gordon Lake Road. The route then turns west for about 2.0 miles, crossing Busy Bee Road. The route then heads southwest for about 3.6 miles, crossing Wooden Bridge Road, US 58, and Antler Road. The Proposed Route then turns west, crossing existing Lines #137 and #38 and sharing the existing right-of-way with existing Lines #1041 and #38 for about 0.9 mile before turning south for 0.6 mile and then turning west for 0.1 mile to terminate at the proposed Nebula Switching Station, located 1.7 miles east of the intersection of Washington Street and Rose Hill Road in Boydton.

The Nebula-Raines Proposed Route will be constructed on new 100-foot-wide right-of-way primarily supported by weathering steel double circuit monopoles with a minimum structure height of 110 feet, a maximum structure height of 175 feet, and an average structure height of 124 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

### Nebula-Raines Alternative Route 1

Nebula-Raines Alternative Route 1 is approximately 15.4 miles in length. Beginning at the future Raines Substation located near the intersection of Raines Street and Butts Street in South Hill, Nebula-Raines Alternative Route 1 heads southwest for about 0.4 mile before turning south for 0.4 mile, crossing Rocky Branch Road, and angling southwest for 0.9 mile and crossing Turtle Road. From here, Nebula-Raines Alternative Route 1 turns and heads south for 1.1 miles and then turns southwest again for about 3.1 miles, crossing Trinity Church Road and Belfield Road. The route then turns and heads west for about 6.2 miles, crossing Goodes Ferry Road, US 1, Eureka Road, Baskerville Road, and Buggs Island Road. The route then angles southwest and then northwest for 1.0 mile before continuing west for about 2.3 miles and terminating at the proposed Nebula Switching Station, located 1.7 miles east of the intersection of Washington Street and Rose Hill Road in Boynton.

Nebula-Raines Alternative Route 1 will be constructed on new 100-foot-wide right-of-way primarily supported by weathering steel double circuit monopoles with a minimum structure height of 110 feet, a maximum structure height of 175 feet, and an average structure height of 124 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

### Nebula-Raines Alternative Route 3

Nebula-Raines Alternative Route 3 is approximately 14.9 miles in length. Beginning at the future Raines Substation located near the intersection of Raines Street and Butts Street in South Hill, Nebula-Raines Alternative Route 3 heads west following the same alignment as the Proposed Route for about 1.3 miles. At this point, the route turns southwest for 2.6 miles, running approximately parallel to the south side of Dockery Creek. Just before Dockery Road, the route turns and heads south-southwest for about 2.4 miles, crossing Dockery Road and Smith Cross Road. From there, the route turns and heads west for 3.2 miles, crossing US 1, Cedar Grove Road, and Baskerville Road. At Baskerville Road, Nebula-Raines Alternative Route 3 converges with and shares the right-of-way with Alternative Route 1 for the remaining 5.4 miles, terminating at the proposed Nebula Switching Station, located 1.7 miles east of the intersection of Washington Street and Rose Hill Road in Boynton.

Nebula-Raines Alternative Route 3 will be constructed on new 100-foot-wide right-of-way primarily supported by weathering steel double circuit monopoles with a minimum structure height of 110 feet, a maximum structure height of 175 feet, and an average structure height of 124 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

### Nebula-Raines Alternative Route 4

Nebula-Raines Alternative Route 4 is approximately 15.0 miles in length. Beginning at the future Raines Substation located near the intersection of Raines Street and Butts Street in South Hill, Nebula-Raines Alternative Route 4 follows the same alignment as Nebula-Raines Alternative Route 3 for the first 10.1 miles to a point 0.6 mile west of Baskerville Road. At this point, the route turns to the northwest for 0.4 mile, then turns to the west-northwest for 0.9 mile, crossing

Cox Creek and Buggs Island Road. The route then turns to the west-southwest for 3.5 miles, crossing Antlers Road and the Company's existing Lines #137 and #38. The route then turns northwest for 0.1 mile (using the same right-of-way as Nebula-Raines Alternative Routes 1 and 3) and terminates at the proposed Nebula Switching Station, located 1.7 miles east of the intersection of Washington Street and Rose Hill Road in Boynton.

Nebula-Raines Alternative Route 4 will be constructed on new 100-foot-wide right-of-way primarily supported by weathering steel double circuit monopoles with a minimum structure height of 110 feet, a maximum structure height of 175 feet, and an average structure height of 124 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

### **Cloud-Nebula Line #2402**

#### **Cloud-Nebula Proposed Route**

The Cloud-Nebula Proposed Route is approximately 0.9 mile in length. Beginning at the existing Cloud Switching Station located about 0.5 mile east of Herbert Drive, the Cloud-Nebula Proposed Route heads south for 0.5 mile adjacent to the western boundary of the existing Cloud Switching Station and an existing data center parcel. The route then turns to the east for 0.3 mile across managed timber land before turning south for 0.1 mile and terminating at the proposed Nebula Switching Station, located 1.7 miles east of the intersection of Washington Street and Rose Hill Road in Boynton.

The Cloud-Nebula Proposed Route will be constructed on new 100-foot-wide right-of-way primarily supported by weathering steel double circuit monopoles with a minimum structure height of 105 feet, a maximum structure height of 130 feet, and an average structure height of 122 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

## **2. Environmental Analysis**

The Company has conducted an environmental analysis on the proposed Project. The environmental analysis considers the impacts of: (1) the approximately 14.4-mile-long Nebula-Raines Proposed Route and three route alternatives, inclusive of the Nebula Station; and (2) the 0.9-mile Cloud-Nebula Proposed Route. Please see the following subsections of this DEQ Supplement for pertinent details about the proposed Project.

### **A. Air Quality**

For the Project, the Company will control fugitive dust during construction in accordance with DEQ regulations. During construction, if the weather is dry for an extended period, there will be airborne particles from the use of vehicles and equipment within the right-of-way. However, minimal earth disturbance will take place and vehicle speed, which is often a factor in airborne particulate, will be kept to a minimum. Erosion and sedimentation control is addressed in Section 2.H of this Supplement. Equipment and vehicles that are powered by gasoline or diesel motors will be used during the construction of the line so

there will be exhaust from those motors. Exhaust from those motors will result in minimal air pollution.

Tree clearing within the new rights-of-way will be required as part of this Project. The Company does not expect to burn cleared material, but, if necessary, the Company will coordinate with the responsible locality to obtain these permits and will comply with any conditions set forth by the locality or take actions as otherwise in accordance with the Company's property rights. The Company's tree clearing methods are described in Section 2.L.

## **B. Water Source**

No water source is required for transmission lines. This discussion focuses on waterbodies that will be crossed by the proposed transmission lines.

On behalf of the Company, ERM identified and mapped waterbodies in the vicinity of the routes using publicly available geographic information system ("GIS") databases, U.S. Geological Survey ("USGS") National Hydrography Dataset Plus High Resolution ("NHD"), ESRI World Elevation Terrain 2-foot contours, the United States Fish and Wildlife Service ("USFWS") National Wetland Inventory ("NWI"), recent (2023) and historic digital aerial photography (National Agricultural Imagery Program and Google Earth).

All route alternatives utilize an overhead configuration that would span waterbodies; no transmission structures are planned to be installed within waterbodies. The Proposed and Alternative Routes of the Nebula-Raines Line and the Proposed Route of the Cloud-Nebula Lines cross perennial and intermittent waterbodies. Specifically, Flat Creek, Dockery Creek, Little Miles Creek, Miles Creek, Cox Creek, Allen Creek and Mines Creek are crossed by the Nebula-Raines Proposed Route (Route 5) and Alternative Routes 1, 3, and 4; Long Branch and Reedy Branch are crossed by Nebula-Raines Proposed Route (Route 5); and Coleman Creek is crossed by the Nebula-Raines Proposed Route (Route 5) and Cloud-Nebula Proposed Route.

The distance between transmission line structures proposed by Dominion Energy Virginia will be adequate to span the waterbodies identified along the Proposed and Alternative Routes of the Nebula-Raines Line and the Cloud-Nebula Lines. Tree clearing will be required within forested riparian areas at waterbody crossing locations. The removal of forested riparian areas adjacent to waterbodies will reduce riparian buffer functions such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, and shading. Impacts to surface waters and riparian habitat will be limited by minimizing rights-of-way at crossings to the extent possible, leaving roots and stumps in place, and implementing erosion control best management practices during construction.

According to U.S. Army Corps of Engineers ("Corps") documentation, no waters considered navigable under Section 10 of the Rivers and Harbors Act are crossed by any of the Project's Proposed or Alternative Routes. Waterbodies in the vicinity of the Project,

inclusive of the proposed Nebula Switching Station site, are shown on Attachment 2 of the Wetland and Waterbody Desktop Summary for the Project, which is included in Attachment 2.D.1.

### **Nebula-Raines Line #2399**

#### **Nebula-Raines Proposed Route (Route 5)**

The Nebula-Raines Proposed Route crosses 32 NHD-mapped waterbodies, including 11 perennial waterbodies (Flat Creek, Long Branch, Dockery Creek, Reedy Branch, Miles Creek, Cox Creek, Allen Creek, one unnamed stream, and three unnamed lake/ponds) and 21 unnamed, intermittent streams. See Table D-2 for a summary of waterbody acreages crossed by the Proposed Route as identified in the Wetland and Waterbody Desktop Summary.

#### **Nebula-Raines Alternative Route 1**

Nebula-Raines Alternative Route 1 crosses 26 NHD-mapped waterbodies, including 11 perennial waterbodies (Flat Creek, Dockery Creek, Allen Creek, Miles Creek, Cox Creek, five unnamed tributaries, and one lake/pond) and 15 unnamed, intermittent streams. See Table D-2 for a summary of waterbody acreages crossed by Nebula-Raines Alternative Route 1 as identified in the Wetland and Waterbody Desktop Summary.

#### **Nebula-Raines Alternative Route 3**

Nebula-Raines Alternative Route 3 crosses 25 NHD-mapped waterbodies, including 10 perennial waterbodies (Flat Creek, Dockery Creek, Miles Creek, Cox Creek, Allen Creek, three unnamed tributaries, and two lake/ponds) and 15 unnamed, intermittent streams. See Table D-2 for a summary of waterbody acreages crossed by Nebula-Raines Alternative Route 3 as identified in the Wetland and Waterbody Desktop Summary.

#### **Nebula-Raines Alternative Route 4**

Nebula-Raines Alternative Route 4 crosses 25 NHD-mapped waterbodies, including 10 perennial waterbodies (Miles Creek, Cox Creek, Allen Creek, Flat Creek, Dockery Creek, three unnamed tributaries, and two lake/ponds) and 15 unnamed, intermittent streams. See Table D-2 for a summary of waterbody acreages crossed by Nebula-Raines Alternative Route 4 as identified in the Wetland and Waterbody Desktop Summary.

### **Cloud-Nebula Line #2402**

#### **Cloud-Nebula Proposed Route**

The Cloud-Nebula Proposed Route crosses one NHD-mapped waterbody, an unnamed, intermittent tributary to Coleman Creek. See Table D-2 for a summary of waterbody



acreages crossed by the Proposed Route as identified in the Wetland and Waterbody Desktop Summary.

During construction, waterbodies will be maintained for proper drainage using culverts and/or other crossing devices, as needed, according to the Company's standard policies. Where clearing of trees and/or woody shrubs is required, clearing within 100 feet of a stream will be conducted by hand. Vegetation will be cut at or slightly above ground level, and stumps will not be grubbed. To protect waterways from soil erosion and sedimentation during construction, the Company will use sediment barriers along waterways and steep slopes. If a section of line cannot be accessed from existing roads, the Company may need to install a culvert or temporary bridge to cross small streams. In such cases, temporary fill material may be required that would be placed on erosion control fabric and removed when work is completed, returning the surface to original contours.

If necessary, a Joint Permit Application ("JPA") will be submitted for review by the Virginia Marine Resources Commission ("VMRC"), DEQ, and the Corps to authorize jurisdictional crossings and for any impacts to jurisdictional features.

### **C. Discharge of Cooling Waters**

No discharge of cooling waters is associated with the Project.

### **D. Tidal and Non-tidal Wetlands**

No tidal wetlands were identified within the Project area. Non-tidal wetlands are summarized below.

On behalf of the Company, ERM identified wetlands along the Project routes using GIS and remote sensing data sources to conduct an offsite desktop wetlands delineation. A copy of ERM's Wetland and Waterbody Desktop Summary for Project is included in Attachment 2.D.1. Sources for this desktop summary include the USFWS NWI, the USGS NHD, the Natural Resources Conservation Service Web Soil Survey, ESRI World Elevation Terrain 2-foot contours, National Agricultural Imagery Program Digital Ortho-Rectified Natural Color and Infrared Images dating from 2024, recent (2023) and historic digital aerial photography (National Agricultural Imagery Program and Google Earth).

ERM did not field delineate wetlands along the Project routes. A field wetland delineation will be completed for the approved route alignments of the Nebula-Raines Line and the Cloud-Nebula Lines after the Company receives a final order from the Commission on the Project.

ERM used a stepwise process to identify probable wetland and waterbody areas along the alternative transmission line routes as follows:

1. Infrared and natural color aerial photography was used in conjunction with USGS topographic maps, soils maps, and other data sources to identify potential wetland areas. Boundaries were assigned to the areas that appeared to exhibit wetland

signatures based on this review (referred to here as “Interpreted Wetlands”), and a cover type was determined based on aerial photo interpretation.

2. To further determine the probability of a wetland occurring within a given location, polygon shapefiles for Interpreted Wetlands were digitally layered with NWI and NHD mapping and hydric soils information from the Natural Resources Conservation Service (“NRCS”) soil survey database.

3. ERM assigned a probability of wetland occurrence based on the number of overlapping data layers (*i.e.*, indicators of potential wetland presence) in any given area (Table D-1).

<b>Table D-1</b> <b>Wetland Probability Criteria</b>	
<b>Probability Class</b>	<b>Criteria</b>
High	Areas where layers of hydric soils, Interpreted Wetlands, and NWI data overlap
Medium/High	Areas where NWI data overlaps hydric soils; or NWI data overlaps Interpreted Wetlands with or without partially hydric soils; or hydric soils overlap Interpreted Wetlands
Medium	Interpreted Wetlands with or without overlap by partially hydric soils
Medium/Low	Hydric soils only; or NWI data with or without overlap by partially hydric soils
Low	Partially hydric soils only
Very Low	Non-hydric soils only

Using the above criteria, wetland and waterbody occurrence probabilities ranging from very low to high were identified for each of the Project’s Proposed and Alternative Routes, with acres of affected wetland calculated by probability class and cover type. The probability of wetland and waterbody occurrence increases as multiple indicators overlap toward the “high” end of the probability spectrum as shown in Table D-1. The medium to high probability categories were selected as the most reliable representation of in-situ conditions due to overlapping data sets. Results for these wetland probability classes are presented below.<sup>1</sup>

As explained further below and in [Attachment 2.D.1](#), the majority of wetlands crossed by the Project are forested and are generally concentrated around Flat Creek, Dockery Creek, Little Miles Creek, Miles Creek, Cox Creek, Allen Creek, Mines Creek, Long Branch and Reedy Branch, Coleman Creek, several unnamed, intermittent tributaries to these waterbodies, and multiple open waterbody features (stormwater ponds and impoundments) throughout the study area. These waterbodies and other surface waters in the watershed

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<sup>1</sup> Note that the sum of the wetland types presented for the Project’s Proposed and Alternative Routes may not equal the totals due to rounding.

generally flow from north to south across the study area, into Miles, Flat, and Parham Creeks, and ultimately into the Staunton River and Lake Gaston to the south.

### **Nebula-Raines Line #2399**

For ease of reference, wetlands of medium or higher probability crossed by the Nebula-Raines Proposed and Alternative Routes are summarized in Table D-2. No wetlands were identified within the footprint of the Nebula Station.

<b>Table D-2</b> <b>Nebula-Raines Line #2399</b> <b>Desktop-Delineated Wetlands Crossed by the Nebula-Raines Proposed and Alternative Routes <sup>a,b</sup></b>				
Aquatic Resource Classification	Nebula-Raines Proposed Route (Route 5) (acres)	Nebula-Raines Alternative Route 1 (acres)	Nebula-Raines Alternative Route 3 (acres)	Nebula-Raines Alternative Route 4 (acres)
Palustrine Forested (PFO)	15.8	16.1	16.9	17.3
Palustrine Scrub-shrub (PSS)	0.6	NA	0.3	0.3
Palustrine Emergent (PEM)	2.6	0.4	0.5	0.5
Palustrine Unconsolidated Bottom (PUB)	2.2	0.2	0.8	0.8
Riverine	1.3	1.3	1.1	1.0
<b>Total</b>	<b>22.5</b>	<b>17.9</b>	<b>19.5</b>	<b>19.8</b>

*a Inclusive of the Nebula Switching Station*

*b The sum may not equal the totals due to rounding.*

### **Nebula-Raines Proposed Route (Route 5)**

Based on the wetland desktop delineation methodology described above, the Nebula-Raines Proposed Route right-of-way encompasses approximately 22.5 acres of wetlands and waterbodies, including 15.8 acres of palustrine forested (“PFO”), 0.6 acre of palustrine scrub-shrub (“PSS”), 2.6 acres of palustrine emergent (“PEM”) wetlands, 2.2 acres of palustrine unconsolidated bottom (“PUB”) open water features, and 1.3 acres of riverine features.

### **Nebula-Raines Alternative Route 1**

Based on the wetland desktop delineation methodology described above, the Nebula-Raines Alternative Route 1 right-of-way encompasses approximately 17.9 acres of wetlands, including 16.1 acres of PFO and 0.4 acre of PEM wetlands, and 0.2 acre of PUB open water features, and 1.3 acres of riverine features.

### **Nebula-Raines Alternative Route 3**

Based on the wetland desktop delineation methodology described above, the Nebula-

Raines Alternative Route 3 right-of-way encompasses approximately 19.5 acres of wetlands and waterbodies, including 16.9 acres of PFO, 0.3 acre of PSS, and 0.5 acre of PEM wetlands, 0.8 acre of PUB open water features, and 1.1 acres of riverine features.

#### Nebula-Raines Alternative Route 4

Based on the wetland desktop delineation methodology described above, the Nebula-Raines Alternative Route 4 right-of-way encompasses approximately 19.8 acres of wetlands and waterbodies, including 17.3 acres of PFO, 0.3 acre of PSS, and 0.5 acre of PEM wetlands, 0.8 acre of PUB open water features, and 1.0 acre of riverine features.

#### **Cloud-Nebula Line #2402**

#### Cloud-Nebula Proposed Route

Based on the wetland desktop delineation methodology described above, the Cloud-Nebula Proposed Route right-of-way encompasses approximately 0.7 acre of wetlands and waterbodies, including 0.4 acre of PFO and 0.2 acre of PEM wetlands and less than 0.1 acre of riverine features.

All wetlands will require protective matting to be installed to support construction vehicles, equipment, and materials during construction. While most wetlands are anticipated to be spanned, with impacts limited to temporary construction impacts, permanent impacts would include any necessary structure placement within wetlands and clearing and conversion of PFO/PSS-type wetlands to PSS or PEM wetland types after construction is complete. This conversion would reduce riparian buffer benefits such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, and water temperature changes due to loss of shading. Construction impacts from the transmission lines on PEM and riverine wetlands would be temporary and would be restored to pre-construction conditions when construction is complete. Within PFO and PSS wetlands, vegetation will be allowed to return to maintained right-of-way heights, consistent with open meadow and/or shrub-scrub habitat, after construction is completed, which would provide some filtration and stabilization to protect waterbodies from runoff.

Prior to construction, the Company will delineate wetlands and other waters of the United States using the *Routine Determination Method*, as outlined in the *1987 Corps of Engineers Wetland Delineation Manual* and methods described in the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) or the *2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (Version 2.0), depending on the location of the wetlands. The Company will obtain any necessary permits to impact jurisdictional resources. The Company has sited structures to avoid wetlands and streams to the extent practicable. Temporary impacts will be restored to pre-existing conditions, and permanent impacts will be compensated for in accordance with all applicable state regulations and laws. The Project is expected to require a Virginia Water Protection

general permit and a Nationwide Permit 57. A JPA will be submitted for further evaluation and final permit need determination by DEQ, VMRC, and the Corps.

#### **E. Floodplains**

As depicted on the Federal Emergency Management Agency's online Flood Insurance Rate Maps #51117C0325C, #51117C0300C, #51117C0275C, and #51117C0242C (effective dates all 9/10/2009), the Project study area contains flood zone hazard area Zone A, areas with a 1% annual chance of flooding (100-year flood), around Flat Creek, Dockery Creek, Miles and Little Miles Creeks, Lake Gordon, Cox Creek, and Allen Creek. The Company will coordinate with the local floodplain coordinators as required.

#### **F. Solid and Hazardous Waste**

ERM identified environmentally regulated sites that use and/or store hazardous materials or waste-producing facilities operating under regulatory permits in the study area using publicly available GIS databases obtained from the U.S. Environmental Protection Agency ("EPA") and the DEQ. These databases provide information about facilities, sites, or places subject to environmental regulation or of environmental interest. These include sites that use and/or store hazardous materials; waste producing facilities operating under permits from the EPA or other regulatory authorities; Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA" or "Superfund") sites; Resource Conservation and Recovery Act ("RCRA") sites; Brownfield sites; petroleum storage and petroleum release sites; and solid waste sites. The identification of a site in the databases does not mean that the site necessarily has contaminated soil or groundwater.

Sites regulated by the EPA under the Clean Air Act ("CAA") Compliance Monitoring Program, Toxic Release Inventory ("TRI"), National Pollutant Discharge Elimination System ("NPDES"), and RCRA, and sites regulated by the DEQ under the Air, Solid Waste, Virginia Pollutant Discharge Elimination System ("VPDES"), Voluntary Response Program ("VRP"), and Registered Petroleum Tank Facilities programs not associated with a petroleum leak, site assessment, remediation, corrective action or emergency response case are anticipated to have no effect on, and will not be affected by the Project. These sites are not discussed further.

A summary of the information from the EPA and DEQ databases within a 0.5-mile buffer of the edges of the rights-of-way for the Project's Proposed and Alternative Routes is provided in Table F-1 below. The locations of the sites are depicted in Attachment 2.F.1.

<b>TABLE F-1</b> <b>Cloud-Nebula-Raines Transmission Project <sup>a</sup></b> <b>Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 0.5 Mile</b>					
Site Type	Nebula-Raines Proposed Route (Route 5)	Nebula-Raines Alternative Route 1	Nebula-Raines Alternative Route 3	Nebula-Raines Alternative Route 4	Cloud-Nebula Proposed Route
Waste	3	2	2	2	1
Toxics	0	0	0	0	0
Land	1	1	1	1	0
Air	9	4	5	5	2
Water	7	6	6	6	3
Solid Waste Facilities	2	2	2	2	1
Petroleum Facilities	4	1	3	3	1
Petroleum Releases	1	0	0	0	2
Total <sup>b</sup>	<b>27</b>	<b>16</b>	<b>19</b>	<b>19</b>	<b>10</b>
<sup>a</sup> The Nebula Switching Station is included in the route analysis for the Nebula-Raines Proposed and Alternative Routes. <sup>b</sup> Note that a single facility may be associated with multiple environmental permits; as such, the total number reflects the number of permits and releases within the specified distance from the Project. <b>Notes</b> Waste (Active and Inactive RCRA Facilities that handle or generate hazardous wastes) Toxics (TRI Regulated facilities that handle and release toxic substances to the environment) Land (Site cleanup under Superfund, RCRA or Brownfield programs, and/or DEQ VRP or Pollution Response program) Air (EPA and DEQ regulated facilities with a release of pollutants to the air) Water (EPA and DEQ regulated facilities that discharge or process water to surface water) Solid Waste Facilities (Former and existing landfills) Petroleum Facilities (Regulated petroleum storage facilities) Petroleum Releases (Typically associated with storage tank releases)					

To evaluate the potential impact to the routes, ERM further assessed the sites within 1,000 feet of the Project's Proposed and Alternative Routes (Table F-2).



**TABLE F-2**  
**Cloud-Nebula-Raines Transmission Project <sup>a</sup>**  
**Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 1,000 Feet**

Site Type	Nebula-Raines Proposed Route (Route 5)	Nebula-Raines Alternative Route 1	Nebula-Raines Alternative Route 3	Nebula-Raines Alternative Route 4	Cloud-Nebula Proposed Route
Waste	0	0	0	0	0
Toxics	1	0	1	1	0
Land	0	0	0	0	1
Air	3	3	3	3	0
Water	0	0	0	0	0
Solid Waste Facilities	1	0	1	1	0
Petroleum Facilities	1	0	0	0	0
Petroleum Releases	<b>6</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>2</b>
Total <sup>b</sup>	0	0	0	0	0

<sup>a</sup> The Nebula Switching Station is included in the route analysis.

<sup>b</sup> Note that a single facility may be associated with multiple environmental permits; as such, the total number reflects the number of permits and releases within the specified distance from the Project.

**Notes**

Waste (Active and Inactive RCRA Facilities that handle or generate hazardous wastes)

Toxics (TRI Regulated facilities that handle and release toxic substances to the environment)

Land (Site cleanup under Superfund, RCRA or Brownfield programs, and/or DEQ VRP or Pollution Response program)

Air (EPA and DEQ regulated facilities with a release of pollutants to the air)

Water (EPA and DEQ regulated facilities that discharge or process water to surface water, such as NPDES)

Solid Waste Facilities (Former and existing landfills)

Petroleum Facilities (Regulated petroleum storage facilities)

Petroleum Releases (Typically associated with storage tank releases)

### EPA Regulated Sites

Based on the most recent available data in the EPA's "Cleanups in My Community" database, no Brownfield or Superfund sites are located within 0.5 mile of any of the Project's Proposed and Alternative Routes. One RCRA (waste) site, three EPA-regulated NPDES (water) sites, and one EPA-regulated air facility are located within 1,000 feet of the proposed Nebula-Raines Line; however, no site is located within 200 feet of any of the Project routes. As such, no further review of EPA-regulated sites was conducted.

### DEQ Regulated Sites

ERM reviewed DEQ Petroleum Release, VRP, and PREP databases to identify sites within 1,000 feet of the Project routes. One Petroleum Release site was identified within 1,000 feet of the Nebula-Raines Proposed Route and one VRP (land) site was identified within 1,000 feet of the Nebula-Raines Proposed Route, Route 3, and Route 4; however, neither site is located within 200 feet of the Project. As such, no further review of DEQ regulated sites was conducted.

## Summary

Although no EPA or DEQ regulated sites were identified within 200 feet of the Project's Preferred and Alternative Routes, proper procedures will be followed to safely identify, manage, and dispose of any suspected hazardous and contaminated media that may be encountered during Project activities in accordance with applicable federal, state, and local regulations.

Although the Project is constructing overhead lines, minor subsurface work is required during installation. This disturbance occurs at discrete locations along the route, with temporary spoils contained as they are generated. The Company has a procedure in place to safely identify, manage, and dispose of any suspected hazardous or contaminated media encountered during construction. If contaminated soil or groundwater are identified, the associated regulatory agency will be coordinated with, and the soils disposed of in accordance with applicable regulations.

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 falls under the purview of the DEQ.

## **G. Natural Heritage, Threatened and Endangered Species**

On behalf of the Company, ERM conducted online database searches for threatened and endangered species in the vicinity of the Project, including the Virginia Department of Conservation and Recreation ("DCR") Natural Heritage Data Explorer ("NHDE"). The NHDE includes three components: Conservation Sites, Stream Conservation Units, and General Location Areas for Natural Heritage Resources. ERM also obtained query results from the Virginia Department of Wildlife Resources ("DWR") Fish and Wildlife Information Service ("VaFWIS"), and the USFWS Information for Planning and Consultation ("IPaC") System to identify federally- and state-listed species that may occur within the study area.<sup>2</sup> Digital data were obtained from the DCR-NHDE to identify locations within the study area that potentially support protected species. Results of these queries are provided in Attachment 2.G.1.

The review accounted for regulatory changes and requirements associated with the USFWS uplisting of the Northern long-eared bat ("NLEB") (*Myotis septentrionalis*) from federally threatened to federally endangered. On October 15, 2024, USFWS issued the NLEB Final Guidance for development projects. The USFWS Interim Guidance for the NLEB expired on November 30, 2024, and the Final Guidance for NLEB took effect.

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<sup>2</sup> The VaFWIS database results include the study area and a two-mile buffer surrounding the study area.



The review also accounted for regulatory changes and requirements associated with Tricolored bat (“TCB”) (*Perimyotis subflavus*) and the proposed USFWS listing of this species as federally endangered. The Company is anticipating the TCB will be listed; therefore, it assumes any regulatory changes associated with the potential listing of the TCB will affect these Projects. On September 14, 2022, the TCB was proposed to be listed as Endangered by the USFWS. USFWS extended its Final Rule issuance target from September 2023 to the end of 2024. At this time, the TCB Final Rule has not been issued.

In October 2024, USFWS issued a final NLEB and TCB Range-wide Determination Key (“Dkey”) to allow project proponents to assess project impacts, practicable avoidance and minimization measures, and consultation requirements under the final NLEB guidance and the eventual TCB listing ahead of the final decision. The Company will utilize the DKey to further assess project impacts and determine appropriate avoidance and minimization measures to ensure compliance with state and federal regulations when the project enters permitting.

To obtain the most current eagle nest data, ERM reviewed the Center for Conservation Biology (“CCB”) Virginia Eagle Nest Locator mapping portal, which provides information about the Virginia Bald Eagle (*Haliaeetus leucocephalus*) population, including the results of the CCB’s annual eagle nest survey.

Based on queries of the above referenced sources, six federal and/or state-listed or proposed threatened and endangered species have the potential to occur within the study area (Table G-1). For additional information, see Section 3.2.5 of the Environmental Routing Study.

<b>TABLE G-1</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Potential Federal-and State-Listed Species in the Project Area</b>				
Species	Status	Database	Habitat	Results
Northern long-eared bat ( <i>Myotis septentrionalis</i> )	FE, ST	USFWS IPaC, DWR-NLEB Winter Habitat and Roost Tree Map	Generally associated with old-growth or late successional interior forests. Partially dead or decaying trees are used for breeding, summer day roosting, and foraging. Hibernation occurs primarily in caves, mines, and tunnels.	No known hibernacula or maternity roost trees are documented within the Project area. However, per DWR-NLEB Winter Habitat and Roost Tree Map, an NLEB capture occurred within the study area in 2023. Nebula-Raines Proposed Route (Route 5) and Nebula-Raines Alternative Routes 1, 3, and 4 occur within that 3-mile buffer capture, verifying that potential summer foraging habitat exists along each route for this species. The Project would require clearing of forested areas; therefore, impacts to the NLEB may occur.
Tricolored bat ( <i>Perimyotis subflavus</i> )	FPE, SE	USFWS IpaC, DWR Tricolored bat Winter Habitat and Roost Tree Map	Typically roost in trees near forest edges during summer. Hibernates deep in caves or mines in areas with warm, stable temperatures during winter.	Species not confirmed as present, and no hibernaculum identified within a 0.5-mile-radius of the Project. No impacts are anticipated.

<b>TABLE G-1</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Potential Federal-and State-Listed Species in the Project Area</b>				
Species	Status	Database	Habitat	Results
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	ST	VaFWIS Search Report	Prefers grazed pastures for nesting purposes and shrub/open forest habitats during winters. For breeding season, the species prefers open country with shrubs, scrub, and scattered trees.	Impacts are not anticipated as the majority of confirmed occurrences are west of the Blue Ridge Mountains, with smaller and scattered populations across the rest of the state.
Atlantic pigtoe ( <i>Fusconaia masoni</i> )	FT, ST	USFWS IpaC VaFWIS Search Report	Requires clean and fast flowing water with coarse sand and gravel substrates. Typically, only found in high quality riverine/large creek habitat. Extremely sensitive to pollution and disturbed habitats.	Suitable habitat within the study area, however species distribution does not fall within the Project study area. No impacts are anticipated.
Carolina darter ( <i>Etheostoma collis</i> )	ST	VaFWIS Search Report	Inhabits streams in the lower and middle Piedmont. Found in small streams and rivulets with low current velocities and sand or gravel substrates. Occasionally found among vegetation, brush/fallen tree limbs, and stick-littered areas.	Potential habitat is present within the Project study area. VaFWIS database confirmed the presence of the species within Kettle Creek, Mines Creek, two unnamed tributaries of Kettles Creek, and one unnamed tributary of Mines Creek. No instream work would be performed; however, shading along streambank would be reduced due to tree clearing. Indirect impacts could result if streambank shade is significantly reduced.
Whitemouth shiner ( <i>Miniellus alborus</i> )	ST	VaFWIS Search Report	Primarily found in small warm creeks and larger streams in the middle and lower Piedmont. Prefers colorless waters with sand-bedrock substrate, swift currents, and no vascular plants.	Potential habitat is present within the Project study area. VaFWIS database confirmed the presence of the species within Allen Creek, Kettle Creek, Mines Creek, two unnamed tributaries of Kettles Creek, and one unnamed tributary of Mines Creek. No instream work would be performed; however, shading along streambank would be reduced due to tree clearing. Indirect impacts could result if streambank shade is significantly reduced.
<b>Federal/State Status:</b> FE Federally listed as endangered SE State listed as endangered FT Federally listed as threatened ST State listed as threatened FPE Federally proposed as endangered				

Database queries identified two federally listed species and one species with a federally proposed listing under the Endangered Species Act (“ESA”). Database queries also identified state listed species with potential to occur in the study area, including NLEB, TCB, Loggerhead shrike, Atlantic pigtoe, Carolina darter, and Whitemouth shiner.

While all six of these species were identified by the DWR, the DCR Division of Natural Heritage (“DNH”), and/or USFWS databases as having potential occurrence within the Project study area, the DWR, VaFWIS, and Wildlife Environmental Review Map Service data shows that only the Loggerhead shrike, Atlantic pigtoe, Carolina darter and Whitemouth shiner have been confirmed as present within the study area and/or within a 2-mile radius of the study area boundary. On behalf of the Company, ERM submitted the Project to DCR-DNH for review. DCR-DNH conducted an official review dated

September 11, 2024 (see [Attachment 2.G.1](#)). According to DCR-DNH's official review, a DCR biologist identified the potential for the Carolina darter and Whitemouth shiner to occur in the Project area if suitable habitat exists on site.

Potential habitat for both the Carolina darter and Whitemouth shiner is present within the Project study area, and the VaFWIS database confirmed the presence of the species within Kettles Creek, Mines Creek, two unnamed tributaries of Kettles Creek, and one unnamed tributary of Mines Creek. The Whitemouth shiner was also confirmed as present within Allen Creek. Due to the documented occurrences of these two state-listed species, these waterbodies have been classified by VaFWS as T&E Waters, which are streams and rivers that contain documented occurrences of federal- or state-listed species and their habitat. Nebula-Raines Alternative Routes 1, 3, and 4 cross a tributary to Mines Creek that is classified as a T&E Water for the Carolina darter and Whitemouth shiner. The Nebula-Raines Proposed Route does not cross any T&E Waters.

Based on the DCR-DNH predicted suitable habitat model, ERM quantified the following approximate acreage in Table G-2 of predicted suitable habitat where the Carolina darter and Whitemouth shiner might exist along each of the Project's Proposed and Alternative Routes.

<b>Species with Potential Suitable Habitat</b>	<b>Nebula-Raines Proposed Route (Route 5) (acres)</b>	<b>Nebula-Raines Alternative Route 1 (acres)</b>	<b>Nebula-Raines Alternative Route 3 (acres)</b>	<b>Nebula-Raines Alternative Route 4 (acres)</b>	<b>Cloud-Nebula Proposed Route (acres)</b>
Carolina Darter	5.4	5.6	9.9	2.0	0.0
Carolina Darter and Whitemouth Shiner	6.0	6.0	5.3	8.5	0.0
<b>Total</b>	<b>11.5</b>	<b>11.6</b>	<b>15.2</b>	<b>10.5</b>	<b>0.0</b>

Source: DCR Response Letter ([Attachment 2.G.1](#))

Ecological cores are areas of at least 100 acres of continuous, interior, natural cover (*e.g.*, forests or woodlands) that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that use marsh, dune, and beach habitats. Interior ecological core areas begin 100 meters inside the nearest core edges and continue to the deepest parts of the ecological core. The integrity of ecological cores are ranked from C1 (Outstanding) to C5 (General).

During the Project routing process, ERM attempted to avoid higher-ranking ecological cores to the extent practicable, while also taking into consideration other routing constraints. When avoidance was not possible, ERM attempted to minimize the crossing length of higher-ranking cores, collocate with existing linear corridors, cross previously cleared or disturbed areas, and minimize fragmentation by following ecological core boundaries to the extent practicable. Where cores are crossed, forested habitat would be converted to open meadow/shrub habitat.

The DCR review found that the Project's Proposed and Alternative Routes intersect multiple ecological cores with rankings of C2, C3, C4, and C5. No ecological cores ranked C1 are crossed by any of the Nebula-Raines Proposed or Alternative Routes or the Cloud-Nebula Proposed Route. All Proposed and Alternative Routes for the Project cross an ecological core ranked C2 (Core ID 75315). This 3,090-acre core is almost entirely land managed for silviculture, apart from small amounts of developed and open land on its northern, northwestern, and eastern edges.

The majority of cores crossed by the Project's Proposed and Alternative Routes surround various creeks such as Flat, Dockery, Miles, Cox, Allen, Coleman, and Mines Creek. Cores crossed by Nebula-Raines Proposed Route (Route 5) are generally associated with forested areas around the creeks previously listed. Of the mapped ecological cores, seven (Core IDs 74622, 75702, 75763, 75508, 75213, and 75418) are less than 100-interior acres and are therefore classified as habitat fragments by DCR rather than ecological cores. These habitat fragments are not discussed further. Ecological cores crossed by the Nebula-Raines Proposed and Alternative Routes and the Cloud-Nebula Proposed Route are summarized in Table G-3 below.

<b>Table G-3</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Ecological Cores Crossed by the Project's Proposed and Alternative Routes</b>			
<b>Core Rank</b>	<b>Core ID</b>	<b>Total Core Acres</b>	<b>Miles Crossed</b>
<b>Nebula-Raines Alternative Route 1</b>			
C2 (Very High)	75315	3,090	1.7
C3 (High)	74773	1,338	1.4
	75338	1,113	1.0
C4 (Moderate)	75639	182	0.6
	75260	917	1.1
	75694	156	0.5
	75764	303	0.2
	75518	232	0.3
	75502	479	0.1
C5 (General)	74445	228	0.4
	74622	46	0.2
	75702	66	0.2
	75763	44	0.2

	75480	211	0.2
	75667	253	0.7
<b>Nebula-Raines Alternative Route 3</b>			
C2 (Very High)	75315	3,090	1.7
C4 (Moderate)	74499	396	1.0
	74666	415	0.9
	75004	479	0.9
	75260	917	0.9
	75321	505	0.6
	75518	232	0.3
	75502	479	0.1
C5 (General)	74445	228	0.4
	75480	211	0.2
	75667	253	0.7
<b>Nebula-Raines Alternative Route 4</b>			
C2 (Very High)	75315	3,090	1.8
C4 (Moderate)	74499	396	1.0
	74666	415	0.9
	75004	479	0.9
	75260	917	0.9
	75321	505	0.6
	75518	232	0.6
	75502	479	0.9
C5 (General)	74445	228	0.4
	75480	211	0.2
	75508	66	0.4
<b>Nebula-Raines Proposed Route (Route 5)</b>			
C2 (Very High)	75315	3,090	1.6

C4 (Moderate)	74499	396	0.4
	74291	654	1.9
	74621	371	0.5
	74834	306	0.6
	74656	270	0.3
C5 (General)	74445	228	0.4
	74405	102	0.5
	74767	111	0.2
	74860	114	0.1
	75213	51	0.0
	75328	117	0.2
	75418	99	0.2
<b>Cloud-Nebula Route</b>			
C2 (Very High)	75315	3,090	0.9

In summary,

- Nebula-Raines Proposed Route (Route 5) crosses a total of 13 ecological cores (one ranked as C2, five ranked as C4, and seven ranked as C5), totaling approximately 6.8 miles in length and 92.5 acres.
- Nebula-Raines Alternative Route 1 crosses a total of 15 ecological cores (one ranked as C2, two ranked as C3, six ranked as C4, and six ranked as C5), totaling approximately 8.4 miles and 113.7 acres.
- Nebula-Raines Alternative Route 3 crosses a total of 11 ecological cores (one ranked as C2, seven ranked as C4, and three ranked as C5), totaling approximately 7.1 miles and 97.2 acres.
- Nebula-Raines Alternative Route 4 crosses a total of 11 ecological cores (one ranked as C2, seven ranked as C4, and three ranked as C5), totaling approximately 8.1 miles and 109.7 acres.
- Cloud-Nebula Proposed Route crosses one ecological core (ranked C2), totaling approximately 0.9 mile and 10.8 acres.

Impacts to the ecological cores crossed by the Project's Proposed and Alternative Routes would be limited to structure placement and conversion of forest cover to open, vegetated

space within the maintained right-of-way. All of the Project's Proposed and Alternative Routes cross the ecological core ranked C2 (Core ID 75315). This 3,090-acre core is almost entirely land managed for silviculture, apart from small amounts of developed and open land on its northern, northwestern, and eastern edges. The proposed Nebula Switching Station is located in an approximately 46.5-acre area of cleared land. Because of the existing infrastructure (*i.e.*, existing transmission lines and the existing Cloud Switching Station) and the clearing already present within Core ID 75315, impacts from the Project will not be the first impacts to the core and may be considered less significant. Of the Proposed and Alternative Routes for the Nebula-Raines Line, the Proposed Route (Route 5) would impact the smallest combined area of ecological cores, as well as the smallest area of the highest-ranking core crossed, Core ID 75315 (ranked C2). The Company will work with the appropriate jurisdictional agencies to minimize any impacts on ecological cores during implementation of the Project.

Based on the CCB Virginia Eagle Nest Locator mapping portal, none of the Project's Proposed and Alternative Routes intersect any primary or secondary buffers of currently documented bald eagle nests as identified in The Bald Eagle Protection Guidelines for Virginia (2012). According to the CCB database, the closest eagle nest (Nest ID ME1404) is approximately 0.8 mile south of the study area. According to the CCB, this nest was last observed in 2016 and last occupied in 2016. The next closest nest (Nest ID ME1201) is approximately 1.7 miles southwest of the study area and was last observed in 2012 and last occupied in 2012. The Company will work with the appropriate jurisdictional agencies to minimize impacts on this species.

An NLEB capture area is located within a 3.0-mile buffer of the Nebula-Raines Proposed and Alternative Routes. Nebula-Raines Route Alternatives 1, 3, and 4 cross designated T&E Waters for the Carolina darter and Whitemouth shiner in which both species have been documented.

The Cloud-Nebula Proposed Route does not cross any T&E Waters, and none of the species identified in Table G-1 above have been documented within the route right-of-way.

Construction and maintenance of the new transmission line facilities could have minor effects on wildlife; however, impacts on most species will be short-term in nature, and limited to the period of construction. See Section K of the DEQ Supplement for impacts on wildlife habitat (forested, agricultural, open space, and open water/waterbodies).

No other natural heritage resources (habitat of rare, threatened, or endangered species, unique or exemplary natural communities, or significant geological formations) were identified within the study area by the DCR. Additionally, DCR-DNH concluded that the Project does not cross any State Natural Area Preserves under DCR's jurisdiction. See Attachment 2.G.1.

New and updated information is continually added to DCR's Biotics database. The Company shall re-submit Project information and a map for an update on this natural

heritage information if the scope of the Project changes and/or six months have passed before this information is utilized.<sup>3</sup>

## **H. Erosion and Sediment Control**

The DEQ approved the Company's *Standards & Specification for Erosion & Sediment Control and Stormwater Management for Construction of Linear Electric Transmission Facilities (TE VEP 8000)*. These specifications are given to the Company's contractors and require erosion and sediment control measures to be in place before construction of the line begins and specifies the requirements for rehabilitation of the right-of-way. A copy of the current DEQ approval letter dated February 27, 2024, is provided as Attachment 2.H.1. According to the approval letter, coverage is effective from February 27, 2024, through February 26, 2025.

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

ERM conducted a Stage I Pre-Application Analysis ("Stage I Analysis") of potential impacts on cultural resources for the Project's Proposed and Alternative Routes in accordance with the Virginia Department of Historic Resource's ("VDHR") *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008). A copy of the Stage I Analysis, which was provided to VDHR on January 22, 2024, is included as Attachment 2.I.1. For each route alternative, the analysis identified and considered previously recorded resources within the following study tiers as specified in the Guidelines:

- National Historic Landmark ("NHL") properties located within a 1.5-mile radius of each route centerline.
- National Register of Historic Places ("NRHP")-listed properties, NHLs, battlefields, and historic landscapes within a 1.0-mile radius of each route centerline.
- NRHP-eligible and -listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of each route centerline.
- Qualifying architectural resources and archaeological sites located within the right-of-way for each alternative route.

Information on cultural resources within each of the above study tiers was obtained from the Virginia Cultural Resource Information System ("VCRIS").

In addition to the VCRIS, ERM collected information from the Historically Black Schools of Mecklenburg County Virginia (2024) and contacted several possibly interested parties

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<sup>3</sup> The Company updated this commitment consistent with discussions held between Company and DCR-DNH representatives on August 23, 2022.



(Preservation Virginia [2024], South Central Virginia Genealogical Society, Virginia Museum of History and Culture, Virginia Genealogical Society, Mecklenburg County Planning Commission, and the Tobacco Heritage Trail) to find locally significant resources within a 1.0-mile radius of each proposed route centerline. Nine locally significant resources were identified within the relevant study tiers for the various route options during the data collection effort. ERM additionally collected information on battlefields surveyed and assessed by the National Park Service's American Battlefield Protection Program ("ABPP") (NPS 2023). No additional ABPP study areas, core areas, or potential NRHP boundaries for battlefields were identified within the relevant study tiers for the Project's Proposed and Alternative Routes through this source.

Along with a records review carried out for the four tiers as defined by VDHR, ERM also conducted field assessments of the considered aboveground resources for the Nebula-Raines Proposed and Alternative Routes and the Cloud-Nebula Proposed Route in accordance with the VDHR Guidelines. Digital photographs of each resource and views to the proposed transmission line were taken. All photographs were taken from the public right-of-way or where access to the property was granted. Photo simulations were prepared to assess potential viewshed impacts from construction of the proposed transmission line for each considered resource and relevant route. For previously recorded archaeological sites under consideration, aerial photographs were examined to assess the current land condition and the spatial relationship between the sites and any existing or planned transmission lines.

A summary of the considered resources identified in the vicinity of the Project's Proposed and Alternative Routes, inclusive of the proposed Nebula Switching Station, and recommendations concerning Project effects are provided in the following discussion. The information presented here derives from existing records and does not purport to encompass the entire suite of historic and archaeological resources that may ultimately be affected by the undertaking.

Resources located within the right-of-way of the Project's Proposed and Alternative Routes may be subject to both direct impacts from placement of the transmission line structures across the property as well as indirect visual impacts from changes to the viewshed introduced by the new transmission infrastructure. Resources in the 0.0 to 0.5-mile study tier would not be directly impacted but would likely be visually impacted unless topography or vegetation obscures the view from the resource to the transmission line. At a distance over 0.5-mile, it becomes less likely that a resource would be within line-of-sight of the new transmission facilities. Beyond 1.0-mile, it becomes even less likely that a given resource would be within line-of-sight of the Project. A complete architectural survey is necessary to determine which resources would be visually impacted and to survey for additional unrecorded resources. This survey would be completed after the Commission approves the Project.

The nature of the impacts on cultural resources from construction and operation of the Project, while estimated in the study with the assistance of photo simulations, will depend on the final Project design in which the exact placement and height of transmission line structures are confirmed. As part of the forthcoming architectural survey, Project impacts

on these and any newly identified resources would be assessed. The study area for the survey would be defined based on the height of the transmission line structures, topography, tree cover, and other factors impacting line-of-sight from resources to the route.

### **Nebula-Raines Line #2399**

#### **Nebula-Raines Proposed Route (Route 5)**

Four above ground historic resources were identified within the VDHR study tiers for the Nebula-Raines Proposed Route (Table I-1). Construction and operation of the new facilities associated with the Nebula-Raines Proposed Route would have No Impact on two resources (058-0140 and 058-5092), a Minimal Impact on one resource (058-0309), and a Severe Impact on one resource (058-0141).

The M.H. Upton House (058-0140) is located approximately 0.8 mile to the southeast of the Nebula-Raines Proposed Route at approximate MP 12.5, while the Mecklenburg County Poorhouse Cemetery (058-5092) is located approximately 0.9 mile to the northwest of the Nebula-Raines Proposed Route at approximate MP 14.3. Resource 058-5092 is also located approximately 0.8 mile to the northwest of the proposed Nebula Switching Station. Both resources would have no visibility towards the Nebula-Raines Proposed Route or the proposed switching station due to intervening vegetation and distance. Thus, the route would have No Impact on 058-0140 and 058-5092.

The Nebula-Raines Proposed Route is located approximately 0.3 mile to the west of a tobacco barn (058-0309), at approximate MP 11.6. The Nebula-Raines Proposed Route would not be visible to the east or southeast due to dense vegetation surrounding the route. However, the transmission line conductors would be visible to the south, at the intersection of Antlers Road and the Nebula-Raines Proposed Route. Thus, the Nebula-Raines Proposed Route would have a Minimal Impact on resource 058-0309.

The Nebula-Raines Proposed Route traverses approximately 575 feet of the northernmost corner of Sanders Farm (058-0141) between approximate MP 12.0 to 12.1. Because the route intersects the resource, it would have a direct impact to the resource. Not only would the Nebula-Raines Proposed Route be visible where it intersects the property, it also would be visible to the west, before it connects to the Company's existing transmission line. This would introduce modern elements and tree removal to the western viewshed and northern boundary where there currently is only vegetation or open field. Thus, the Nebula-Raines Proposed Route would have a Severe Impact on 058-0141.

<b>TABLE I-1</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Resources in VDHR Tiers for the Nebula-Raines Proposed Route (Route 5)</b>				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA

0.5-1.0	National Register— Listed	NA	NA	NA
	Battlefields/Rural Historic Districts	NA	NA	NA
	Locally Significant	058-0140 058-5092*	M.H. Upton House Mecklenburg County Poorhouse Cemetery	
0.0- 0.5	National Register— Eligible	NA	NA	NA
	Locally Significant	058-0309	Tobacco Barn	
0.0 (within right-of- way)	National Historic Landmarks, National Register Properties (listed and eligible)	NA	NA	NA
	Locally Significant	058-0141	Sanders Farm	Severe Impact

\* Resource is within the designated tiers for the proposed Nebula Switching Station  
NA = not applicable; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. Five archaeological sites lie within the new right-of-way associated with the Nebula-Raines Proposed Route: 44MC0367, 44MC0457, 44MC0474, 44MC0475, and 44MC0585. All five sites have not been formally evaluated for listing in the NRHP.

Site 44MC0367 is a multi-component unknown prehistoric lithic scatter and historic (1850–1874) church site that has previous ground disturbance due to historic cultivation activities and is currently unevaluated for the NRHP (Jones et al. 1990a). The site was subject to a Phase II archaeological evaluation in 1990 performed by the William and Mary Archaeological Project Center for the Virginia Department of Transportation and was recommended as ineligible for the NRHP due to the sparsity of artifacts recovered and the lack of intact cultural features from either the prehistoric or historic components (Jones et al. 1990b). The site is located approximately 13 feet to the north of the Nebula-Raines Proposed Route. The transmission line right-of-way crosses approximately 140 feet of the southernmost portion of the site. Due to previous ground disturbance by roadway grading and development, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered. Site 44MC0457 is an unknown historic site that contains structure foundation remnants and has previous ground disturbance from timbering and land clearing from the installation of an existing transmission line right-of-way. The site is currently unevaluated for the NRHP. A previous Phase I archaeological survey performed by Power Engineers, Inc. in 2019 for Dominion Energy Virginia was unable to relocate the site and it was interpreted to be destroyed by previous ground disturbance activities (Haynes and Parrott 2020). The route's centerline crosses approximately 210 feet of the southern half of the site boundary. The site has already been intersected by Dominion Energy Virginia's existing Lines #38/#1041. Due to the previous reporting of the site being unable to be relocated during survey, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered.

Site 44MC0474 is a multi-component unknown temporal affiliation prehistoric lithic scatter and historic (1850–1874) domestic artifact scatter that has previous ground disturbance by cultivation activities and is currently unevaluated for the NRHP (Jones et al. 1990a). Approximately 85 feet of the route's centerline would cross the southernmost corner of the site. Due to previous ground disturbance by roadway grading and development, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered.

Site 44MC0475 is an unknown temporal affiliation prehistoric lithic scatter that has previous ground disturbance due to cultivation activities and is currently unevaluated for the NRHP (Jones et al. 1990a). Approximately 310 feet of the route's centerline would cross the southern portion of the site. Due to previous ground disturbance by roadway grading and development, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered.

Site 44MC0585 is a multi-component unknown temporal affiliation prehistoric temporary camp site and historic (1900-1949) tobacco barn and associated artifact scatter that has previous ground disturbance due to the grading and development of the roadway and is currently unevaluated for the NRHP. A previous Phase I survey performed by the William and Mary Archaeological Project Center for the Department of Transportation in 1996 recommended the site as ineligible for the NRHP due to the sparse recovery of artifacts from the prehistoric component and the lack of cultural integrity of the historic component (Stuck and Downing 1996). Approximately 0.1 mile of the route's centerline would cross the southernmost portion of the site. Due to previous ground disturbance by roadway grading and development, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered.

During final engineering, the Company will look to minimize impacts by placing structures outside or at the edges of the sites if feasible.

#### Nebula-Raines Alternative Route 1

Three aboveground historic resources were identified within the VDHR study tiers for Nebula-Raines Alternative Route 1 (Table I-2). Construction and operation of the new facilities associated with this route would have No Impact on one resource (058-5092) and a Minimal Impact on two resources (058-0140 and 058-5412).

The Mecklenburg County Poorhouse Cemetery (058-5092) is located approximately 0.9 mile to the northwest of Nebula-Raines Alternative Route 1 at approximate MP 15.3, and approximately 0.8 mile to the northwest of the proposed Nebula Switching Station. The resource would have no visibility of Nebula-Raines Alternative Route 1 or the proposed switching station due to the resource being surrounded by trees, distance between the resource and the route, and the higher elevation directly east of the resource. Thus, Nebula-Raines Alternative Route 1 would have No Impact on 058-5092.

The M.H. Upton House is located approximately 0.3 mile to the north of Nebula-Raines Alternative Route 1, at approximate MP 13.2. The transmission line conductors could be visible through the trees as one looks to the south. However, the Company's existing Line #38/137 already bisects the western portion of the resource's boundary, which has already diminished the historic viewshed. Thus, the construction of Nebula-Raines Alternative Route 1 would have a Minimal Impact on 058-5412.

The Carey Farmhouse (058-5412) is located approximately 0.6 mile to the northwest of Nebula-Raines Alternative Route 1, at approximate MP 3.7. Most of the resource would have no visibility of the route, however, the top of a singular structure could be visible from the southernmost boundary. Thus, Nebula-Raines Alternative Route 1 could have a Minimal Impact on 058-5412.

<b>TABLE I-2</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Resources in VDHR Tiers for Nebula-Raines Alternative Route 1</b>				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
0.5-1.0	National Register—Listed	NA	NA	NA
	Battlefields/Rural Historic Districts	NA	NA	NA
	Locally Significant	058-5092* 058-5412	Mecklenburg County Poorhouse Cemetery Carey Farmhouse	No Impact Minimal Impact
0.0- 0.5	National Register—Eligible	NA	NA	NA
	Locally Significant	058-0140	M.H. Upton House	
0.0 (within right-of-way)	National Historic Landmarks, National Register Properties (listed and eligible)	NA	NA	NA

\* Resource is within the designated tiers for the proposed Nebula Switching Station

NA = not applicable; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. One archaeological site lies within the new right-of-way associated with Nebula-Raines Alternative Route 1: 44MC0416. It has not been formally evaluated for listing on the NRHP.

Site 44MC0416 is a prehistoric (Archaic and Woodland) temporary camp site that has previous ground disturbance due to cultivation activities and is currently unevaluated for the NRHP (Gardner 1985). The center of the site would be intersected by approximately 348 feet of the centerline of Nebula-Raines Alternative Route 1. Due to previous ground disturbance by agricultural activities, it is unlikely that any intact

cultural remains that would be evaluated as eligible for the NRHP would be encountered.

During final engineering Dominion will look to minimize impacts by placing structures outside or at the edges of the site if feasible.

### Nebula-Raines Alternative Route 3

Five aboveground historic resources were identified within the VDHR study tiers for the Nebula-Raines Alternative Route 3 (Table I-3). Construction and operation of the new facilities associated with this route would have No Impact on two resources (058-0057 and 058-5092) and a Minimal Impact on three resources (058-0073, 058-0140, and East End High School).

Sycamore Lodge (058-0057) is located approximately 0.5 mile to the southeast of Alternative Route 3, at approximate MP 3.3. The Mecklenburg County Poorhouse Cemetery (058-5092) is located approximately 0.9 mile to the northwest of Nebula-Raines Alternative Route 3, at approximate MP 14.9 and approximately 0.8 mile to the northwest of the proposed Nebula Switching Station. Both resources would have no visibility to the route due to intervening vegetation and distance. Thus, Nebula-Raine Alternative 3 would have No Impact on 058-5092 and 058-0057.

The Lombardy Grove Tavern (058-0073) is located approximately 0.6 mile to the west of Nebula-Raines Alternative Route 3, at approximate MP 4.2. The tops of three structures associated with the route would be visible from the eastern boundary of the resource when looking to the northeast. Thus, Nebula-Raines Route Alternative 3 would have a Minimal Impact on 058-0073.

The M.H. Upton House (058-0140) is located approximately 0.3 mile to the north of Nebula-Raines Alternative Route 3, at approximate MP 12.7. The conductors of the route would be visible between the trees, when looking to the north. However, the Company's existing Line #38/137 already bisects the resource's parcel. Although there are trees and dense vegetation bordering the southern resource boundary, the route would be visible from the resource and add a modern element to the southern viewshed where there currently are none. Because the historic viewshed has already been diminished by the existing transmission line, the route would have a Minimal Impact on 058-0140.

The parcel associated with East End High School is located approximately 192 feet to the west of Nebula-Raines Route Alternative 3, at approximate MP 3.9. The transmission line conductors would only be visible where the route intersects Dockery Road, when looking to the east from the southern property boundary (adjacent to Dockery Road) of East End High School. In addition, the construction of the route would involve tree clearing, which could thin the vegetation and increase route visibility from the resource. Thus, Nebula-Raines Route Alternative 3 would have a Minimal Impact on East End High School.

<b>TABLE I-3</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Resources in VDHR Tiers for Nebula-Raines Alternative Route 3</b>				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
0.5-1.0	National Register—Listed	NA	NA	NA
	Battlefields/Rural Historic Districts	NA	NA	NA
	Locally Significant	058-0073 058-5092*	Lombardy Grove Tavern Mecklenburg County Poorhouse Cemetery	Minimal Impact No Impact
0.0- 0.5	National Register—Eligible	NA	NA	NA
		058-0057	Sycamore Lodge	No Impact
	Locally Significant	058-0140	M.H. Upton House	Minimal Impact
0.0 (within right-of-way)	National Historic Landmarks, National Register Properties (listed and eligible)	NA	East End High School	Minimal Impact

\* Resource is within the designated tiers for the proposed Nebula Switching Station  
NA = not applicable; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. Five archaeological sites lie within the new right-of-way associated with Nebula-Raines Alternative Route 3: 44MC0367, 44MC0416, 44MC0474, 44MC0475, and 44MC0585. None of the five sites have been formally evaluated for listing in the NRHP.

Site 44MC0416 is crossed in the same manner as identified in Nebula-Raines Alternative Route 1 above. Sites 44MC0367, 44MC0475, and 44MC0585 are also crossed in the same manner as identified in the Nebula-Raines Proposed Route.

Site 44MC0474 is discussed under the Nebula-Raines Proposed Route above, but it differs because approximately 53 feet of the route's centerline would cross the southernmost corner of the site. Due to previous ground disturbance by roadway grading and development, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered. During final engineering, the Company will look to minimize impacts by placing structures outside or at the edges of the sites if feasible.

#### Nebula-Raines Alternative Route 4

Eight aboveground historic resources were identified within the VDHR study tiers for the Nebula-Raines Alternative Route 4 (Table I-4). Construction and operation of the new facilities associated with this route would have No Impact on four resources (058-



0057, 058-0141, 058-0309, and 058-5092) and a Minimal Impact on four resources (058-0073, 058-0140, 058-0175, and East End High School).

Sycamore Lodge (058-0057) is located approximately 0.5 mile to the southeast of Nebula-Raines Route Alternative 4, at approximate MP 3.3. Sanders Farm (058-0141) is located approximately 0.3 mile to the north of the route, at approximate MP 12.8. The tobacco barn (058-0309) is located approximately 1.0 mile to the north of the route at approximate MP 12.9. The Mecklenburg County Poorhouse Cemetery (058-5092) is located approximately 0.9 mile to the northwest of Nebula-Raines Route Alternative 4, at approximate MP 14.9 and approximately 0.8 mile to the northwest of the proposed Nebula-Switching Station. All four resources will have no view of the route due to intervening vegetation and distance to the route. Thus, Nebula-Raines Route Alternative 4 will have No Impact on 058-0057, 058-0141, 058-0309, and 058-5092.

Lombardy Grove Tavern (058-0073) is located approximately 0.6 mile to the west of Nebula-Raines Route Alternative 4, at approximate MP 4.5. The tops of three structures associated with the route would be visible from the eastern boundary of the resource when looking to the northeast. Thus, Nebula-Raines Route Alternative 4 would have a Minimal Impact on 058-0073.

The M.H. Upton House (058-0140) is located approximately 0.3 mile to the south of Nebula-Raines Route Alternative 4, at approximate MP 12.7. A small portion of the conductors would be visible where the route intersects the Company's existing Line #38/137, to the north of the resource. Although the existing line is more prevalent in the landscape, and intersects the resource parcel boundary, the construction of Nebula-Raines Route Alternative 4 could introduce additional modern elements to the northern viewshed. If visible, only the tops of the structures could be visible. Thus, Nebula-Raines Route Alternative 4 could have a Minimal Impact on 058-0140.

The tobacco barns (058-0175) are located approximately 0.6 mile to the north of Nebula-Raines Route Alternative 4, at approximate MP 11.3. Although the resource is over a half mile north of the route, the top of a singular structure would be visible above the trees when looking to the south from Buggs Island Road. While this is a minor change, the construction of the route would introduce a modern element to the southern viewshed, which currently consists of rural land and vegetation. Thus, Nebula-Raines Route Alternative 4 would have a Minimal Impact on 058-0175.

The parcel associated with East End High School is located approximately 192 feet to the west of Nebula-Raines Route Alternative 4, at approximate MP 3.9. The route conductors would only be visible where the route intersects Dockery Road, when looking to the east from the southern property boundary (adjacent to Dockery Road) of East End High School. In addition, the construction of the route would involve tree clearing, which could thin the vegetation and increase visibility from the resource. Thus, Nebula-Raines Route Alternative 4 would have a Minimal Impact on East End High School.



<b>TABLE I-4</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Resources in VDHR Tiers for Nebula-Raines Alternative Route 4</b>				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
0.5-1.0	National Register—Listed	NA	NA	NA
	Battlefields/Rural Historic Districts	NA	NA	NA
	Locally Significant	058-0073	Lombardy Grove Tavern	Minimal Impact
		058-0175	Tobacco Barns	Minimal Impact
		058-0309	Tobacco Barn	No Impact
		058-5092*	Mecklenburg County Poorhouse Cemetery	No Impact
0.0- 0.5	National Register—Eligible	NA	NA	NA
	Locally Significant	058-0057	Sycamore Lodge	No Impact
		058-0140	M.H. Upton House	Minimal Impact
		058-0141	Sanders Farm	No Impact
		NA	East End High School	Minimal Impact
0.0 (within right-of-way)	National Historic Landmarks, National Register Properties (listed and eligible)	NA	NA	NA

\* Resource is within the designated tiers for the proposed Nebula Switching Station

NA = not applicable; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. Six archaeological sites lie within the new right-of-way associated with Nebula-Raines Alternative Route 4: 44MC0367, 44MC0444, 44MC0460, 44MC0474, 44MC0475, and 44MC0585. All six sites have not been formally evaluated for listing in the NRHP.

Sites 44MC0367, 44MC0475, and 44MC0585 are crossed in the same manner as described in the Nebula-Raines Proposed Route above. Site 44MC0474 is crossed in the same manner as described in the Nebula-Raines Route Alternative 3 above.

Site 44MC0444 is a prehistoric (Archaic) temporary camp site that has previous ground disturbance due to timbering activities and is currently unevaluated for the NRHP (Gardner 1985). The site is in managed timbered area and is intersected by an access path on the parcel. Approximately 308 feet of the route's centerline crosses the southern half of the site. Due to previous ground disturbance by timbering, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered.

Site 44MC0460 is a prehistoric (Middle Archaic) temporary camp site that has previous ground disturbance due to timbering activities and is currently unevaluated for the NRHP (Gardner 1985). The site is in an active timber farm and 308 feet of the route's

centerline cross the center of the site. Due to previous ground disturbance by timbering, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP would be encountered. During final engineering, the Company will look to minimize impacts by placing structures outside or at the edges of the sites if feasible.

### **Cloud-Nebula Lines #2402**

#### **Cloud-Nebula Proposed Route**

One aboveground historic resource was identified within the VDHR study tiers for the Cloud-Nebula Proposed Route (Table I-5). Construction and operation of the new facilities associated with this route would have No Impact on the Mecklenburg County Poorhouse Cemetery (058-5092).

The Mecklenburg County Poorhouse (058-5092) is located approximately 0.5 mile to the west of the Cloud-Nebula Proposed Route, at approximate MP 0.0 and approximately 0.8 mile to the northwest of the proposed Nebula Switching Station. The resource would have no view of the route due to the resource being surrounded by dense vegetation and trees, distance between the resource and the route, and the higher elevation directly east of the resource. Thus, the Cloud-Nebula Proposed Route would have No Impact on 058-5092.

<b>TABLE I-5</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Resources in VDHR Tiers for the Cloud-Nebula Proposed Route</b>				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
0.5-1.0	National Register—Listed	NA	NA	NA
	Battlefields/ Rural Historic Districts	NA	NA	NA
	Locally Significant	058-5092*	Mecklenburg County Poorhouse Cemetery	No Impact
0.0- 0.5	National Register—Eligible	NA	NA	NA
0.0 (within right-of-way)	National Historic Landmarks, National Register Properties (listed and eligible)	NA	NA	NA

\* Resource is within the designated tiers for the proposed Nebula Switching Station

NA = not applicable; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. However, no previously recorded archaeological sites fall within the right-of-way for the Cloud-Nebula Proposed Route.

## **J. Chesapeake Bay Preservation Areas**

The Project is not located in a locality subject to the Chesapeake Bay Preservation Act. 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 25-830-150. The Company will meet those conditions.

## **K. Wildlife Resources**

Forested, open water, agricultural, and open space land use areas and wetlands within the study area may provide wildlife habitat. Forested areas within the Project's Proposed and Alternative Route rights-of-way would be cleared of trees and converted to maintained vegetation, which would eliminate forest habitat and cover but may provide edge habitat or open space for some species. Open water or stream habitat crossed by the Project's Proposed and Alternative Routes would be spanned by the transmission line, with impacts to aquatic species limited to any temporary construction impacts associated with vegetation clearing adjacent to the waterbody and the elimination of riparian buffer benefits (erosion control, water filtration, habitat, and temperature control through shading). Most wetlands are anticipated to be spanned, with impacts limited to temporary construction impacts. Permanent impacts to wetland habitat would include any necessary structure placement within wetlands and clearing and conversion of PFO/PSS-type wetlands to PSS or PEM wetland types after construction is complete. Impacts to agricultural and open space would be limited to structure placement if required and vegetation maintenance; the function of the land use would otherwise remain the same.

### **Nebula-Raines Line #2399**

#### **Nebula-Raines Proposed Route (Route 5)**

The majority of the Nebula-Raines Proposed Route crosses forested lands (99.5 acres), some agricultural lands (34.4 acres) and open space (46.7 acres), and 1.4 acres of open water. The Proposed Route crosses 32 waterbodies, including 11 perennial waterbodies, and about 22.6 acres of wetlands.

#### **Nebula-Raines Alternative Route 1**

The majority of Nebula-Raines Alternative Route 1 crosses forested lands (103.1 acres), some agricultural land (48.7 acres) and open space (44.7 acres), and 0.3 acre of open water. Nebula-Raines Alternative Route 1 crosses 26 waterbodies, including 11 perennial waterbodies, and about 17.8 acres of wetlands.

#### **Nebula-Raines Alternative Route 3**

The majority of Nebula-Raines Alternative Route 3 crosses forested lands (109.6 acres), some agricultural land (50.0 acres), smaller amounts of open space (30.9 acres), and about 0.7 acre of open water. Nebula-Raines Alternative Route 3 crosses 25 waterbodies, including 10 perennial waterbodies, and about 19.5 acres of wetlands.

#### Nebula-Raines Alternative Route 4

The majority of Nebula-Raines Alternative Route 4 crosses forested lands (132.8 acres), some agricultural land (33.0 acres) and open space (25.0 acres), and about 0.7 acre of open water. Nebula-Raines Alternative Route 4 crosses 25 waterbodies, including 10 perennial waterbodies, and about 19.8 acres of wetlands.

#### **Cloud-Nebula Line #2402**

##### Cloud-Nebula Proposed Route

The majority of the Cloud-Nebula Proposed Route crosses forested (4.6 acres) and open space (5.7 acres) land. No agricultural land is crossed by the Cloud-Nebula Proposed Route. This route would cross one waterbody (an intermittent stream) and approximately 0.4 acre of wetlands.

### **L. Recreation, Agricultural, and Forest Resources**

The Project is expected to have minimal incremental impacts on recreational, agricultural, and forest resources. Opportunities for collocation with other rights-of-way were considered, where possible, as a means of avoiding or minimizing impacts on resources. Where the route or variation crosses agricultural lands, impacts would be limited to structure placement and agricultural activities could resume post construction. Where forested areas are crossed, trees would be removed, and vegetation kept to maintained heights within the right-of-way.

The Virginia Agricultural and Forestal Districts Act provides for the creation of conservation districts designed to conserve, protect, and encourage the development and improvement of a locality's agricultural and forested lands. According to the Virginia Department of Forestry, there are no Agricultural and Forestal Districts crossed by the Project.

The Virginia Scenic Rivers Act seeks to identify, designate, and protect rivers and streams that possess outstanding scenic, recreational, historic, and natural characteristics of statewide significance for future generations. No state scenic rivers will be crossed by the Project.

Under the Virginia Open-Space Land Act, any public body can acquire title or rights to real property to provide means of preservation of open-space land. Most easements created under the Act are held by the Virginia Outdoors Foundation ("VOF"), but any state agency is authorized to create and hold an open-space easement. Such conservation easements are designed to preserve and protect open space and other resources and must be held for no less than five years in duration and can be held in perpetuity. According to the DCR's Managed Conservation Lands Database and the Protected Areas Database of the United States ("PAD-US"), there are no easements within a quarter mile of the Project's Proposed or Alternative Routes. The closest easement is a private VOF conservation easement approximately 0.5 mile east of Nebula-Raines Alternative Routes 3 and 4.

Any tree along the right-of-way that is tall enough to endanger the conductors if it were to break at the stump or uproot and fall directly toward the conductors and exhibits signs or symptoms of disease or structural defect that make it an elevated risk for falling will be designated as a “danger tree” and may be removed. The Company’s arborist will contact the property owner if possible before any danger trees are cut, except in emergency situations. The Company’s Forestry Coordinator will field-inspect the rights-of-way and designate any danger trees present. Qualified contractors working in accordance with the Company’s Electric Transmission specifications will perform all danger tree cutting.

None of the Project’s Proposed and Alternative Routes run parallel to or cross any designated Scenic Rivers. The Nebula-Raines Proposed Route and Nebula-Raines Alternative Routes 1, 3, and 4 cross the same Virginia byway, Goodes Ferry Road. Recreational, agricultural, and forest resources identified within a quarter mile of the Project routes are discussed below. An assessment of impacts on these resources is provided in the Environmental Routing Study.

### **Nebula-Raines Line #2399**

#### **Nebula-Raines Proposed Route (Route 5)**

The Nebula-Raines Proposed Route crosses approximately 99.5 acres of forested land (55.7% of the route) and 34.4 acres of agricultural land (26.3% of the route). NRCS soils data indicates approximately 63.6 acres (5.2 miles) of the right-of-way are classified as prime farmland and 65.5 acres (4.6 miles) are classified as farmland of statewide importance.

The Nebula-Raines Proposed Route crosses five recreational trails and one Virginia byway. The route crosses the Beaches to Bluegrass Trail three times (MP 0.6, 8.5, and 11.6), the East Coast Greenway four times (MP 0.6, 3.1, 6.8, and 7.3), the Tobacco Heritage Trail three times (MP 0.6, 8.5, and 11.6), the Christiana Loop Birding Wildlife Trail twice (MP 2.5 and 11.3) and Goodes Ferry Road (MP 0.6), which is a designated Virginia Scenic Byway, and U.S. Bike Route 1 (MP 9.0) once each. The Proposed Route recreational trail crossings are generally perpendicular to minimize potential impacts. In addition to the recreational trails, the Park View Athletic Complex is approximately 0.2 mile southwest of the route. The facility is partially active and there are proposals under review with Mecklenburg County to update and expand the sports complex facility. The Nebula-Raines Proposed Route would not cross or impact any existing or future development plans for the athletic sports complex.

#### **Nebula-Raines Alternative Route 1**

Nebula-Raines Alternative Route 1 crosses approximately 103.1 acres of forested land (52.2% of the route) and 48.7 acres of agricultural land (24.6% of the route). NRCS soils data indicates approximately 74.5 acres (6.1 miles) the right-of-way are classified

as prime farmland, and 91.7 acres (6.7 miles) are classified as farmland of statewide importance.

Nebula-Raines Alternative Route 1 crosses five recreational trails and one Virginia scenic byway. The route crosses each of the following trails twice, the Beaches to Bluegrass Trail (MP 0.8 and 6.0), the Christiana Loop Birding Wildlife Trail (MP 7.3 and 11.2), the East Coast Greenway (MP 0.8 and 10.0), and the Tobacco Heritage Trail (MP 0.8 and 12.2). Nebula-Raines Alternative Route 1 crosses Goodes Ferry Road, which is a designated Virginia Scenic Byway (MP 6.0), and U.S. Bike Route 1 (MP 11.2) once each.

#### Nebula-Raines Alternative Route 3

Nebula-Raines Alternative Route 3 crosses approximately 109.6 acres of forested land (53.7% of the route) and 50.0 acres of agricultural land (25.4% of the route). NRCS soils data indicates approximately 56.9 acres (4.7 miles) of the right-of-way are classified as prime farmland and 97.1 acres (7.1 miles) are classified as farmland of statewide importance.

Nebula-Raines Alternative Route 3 crosses five recreational trails and one Virginia scenic byway. Alternative Route 3 crosses each of the following trails twice, the Christiana Loop Birding Wildlife Trail (MP 6.8 and 10.8), the East Coast Greenway (MP 0.6 and 9.5), and the Tobacco Heritage Trail (MP 0.6 and 11.7). Nebula-Raines Alternative Route 3 crosses the Beaches to Bluegrass Trail (MP 0.6), Goodes Ferry Road (MP 0.6), which is a designated Virginia Scenic Byway, and U.S. Bike Route 1 (MP 10.7) once each.

#### Nebula-Raines Alternative Route 4

Nebula-Raines Alternative Route 4 crosses approximately 132.8 acres of forested land (53.6% of the route) and 33.0 acres of agricultural land (25.3% of the route). NRCS soils data indicates approximately 52.2 acres (4.3 miles) the right-of-way are classified as prime farmland, and 93.4 acres (6.8 miles) are classified as farmland of statewide importance.

Nebula-Raines Alternative Route 4 crosses five recreational trails and one Virginia scenic byway. Alternative Route 4 crosses each of the following trails twice, the Christiana Loop Birding Wildlife Trail (MP 6.8 and 11.3), the East Coast Greenway (MP 0.6 and 9.5), and the Tobacco Heritage Trail (MP 0.6 and 12.0). Nebula-Raines Alternative Route 3 crosses the Beaches to Bluegrass Trail (MP 0.6), Goodes Ferry Road (MP 0.6), which is a designated Virginia Scenic Byway, and U.S. Bike Route 1 (MP 11.2) once each.

## **Cloud-Nebula Line #2402 and**

### **Cloud-Nebula Proposed Route**

The Cloud-Nebula Proposed Route crosses approximately 4.6 acres of forested land (43% of the route) and no agricultural land. NRCS soils data indicates approximately 1.9 acres (0.2 mile) of the right-of-way are classified as prime farmland and 2.7 acres (0.3 mile) are classified as farmland of statewide importance.

No recreational trails, scenic byways, or other recreational resources are crossed by the Cloud-Nebula Route.

### **M. Use of Pesticides and Herbicides**

Of the techniques available, selective foliar is the preferred method of herbicide application. The Company typically maintains transmission line right-of-way by means of selective, low volume applications of EPA-approved, non-restricted use herbicides. The goal of this method is to exclude tall growing brush species from right-of-way by establishing early successional plant communities of native grasses, forbs, and low growing woody vegetation. “Selective” application means the Company sprays only the undesirable plant species (as opposed to broadcast applications). “Low volume” application means the Company uses only the volume of herbicide necessary to remove the selected plant species. The mixture of herbicides used varies from one cycle to the next to avoid the development of resistance by the targeted plants. There are four means of dispersal available to the Company, including by-hand application, backpack, fixed nozzle-radiarc, and aerial. Very little right-of-way maintenance incorporates aerial equipment. The Company uses licensed contractors to perform this work that are either certified applicators or registered technicians in the Commonwealth of Virginia.

DEQ has previously requested that only herbicides approved for aquatic use by the EPA or the USFWS be used in or around any surface water. The Company intends to comply with this request.

Additionally, based on a discussion between Company and DCR-DNH representatives, the Company reviewed its Integrated Vegetation Management Plan (“IVMP”) for application to both woody and herbaceous species based on the species list available on the DCR website. The Company continues to coordinate with DNH on an addendum to the IVMP to further explain how the Company’s operations and maintenance forestry program addresses invasive species. In November 2023, the Company submitted the addendum draft to DCR for review and continued discussions. DCR provided an initial response to the addendum in January 2024. The Company is in the process of ongoing coordination with DCR-DNH pertaining to the Company’s IVMP with a meeting held on November 11, 2024. The Company is continuing to coordinate with DCR with the commitment to schedule additional meetings to discuss DCR’s concern. Once the



addendum is finalized, the Company will report on the results of its communications with DCR in future transmission certificate of public convenience and necessity filings.<sup>4</sup>

## **N. Geology and Mineral Resources**

The Project study area is within the Piedmont geologic province, characterized by strongly weathered bedrock due to the humid climate, thick soils overlying saprolite (weathered bedrock), and rolling topography that becomes more rugged to the west near the Blue Ridge mountains. In general, the Piedmont province consists of several complex geologic terranes where rock units with differing igneous and metamorphic histories are separated by faults. Based on review of the Geologic Map of Virginia, the Project area is located within the Clarksville Terrane, where the general bedrock underlying the study area comprises Proterozoic-age metamorphic bedrock (mylonite, phyllite, and biotite gneiss) along with sections of Mississippian Pennsylvanian-age volcanics (primarily granite) (William and Mary Department of Geology 2023). Based on review of the Geologic Map of Virginia, each of the Nebula-Raines Proposed and Alternative Routes encounter sections of bedrock comprised of granite, phyllite, mylonite, and biotite gneiss, while the Cloud-Nebula Proposed Route crosses bedrock comprised of phyllite.

ERM reviewed publicly available Virginia Department of Energy datasets (2023), USGS topographic quadrangles, and recent (2023) digital aerial photographs to identify mineral resources in the Project study area. Based on this review, no active mineral resources were identified within 0.25 mile of the Nebula-Raines Proposed and Alternative Routes or the Cloud-Nebula Proposed Route. The next closest mineral occurrence is an inactive clay and shale prospect located approximately 0.25 mile north of Nebula-Raines Alternative Route 4 (MP 12.8). Because the closest active mineral resource site is located more than a quarter mile from the Project area, it is not anticipated that construction or operation of the Project's transmission infrastructure will impact site operations.

## **O. Transportation Infrastructure**

### Road and Railroad Crossings

The road network in the study area includes road types ranging from principal arterials (such as Interstate 85 and Highway 58) to minor arterials (such as Highway One, Buggs Island Road, and Union Level Road) to minor collectors (such as Goodes Ferry Road and Baskerville Road), as well as local roads. All road crossings are generally perpendicular.

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<sup>4</sup> See, *Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: 230 kV Line #293 and 115 kV Line #83 Rebuild Project*, Case No. PUR-2021-00272, Final Order at 9-11 (Aug. 31, 2022) (*The Commission agreed with the Chief Hearing Examiner and declined to adopt DCR-DNH's recommendation regarding an invasive species management plan ("ISMP"), but directed the Company to meet with DCR-DNH and to report on the status of the meetings in the Company's next transmission certificate of public convenience and necessity ("CPCN") filing*); see also Report of Alexander F. Skirpan, Jr., Chief Hearing Examiner (Jun. 22, 2022) at 22 (*agreeing with the Company that, with its IVMP, the Company should not be required to undergo the additional cost of DCR-DNH's ISMP; however, recommending that the Company meet with DCR-DNH regarding its IVMP and report the results of the meeting in the next transmission CPCN filing*).

The Mecklenburg County 2035 Plan notes that Highway 58 has been designated by the Virginia Department of Transportation (“VDOT”) as a corridor of state significance as it links the Hampton Roads area to the western areas of the state. VDOT designated Goodes Ferry Road, between the town of South Hill and the Mecklenburg County and Brunswick County border, as a Virginia Byway in 2006.

ERM reviewed the Mecklenburg County 2035 Plan and the VDOT project website for upcoming projects within the Project study area. VDOT’s six-year improvement plan program includes several road projects within the study area; however, only one is within 0.5 mile of any of the Project’s Proposed and Alternative Routes (Mecklenburg Route (“Rte.”) 672 (Bowers Road) Rural Rustic). The Mecklenburg Rte. 672 (Bowers Road) Rural Rustic Road project, which will include reconstruction and resurfacing to treat a non-hard surface road, has an estimated completion date of 2028. That road project is approximately 0.3 mile north of the Nebula-Raines Proposed Route (Route 5) and would not be crossed by any of the Project’s Proposed and Alternative Routes.

There are no existing or planned railroads present within the study area. There is an abandoned Norfolk Southern railroad located in the study area; however, the railroad right-of-way has been abandoned and has been converted to the Tobacco Heritage Trail.

### **Nebula-Raines Line #2399**

#### **Nebula-Raines Proposed Route (Route 5)**

There is one planned VDOT road improvement within 0.5 mile of Nebula-Raines Proposed Route (Mecklenburg Rte. 672 (Bowers Road) Rural Rustic Road project). The project is located approximately 0.3 mile north of the route and would not be crossed by the route. No impacts to the Bowers Road project would be anticipated because of the transmission line. The Nebula-Raines Proposed Route has 13 road crossings: Goodes Ferry Road, an unnamed through road connecting Goodes Ferry Road and US 58, Theater Road, US 1, Plank Road, Union Level Road, Gordon Lake Road, Busy Bee Road, Baskerville Road, Wooden Bridge Road, and Antlers Road. The Proposed Route crosses US 58 twice at MPs 2.5 and 11.2. The Proposed Route parallels the south side (but does not overlap the road right-of-way) of US 58 for approximately 1.8 miles, including the same shared segment as Nebula-Raines Alternative Routes 3 and 4, before crossing US 58 at approximate MP 2.5 and at MP 11.2. The Proposed Route paralleling US 58 would have no impact on the highway’s operations; however, crossing US 58 may impact traffic and operations during construction and/or maintenance and result in temporary lane or road closures. Additional coordination with VDOT would be required.

#### **Nebula-Raines Alternative Route 1**

Nebula-Raines Alternative Route 1 contains 10 road crossings. Alternative Route 1 crosses each of the following roads once: Rocky Branch Road, Turtle Road, Trinity Church Road, Belfield Road, Goodes Ferry Road, US 1, Eureka Road, Baskerville

Road, Buggs Island Road, and Antlers Road. There are no planned VDOT road improvements within 0.5 mile of Alternative Route 1.

#### Nebula-Raines Alternative Route 3

Nebula-Rains Alternative Routes 3 contains nine road crossings. Alternative Route 3 crosses each of the following roads once: Goodes Ferry Road, an unnamed through road connecting Goodes Ferry Road and US 58, Dockery Road, Smith Cross Road, US 1, Cedar Grove Road, Baskerville Road, Buggs Island Road, and Antlers Road. Alternative Route 3 also parallels the south side (but does not overlap the road right-of-way) of US 58 for approximately 0.8 mile. Alternative Route 3 would have no impacts on US 58. There are no planned VDOT road improvements within 0.5 mile of Nebula-Raines Alternative Route 3.

#### Nebula-Raines Alternative Route 4

Nebula-Raines Alternative Route 4 contains nine road crossings. The route crosses each of the following roads once: Goodes Ferry Road, an unnamed through road connecting Goodes Ferry Road and US 58, Dockery Road, Smith Cross Road, Highway One, Cedar Grove Road, Baskerville Road, Buggs Island Road, and Antlers Road. Alternative Route 4 also parallels the south side (but does not overlap the road right-of-way) of US 58 for approximately 0.8 mile at the same location where Alternative Route 3 parallels US 8. Alternative Route 4 would have no impacts on US 58. There are no planned VDOT road improvements within 0.5 mile of Nebula-Raines Route 4.

#### **Cloud-Nebula Line #2402**

##### Cloud-Nebula Proposed Route

The Cloud-Nebula Proposed Route does not cross any roads or transportation corridors, and there are no planned roadway projects within 0.3 mile of the route.

Temporary closures of roads and/or traffic lanes would be required during construction of the Nebula-Raines Proposed or Alternative Routes. No long-term impacts to roads are anticipated as a result of the Project. The Company will comply with VDOT and Mecklenburg County requirements for access to the rights-of-way from public roads. At the appropriate time, the Company will obtain the necessary VDOT permits as required and comply with permit conditions.

#### Airports

The Federal Aviation Administration (“FAA”) is responsible for overseeing air transportation in the United States. The FAA manages air traffic in the United States and evaluates physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. The prime objective of the FAA in conducting an obstruction evaluation is to ensure the safety of air navigation and the efficient utilization of navigable airspace by aircraft.

The Company has reviewed the FAA’s website<sup>5</sup> to identify airports/heliports within 10.0 nautical miles (“nm”) of the proposed Project. FAA-restricted airports/heliports are located within 10.0 nautical miles of the Project are listed in Table O-1 below.

<b>TABLE O-1</b> <b>Cloud-Nebula-Raines Transmission Project</b> <b>Airports and Heliports Within 10.0 Nautical Miles of the Project</b>		
<b>Airport Name</b>	<b>Approximate Distance and Direction from Proposed Dominion Energy Virginia Facility (nautical miles)</b>	<b>Use</b>
Loves Helipad Heliport	○ 2.7 nm northeast of the future Raines Substation (eastern terminus of all routes)	Private Use
Community Memorial Hospital Heliport	○ 2.9 nm northeast of the future Raines Substation (eastern terminus of all routes)	Private Use
Mecklenburg-Brunswick Regional Airport	○ 3.8 nm east of the future Raines Substation (eastern terminus of all routes)	Public Use
Twin Towers Airport	○ 5.5 nm northwest of Nebula-Raines Proposed Route	Private Use
Martindale Executive Airpark Airport	○ 6.6 nm southeast of Nebula-Raines Alternative Route 1	Private Use
Merifield Airport	○ 8.0 nm southwest of the Cloud-Nebula Proposed Route ○ 8.1 nm southwest of the Nebula Switching Station (western terminus of all routes)	Private Use
Nocarva Airport	○ 8.5 nm southeast of Nebula-Raines Alternative Route 1	Private Use
Lake County Regional Airport	○ 10.0 nm southwest of the Cloud-Nebula Proposed Route	Public Use
Chase City Municipal Airport	○ 10.0 nm northwest of the Cloud Switching Station (northern terminus of the Cloud-Nebula Proposed Route)	Public Use

Of the public use airports listed above, it was determined only the Mecklenburg-Brunswick Regional Airport was in close enough proximity to potentially impact navigable airspace. The regulations that govern objects that may affect navigable airspace are codified in the Code of Federal Regulations, Title 14, Part 77. In these regulations, it states that restrictions to structure heights only apply to public use airports and do not apply to privately owned airports. The Company conducted an airport analysis to determine if any of the FAA defined Civil Airport Imaginary Surface would be penetrated by structures associated with the Project. The Company hired ERM to conduct the review. ERM reviewed the height limitations associated with FAA-defined imaginary surfaces for the Mecklenburg-Brunswick Regional Airport. Standard GIS tools, including ESRI’s ArcMap

<sup>5</sup> See <https://ocaaa.faa.gov/ocaaa/external/portal.jsp> and <https://adip.faa.gov/agis/public/#/public>.

3D and Spatial Extension software were used to create and geo-reference the imaginary surfaces in space, and in relation to the locations and proposed heights of the transmission structures. Ground surface data for the study area was derived by using a USGS 10 Meter Digital Elevation Model. Based on the results of this review it was determined there would be no potential for penetration into any of the proposed imaginary surfaces associated with the Mecklenburg-Brunswick Regional Airport, and thus, there would be no impacts to navigable airspace from the proposed Project.

Based on FAA Form 7460-1, Notice of Proposed Construction or Alteration, notice must be filed for penetrating a 100 to 1 slope within a distance of 20,000 feet from a public airport or any airport with at least one FAA-approved instrument approach procedure. The Mecklenburg-Brunswick Regional Airport is located over 22,000 feet east of the eastern most extent of the project. Given the distance between the Project and the airport, no notice is anticipated to be required for the Project.

#### **P. Drinking Water Wells**

The Company has coordinated with the Department of Health (“VDH”), Office of Drinking Water (“ODW”) on the Company’s analysis of drinking water sources in proximity to the Company’s construction projects. VDH-ODW has requested the Company identify known drinking water wells within the project area on the Company’s Erosion and Sediment Control Plans.

As a general matter, water wells within 1,000 feet of the Project’s Proposed and Alternative Routes may be outside of the transmission line corridor and may be located on private property. The Company does not have the ability or right to field-mark wells located on private property. In June 2021, the Company contacted VDH-ODW to propose a method of well protection, including plotting and calling out the wells on the Project’s Erosion and Sediment Control Plan, to which VDH-ODW indicated that the Company’s proposed method is reasonable. A copy of that correspondence is included as Attachment 2.P.1. The Company intends to follow this same approach in this proceeding, as it has in other cases, and will coordinate with VDH-ODW, as needed.

#### **Q. Pollution Prevention**

Generally, as to pollution prevention, as part of Dominion Energy Virginia’s commitment to environmental compliance, the Company has a comprehensive Environmental Management System Manual in place that ensures it is complying with environmental laws and regulations, reducing risk, minimizing adverse environmental impacts, setting environmental goals, and achieving improvements in its environmental performance, consistent with the Company’s core values. Accordingly, any recommendation by the DEQ to consider development of an effective environmental management system has already been satisfied.

## **ATTACHMENTS**





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Virginia Department of Environmental Quality  
Office of Environmental Impact Review  
Ms. Bettina Rayfield, Manager  
P.O. Box 1105  
Richmond, Virginia 23218

**DATE**  
13 January 2025

**SUBJECT**  
230 kV Nebula-Raines Line, 230 kV  
Nebula Switching Station, and 230 kV  
Cloud-Nebula Line

**REFERENCE**  
0706631

Dear Ms. Rayfield:

Environmental Resources Management (ERM), on behalf of Virginia Electric and Power Company (Dominion Energy Virginia, Dominion, or the Company), conducted a desktop wetland and waterbody review of publicly available information for the proposed 230 kilovolt (kV) Nebula-Raines Line, 230 kV Nebula Switching Station, and 230 kV Cloud-Nebula Line in Mecklenburg County, Virginia. These transmission lines and the Nebula Switching Station are collectively referred to as the Project. This delineation was done using desktop resources and methodology. A field delineation is required to verify the accuracy and extent of aquatic resource boundaries. Project route alternatives are shown in Attachment 1, with wetland boundaries identified in this desktop review shown in Attachment 2.

Dominion Energy Virginia is filing an application with the State Corporation Commission (SCC) to construct and operate the following facilities:

- An approximately 14.4-mile-long overhead single circuit, 230-kV transmission line in new 100-foot-wide right-of-way supported by weathering steel double circuit monopoles with an idle conductor from the future Raines Substation<sup>1</sup>, located just south of South Hill, Virginia, to the proposed Nebula Switching Station located east of Boynton, Virginia;<sup>2</sup>
- The new 230-kV Nebula Switching Station located approximately 0.5 mile south of the existing Cloud Switching Station. The proposed Nebula Switching Station will be constructed with 14 230 kV, 4000 ampere (A) breakers with an ultimate design of six rows of breakers arranged in a breaker-and-a-half configuration. It will require the installation of an additional 24 arresters, 32 230-kV 4000A switches. The Nebula

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<sup>1</sup> The future Raines Substation is being constructed as part of the SCC approved South Hill 230 kV Transmission Line Project and is not considered a part of this Project.

<sup>2</sup> Although the name of the Project is "Nebula to Raines," the transmission line is evaluated throughout the routing study from the future Raines Substation (starting point) to the proposed Nebula Switching Station (endpoint).



Switching Station will be designed to provide six 230-kV feeds to serve a MEC delivery point. The total area of the proposed Nebula Station is approximately 11.3 acres; and

- An approximately 0.9-mile-long overhead single circuit, 230-kV transmission line in new 100-foot-wide right-of-way supported by weathering steel double circuit monopoles with an idle conductor from the proposed Nebula Switching Station to the existing Cloud Switching Station, located just north of the proposed Nebula Switching Station.

The Project is necessary to provide service to a new delivery point pursuant to a request by Old Dominion Electric Cooperative on behalf of Mecklenburg Electric Cooperative (MEC), for Mecklenburg Electric Cooperative to provide service to one of its data center customers; maintain reliable service for the overall growth in the area; and comply with mandatory North American Electric Reliability Corporation Reliability Standards.

The purpose of this desktop analysis is to identify and evaluate potential impacts of the Project on aquatic resources (wetlands, streams, creeks, runs, and open water features) in the area. In accordance with Virginia Department of Environmental Quality (DEQ) and the SCC's Memorandum of Agreement, the evaluation was conducted using various data sets that may indicate wetland location and type. This report is being submitted to the DEQ as part of the DEQ Wetland Impacts Consultation.

This assessment did not include field investigations required for wetland delineations, as defined in the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).

## PROJECT STUDY AREA AND POTENTIAL ROUTES

A study area was developed encompassing an area containing the Project origin and termination points for the planned facilities (i.e., the proposed Project) as well as an area broad enough for the identification of reasonable route alternatives meeting the Project objectives. Additionally, and to the extent practicable, the limits of the study area were defined by reference to easily distinguishable landmarks, such as roads or other recognizable features.

Based on the above, ERM and Dominion defined the boundaries of the study area for the Project as follows:

- An area east of Interstate 85 (I-85) to the east;
- The unincorporated community of Gordon Corner to the north;
- The eastern extend of the Town of Boydton to the west; and
- The unincorporated communities of Norvello, Elamtown and Invermay to the south.

The study area encompasses approximately 96 square miles entirely within Mecklenburg County, Virginia. Portions of the incorporated towns of South Hill and Boydton are located respectively at the extreme eastern and western edges of the study area. The unincorporated

communities of Union Level, Gordon Corner, Callahans Corner, Busy Bee Corner, Lombardy Grove, Dockery, Smiths Crossroads, Radcliff, Big Fork, Cedar Grove, Midway, Baskerville, Gills, Antlers and Redlawn are also located within the Study Area. Land use and land cover consists of forested, agricultural, and undeveloped lands, therefore there are minimal commercial and industrial areas and buildings present throughout the study area, and forested areas along Flat Creek, Dockery Creek, Little Miles Creek, Miles Creek, Cox Creek, Allen Creek, Mines Creek, Long Branch and Reedy Branch, and Coleman Creek and associated tributaries. The largest forested/undeveloped areas are associated with riparian areas along Flat Creek, Dockery Creek, Little Miles Creek, Miles Creek, Cox Creek, Allen Creek, Mines Creek, Long Branch and Reedy Branch, and Coleman Creek waterways. Commercial and industrial buildings in the study area include warehouses and commercial signage retailers. In general, these sparse commercial businesses and buildings are located in the northeast portion of the study area near the city of South Hill. The study area is shown in Attachment 1.

## PROPOSED ROUTE ALTERNATIVES

### CLOUD-NEBULA ROUTE

Starting at the existing Cloud Switching Station, the Cloud-Nebula Route heads south for 0.5 mile adjacent to the western boundary of the Cloud Switching Station and an existing data center parcel, crossing through mostly managed timber land. The route then turns to the east for 0.3 mile across managed timber land before turning south and terminating at the proposed Nebula Substation.

The Cloud-Nebula Route measures approximately 0.9 mile long. The operational right-of-way for this alternative is 10.8 acres. Existing land uses along the route largely consist of managed timber lands with some previously cleared timber lands.

## NEBULA-RAINES ROUTE ALTERNATIVES

### NEBULA-RAINES ROUTE 1

Starting at the Raines Substation, Route 1 heads southwest for about 0.4 mile through forested areas and crossing Flat Creek before turning south for an additional 0.8 mile, crossing Rocky Branch Road at approximately milepost (MP) 0.8, just west of the South Hill WWTP. The route then turns to the southwest for 0.5 mile, crossing Turtle Road at approximately MP 1.5. The route then turns to the south for 1.1 mile, crossing through mostly forested areas (including managed timber land). At this point, the route turns to the southwest for 1.9 miles, crossing Trinity Church Road at approximately MP 3.6. This segment of the route crosses through mostly dense forested areas. The route then runs west then southwest then west for 1.2 miles, crossing Belfield Road at approximately MP 5.2. The route then turns west and continues for 3.7 miles, crossing Goodes Ferry Road at approximately MP 6.0, US 1 at MP 7.3, and Eureka Rd at MP 8.1. This segment of the route



is primarily through heavily forested land up to approximately MP 8.4, at which point the route crosses through mixed forest and agricultural land. At approximately MP 9.6, the route turns northwest and crosses Baskerville Road at approximately MP 10.0. The route then turns to the west and then southwest for 1.2 miles across forested and agricultural land before crossing Buggs Island Road at approximately MP 11.2. The route continues to the west for 1.0 mile, crossing mostly recently cleared timber lands and some agricultural grazing fields before turning southwest for 0.5 mile, and then northeast for 0.5 mile through primarily agricultural and grazing land. At this point the route turns to the west-northwest for the remaining 2.3 miles, crossing the Company's existing Lines #137 and #38 at approximately MP 13.2 and Antlers Road at approximately MP 13.5, before terminating at the proposed Nebula Station. The segment of the route west of approximate MP 13.5 is through dense managed timber land.

Route 1 measures approximately 15.4 miles in length. The operational right-of-way for this alternative (186.3 acres) and the proposed Nebula Station (11.3 acres) would encompass a combined 197.6 acres. Existing land uses along the route largely consist of a mix of agricultural and forested lands (including substantial areas of managed or replanted timber lands) with scattered rural residences and other low-intensity development at and near road crossings.

### NEBULA-RAINES ROUTE 3

Starting at the Raines Substation, Route 3 heads west for about 0.5 mile through forested areas before continuing west and collocating with the south side of US 58 for 0.8 mile across primarily agricultural lands. The route then turns to the southwest and crosses through mostly forested areas for 2.4 miles. At this point, the route turns to the west for 0.2 mile and then southwest for 0.3 mile across forested land, crossing Dockery Road at approximately MP 3.9. The route then turns south for 0.4 miles crossing through dense forested areas before turning southwest for 0.8 mile, crossing Smith Cross Road at approximately MP 5.5. After crossing Smith Cross Road, the route turns southeast for 0.1 mile and then southwest for 0.7 mile, crossing through most dense forested areas. The route then turns to the west, crossing through a mix of forested areas and cleared agricultural lands for 2.7 miles and crossing US 1 at approximately MP 6.8 and Cedar Grove Road at approximately MP 8.5. At this point the route heads southwest for 0.4 mile, crossing through open agricultural lands. At approximately MP 9.5, Route 3 crosses Baskerville Road and intersects Route 1. From this point, Route 3 follows the same alignment as Route 1 for the remaining 5.4 miles to the proposed Nebula Station.

Route 3 measures approximately 14.9 miles in length. The operational right-of-way for this alternative (180.7 acres) and the proposed Nebula Station (11.3 acres) would encompass a combined 192.0 acres. Existing land uses along the route largely consist of a mix of agricultural and forested lands (including substantial areas of managed or replanted timber

lands) with scattered rural residences and other low-intensity development at and near road crossings.

#### NEBULA-RAINES ROUTE 4

Route 4 follows the same alignment as Route 3 for the first 10.1 miles from the Raines Substation to a point 0.6 mile west of Baskerville Road. At this point, the route turns to the northwest for 0.4 mile, crossing through mostly forested lands, then turns to the west-northwest for 0.8 mile, crossing Cox Creek at approximately MP 10.5, Buggs Island Road at approximately MP 11.2. The route then turns to the west-southwest for 3.2 miles, crossing Antlers Road at approximately MP 13.0 and the Company's existing Lines #137 and #38 at approximately MP 13.1. The route then turns northwest for 0.1 mile (using the same right-of-way as Routes 1 and 3) and terminates at the proposed Nebula Station.

Route 4 measures approximately 15.0 miles in length. The operational right-of-way for this alternative (181.0 acres), and the proposed Nebula Station (11.3 acres) would encompass a combined 192.3 acres. Existing land uses along the route largely consist of a mix of agricultural and forested lands (including substantial areas of managed or replanted timber lands) with scattered rural residences and other low-intensity development at and near road crossings.

#### NEBULA-RAINES ROUTE 5

Starting at the Raines Substation, Route 5 follows the same alignment as Route 3 for the first 1.3 miles from the Raines Substation along the south side of US 58. From this point, the route continues along the south side of US 58 for another 1.1 miles before turning to the northwest for 0.1 mile, crossing US 58 and US 1 (where the two roads divide) at approximately MP 2.5, before turning west for 0.1 mile. The route then turns north-northwest for 0.6 mile, crossing Plank Road at approximately MP 3.1. The route then turns to the west for 1.3 miles and then southwest for 2.3 miles, crossing Miles Creek at approximately MP 4.5, Union Level Road at approximately MP 5.6, and Gordon Lake Road at approximately MP 6.8. At this point the route turns to the west for 2.0 miles, crossing Busy Bee Road at approximately MP 7.3. The route turns to the west/southwest for 1.7 miles, crossing Baskerville Road and Wooden Bridge Road at approximately MP 9.0 and then running through mainly forested areas. The route then heads southwest for 1.2 miles across agricultural land east of the county landfill and crossing U.S. 58 at approximately MP 11.2. At approximately MP 11.8, the route turns to the west-southwest for 0.4 mile, crossing Antlers Road at approximately MP 11.9, and then back to the southwest for 0.4 approximately mile. At approximately MP 12.5 the route turns to the west, crosses the Company's existing Lines #137 and #38, and shares right-of-way with the south side of the Company's existing Lines #1041 and #38 for 0.9 mile. The route then turns to the southwest (away from Lines #1041 and #38) for 0.6 mile across managed timber lands,



before turning west for 0.1 mile (using the same right-of-way as Routes 1 and 3) and terminating at the Nebula Station.

Route 5 measures approximately 14.4 miles in length. The operational right-of-way for this alternative (174.0 acres) and the proposed Nebula Station (11.3 acres) would encompass a combined 185.2 acres. Existing land uses along the route largely consist of a mix of agricultural and forested lands (including substantial areas of managed or replanted timber lands) with scattered rural residences and other low-intensity development at and near road crossings.

## DESKTOP EVALUATION METHODOLOGY

The area of effect considered for this study consists of the proposed rights-of-way identified above within which the electric transmission lines would be constructed and operated. Data sources used for this review include the following, each of which is described briefly below:

- USA NAIP Imagery: Color Infrared NAIP Infrared Images, Virginia, 1-meter pixel resolution (NAIP 2024)
- USA NAIP Imagery: Natural Color Images (2010-2022), Virginia, 1-meter pixel or better resolution (NAIP 2024a)
- Recent aerial imagery, taken in October of 2023 (NAIP 2023);
- Mecklenburg County Interactive Data Portal GIS datasets (Mecklenburg County 2024);
- Google Earth Aerial Imagery (Google LLC 2024);
- ESRI World Elevation Terrain 2-foot contours (ESRI et al. 2024);
- NWI maps from the USFWS online data mapping portal (USFWS 2024);
- The National Hydrography Dataset (NHD) Plus High Resolution (USGS 2024);
- Soil Survey Geographic Database soils data from the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2023).

## NATURAL COLOR AND INFRARED AERIAL PHOTOGRAPHY

Recent (2023) natural color aerial photography was used to provide a visual overview of the Project area and to assist in evaluating current conditions. Infrared aerial photography was used to identify the potential presence of wetlands based on signatures associated with the levels of reflectance. For example, areas that are inundated with water appear very dark (almost black) due to the low level of reflectance in the infrared spectrum. The presence of these dark colors can be used as a potential indicator of hydric or inundated soils that are likely associated with wetlands.



## TOPOGRAPHIC MAPS

Recent ESRI world topographic maps show the topography of the area as well as other important landscape features such as forest cover, development, buildings, agricultural areas, streams, lakes, and wetlands (USGS 2024; ESRI et al., 2024).

## USFWS NATIONAL WETLAND INVENTORY MAPPING

NWI maps provide the boundaries and classifications of potential wetland areas as mapped by the USFWS (USFWS 2024). NWI data is based primarily on aerial photo interpretations with limited ground-truthing and may represent incorrect boundaries or wetland cover types. NWI data can be unreliable in some areas, especially in forested landscapes, where aerial photography is used as the major data source. The classifications of the majority of the NWI polygons in the study area appear to be accurate based on a review of the cover types observed in the aerial photography. However, in areas where there was an obvious discrepancy between the NWI classification and the aerial photography, ERM modified the classification to more accurately reflect current conditions. In order to acknowledge ERM's adjustment of NWI classifications where appropriate, all the wetland types referenced in this assessment are referred to as "assigned wetland cover types" regardless of whether the cover type was modified from the NWI classification.

## USDA-NRCS SOILS DATA

Soils in the study area were identified and assessed using the SSURGO database, which is a digital version of the original county soil surveys (USDA-NRCS 2023). The attribute data within the SSURGO database provides the proportionate extent of the component soils and their properties (e.g., hydric rating) for each soil map unit. The soils in the study area were grouped into three categories based on the hydric rating of the component soils within each map unit: hydric, partially hydric, and non-hydric. Hydric soils were defined as those where the major component soils, and minor components in some cases, are designated as hydric. Hydric components in these map units account for more than 80 percent of the map unit. Partially hydric soils include map units that only contain minor component soils that are designated as hydric. The partially hydric map units in the Project area contain 10 percent or less hydric soils. The remaining map units do not contain any component soils that are designated as hydric. Areas mapped as hydric or partially hydric have a higher probability of containing wetlands than areas with no hydric soils.

## USGS NATIONAL HYDROGRAPHY DATASET

The National Hydrography Dataset (NHD) dataset contains features such as lakes, ponds, streams, rivers, and canals (USGS 2024). The waterbodies mapped by the NHD appeared generally consistent with those visible on the USGS maps and aerial photography.



## PROBABILITY ANALYSIS

ERM used a stepwise process to identify probable wetland areas along the proposed routes, as follows:

- Infrared and natural color aerial photography was used in conjunction with topographic maps and soils maps to identify potential wetland areas. Boundaries were assigned to the areas that appeared to exhibit wetland signatures based on this review and a cover type was determined based on aerial photo interpretation. For the purpose of the study, these areas are referred to as Interpreted Wetlands.
- To further determine the probability of a wetland occurring within a given location, the Interpreted Wetland polygon shape files were digitally layered with the NWI mapping and soils information from the SSURGO database.
- The probability of a wetland occurring was assigned based on the number of overlapping data layers (i.e., indicators of potential wetland presence) that occurred in a particular area.

The criteria assigned to each probability are outlined in Table 1.

**TABLE 1: CRITERIA USED TO RANK THE PROBABILITY OF WETLAND OCCURRENCE**

Probability	Criteria
High	Areas where layers of hydric soils, Interpreted Wetlands, and NWI data overlap
Medium/High	NWI data overlaps hydric soils; or NWI data overlaps Interpreted Wetlands with or without partially hydric soils; or Hydric soils overlap Interpreted Wetlands
Medium	Interpreted Wetlands with or without overlap by partially hydric soils
Medium/Low	Hydric soils only; or NWI data with or without overlap by partially hydric soils
Low	Partially hydric soils only
Very Low	Non-hydric soils only

## WETLAND AND WATERBODY CROSSINGS

The desktop analysis provides a probability of wetland and waterbody occurrence within each route, with wetlands classified based on the Cowardin classification system described below:

- Palustrine Emergent (PEM) wetlands – characterized by erect, rooted, herbaceous hydrophytes (i.e., aquatic plants) and woody species less than 3 feet in height, excluding mosses and lichens;



- Palustrine Scrub-Shrub (PSS) wetlands – characterized by woody vegetation, excluding woody vines, approximately 3 to 20 feet in height;
- Palustrine Forested (PFO) wetlands – characterized by woody vegetation, excluding woody vines, approximately 20 feet or more in height and 3 in. or larger diameter at breast height (DBH);
- Palustrine Unconsolidated Bottom (PUB) open waters – characterized by bottom substrate particles smaller than stones (less than 10 inches) covering greater than 25 percent of the area, with plants covering less than 30 percent of the area; and
- Riverine streams – within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5%. (USFWS 2013).

As stated above, field delineations were not performed and would be required to verify the accuracy and extent of aquatic resource boundaries. A range of wetland occurrence probabilities are reported by this study from very low to high. The probability of wetland occurrence increases as multiple indicators begin to overlap towards the “high” end of the spectrum. The medium, medium-high, and high probability categories are the most reliable representation of in-situ conditions, due to overlapping data sets, and these categories are reported in the summary below as a percentage of the total acreage of each route. Attachment 2 depicts the interpreted wetlands displayed on color base map images.

## RESULTS

Results of the probability analysis are presented in Table 2 below. Summaries are provided in the sections following the table. No wetlands were identified using the desktop methodology within the footprint of the proposed Nebula Switching Station.

**TABLE 2: SUMMARY OF THE PROBABILITIES OF WETLAND AND WATERBODY OCCURRENCE ALONG THE ROUTE ALTERNATIVES <sup>A,B,C</sup>**

Probability	Total Within Right-of-way (acres) <sup>b</sup>	Wetland and Waterbody type (acres)				
		PEM (Emergent)	PFO (Forested)	PSS (Scrub-Shrub)	PUB (Freshwater pond)	Riverine (Stream)
Cloud-Nebula Route						
High	NA	NA	NA	NA	NA	NA
Medium/High	0.0	NA	0.0	NA	NA	0.0

Probability	Total Within Right-of-way (acres) <sup>b</sup>	Wetland and Waterbody type (acres)				
		PEM (Emergent)	PFO (Forested)	PSS (Scrub-Shrub)	PUB (Freshwater pond)	Riverine (Stream)
Medium	0.6	0.2	0.4	NA	NA	0.0
Medium/Low	NA	NA	NA	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA

**Nebula-Raines Lines**
*Nebula-Raines Route 1*

High	2.9	0.0	2.5	NA	0.1	0.3
Medium/High	4.7	0.4	4.0	NA	0.1	0.2
Medium	10.3	NA	9.5	NA	0.0	0.8
Medium/Low	0.6	NA	0.3	NA	0.1	0.2
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA

*Nebula-Raines Route 3*

High	4.5	0.0	3.8	NA	0.3	0.4
Medium/High	9.1	0.4	7.8	0.3	0.2	0.4
Medium	5.9	0.0	5.3	NA	0.3	0.3
Medium/Low	2.1	NA	1.8	NA	0.1	0.2
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA

*Nebula-Raines Route 4*

High	5.7	0.0	5.1	NA	0.3	0.4
Medium/High	8.9	0.4	7.6	0.3	0.2	0.4
Medium	5.2	0.0	4.6	NA	0.3	0.3
Medium/Low	1.9	NA	1.7	NA	0.1	0.1
Low	NA	NA	NA	NA	NA	NA

Probability	Total Within Right-of-way (acres) <sup>b</sup>	Wetland and Waterbody type (acres)				
		PEM (Emergent)	PFO (Forested)	PSS (Scrub-Shrub)	PUB (Freshwater pond)	Riverine (Stream)
Very Low	NA	NA	NA	NA	NA	NA
<i>Nebula-Raines Route 5</i>						
High	3.4	NA	2.7	NA	0.4	0.3
Medium/High	7.2	0.1	5.8	0.0	0.9	0.5
Medium	11.8	2.6	7.4	0.5	0.9	0.5
Medium/Low	1.8	NA	0.9	0.3	0.1	0.5
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA

NA: Not applicable due to absence of wetland or waterbody type within the alternative route

<sup>a</sup> Numbers in this table have been rounded for presentation purposes; as a result, the totals may not reflect the sum of the addends.

<sup>b</sup> Total acres may not total the sum of wetland and waterbody types because some of the lower probability rankings do not overlap with NWI or interpreted wetlands, and therefore do not have a wetland/waterbody type associated with them.

<sup>c</sup> NA: Not applicable due to absence of a wetland type within the Project footprint; 0.0 indicates less than 0.05 acre of the wetland is present.

## WETLAND CROSSINGS

### CLOUD-NEBULA ROUTE

The length of the corridor for Cloud-Nebula Route is approximately 0.9 miles and encompasses a total of approximately 10.8 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 6.2 percent (0.7 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 0.7 acre of wetlands, 0.4 acre consist of PFO wetlands, 0.2 acre consist of PEM wetlands, and less than 0.1 acre consist of riverine features.

### NEBULA-RAINES ROUTE ALTERNATIVES

The Nebula-Raines Route Alternatives discussed below include the 11.3-acre proposed Nebula Switching Station Footprint. Based on the methodology discussed above, the proposed switching station footprint did not contain wetlands or waterbodies.



**Route Alternative 1**

The length of the corridor for Route Alternative 1 is approximately 15.4 miles and encompasses a total of approximately 197.6 acres (including the 11.3-acre proposed Nebula Switching Station footprint). Based on the methodology discussed above, the right-of-way footprint will encompass approximately 9.1 percent (17.9 acres) of land with a medium or higher probability of containing wetlands and waterbodies. These 17.9 acres consist of 16.1 acre of PFO wetlands, 0.4 acre of PEM wetlands, 0.2 acre of PUB open water features, and 1.3 acre of riverine features.

**Route Alternative 3**

The length of the corridor for this Nebula-Raines Route 3 is approximately 14.9 miles and encompasses a total of approximately 192.0 acres (including the 11.3-acre proposed Nebula Switching Station footprint). Based on the methodology discussed above, the right-of-way footprint will encompass approximately 10.2 percent (19.5 acres) of land with a medium or higher probability of containing wetlands and waterbodies. These 19.5 acres consist of 16.9 acres of PFO wetlands, 0.3 acre of PSS wetlands, 0.3 acre of PSS wetlands, 0.5 acre of PEM wetlands, 0.8 acre of PUB open water features, and 1.1 acre of riverine features.

**Route Alternative 4**

The length of the corridor for Nebula-Raines Route 4 is approximately 15.0 miles and encompasses a total of approximately 192.3 acres (including the 11.3-acre proposed Nebula Switching Station footprint). Based on the methodology discussed above, the right-of-way footprint will encompass approximately 10.3 percent (19.8 acres) of land with a medium or higher probability of containing wetlands and waterbodies. These 19.8 acres consist of 17.3 acres of PFO wetlands, 0.3 acre of PSS wetlands, 0.5 acre of PEM wetlands, 0.8 acre of PUB open water features, and 1.0 acre of riverine features.

**Route Alternative 5**

The length of the corridor for Nebula-Raines Route 5 is approximately 14.4 miles and encompasses a total of approximately 185.2 acres (including the 11.3-acre proposed Nebula Switching Station footprint). Based on the methodology discussed above, the right-of-way footprint will encompass approximately 12.2 percent (22.5 acres) of land with a medium or higher probability of containing wetlands and waterbodies. These 22.5 acres consist of 15.8 acres of PFO wetlands, 0.6 acre of PSS wetlands, 2.6 acres of PEM wetlands, 2.2 acres of PUB open water features, and 1.3 acres of riverine features.

**WATERBODY CROSSINGS**

ERM identified and mapped waterbodies in the study area using similar publicly available GIS databases as those used to identify and map wetlands. Waterbodies crossed by the Cloud to Raines Route and the Nebula-Raines route alternatives include the Perennial Flat Creek,

Dockery Creek, Little Miles Creek, Miles Creek, Cox Creek, Allen Creek, Mines Creek, Long Branch and Reedy Branch, Coleman Creek, several unnamed, intermittent tributaries to these waterbodies, and multiple open waterbody features (stormwater ponds and impoundments). No waterbodies were identified within the Proposed Nebula Switching Station footprint.

**TABLE 2: WATERBODIES CROSSED BY THE ROUTES AND ROUTE VARIATIONS**

Waterbodies Crossed	Unit	Cloud-Nebula Route	Nebula-Raines Route 1	Nebula-Raines Route 3	Nebula-Raines Route 4	Nebula-Raines Route 5
<b>Total</b>	Number	1	26	25	25	31
Perennial Streams/Rivers	Number	0	10	8	8	8
Intermittent Streams/Rivers	Number	1	15	15	15	20
Perennial Lakes/Ponds	Number	0	1	2	2	3

Source: NHD (USGS 2024)

### CLOUD-NEBULA ROUTE

Based on the NHD and the methodology discussed above, the Cloud-Nebula Route crosses one NHD-mapped, unnamed, intermittent tributary to Coleman Creek that is mapped by the NHD. Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Cloud-Nebula Route 1 would encompass approximately less than 0.1 acre of riverine features.

### NEBULA-RAINES ROUTE ALTERNATIVES

#### Route Alternative 1

Route Alternative 1 would have a total of 26 waterbodies that are mapped by the NHD, including 11 perennial waterbodies (Flat Creek, Dockery Creek, Allen Creek, Miles Creek, Cox Creek, five unnamed tributaries, and one lake/pond), and 15 unnamed, intermittent streams. Based on the methodology described above, the right-of-way for Route Alternative 1 would encompass approximately 0.2 acre of PUB open water features and 1.3 acres of riverine features.

#### Route Alternative 3

Route Alternative 3 would have a total of 25 waterbodies that are mapped by the NHD, including 10 perennial waterbodies (Perennial Flat Creek, Dockery Creek, Miles Creek, Cox Creek, Allen Creek, four unnamed tributaries, and two lake/ponds), and 15 unnamed, intermittent streams. Based on the methodology described above, the right-of-way for Route



Alternative 3 would encompass approximately 0.8 acre of PUB open water features and 1.1 acre of riverine features.

#### **Route Alternative 4**

Route Alternative 4 would have a total of 25 waterbodies that are mapped by the NHD, including 10 perennial waterbodies (Perennial Miles Creek, Cox Creek, Allen Creek, Flat Creek, Dockery Creek, three unnamed tributaries, and two lake/ponds), and 15 unnamed, intermittent streams. Based on the methodology described above, the right-of-way for Route 4 would encompass approximately 0.8 acre of PUB open water features and 1.0 acre of riverine features.

#### **Route Alternative 5**

Route Alternative 5 would have a total of 31 waterbodies that are mapped by the NHD, including 11 perennial waterbodies (Perennial Flat Creek, Long Branch, Dockery Creek, Reedy Branch, Miles Creek, Cox Creek, Allen Creek, one unnamed tributary, and three unnamed lake/ponds), and 20 unnamed, intermittent streams. Based on the methodology described above, the right-of-way for Route Alternative 5 would encompass approximately 2.2 acres of PUB open water features and 1.3 acres of riverine features.

### **PROJECT IMPACTS**

Avoiding or minimizing new impacts on wetlands and streams was among the criteria used in developing routes for the Project. To minimize impacts on wetland areas, the transmission lines have been designed to span or avoid wetlands and waterbodies where possible, keeping transmission structures outside of aquatic resources to the extent practicable.

The majority of potential direct impacts on wetlands due to Project construction, would be temporary in nature. Mats would be used for construction equipment to travel over wetlands, as appropriate. Due to the absence of an existing right-of-way, some new access roads may be necessary along the route. If a section of line cannot be accessed from existing roads, Dominion Energy Virginia may need to install a culvert, ford, or temporary bridge along the right-of-way to cross small streams. In such cases, some temporary fill material in wetlands adjacent to such crossings may be required. This fill would be placed on erosion control fabric and removed when work is completed, returning ground elevations to original contours. When siting transmission lines, perpendicular crossings of wetland systems are prioritized to minimize direct impacts to these sensitive areas and reduce overall impacts to the watershed.

Permanent direct impacts to wetlands would be limited to placement of structures within wetlands, if unavoidable, and, due to the necessity of removing trees and shrubby vegetation from the right-of-way, the permanent conversion of PSS/PFO wetlands to PSS or PEM type wetlands.

No change in contours of wetlands and waterbodies, or redirection of the flow of water, is anticipated and the amount of spoil from foundation and structure placement would be minimal. Excess spoil in wetlands generated through foundation construction would be controlled through construction best management practices (e.g., the implementation erosion and sediment controls).

Required tree removal adjacent to waterbodies would reduce riparian buffer functions such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, habitat diversity, and water temperature modification from shading. Where the removal of trees or shrubby vegetation occurs within wetlands, Dominion Energy Virginia would use the least intrusive method reasonably possible to clear the corridor. Within the stream buffers (100 feet), and as needed to minimize impacts to wetlands, trees and vegetation will be hand felled and stumps left in place to reduce the potential for erosion. Shrubs and trees with a diameter at breast height of less than three inches will be left in place unless it impedes temporary access where they would be clipped, leaving roots in place which will be able to naturally regenerate. Vegetation within the right-of-way would be allowed to return to maintained grasses and shrubs after construction, which would provide some filtration stabilization to help protect waterbodies from pollutants.

## SUMMARY

This Wetland and Waterbody Summary report was prepared in accordance with the Memorandum of Agreement between the DEQ and the SCC for the purpose of initiating a Wetlands Impact Consultation. Please note that a formal onsite wetland delineation was not conducted as part of this review.

In addition, there is a Project website where the SCC application will be available after filing, as well as maps and discussions about the Project. It can be accessed by going to: <https://www.dominionenergy.com/projects-and-facilities/electric-projects/power-line-projects/nebula-raines>.

If you have any questions regarding this wetland assessment, please contact me at 857-302-6502 or by email at [jake.bartha@erm.com](mailto:jake.bartha@erm.com).

Sincerely,

Jake Bartha  
Environmental Resources Management

cc: James Young, Dominion Energy Virginia

Enclosures: Attachments 1 and 2



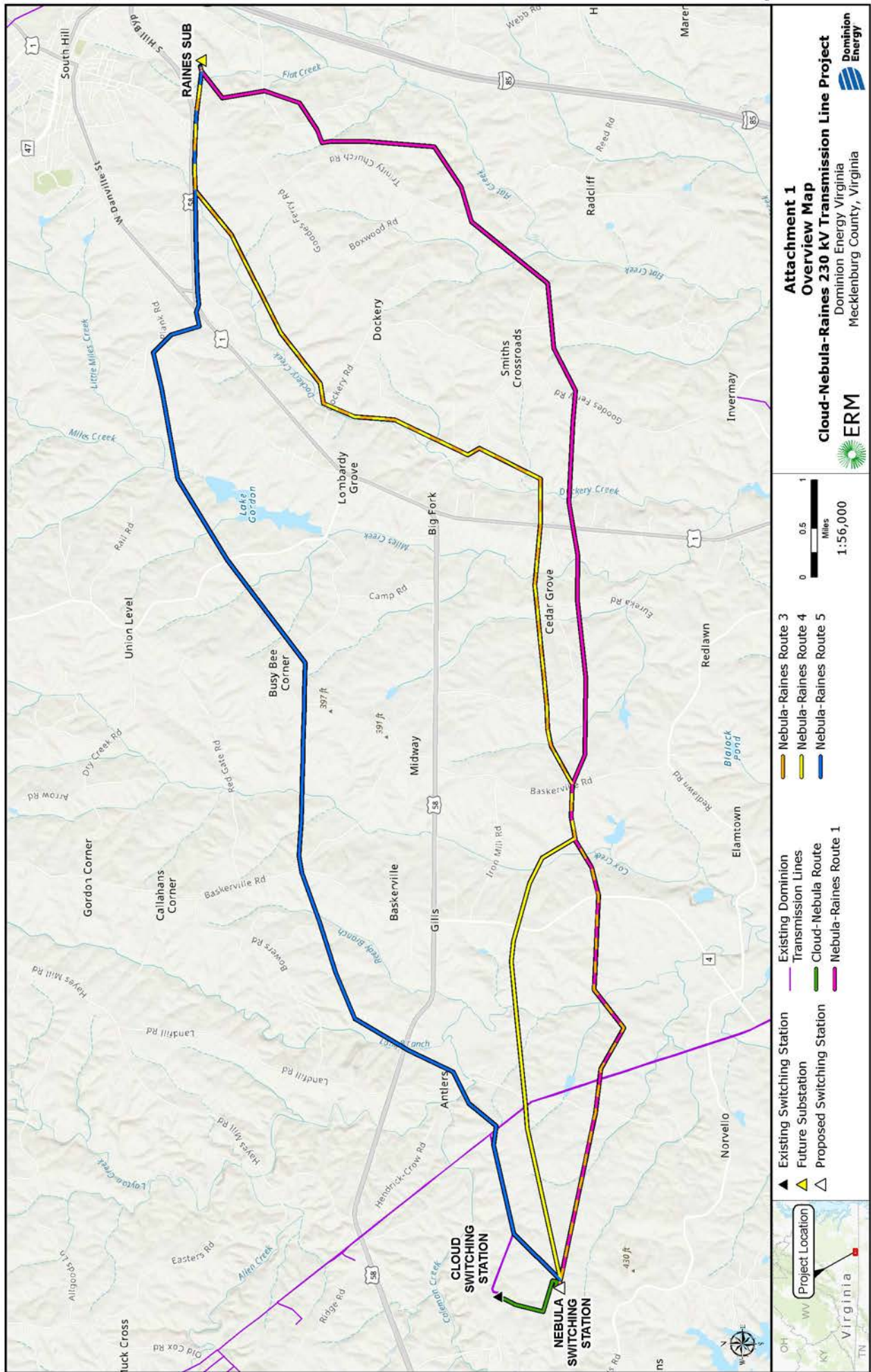
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<https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer>.

## **ATTACHMENT 1**







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Suite 2900  
Minneapolis, Minnesota 55402

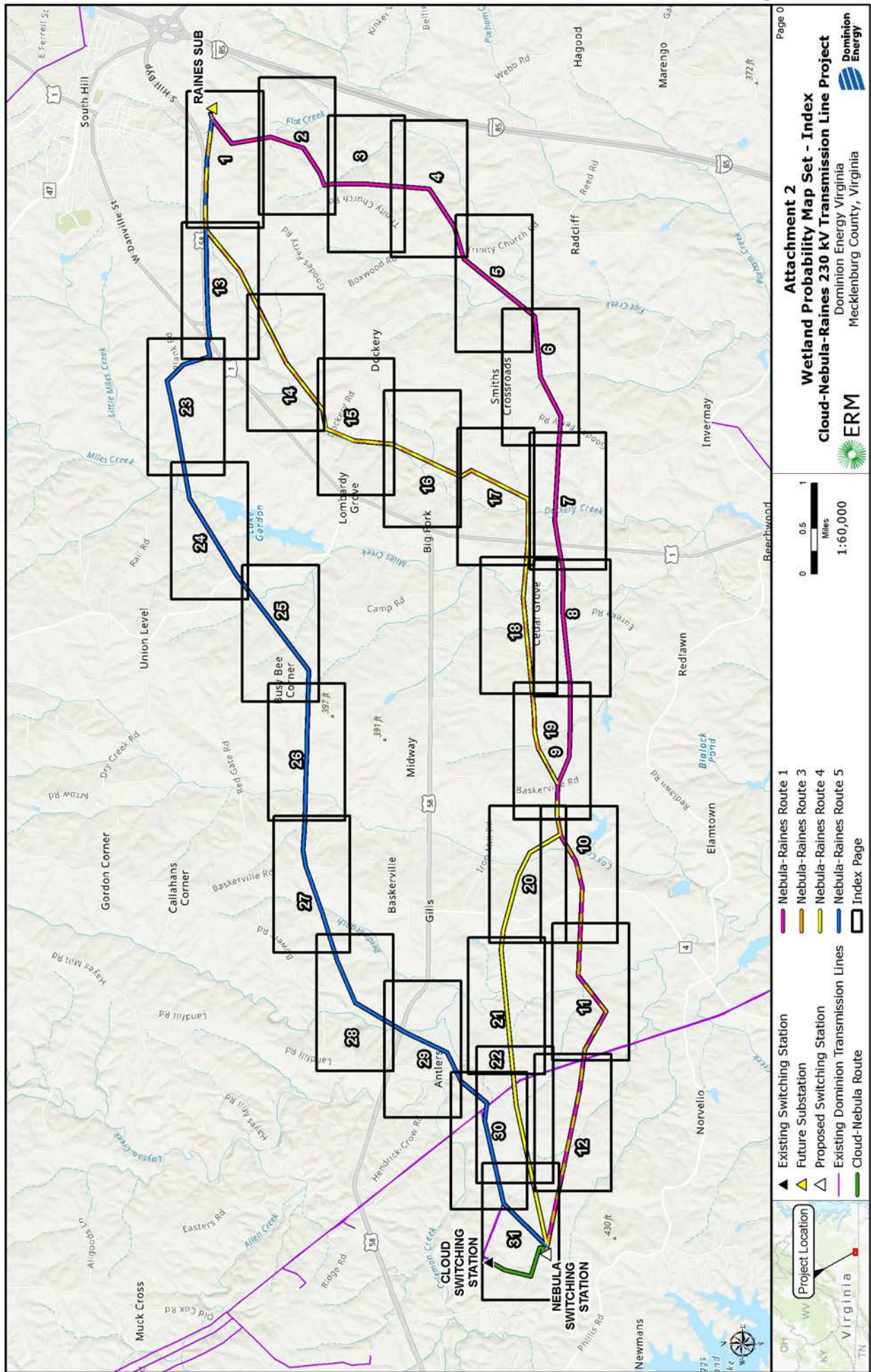
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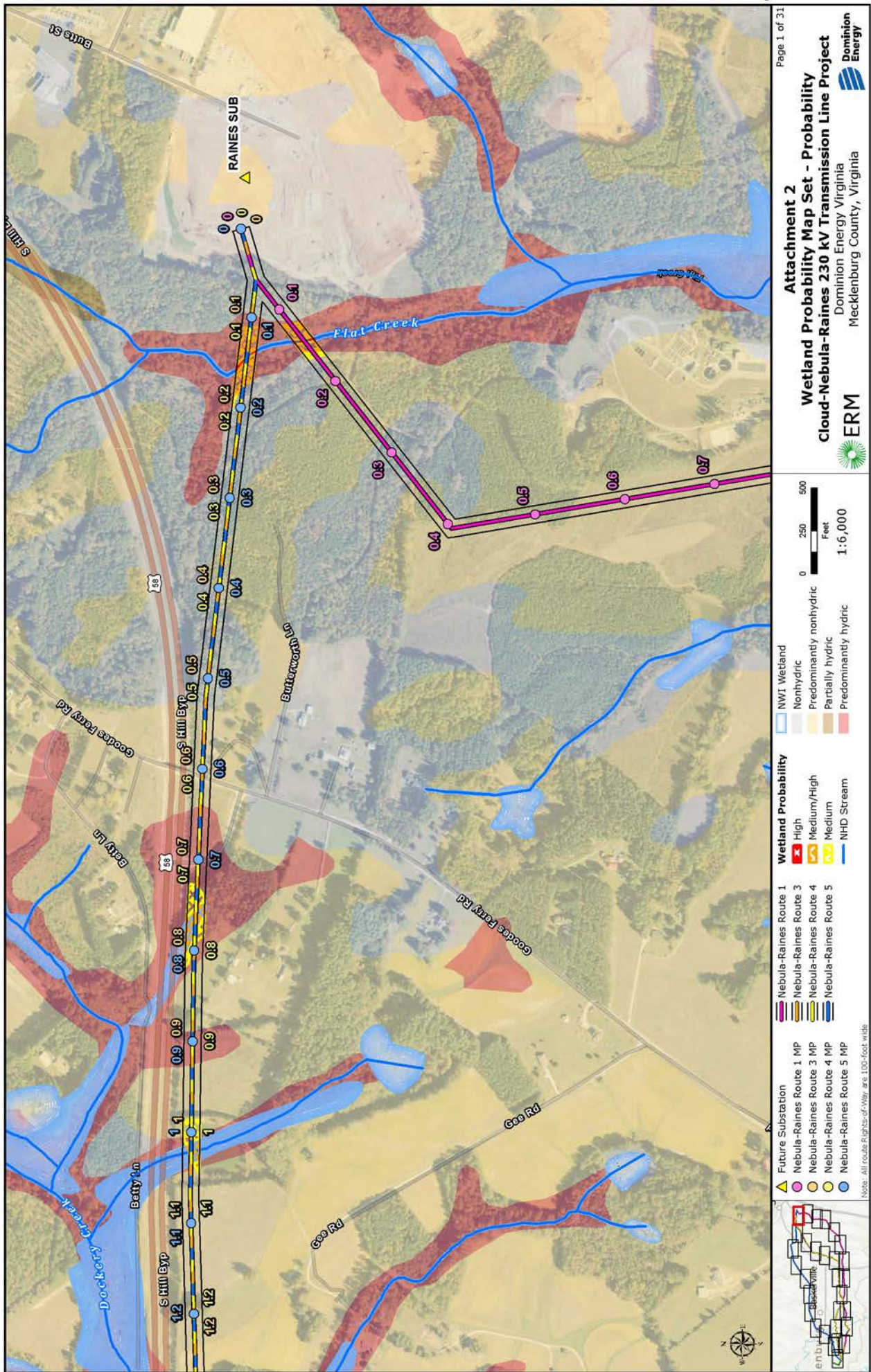
**erm.com**

## **ATTACHMENT 2**

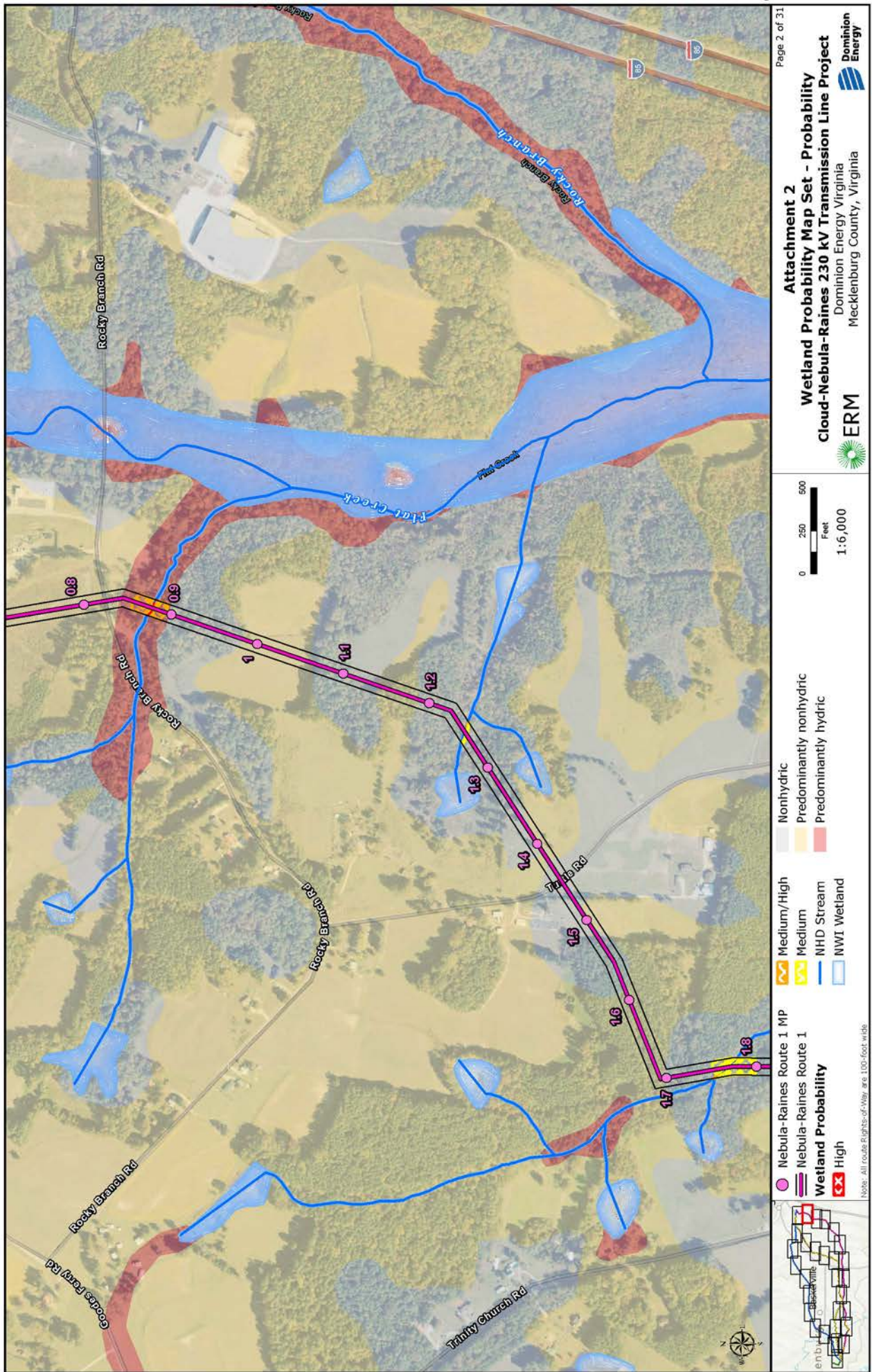




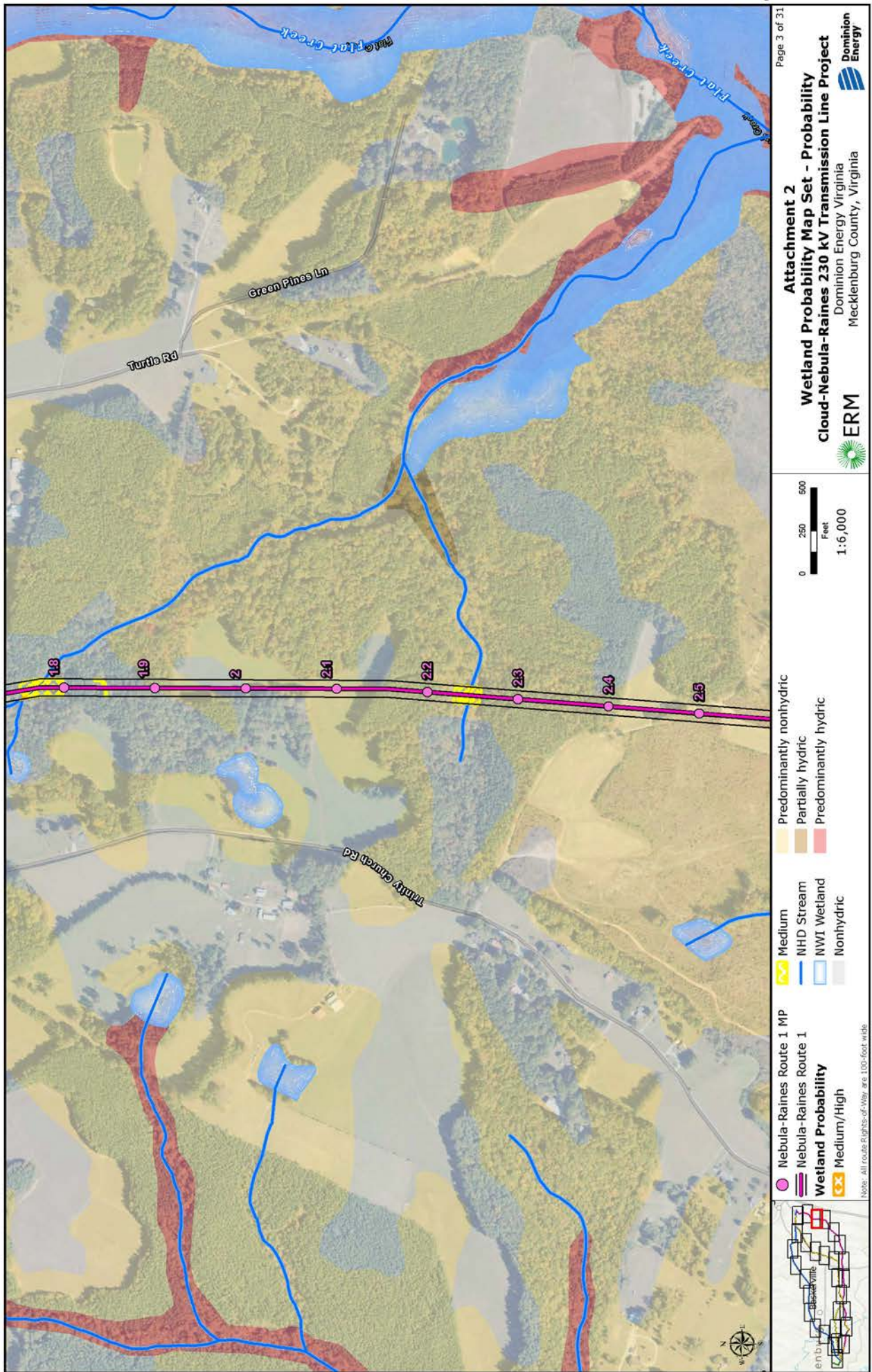




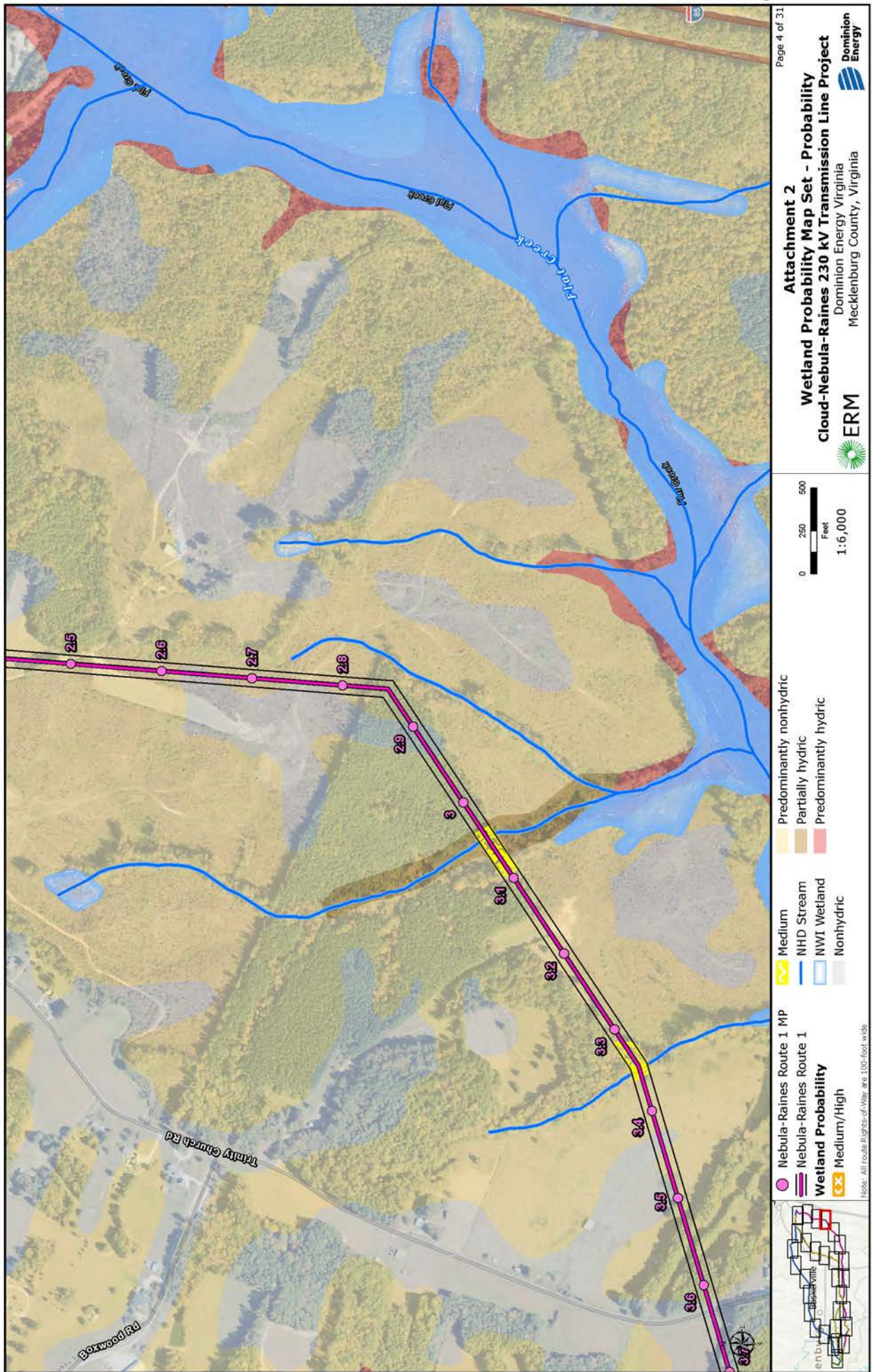




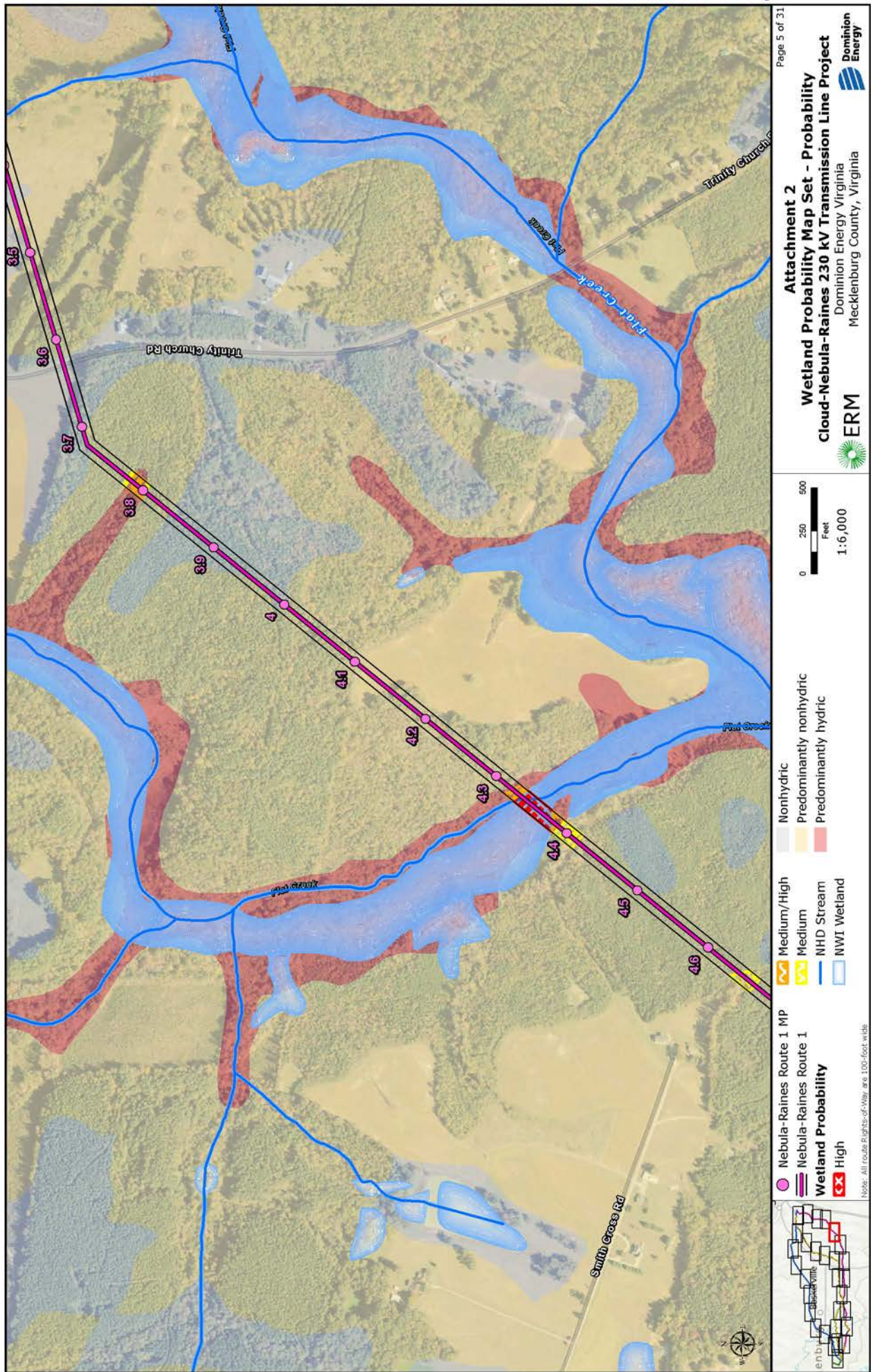




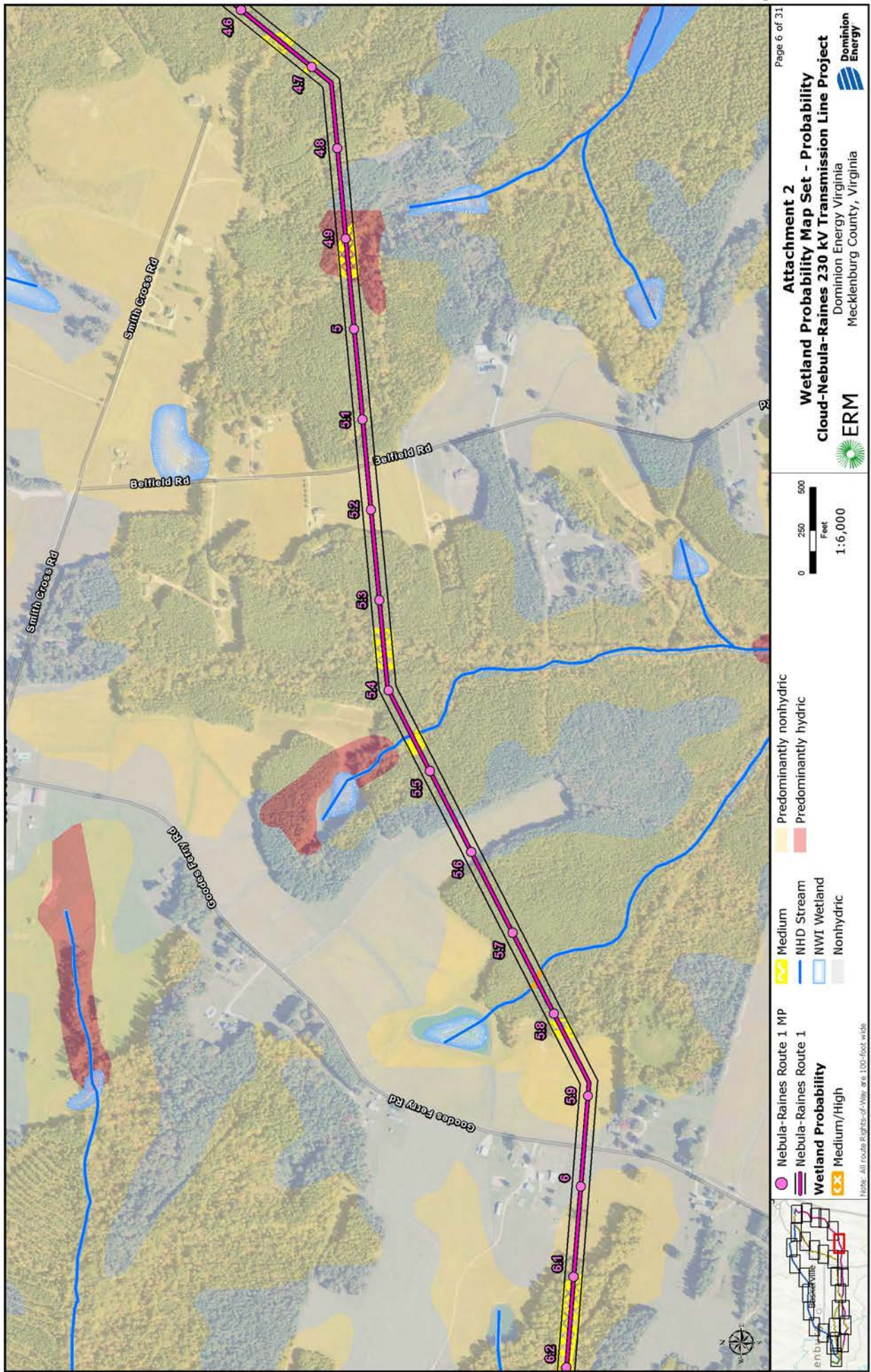




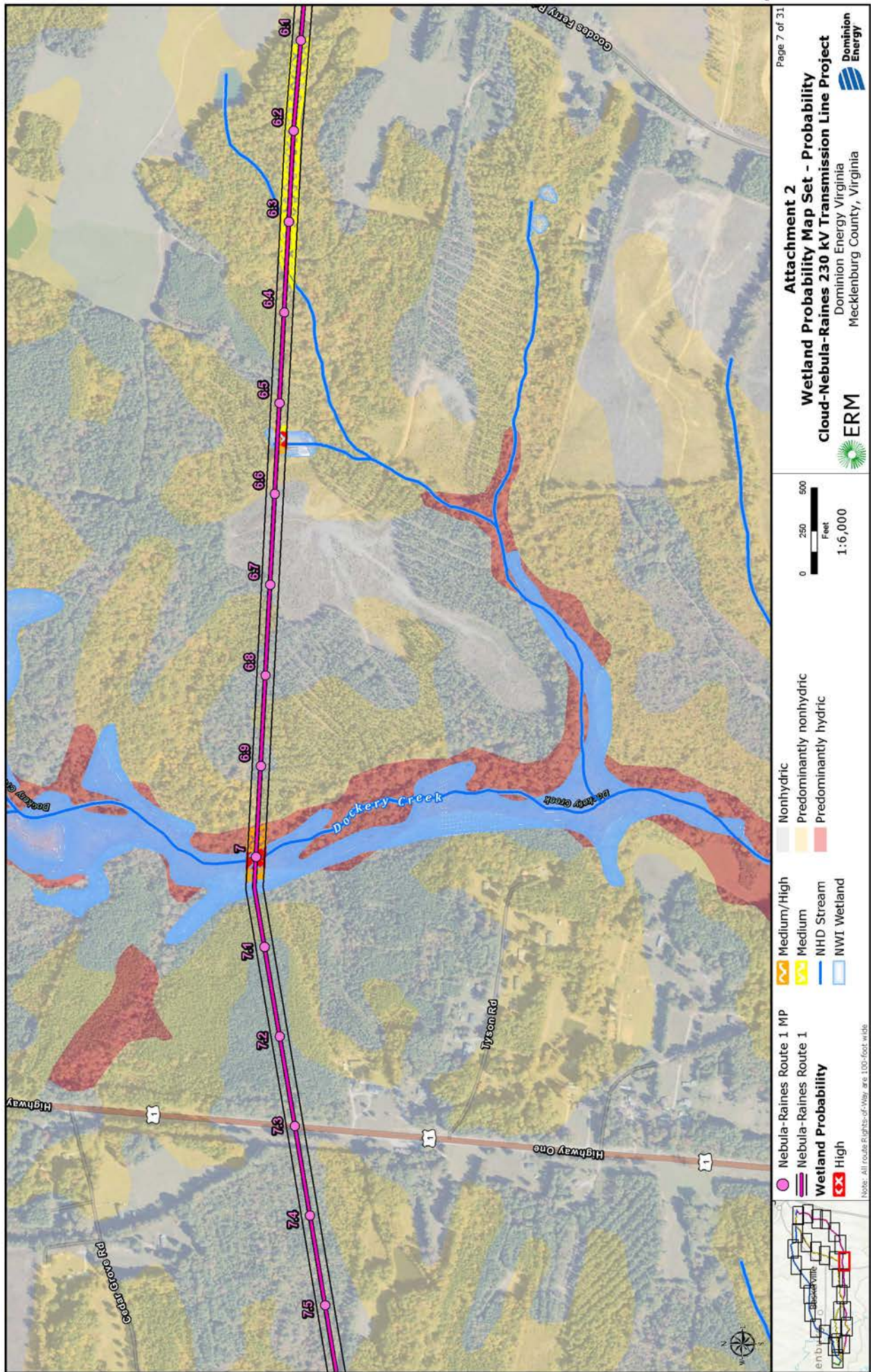




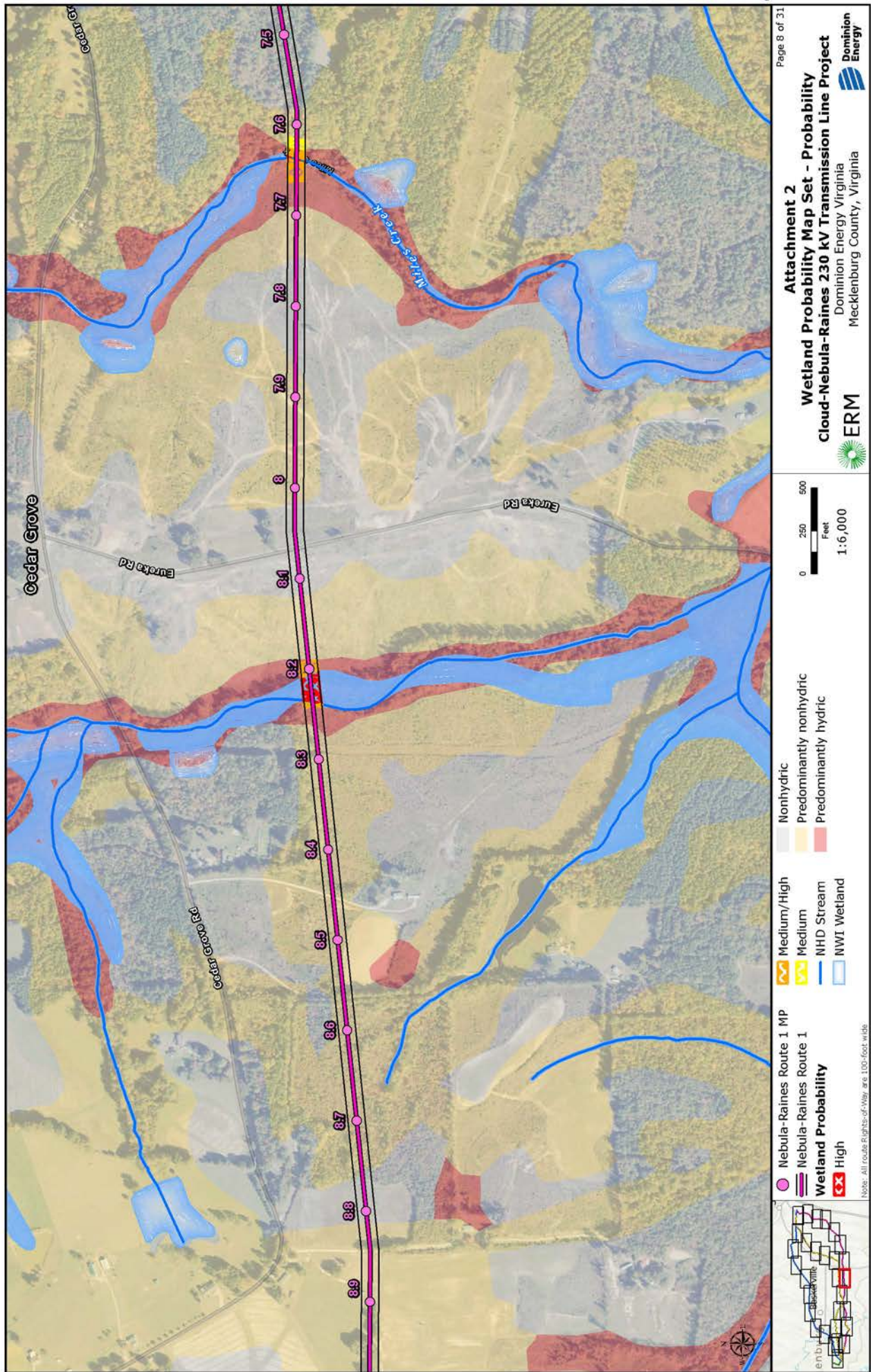




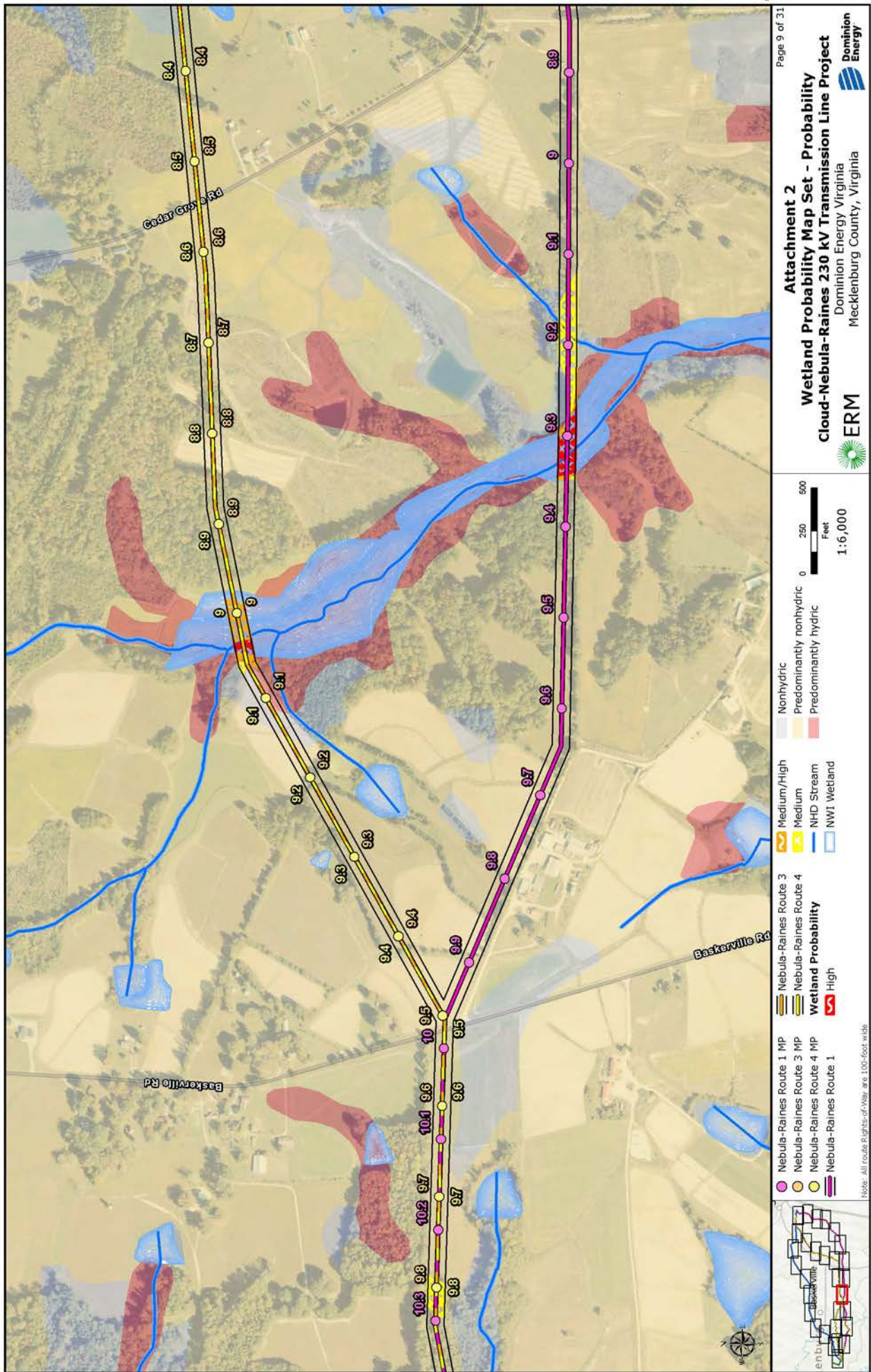




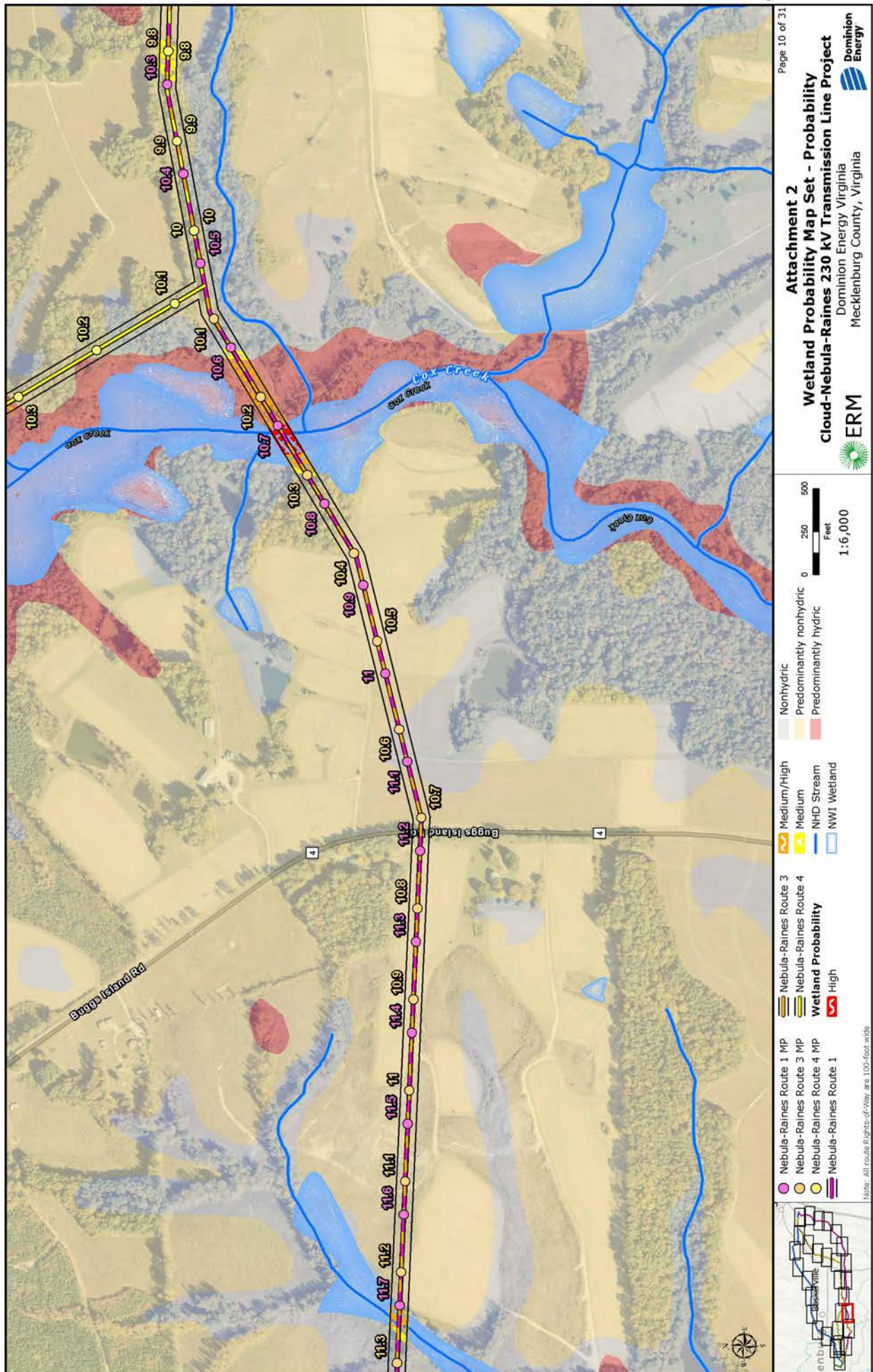




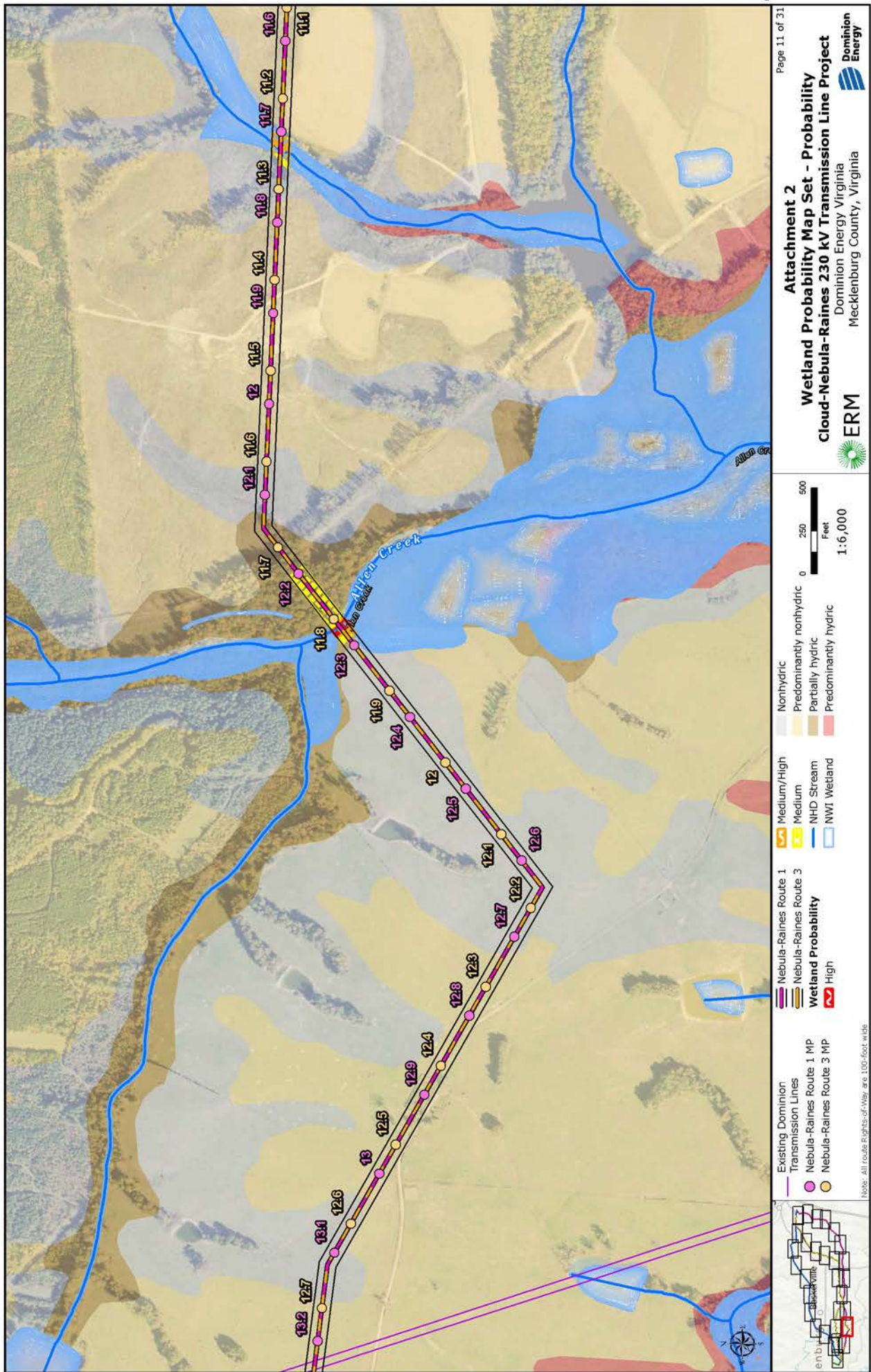




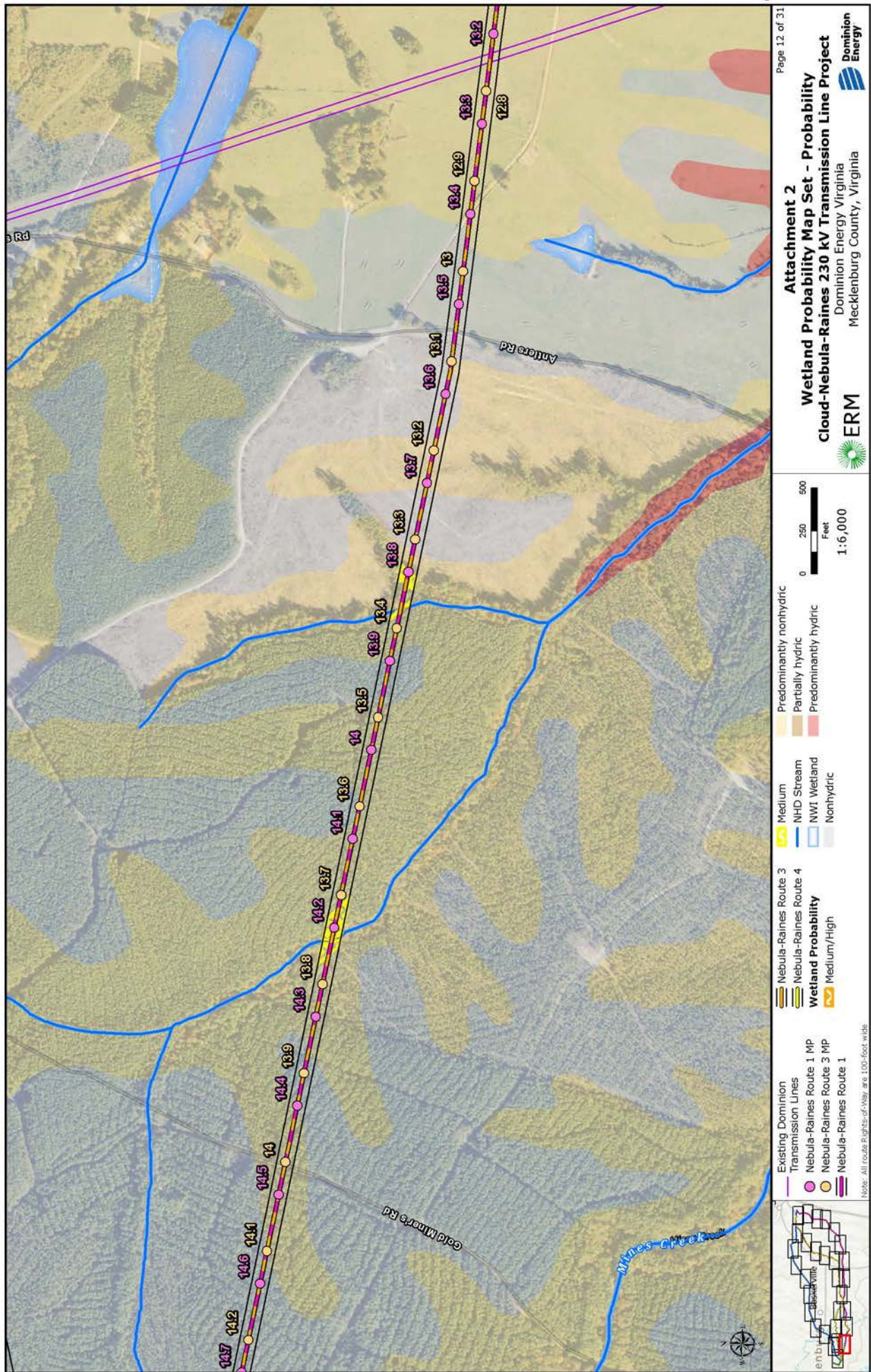




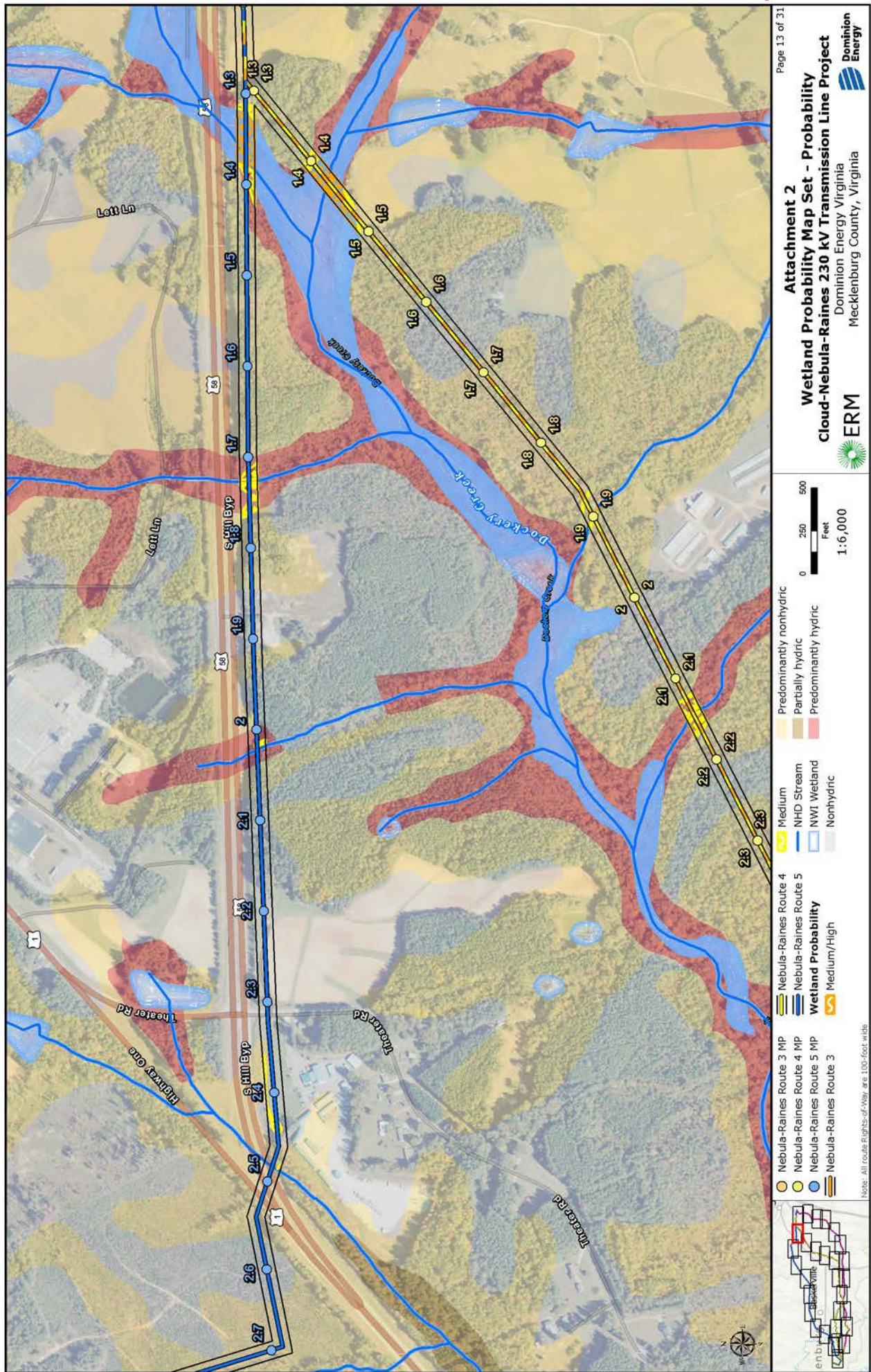




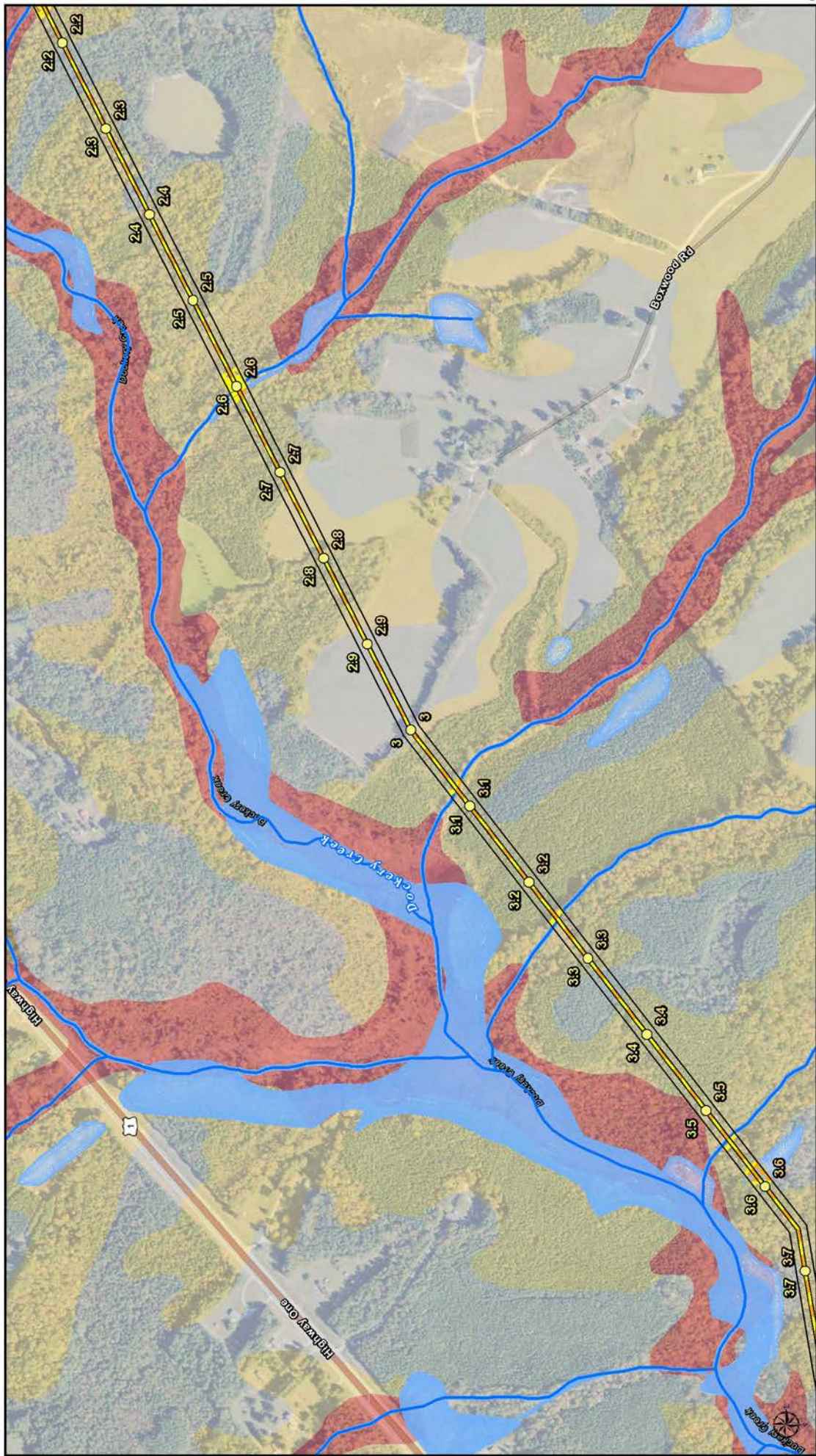












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**Attachment 2**  
**Wetland Probability Map Set - Probability**  
**Cloud-Nebula-Raines 230 kV Transmission Line Project**  
Dominion Energy Virginia  
Mecklenburg County, Virginia

**ERM**  

0 250 500  
Feet  
1:6,000

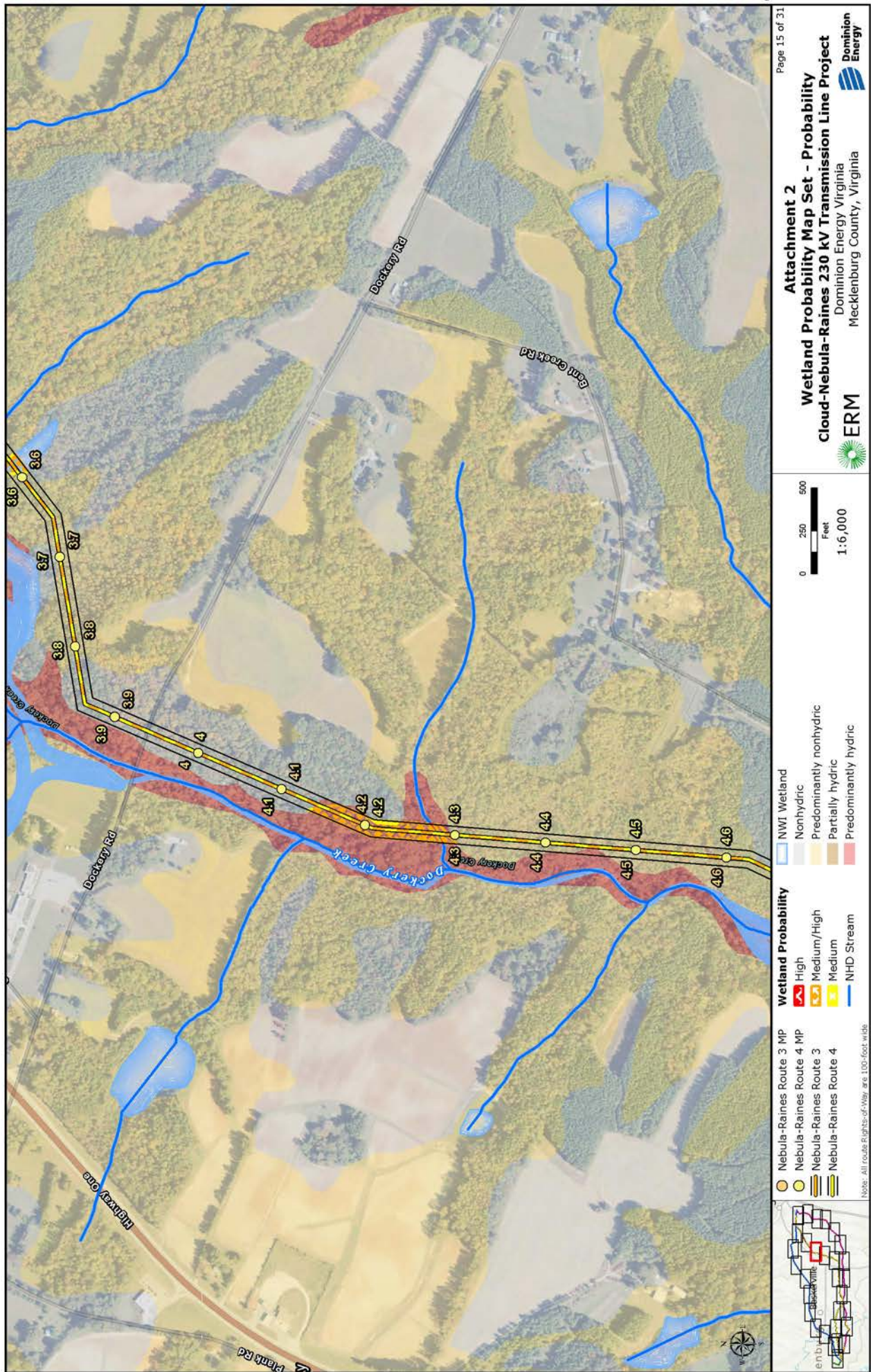
**Wetland Probability**

- Nonhydryc
- Predominantly nonhydryc
- Partially hydryc
- Predominantly hydryc

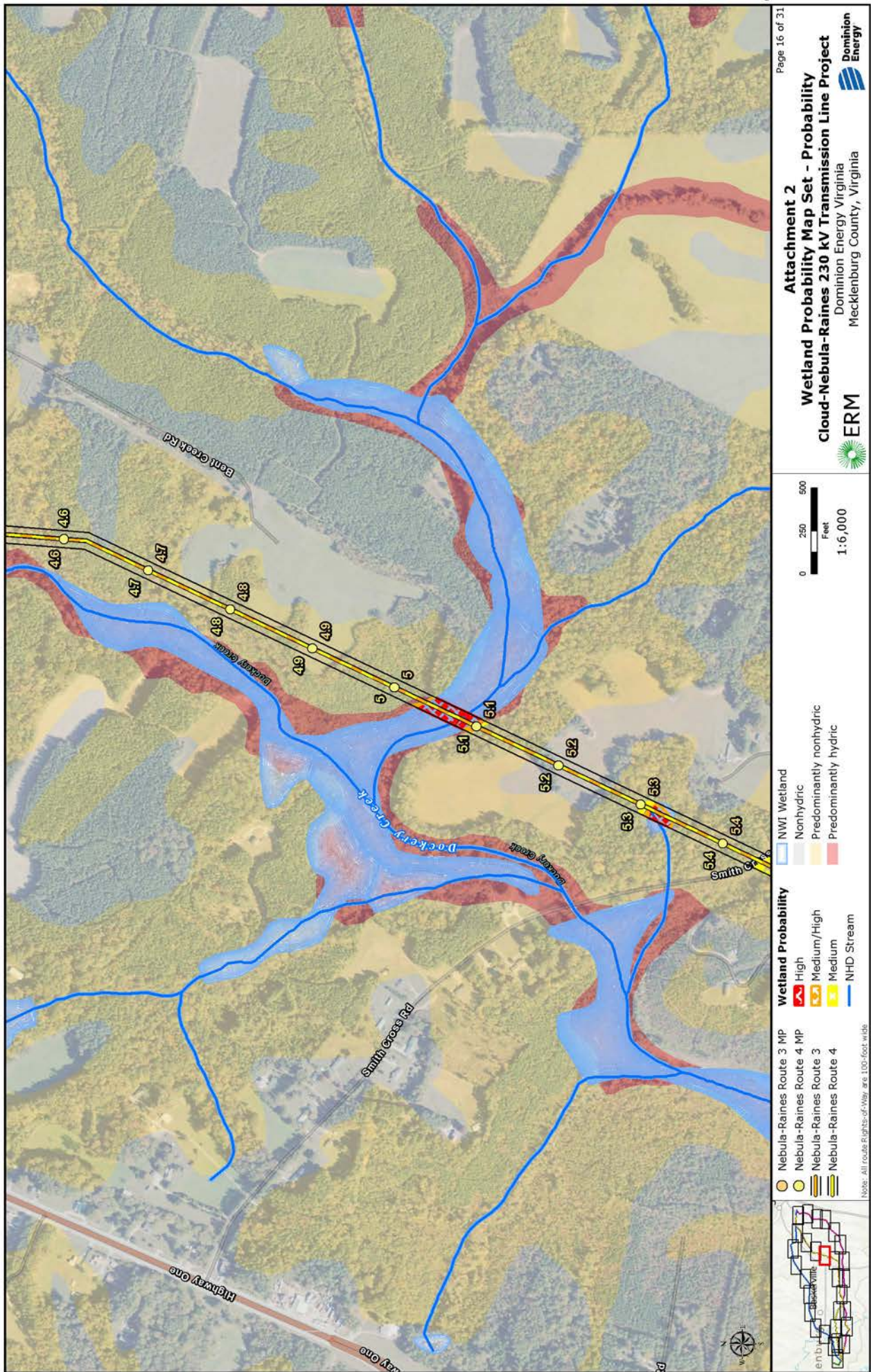
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- Nebula-Raines Route 4 MP
- Nebula-Raines Route 3
- Nebula-Raines Route 4
- NHD Stream
- NWI Wetland

Note: All route Right-of-Way are 100-foot wide

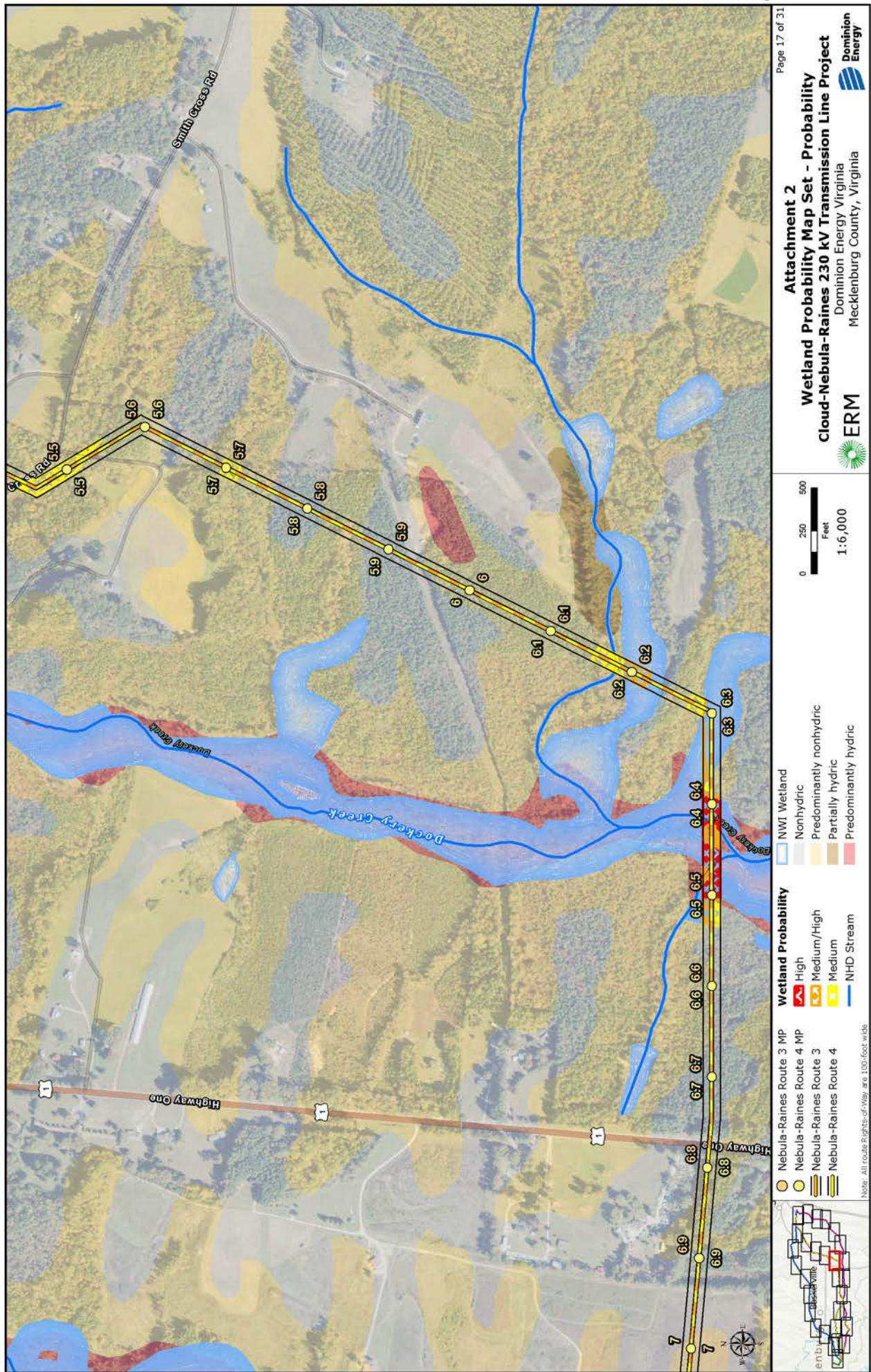




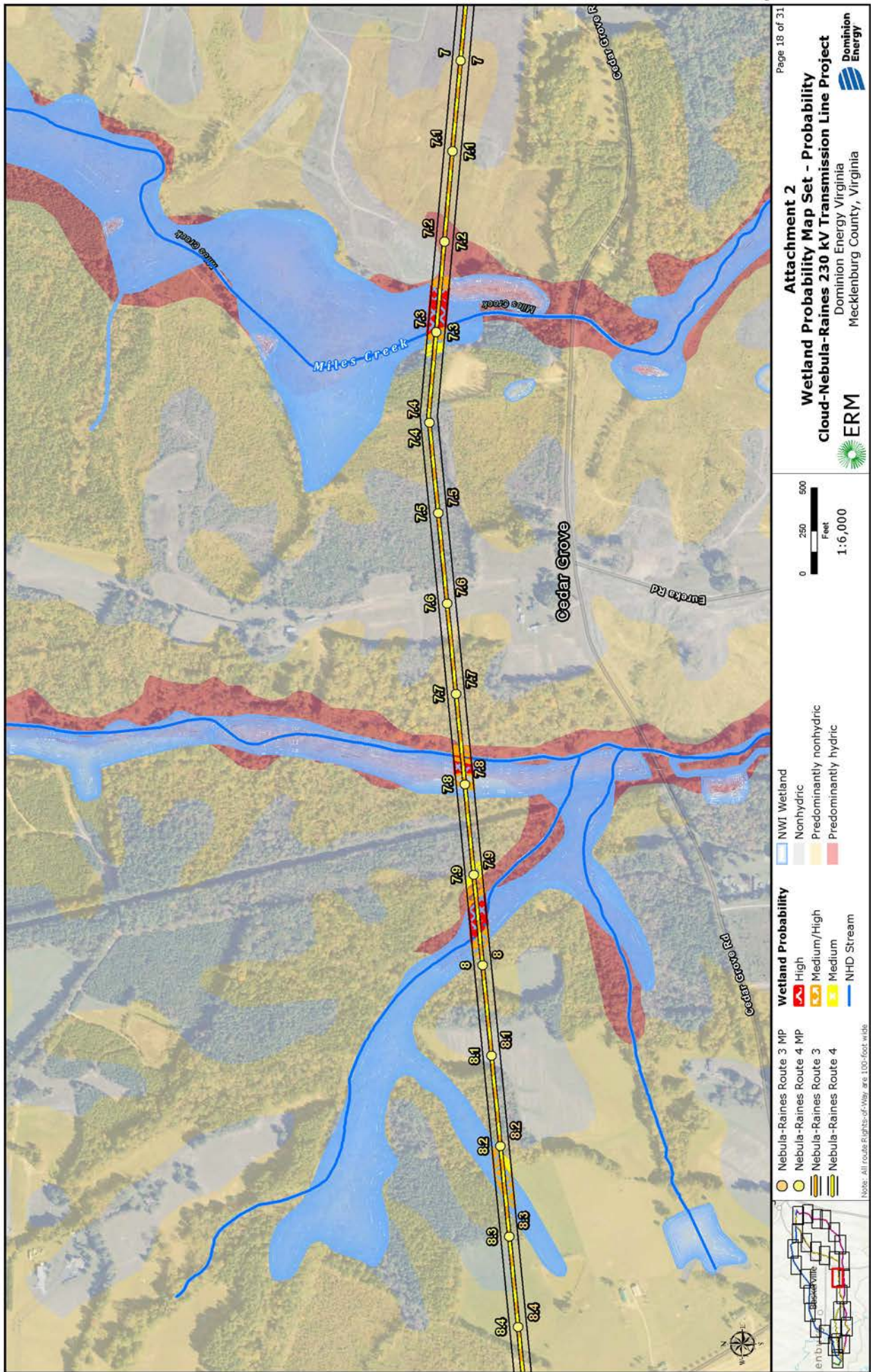




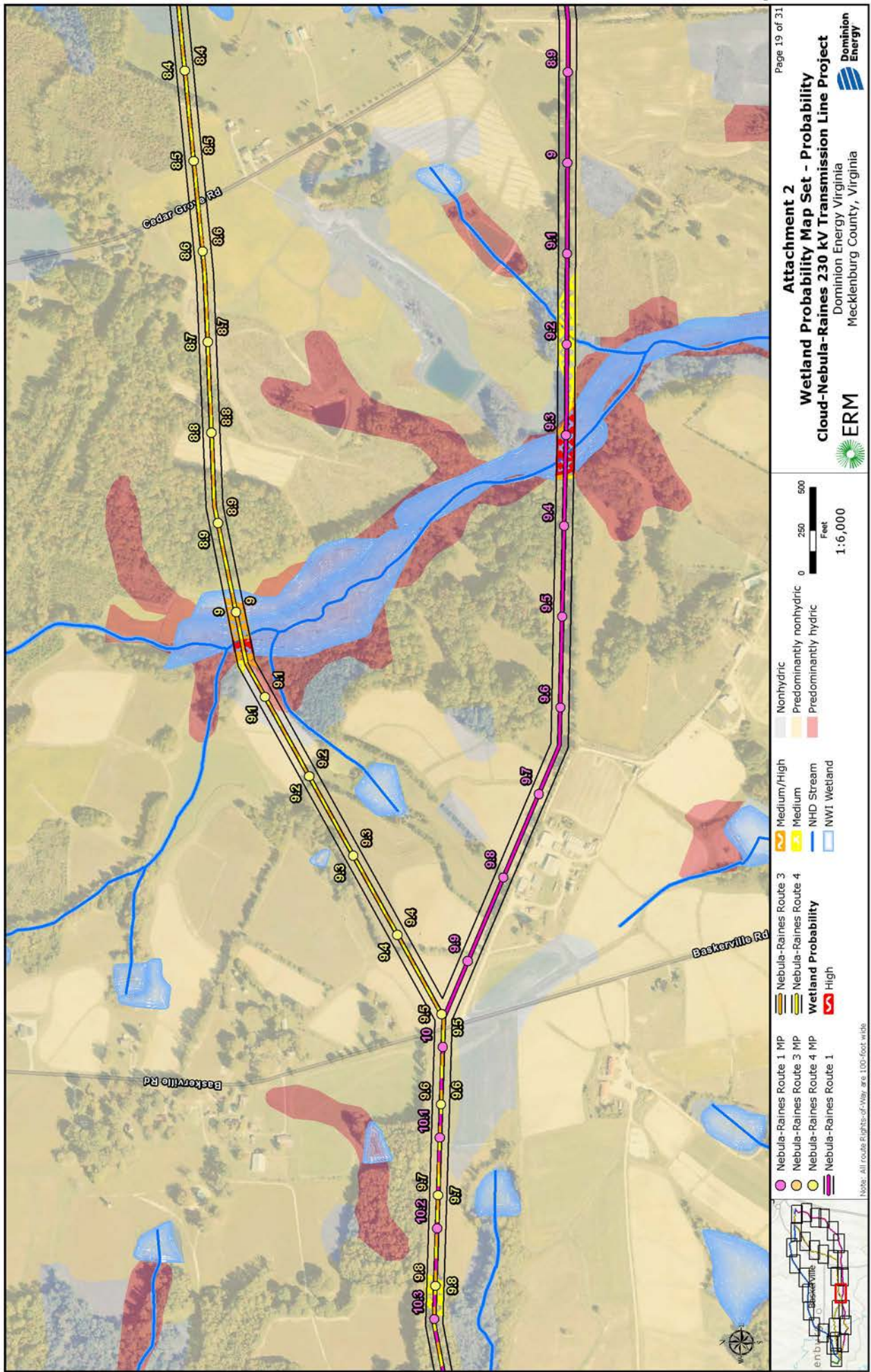




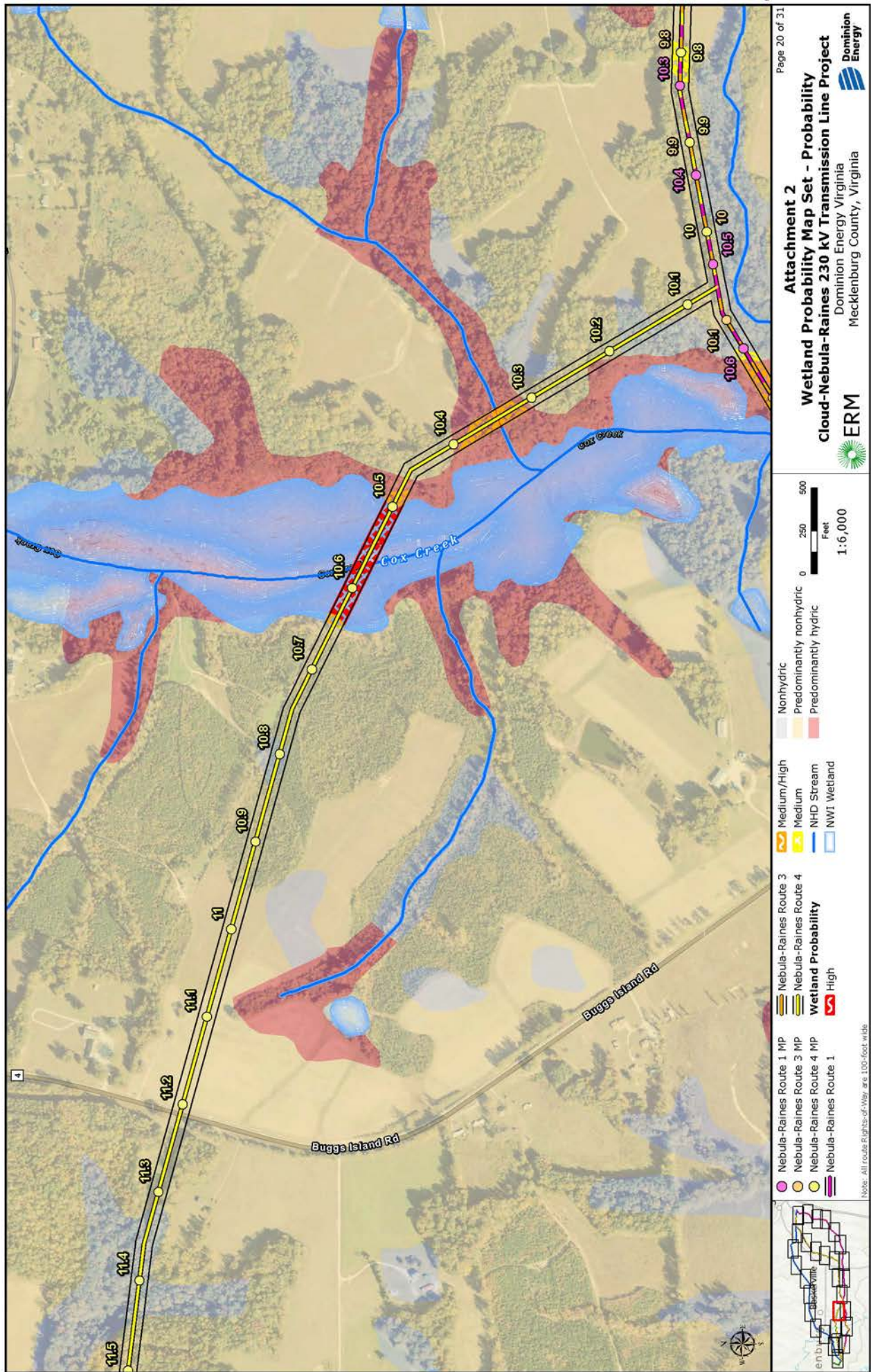




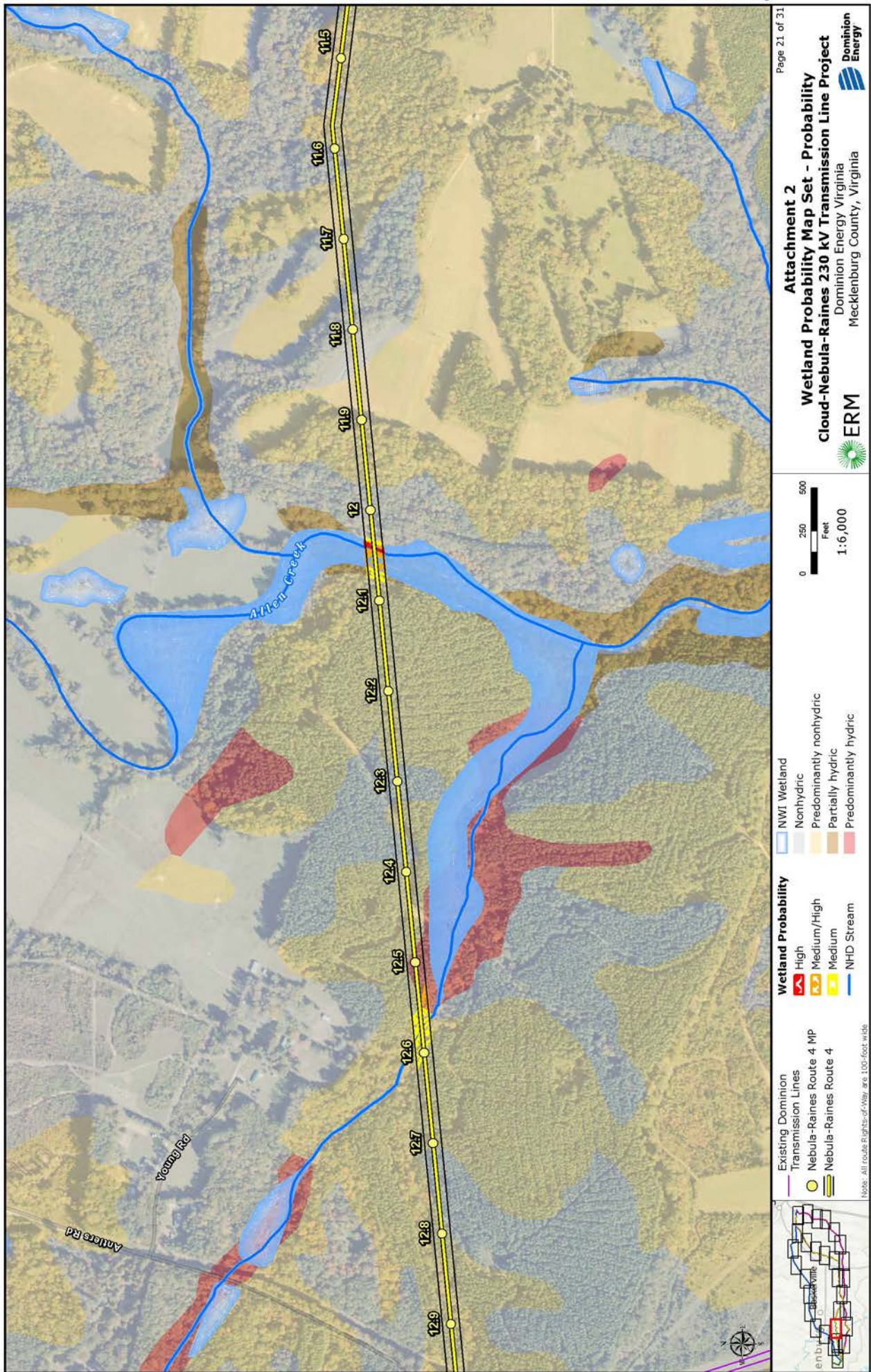




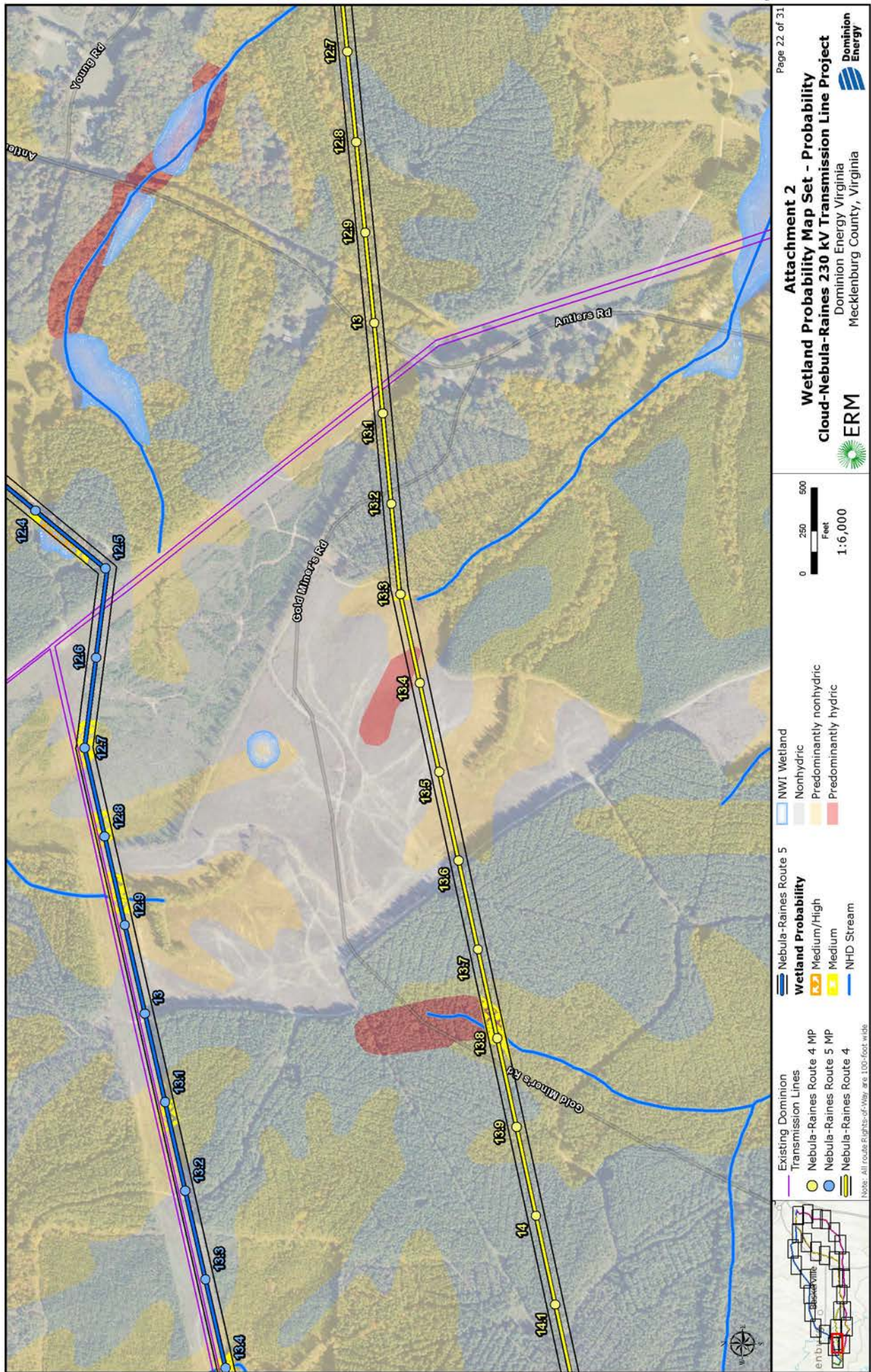




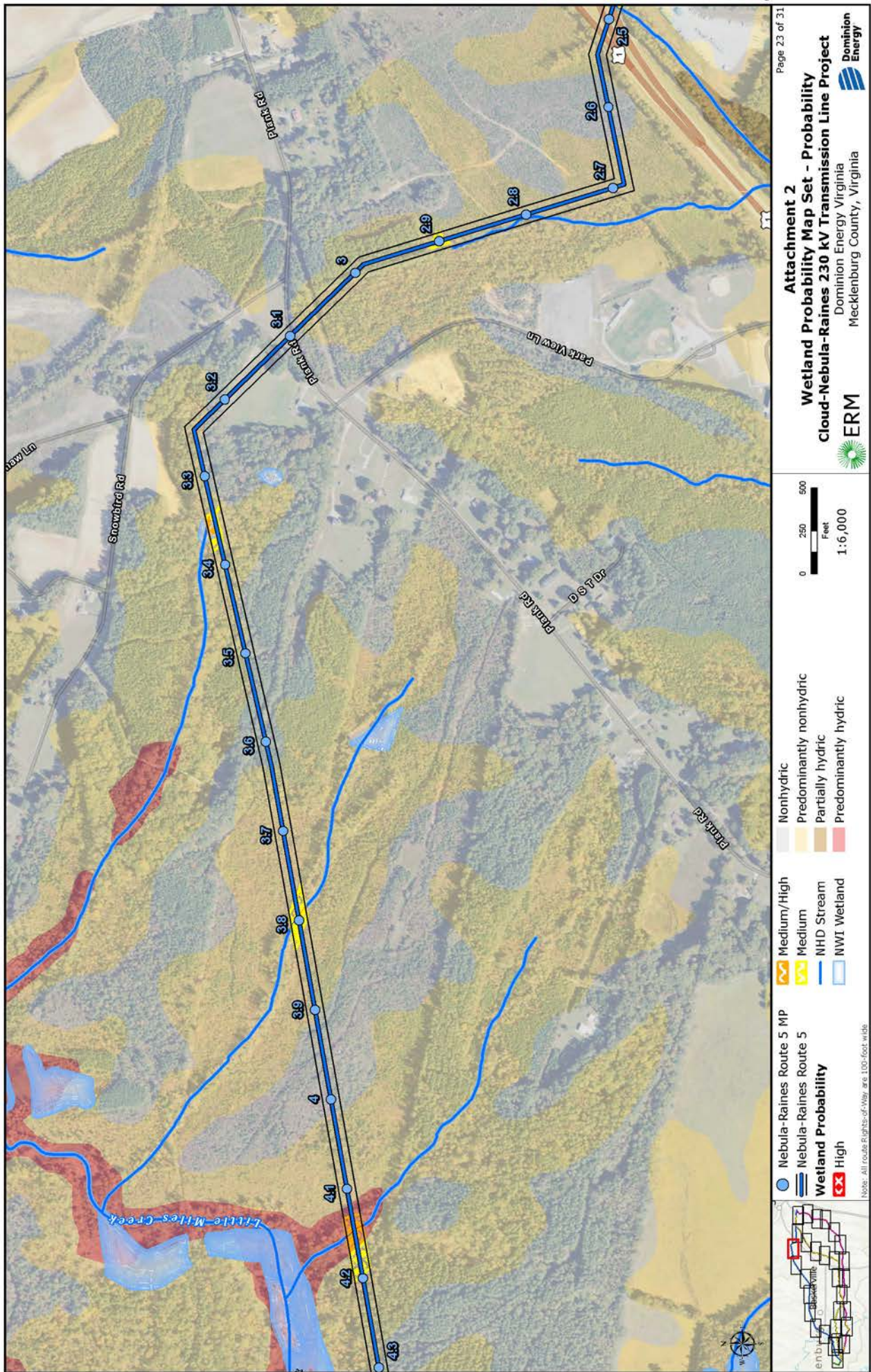




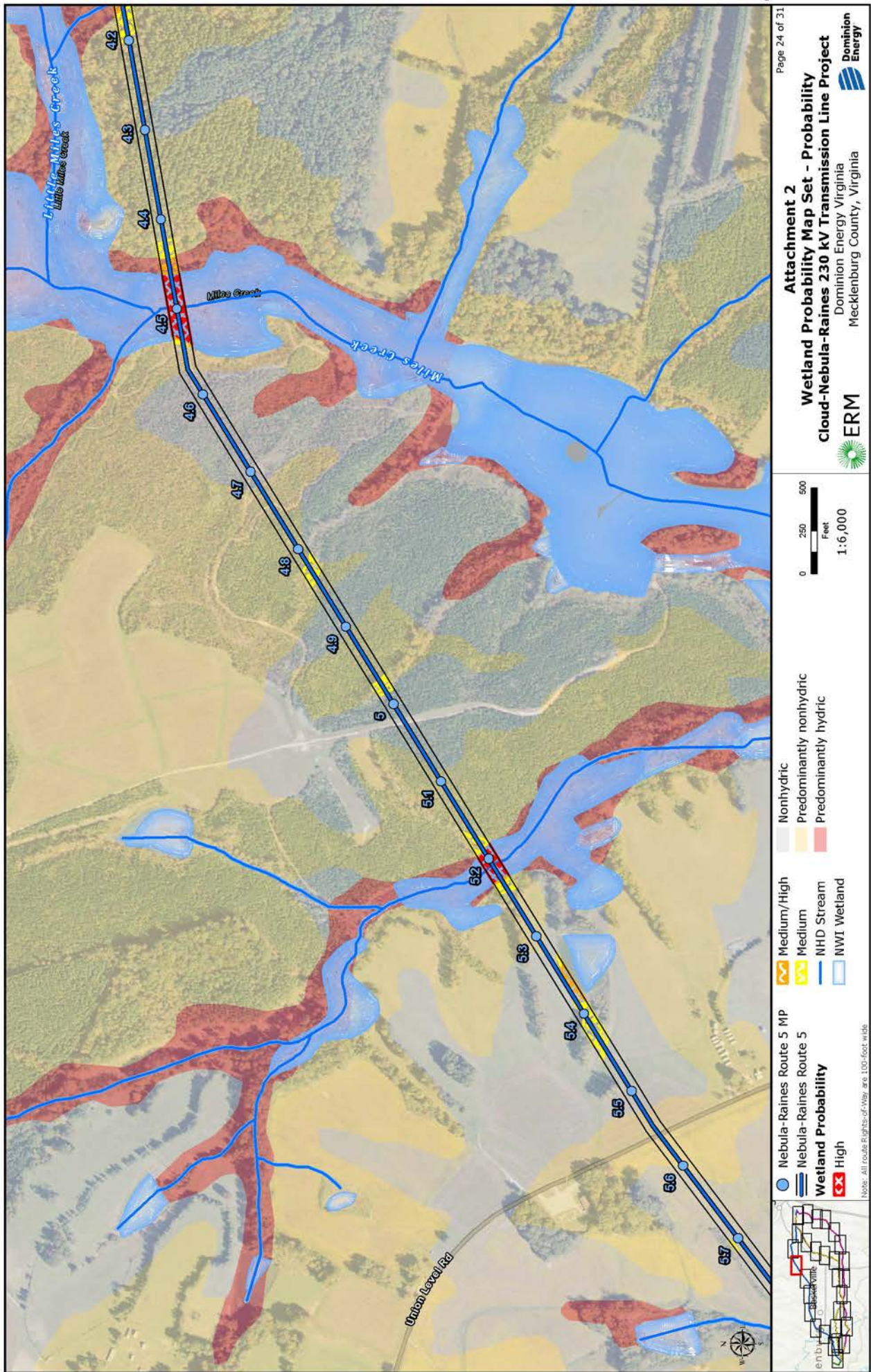




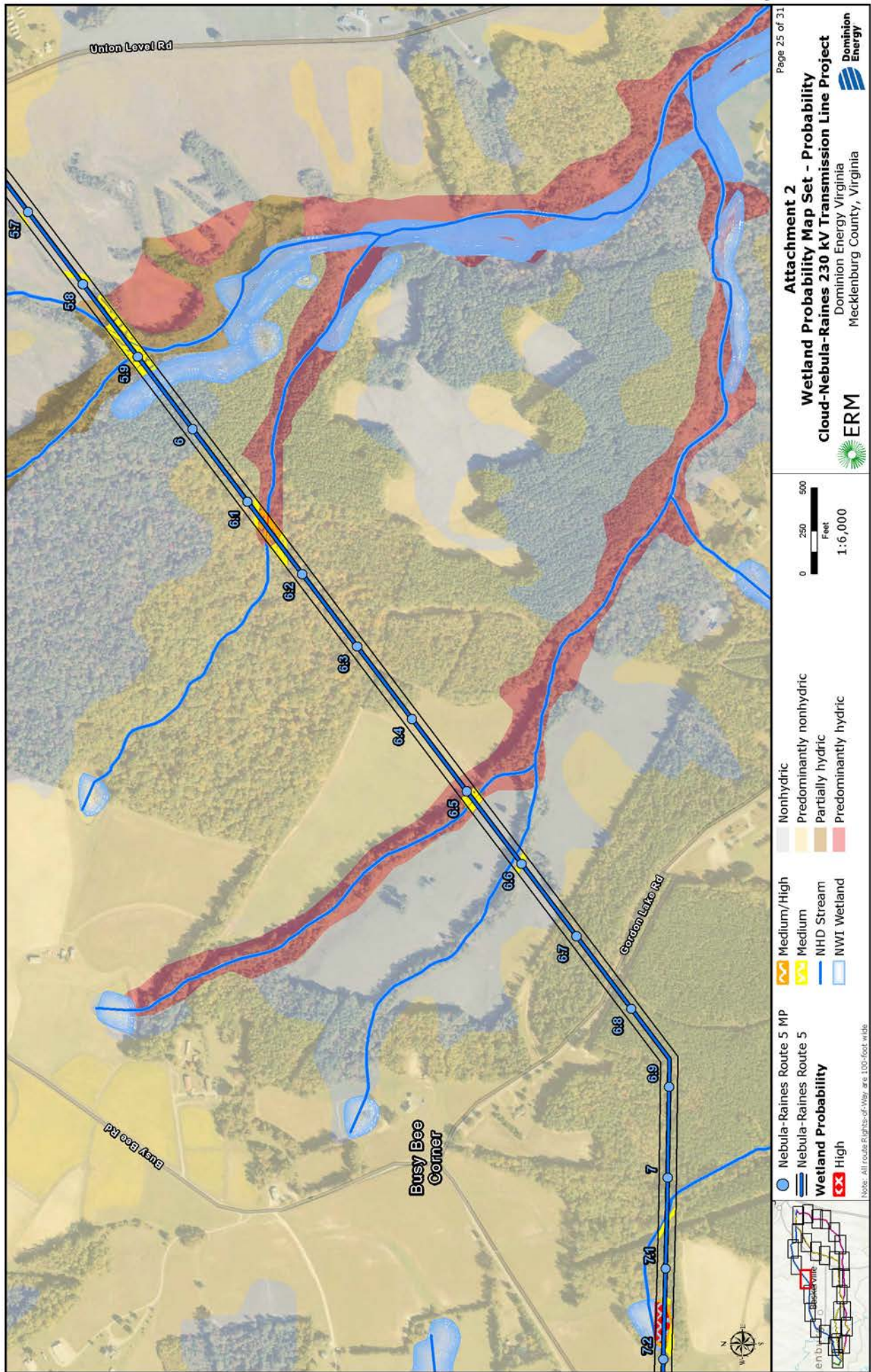




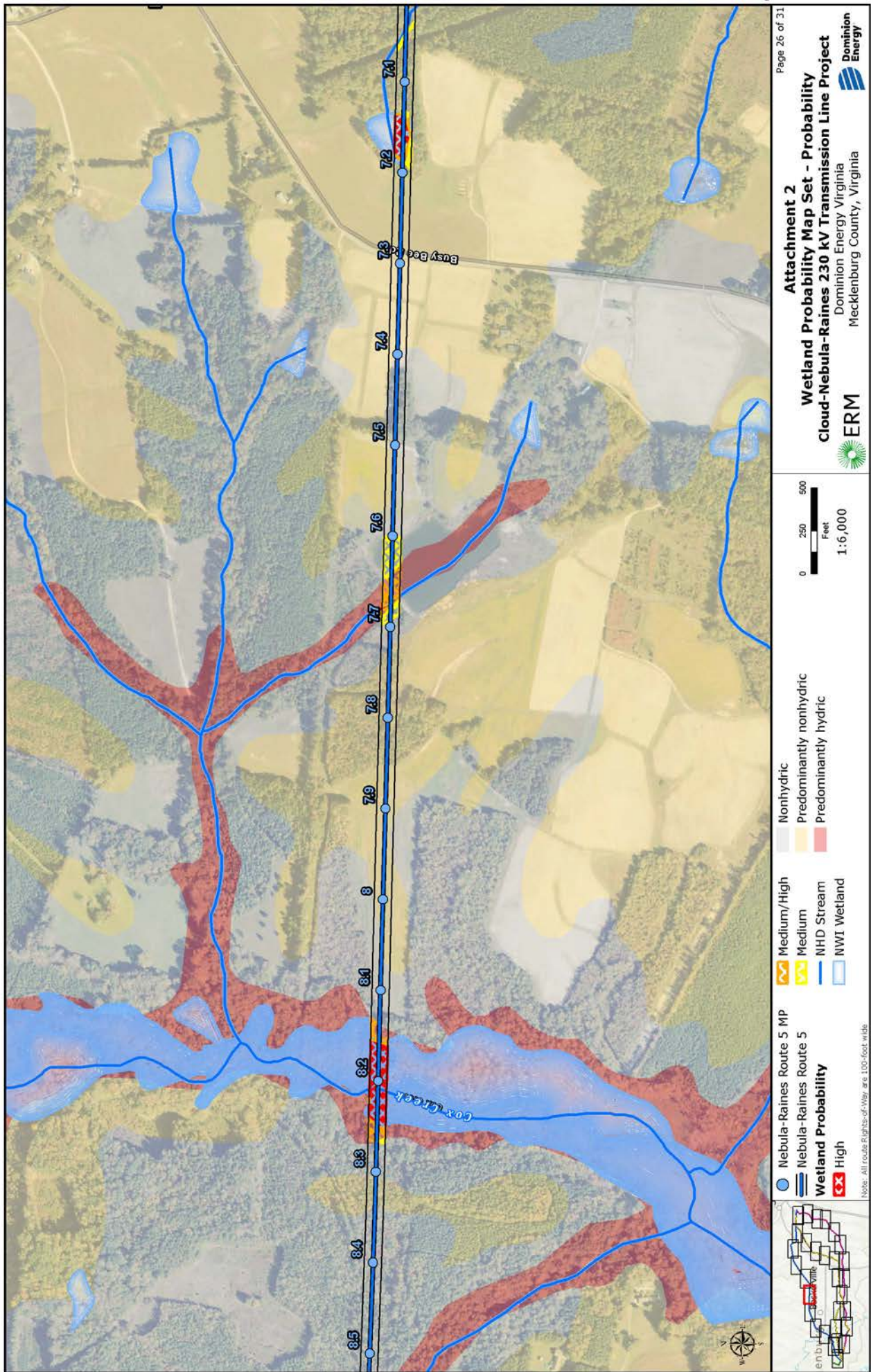




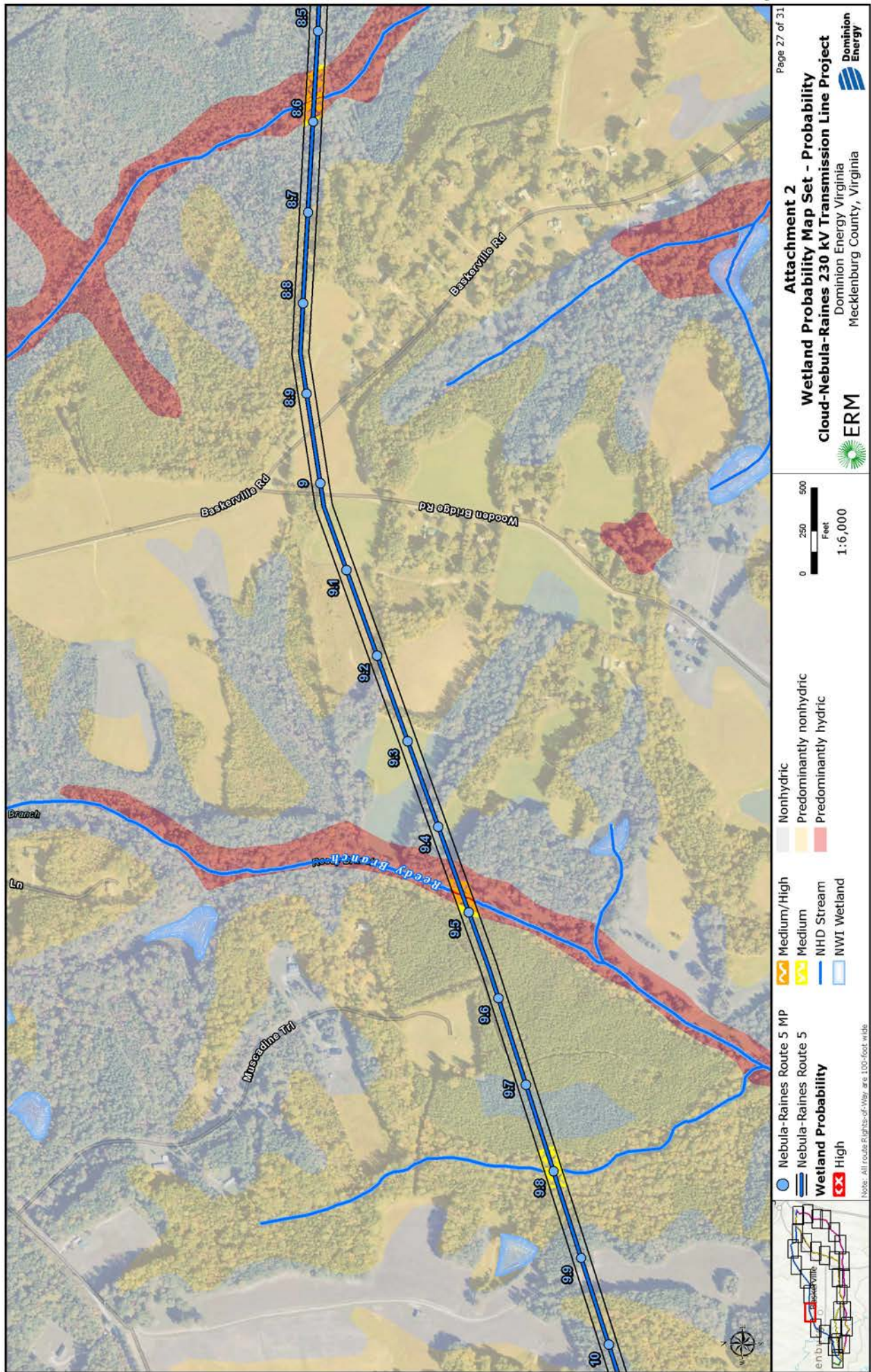




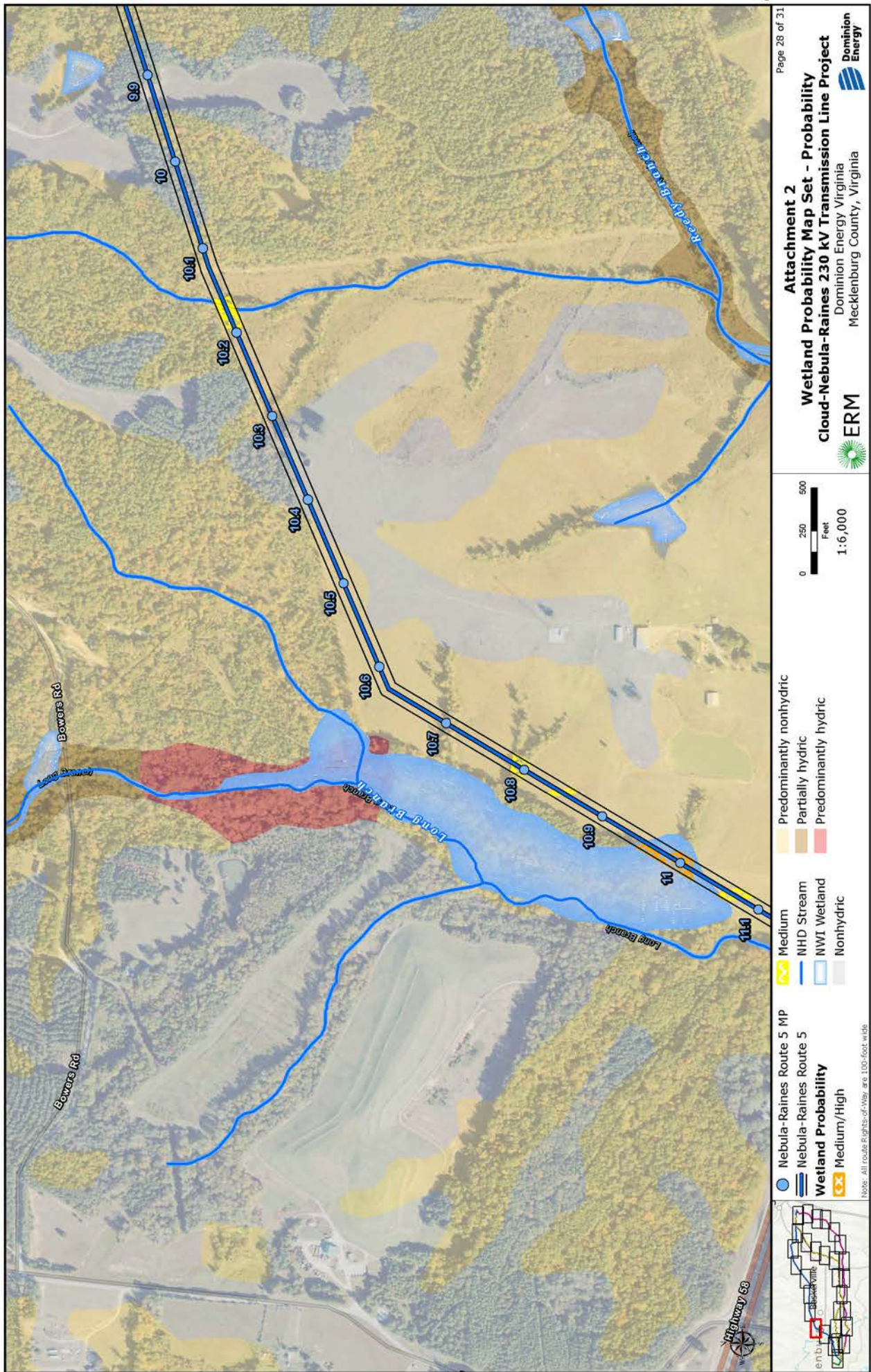




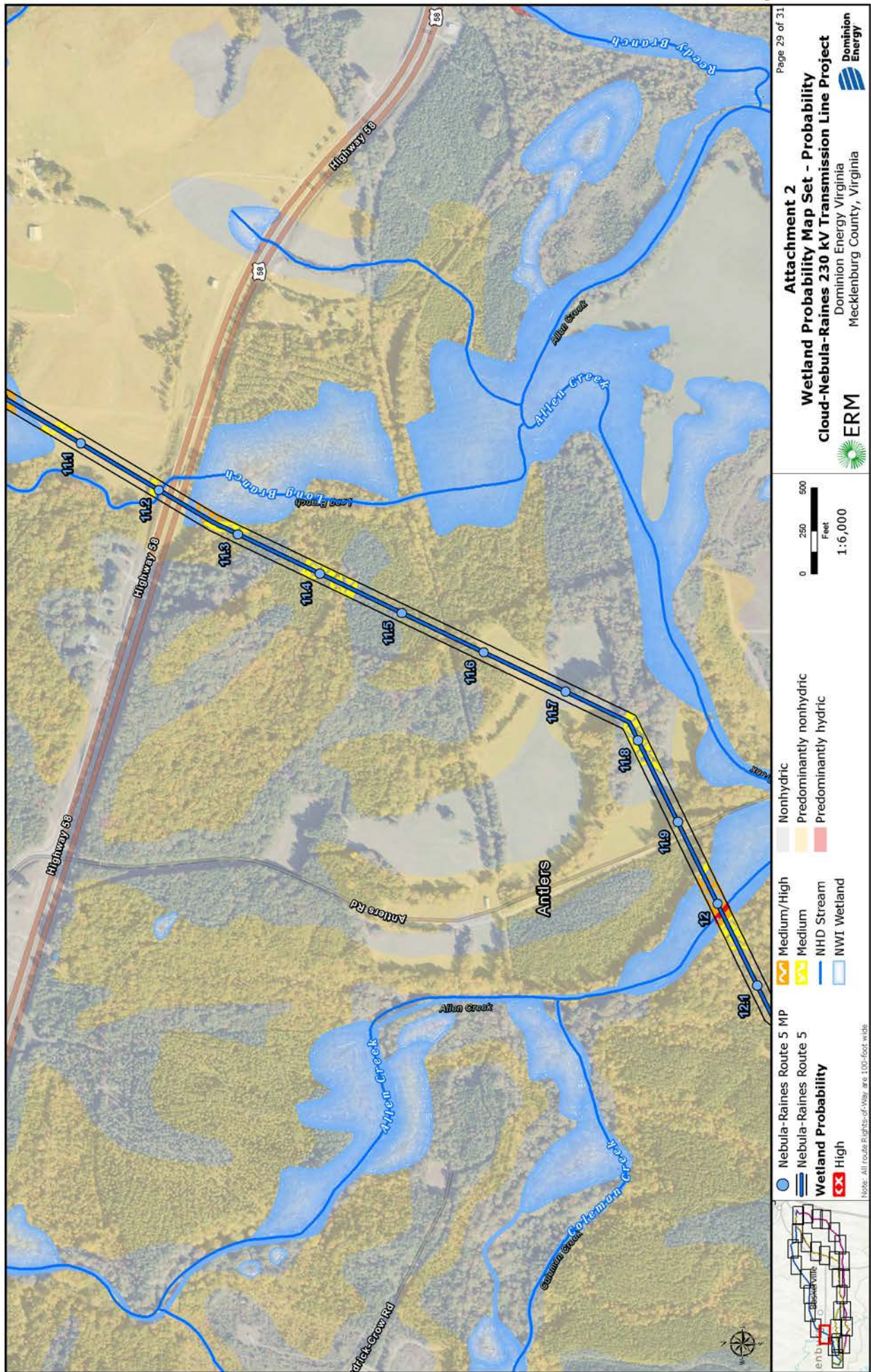




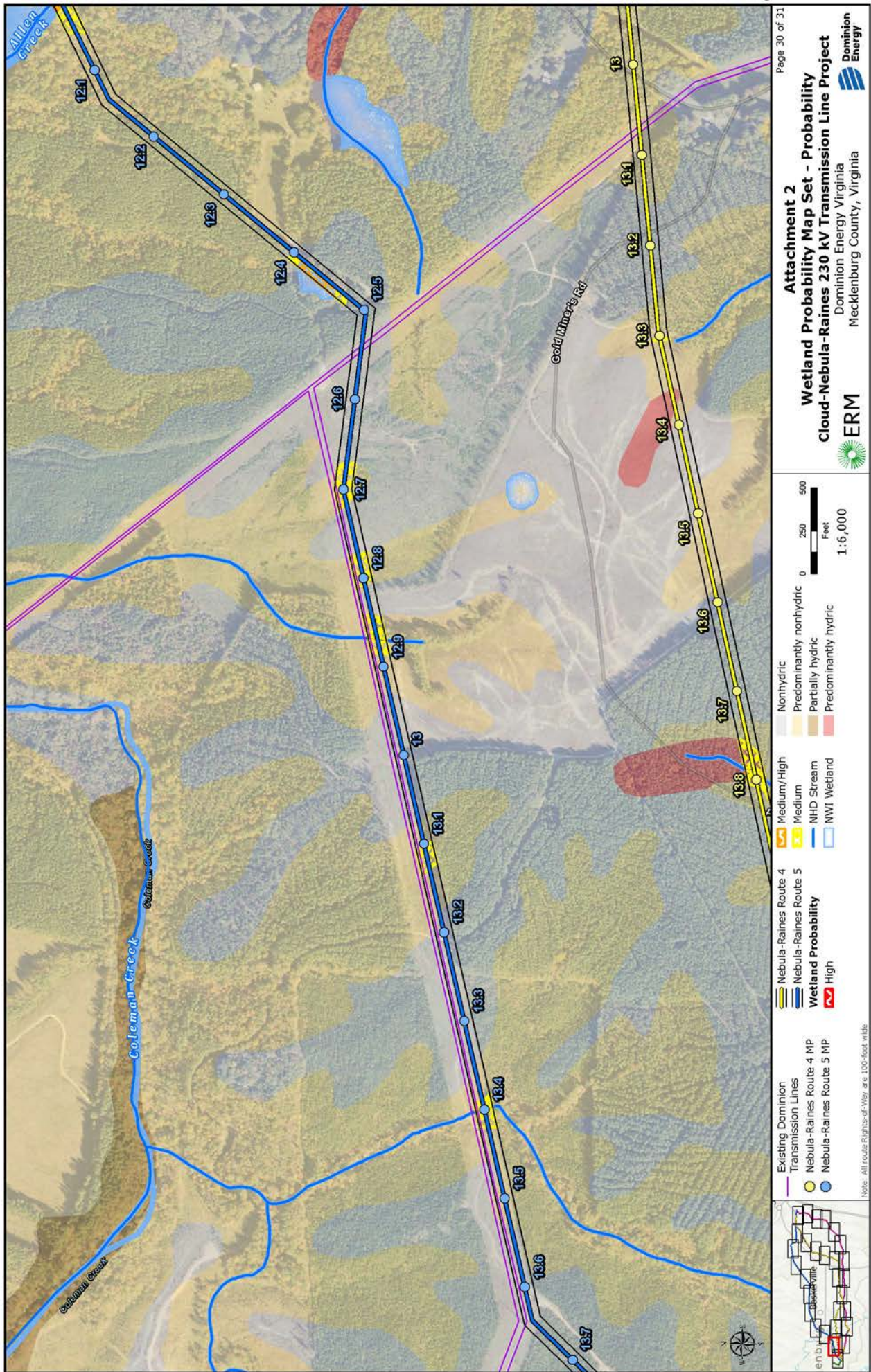




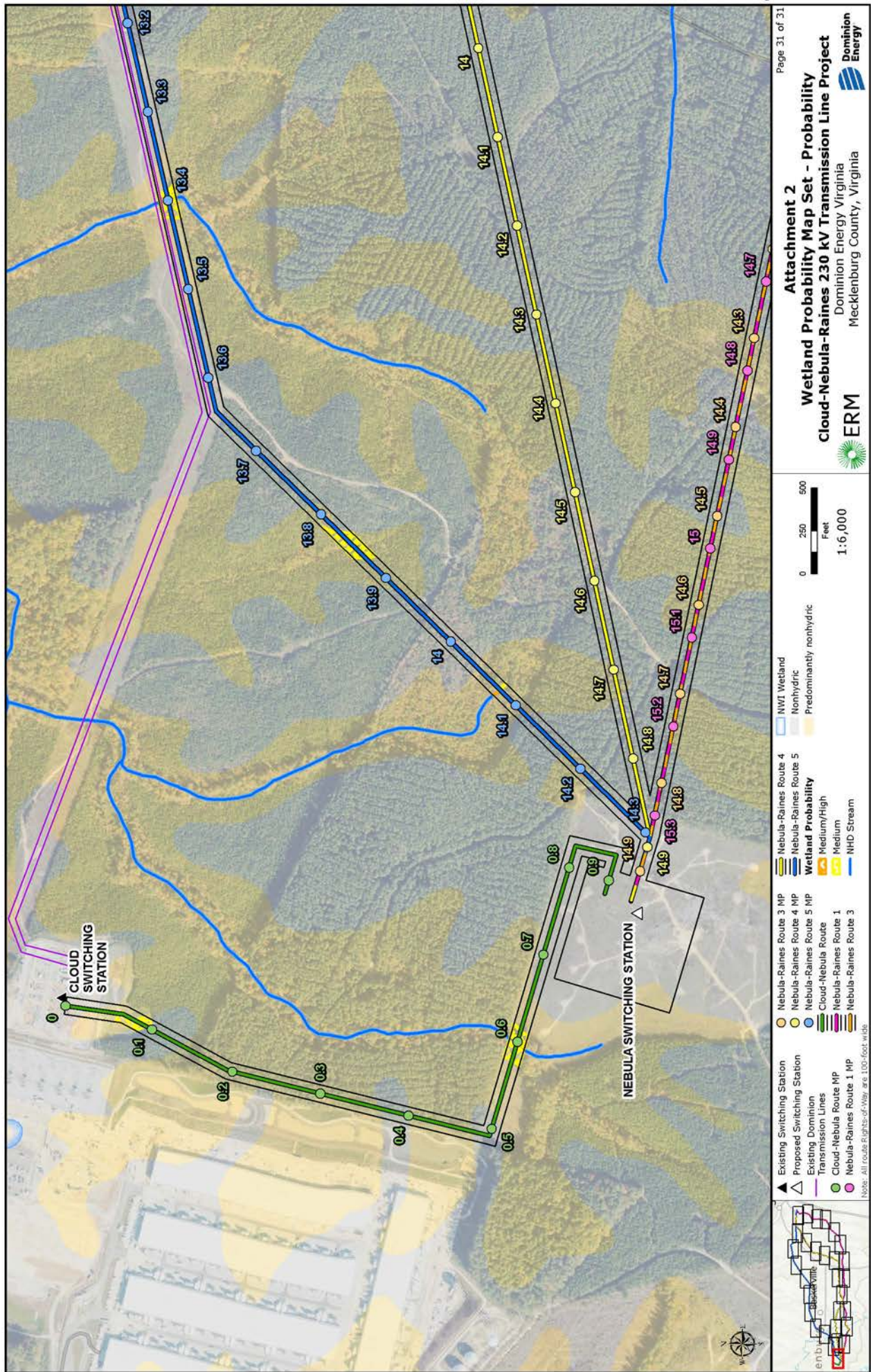




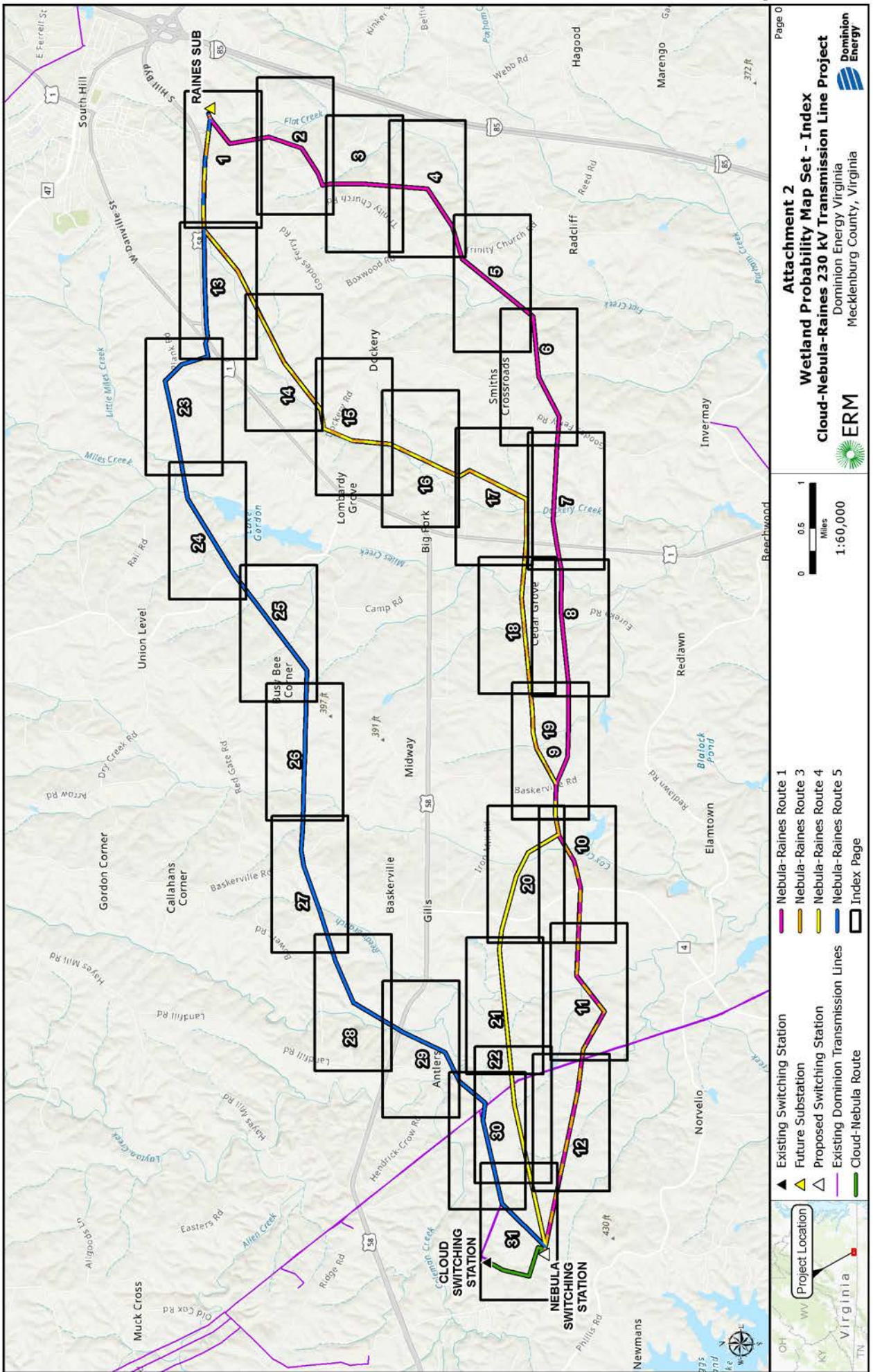




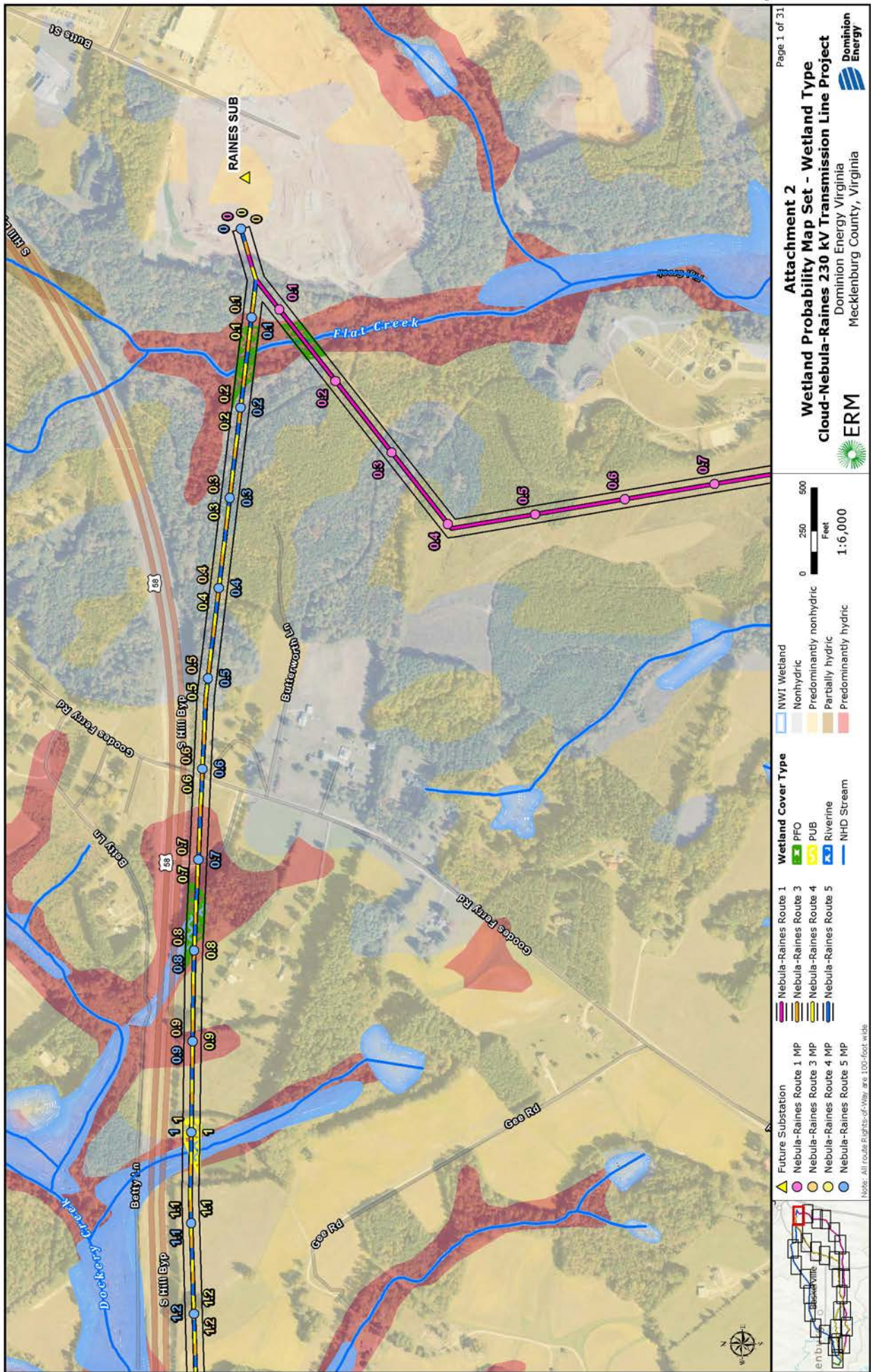




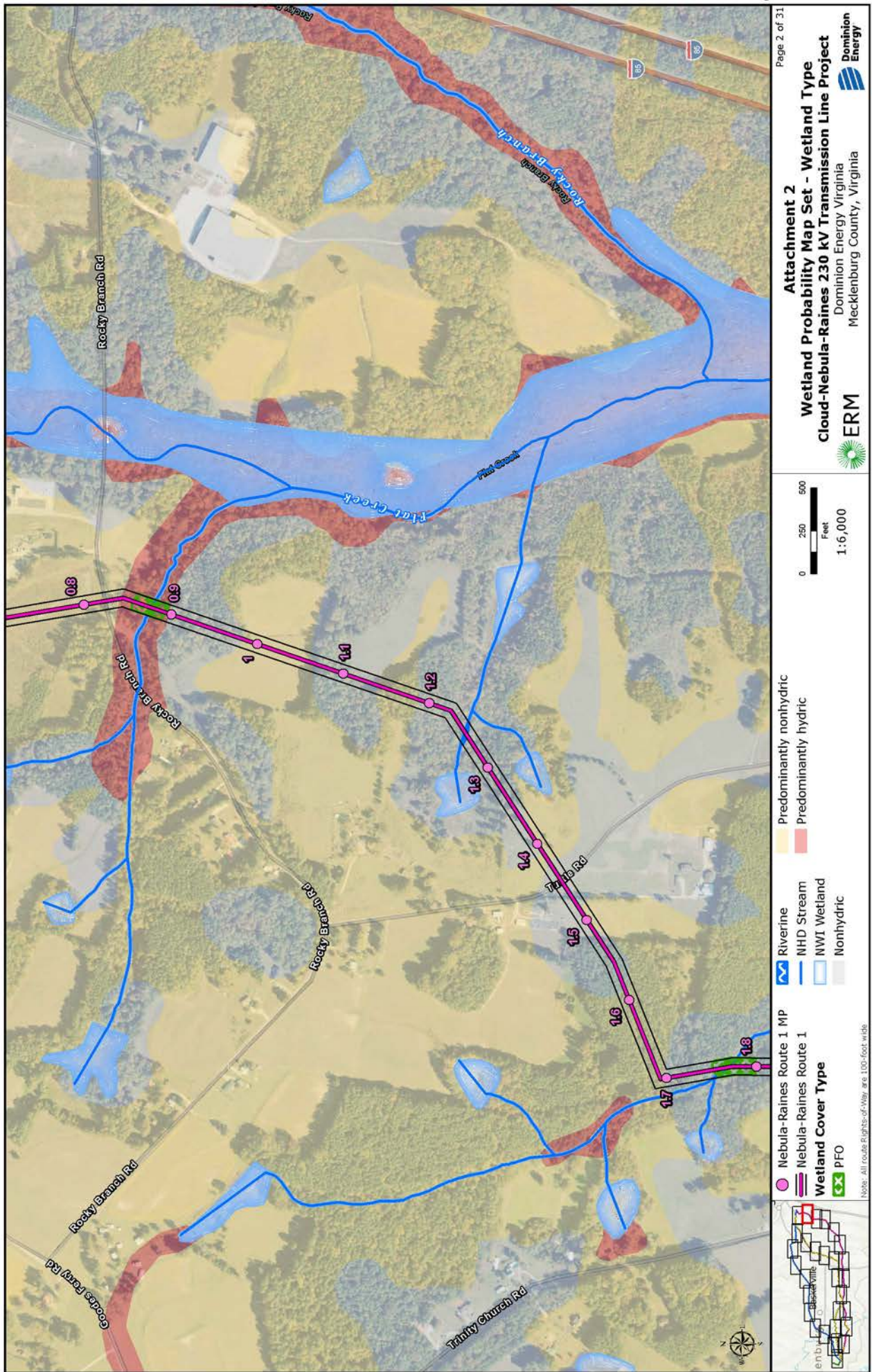




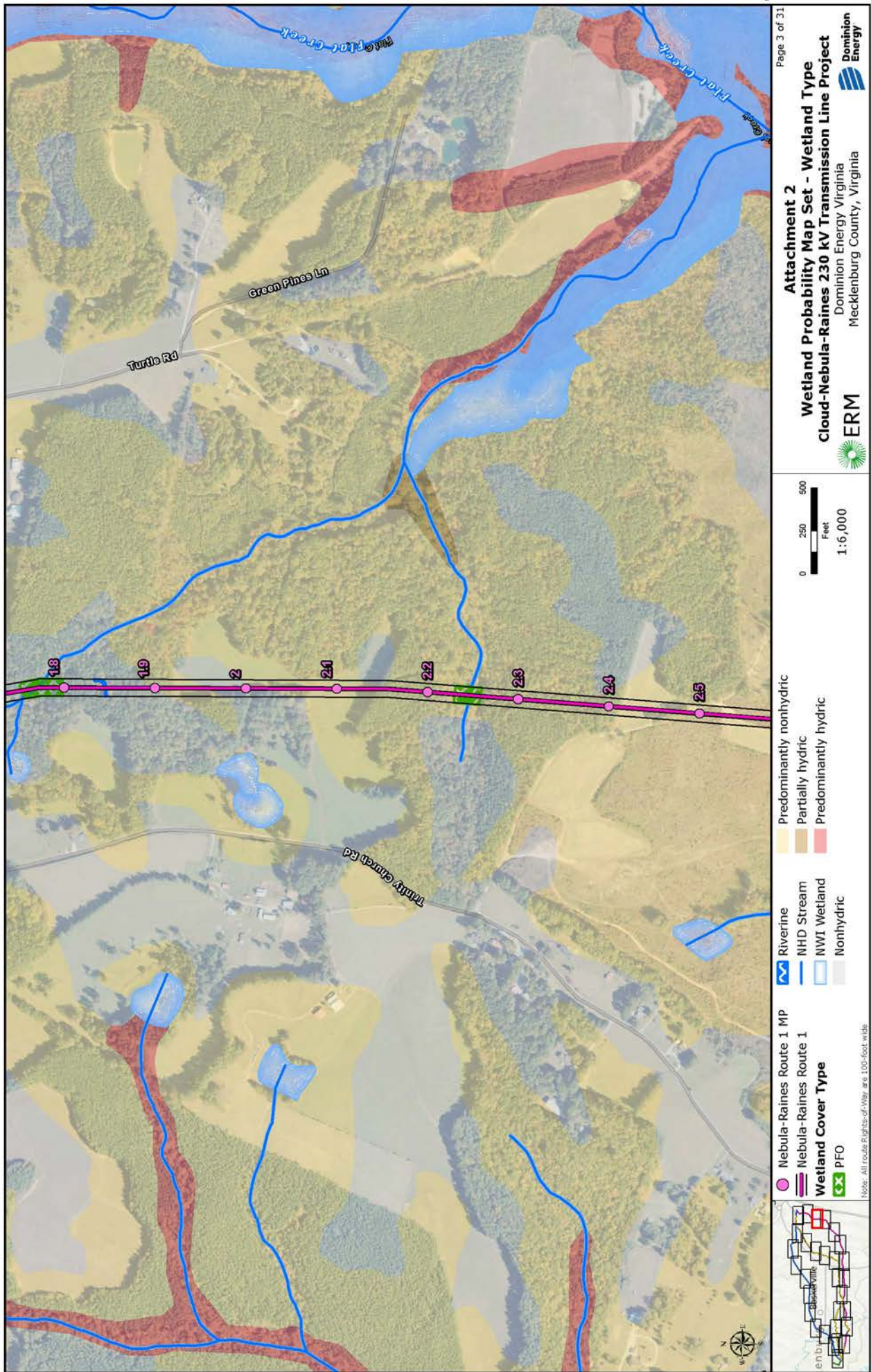




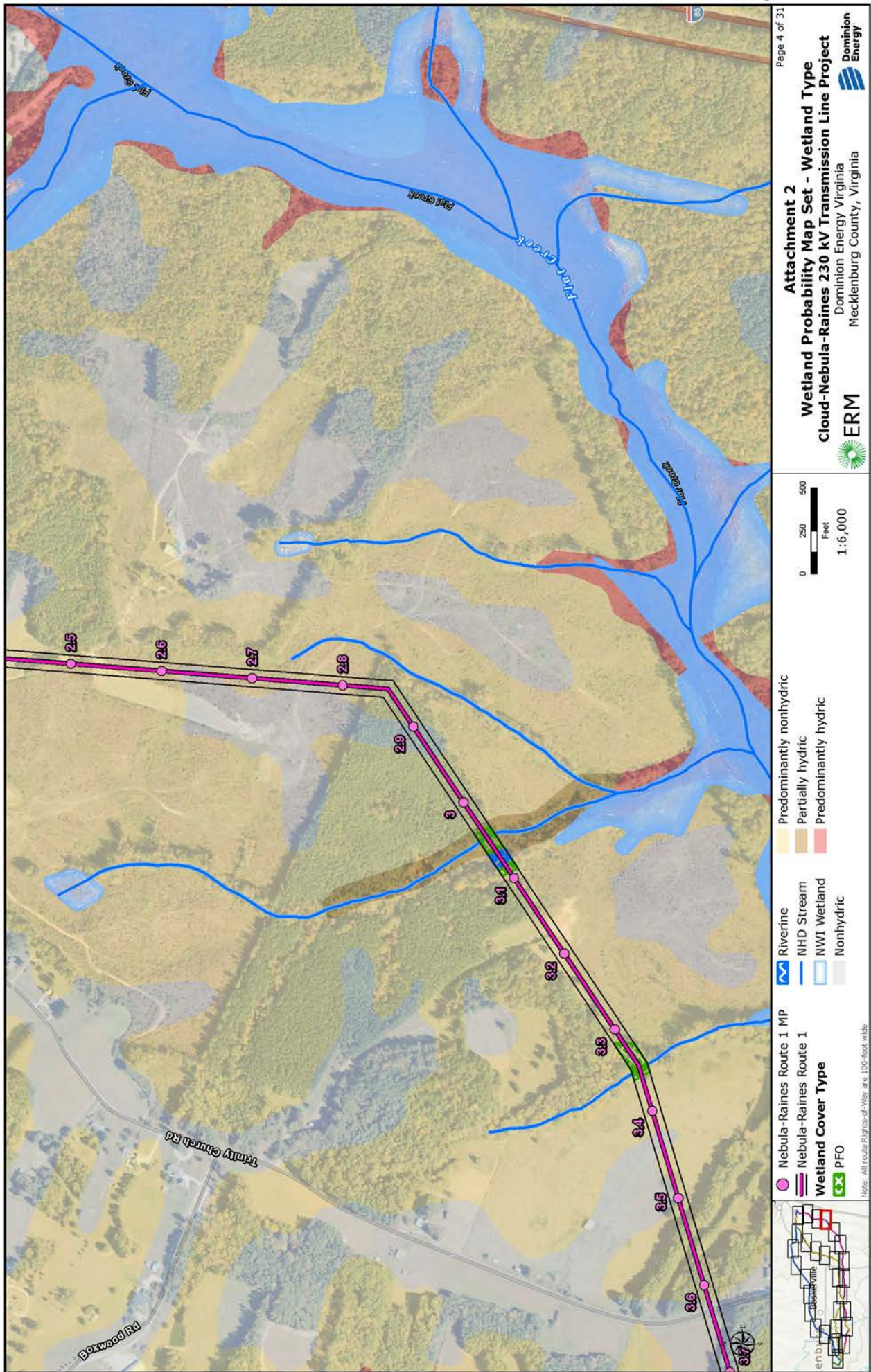




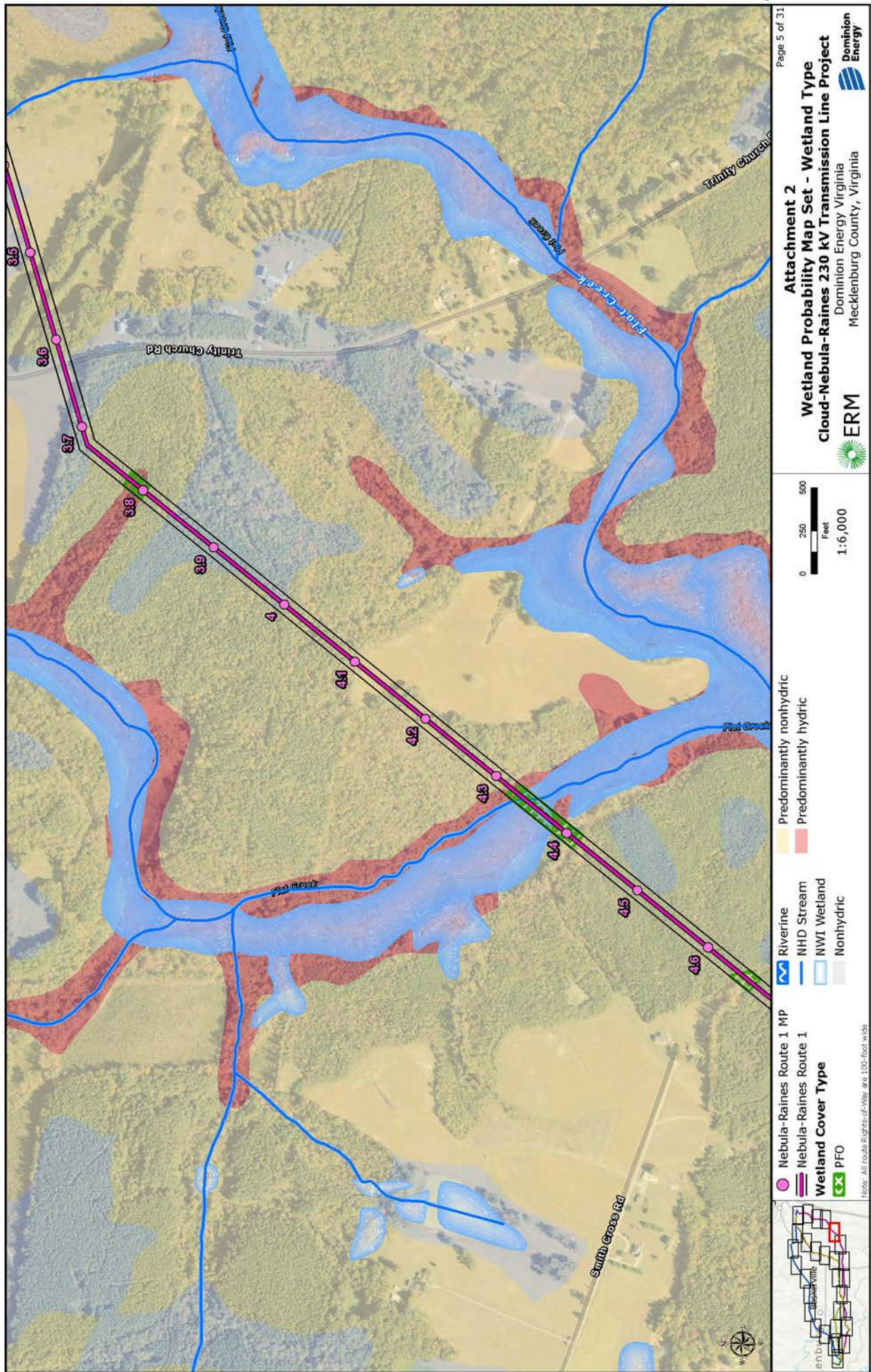




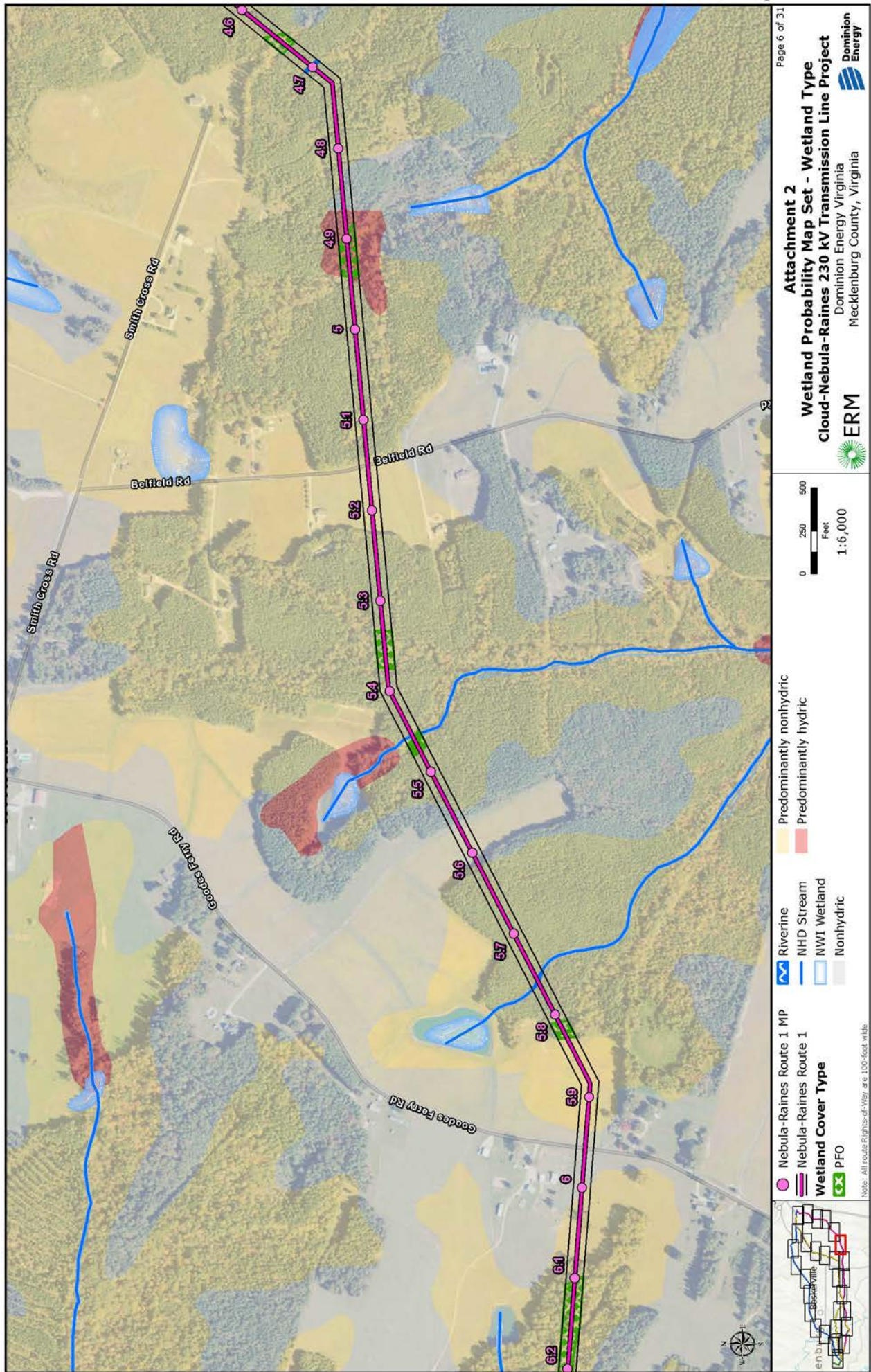




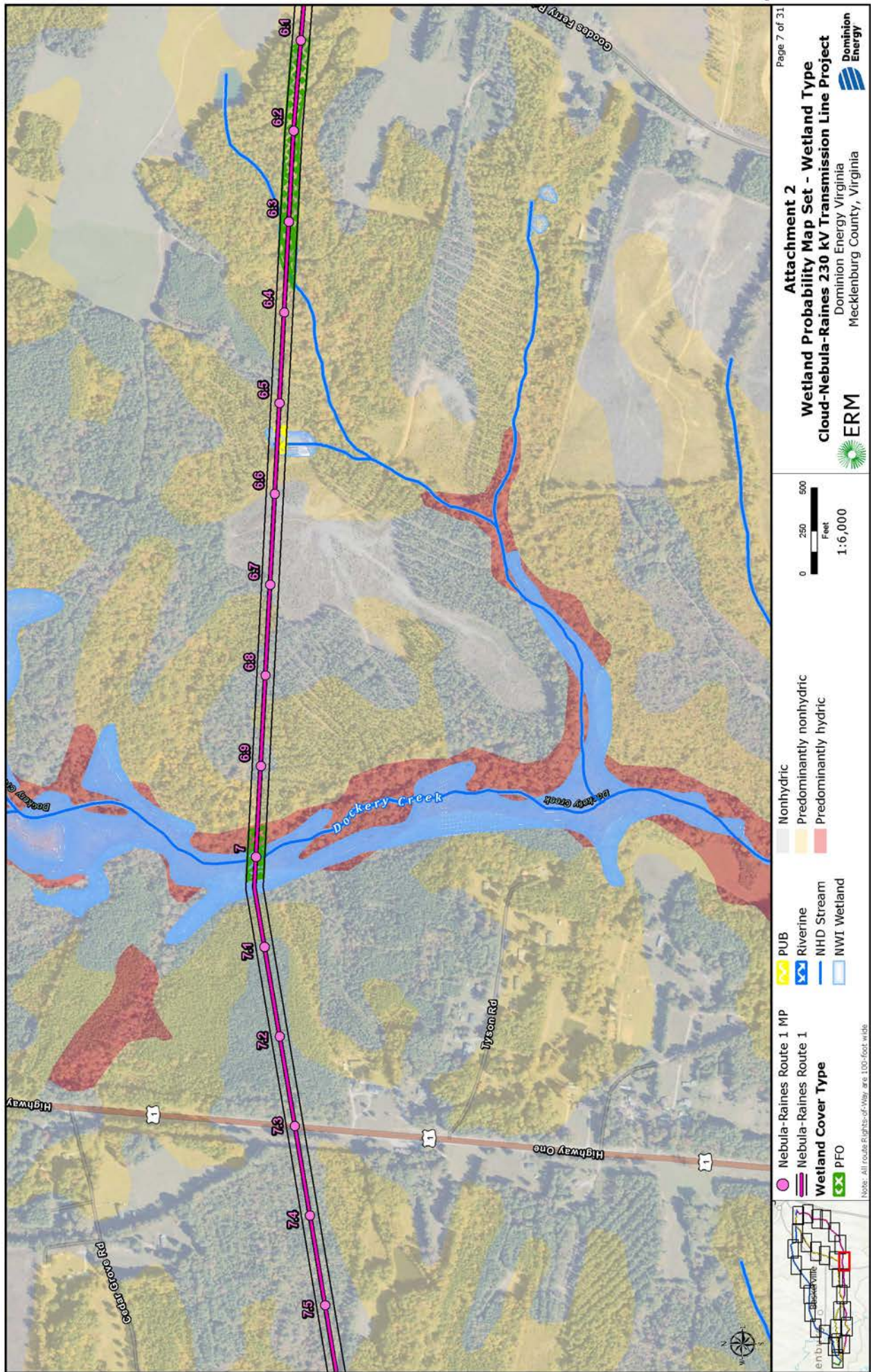




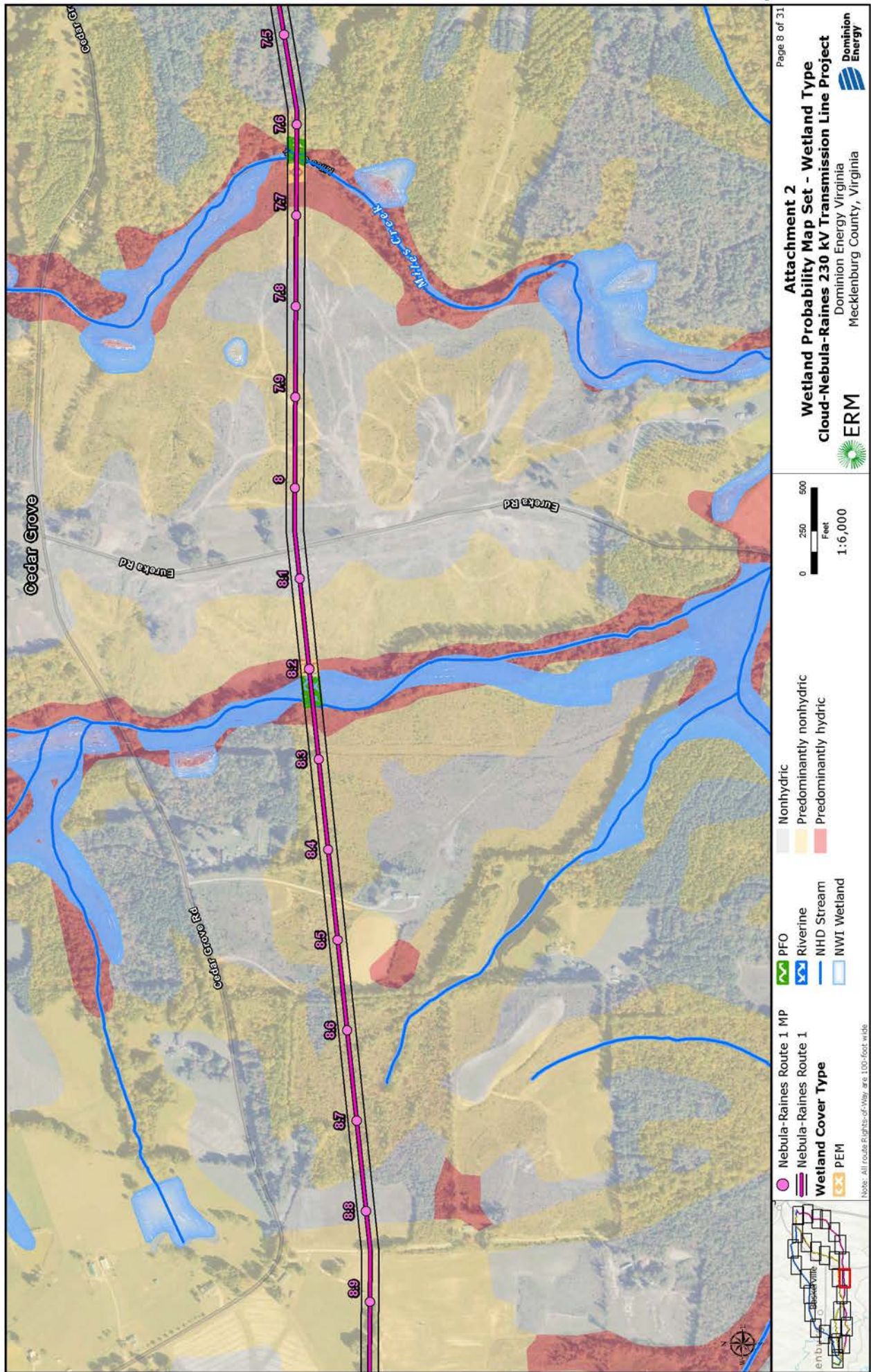




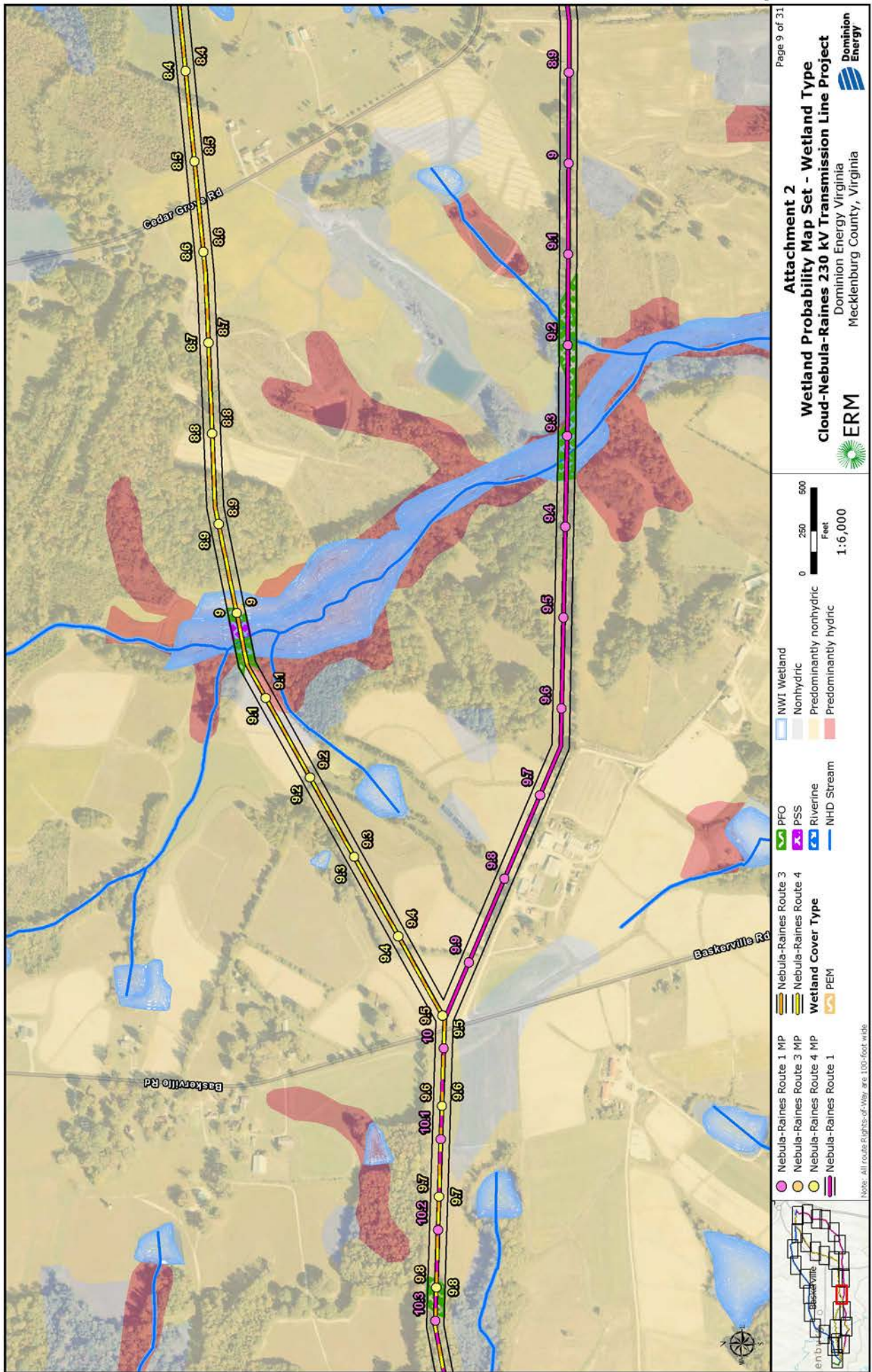




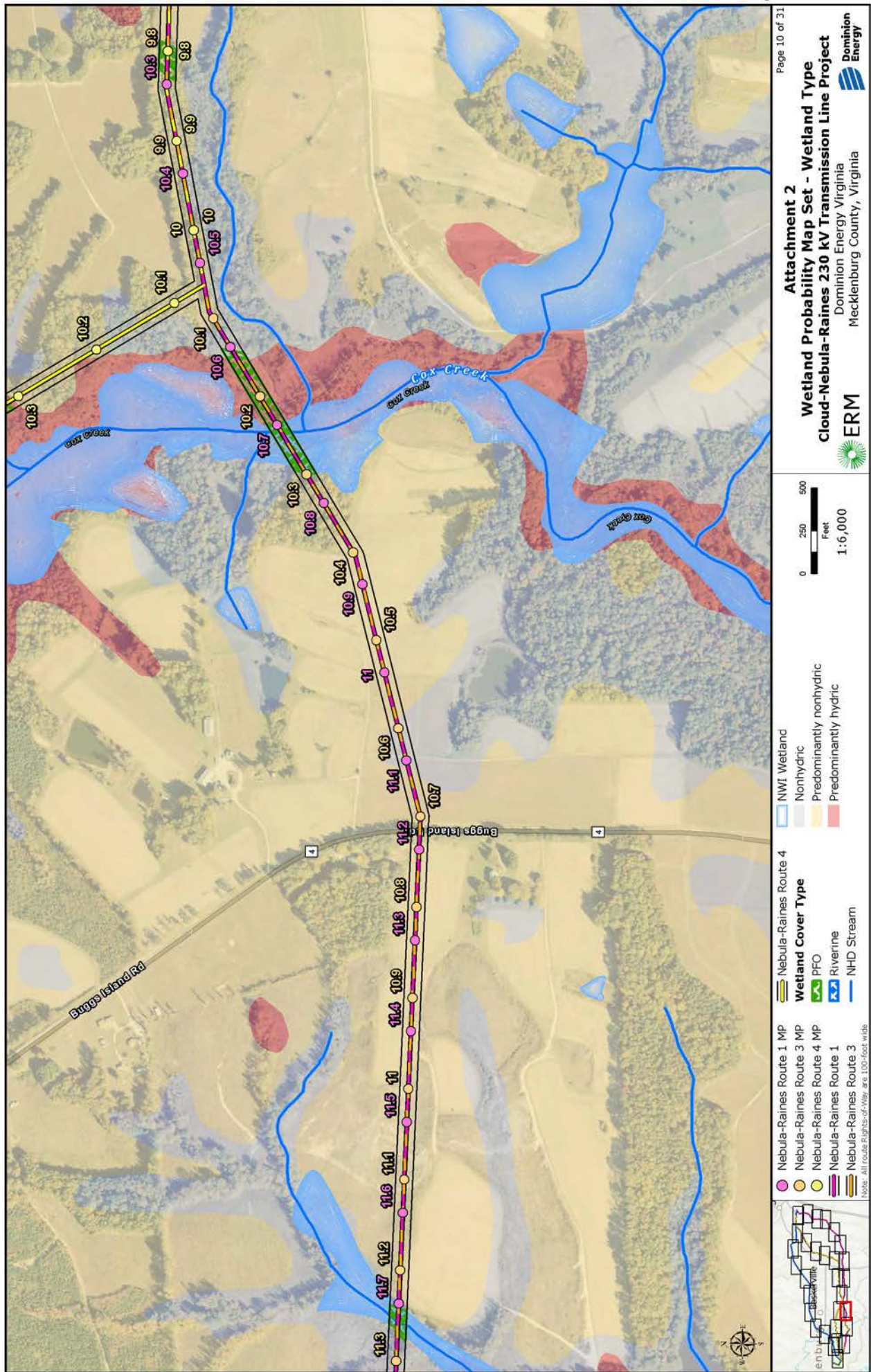




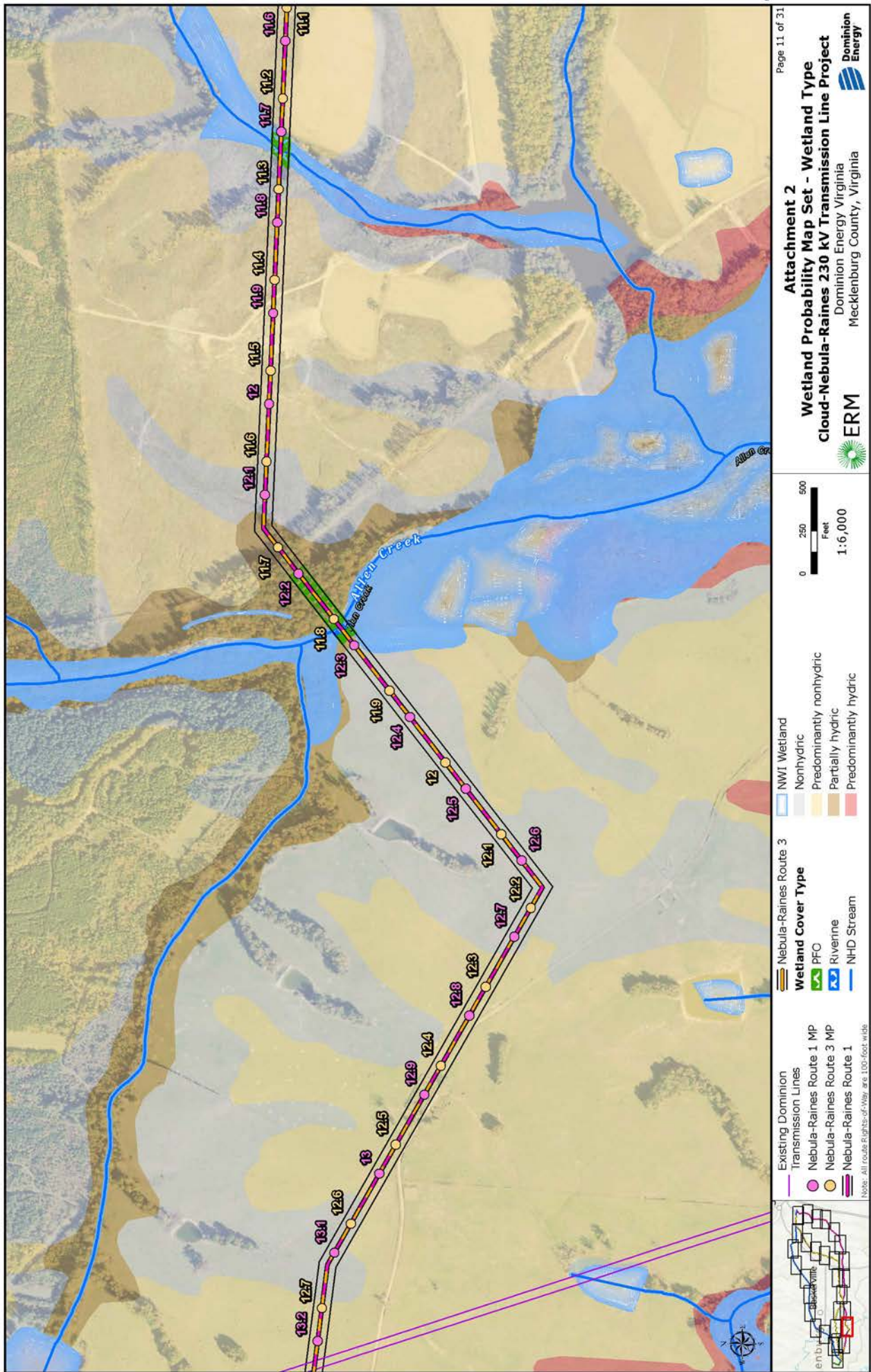












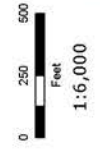




Page 12 of 31

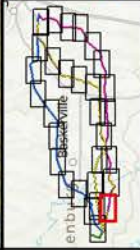
**Attachment 2**  
**Wetland Probability Map Set - Wetland Type**  
**Cloud-Nebula-Raines 230 kV Transmission Line Project**  
Dominion Energy Virginia  
Mecklenburg County, Virginia

**ERM**  



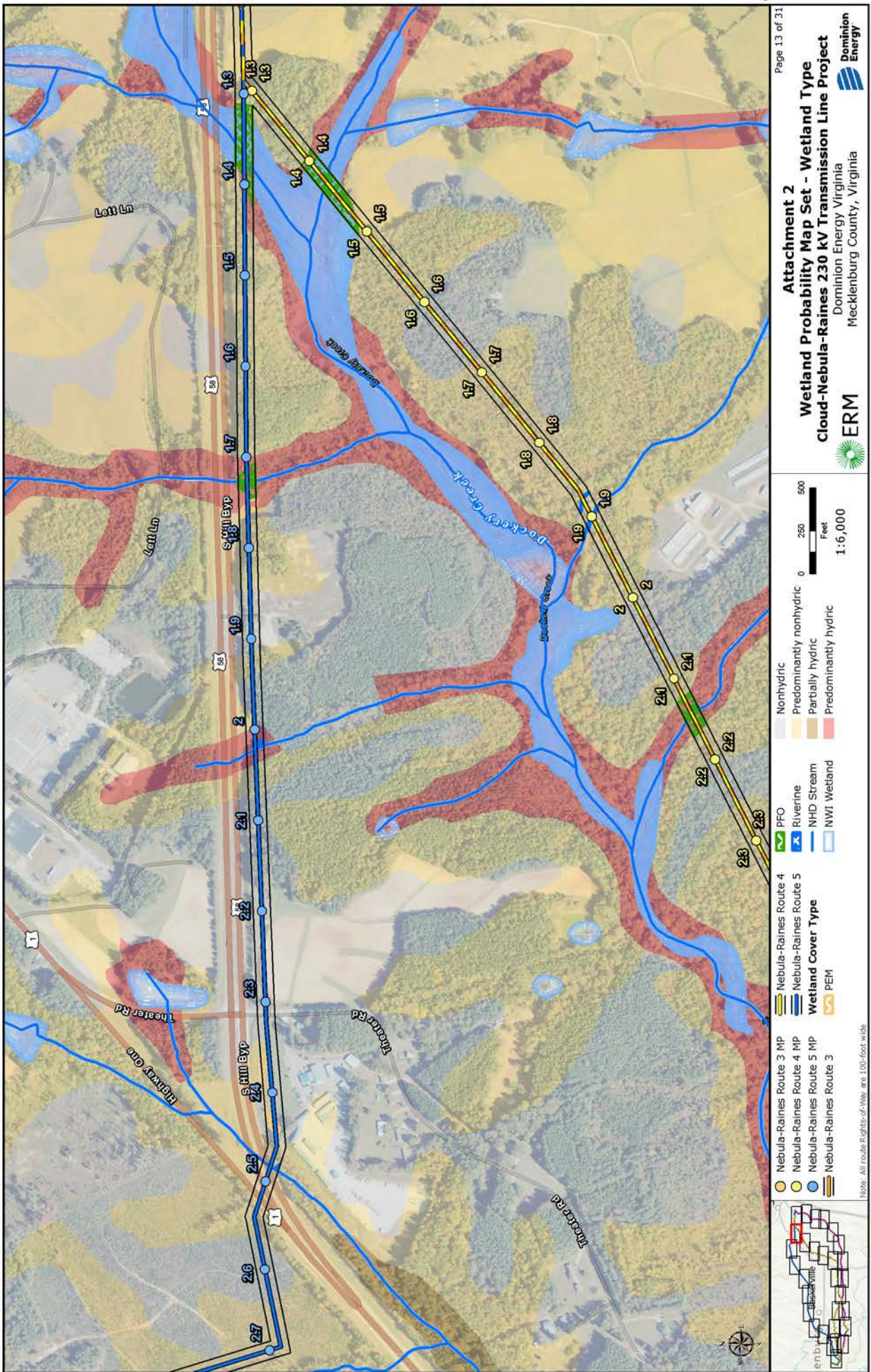
-  NWI Wetland
  -  Nonhydryc
  -  Predominantly nonhydryc
  -  Partially hydryc
  -  Predominantly hydryc
- Wetland Cover Type**
-  PFO
  -  Riverline
  -  NHD Stream

- Existing Dominion**
-  Transmission Lines
  -  Nebula-Raines Route 1 MP
  -  Nebula-Raines Route 3 MP
  -  Nebula-Raines Route 1
  -  Nebula-Raines Route 3

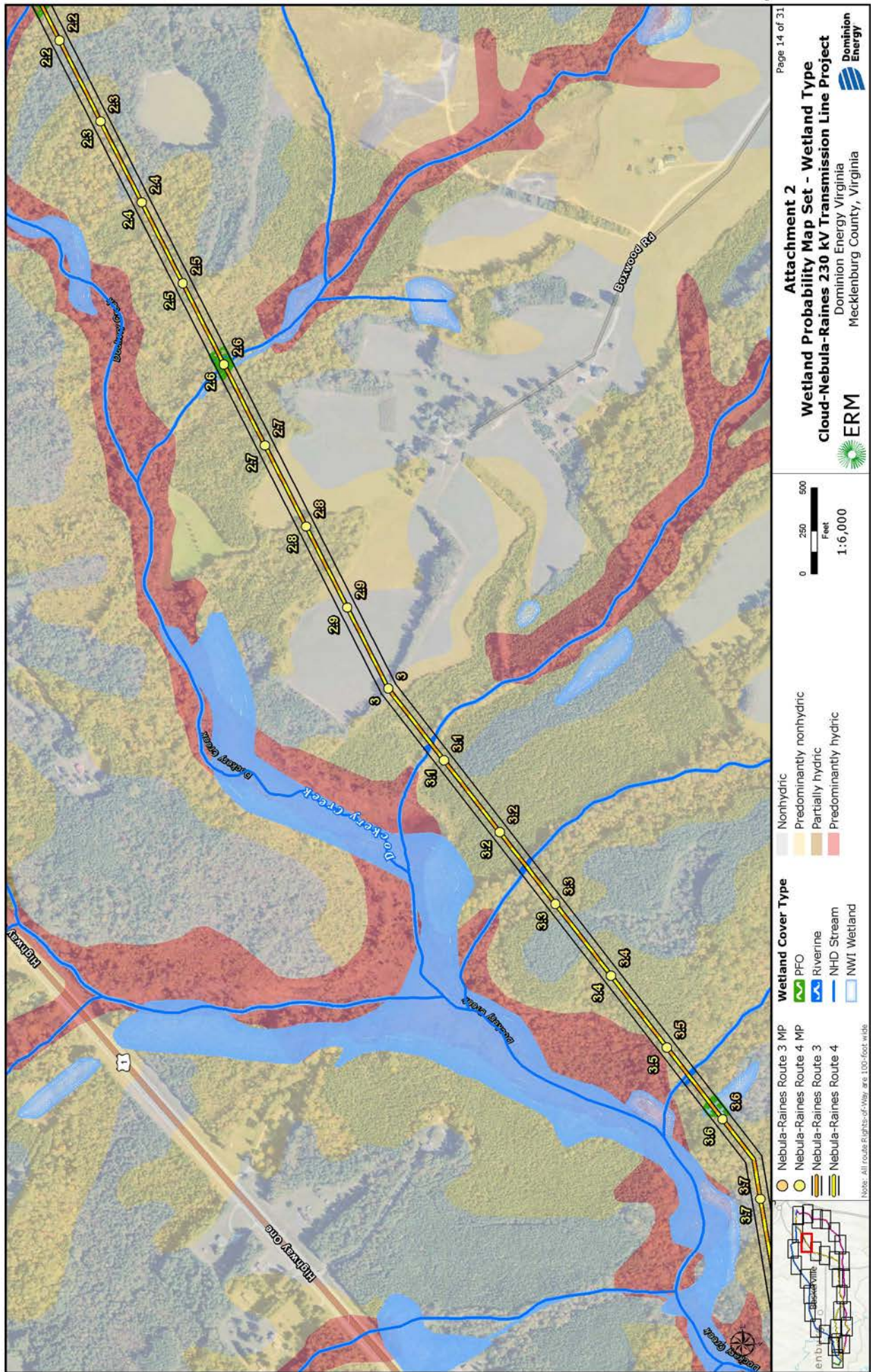


Note: All route rights-of-way are 100-foot wide

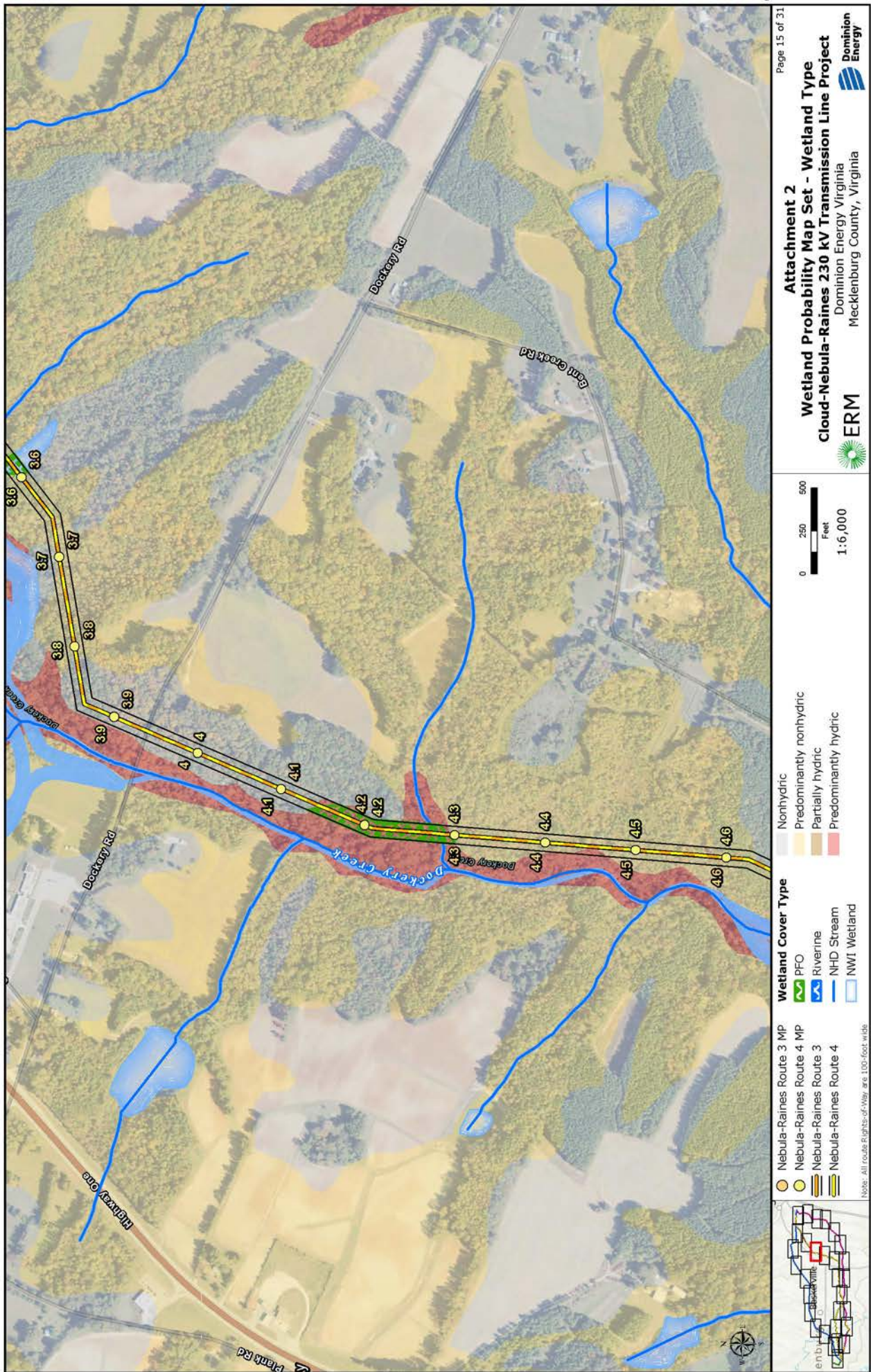




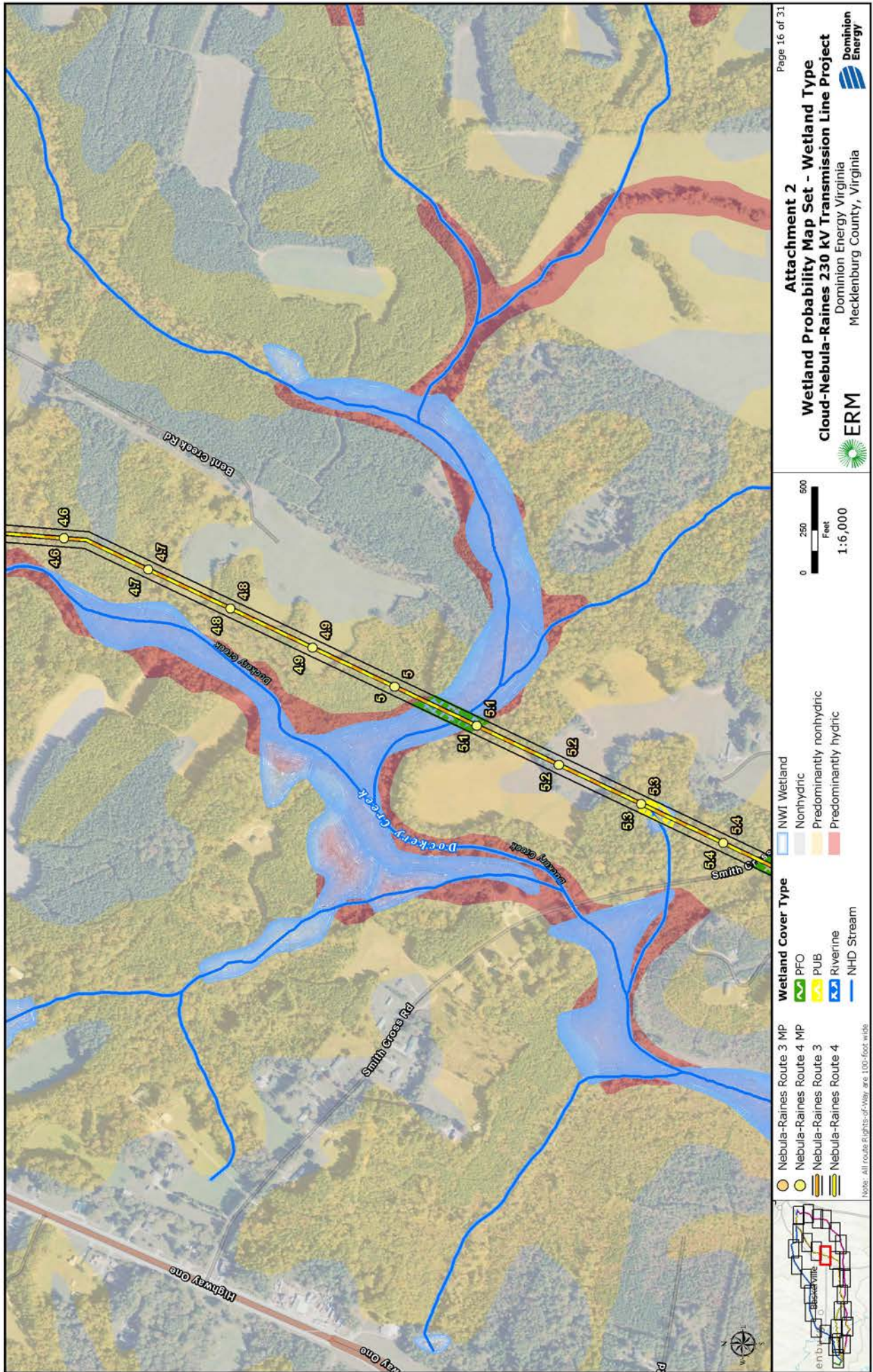




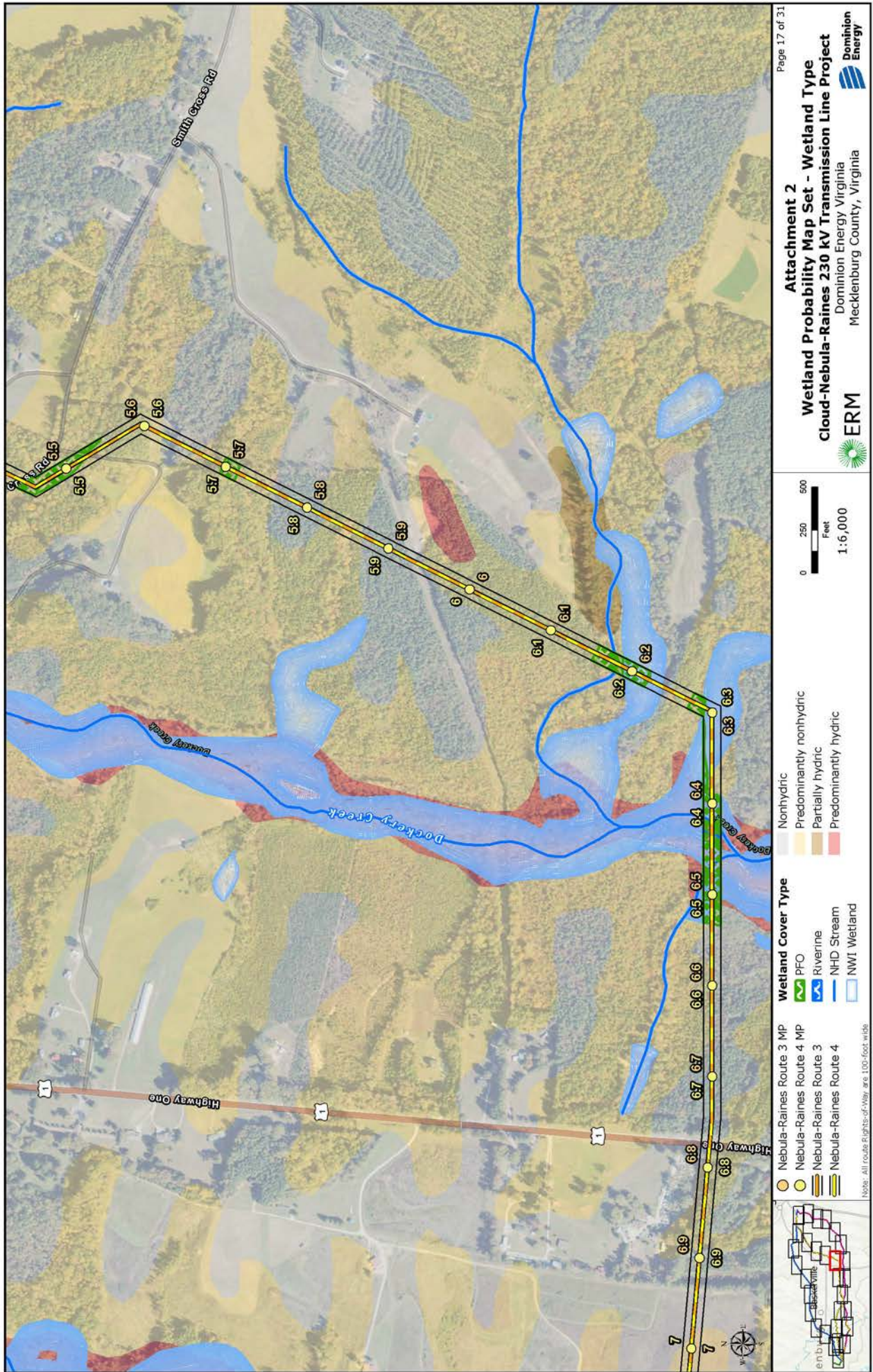




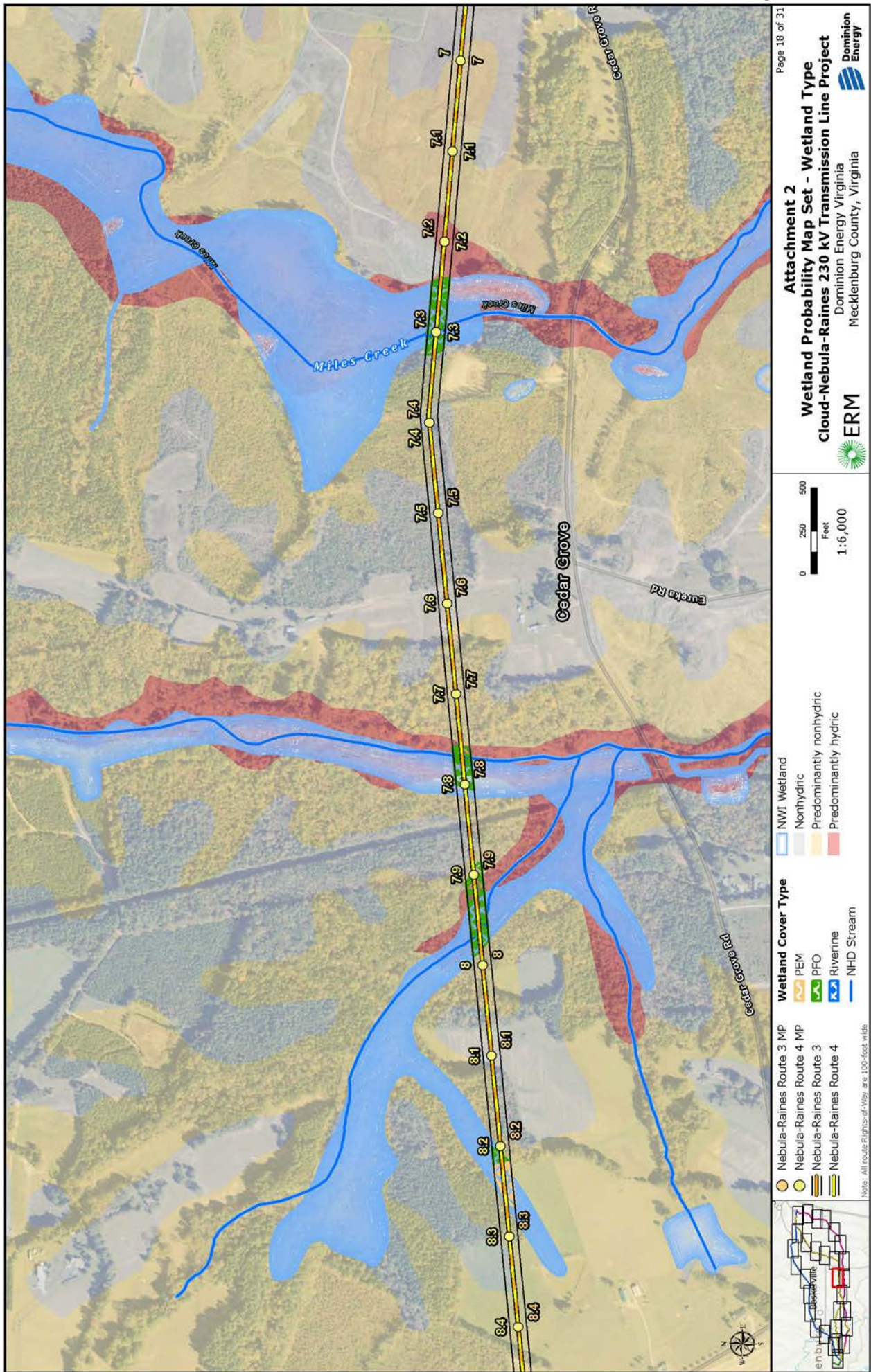




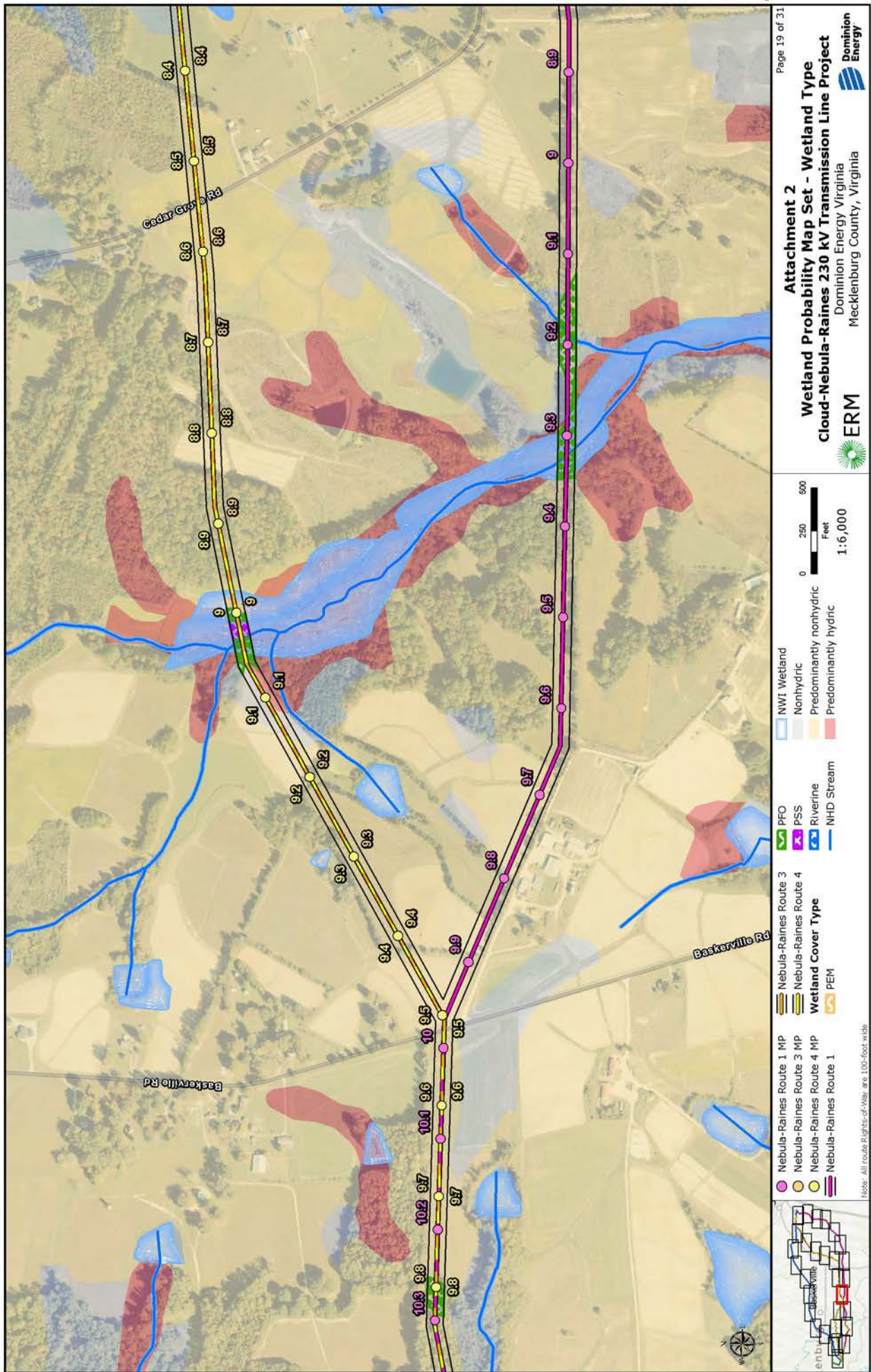




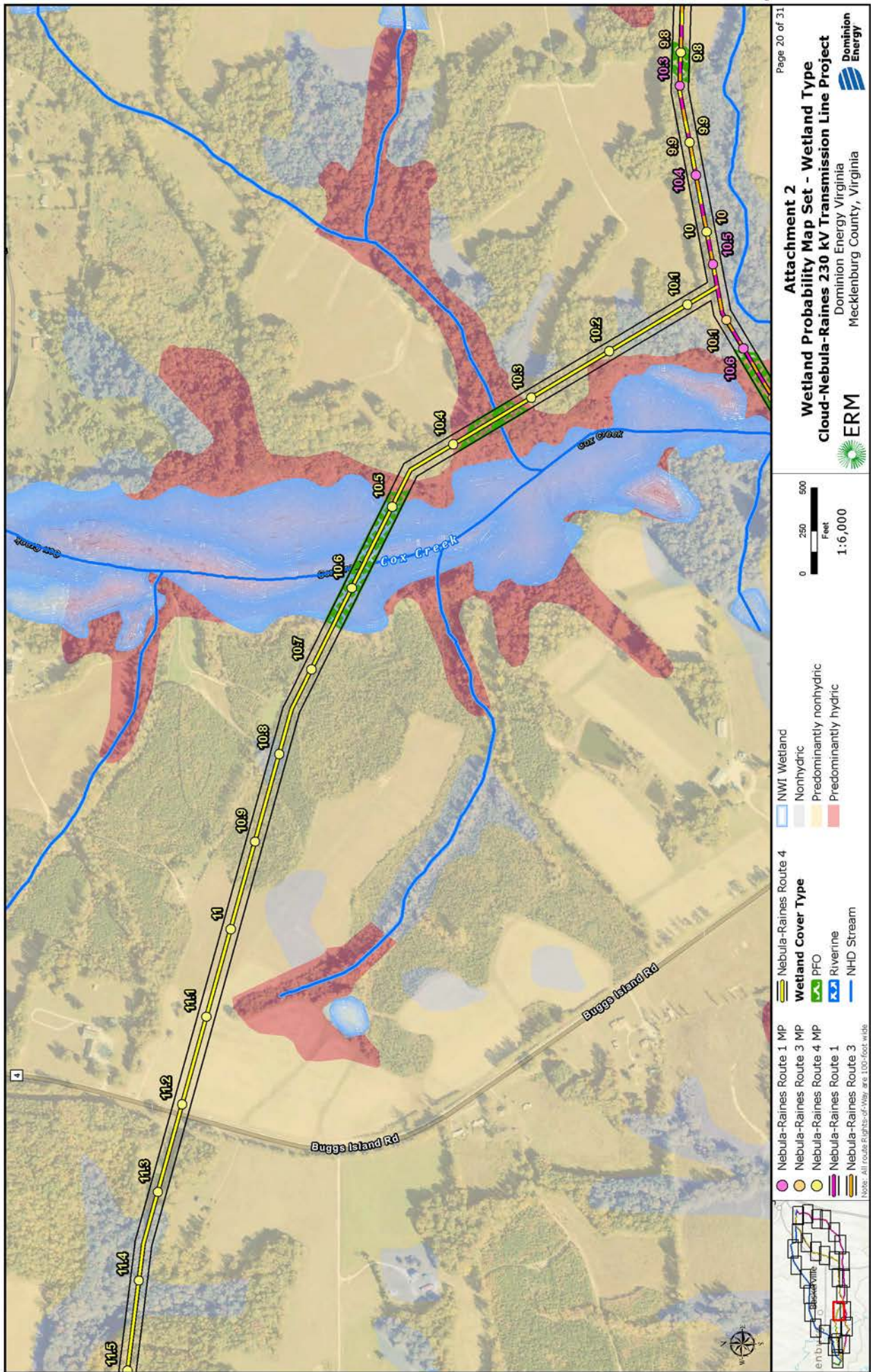




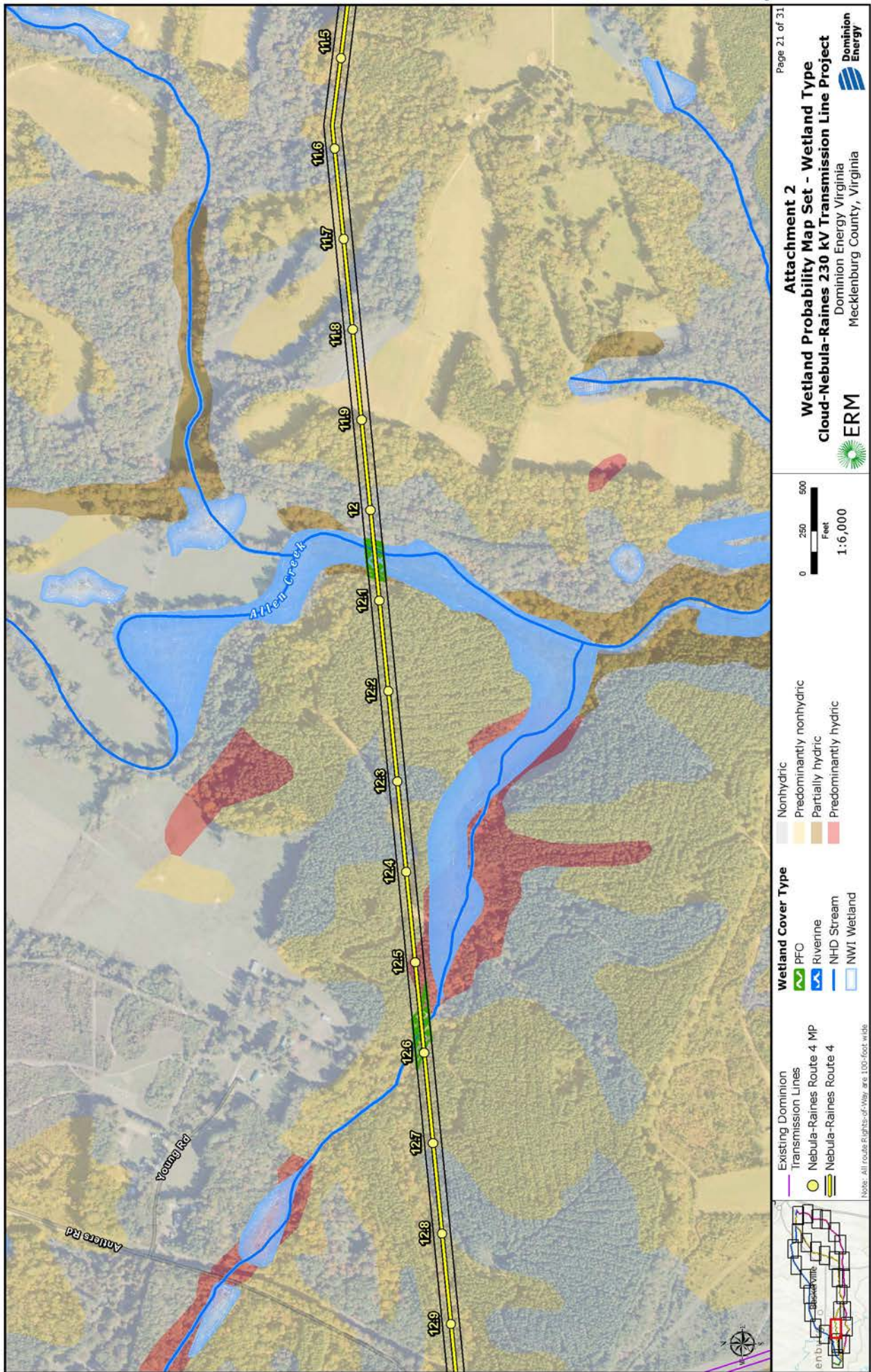




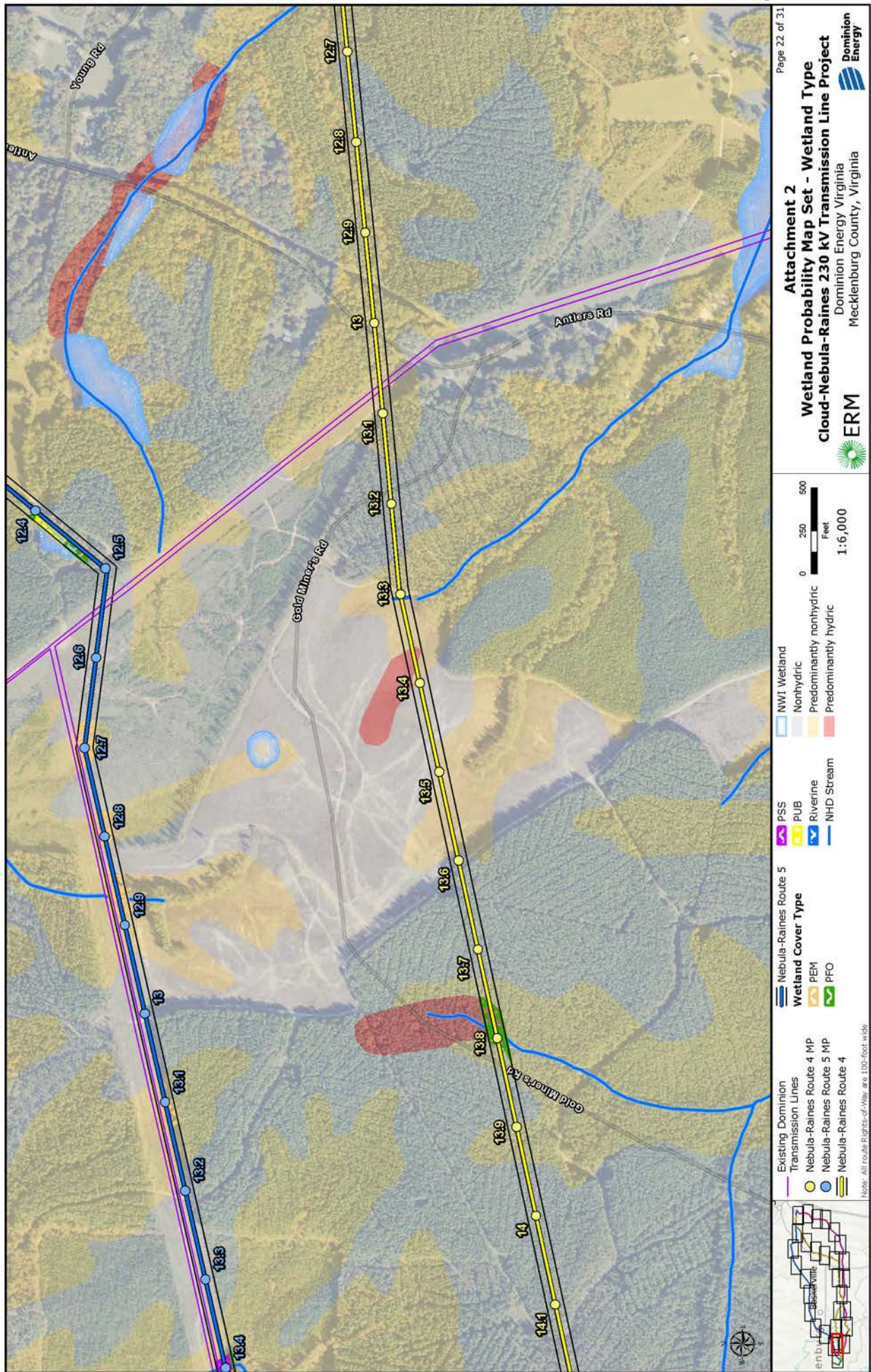




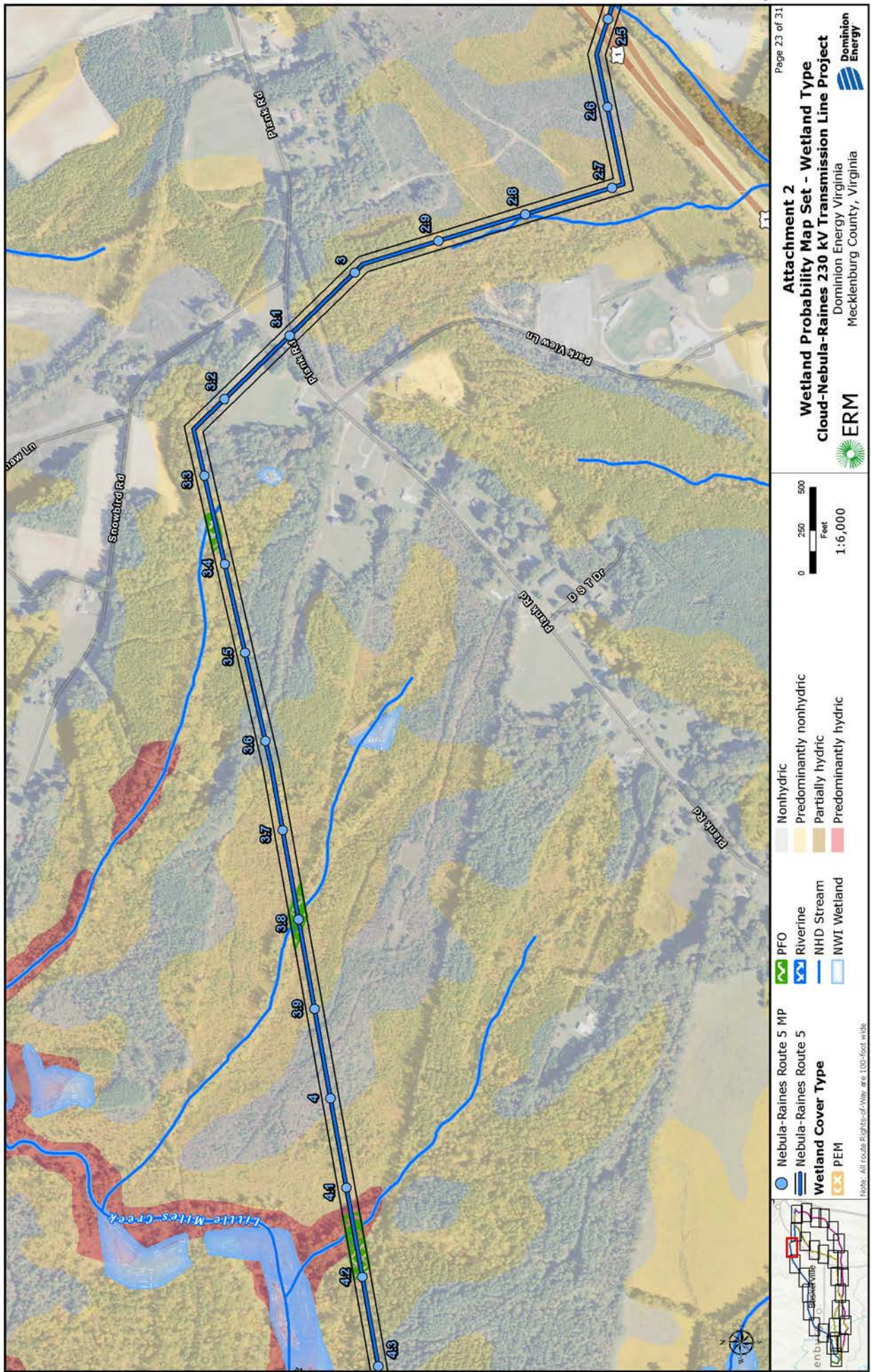




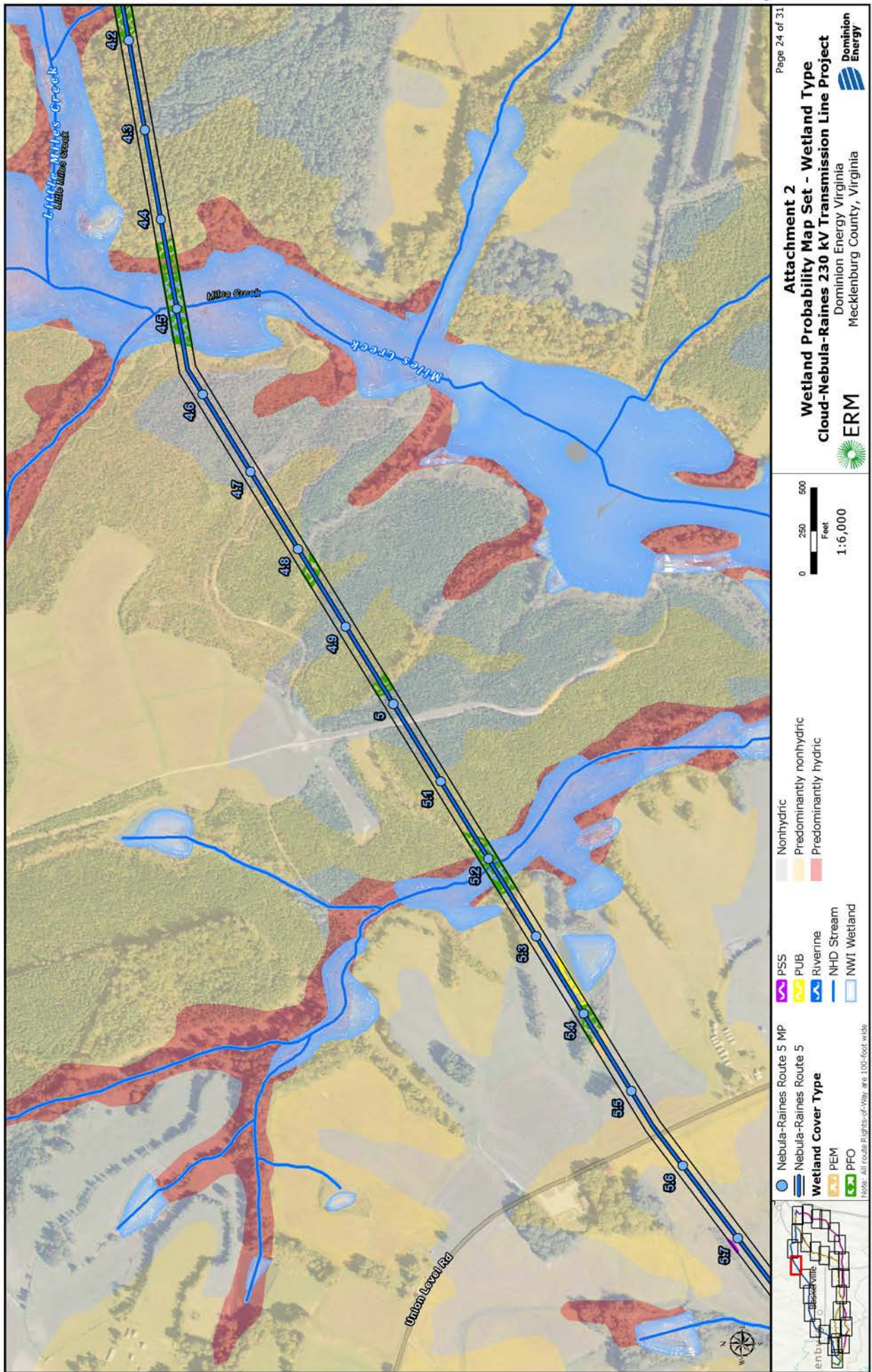




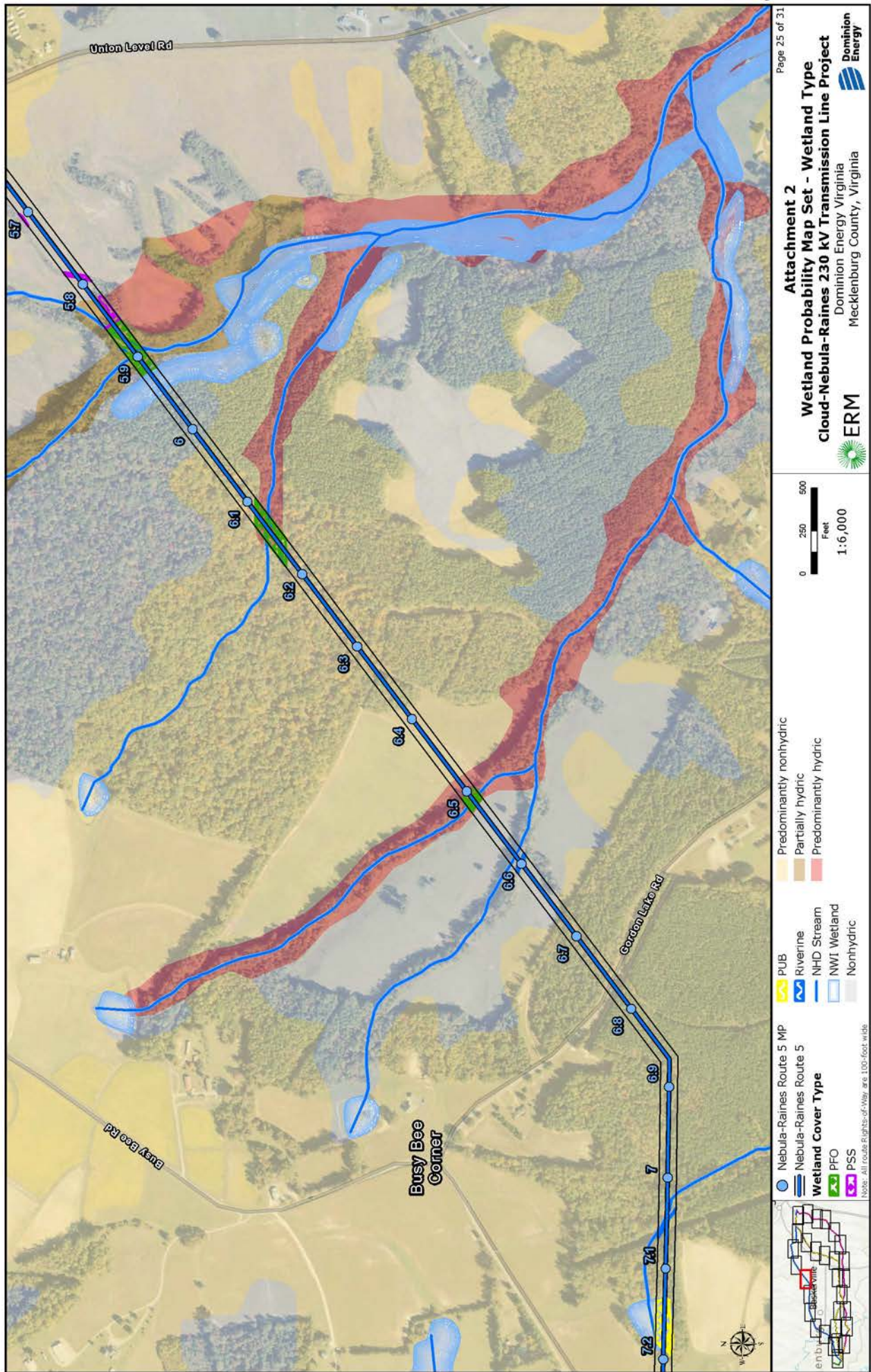




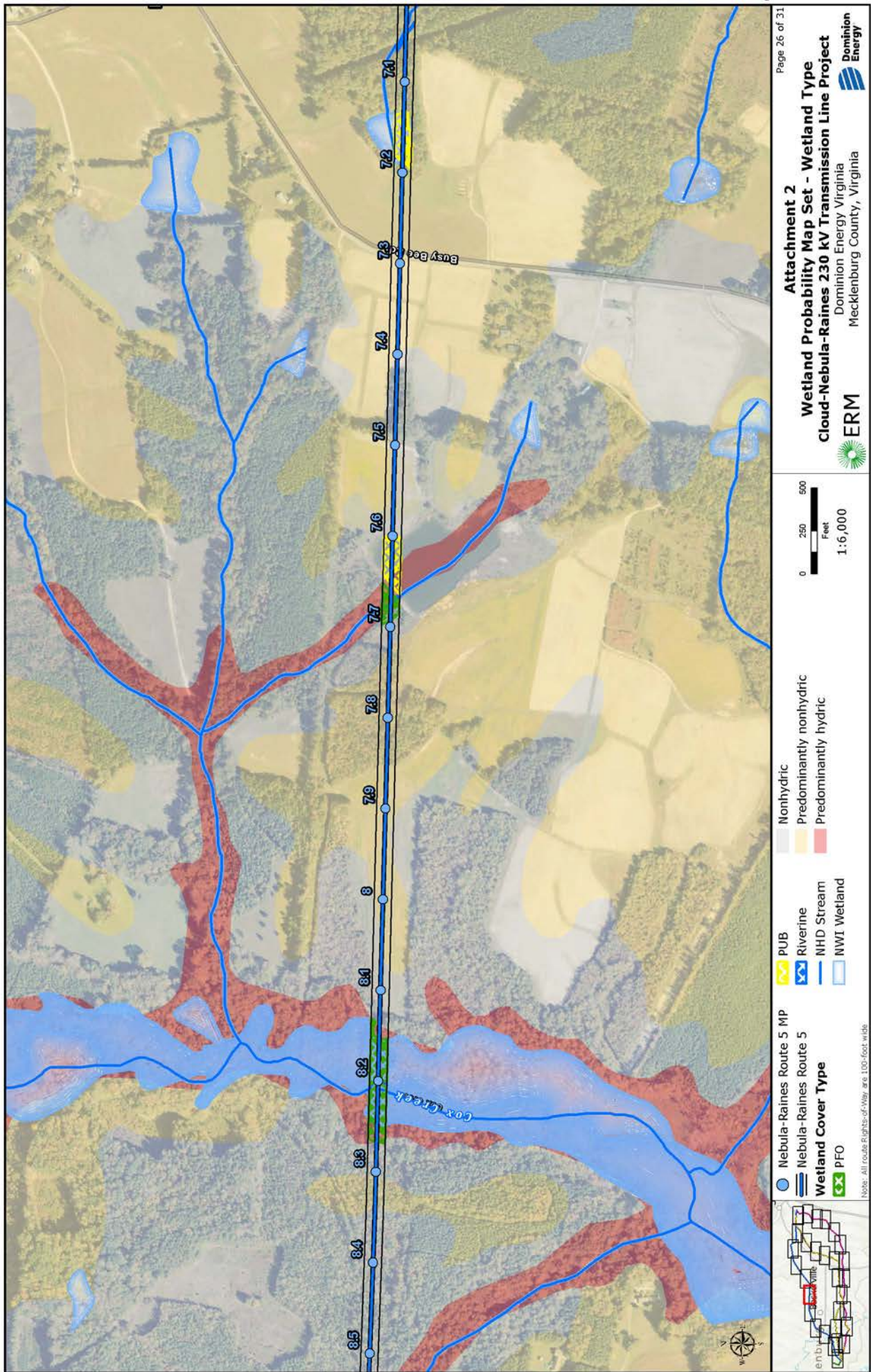




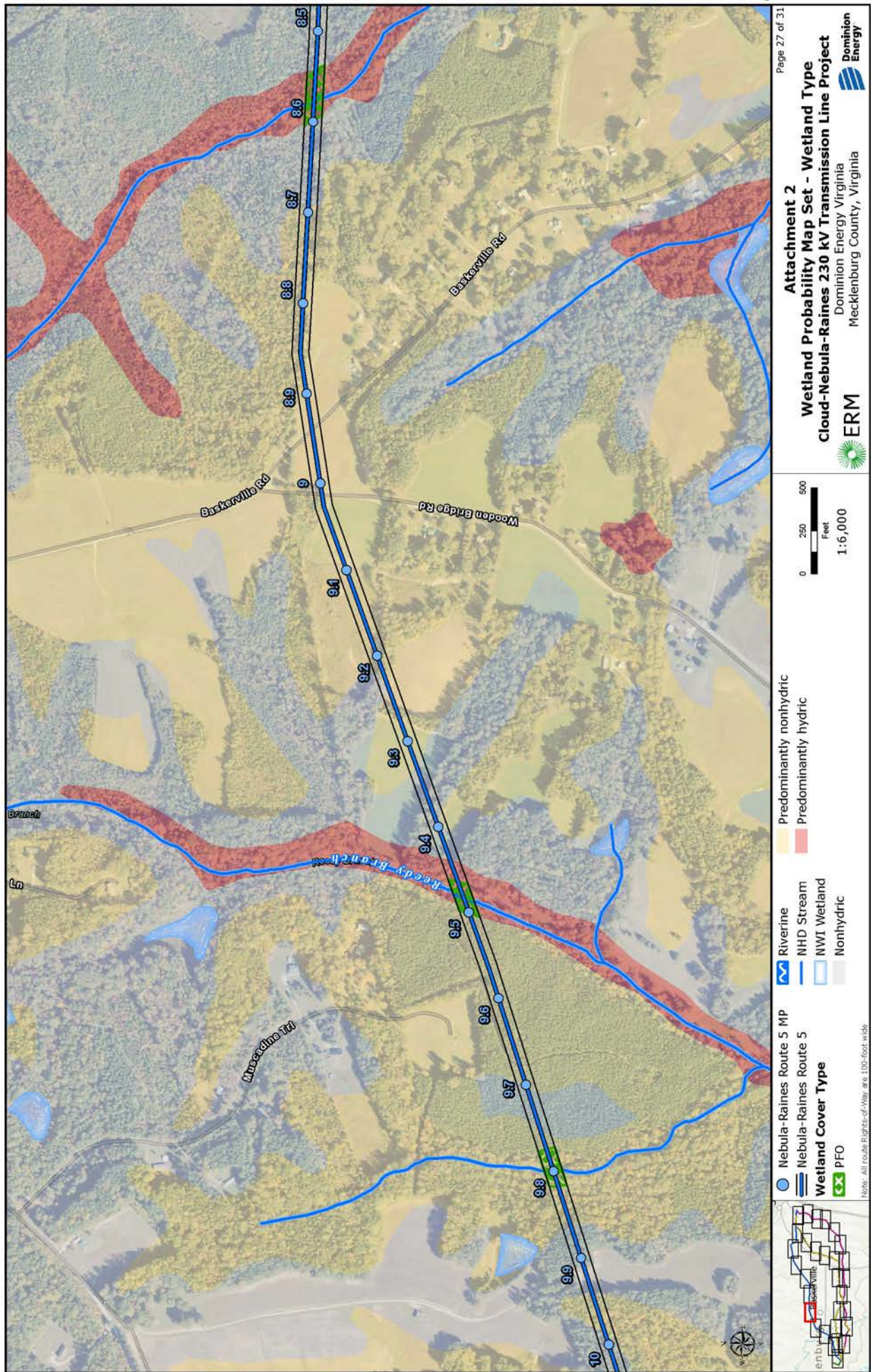




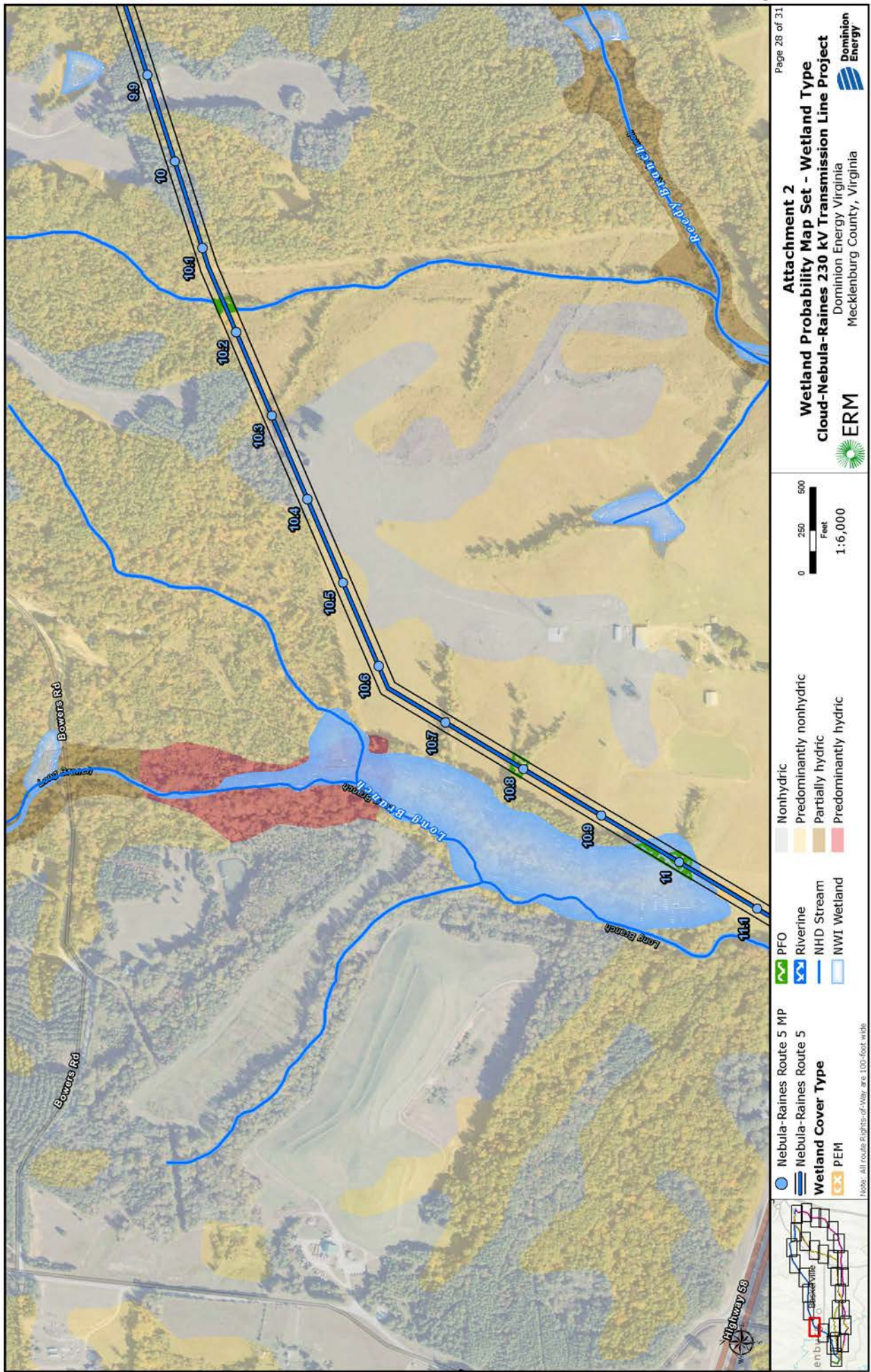




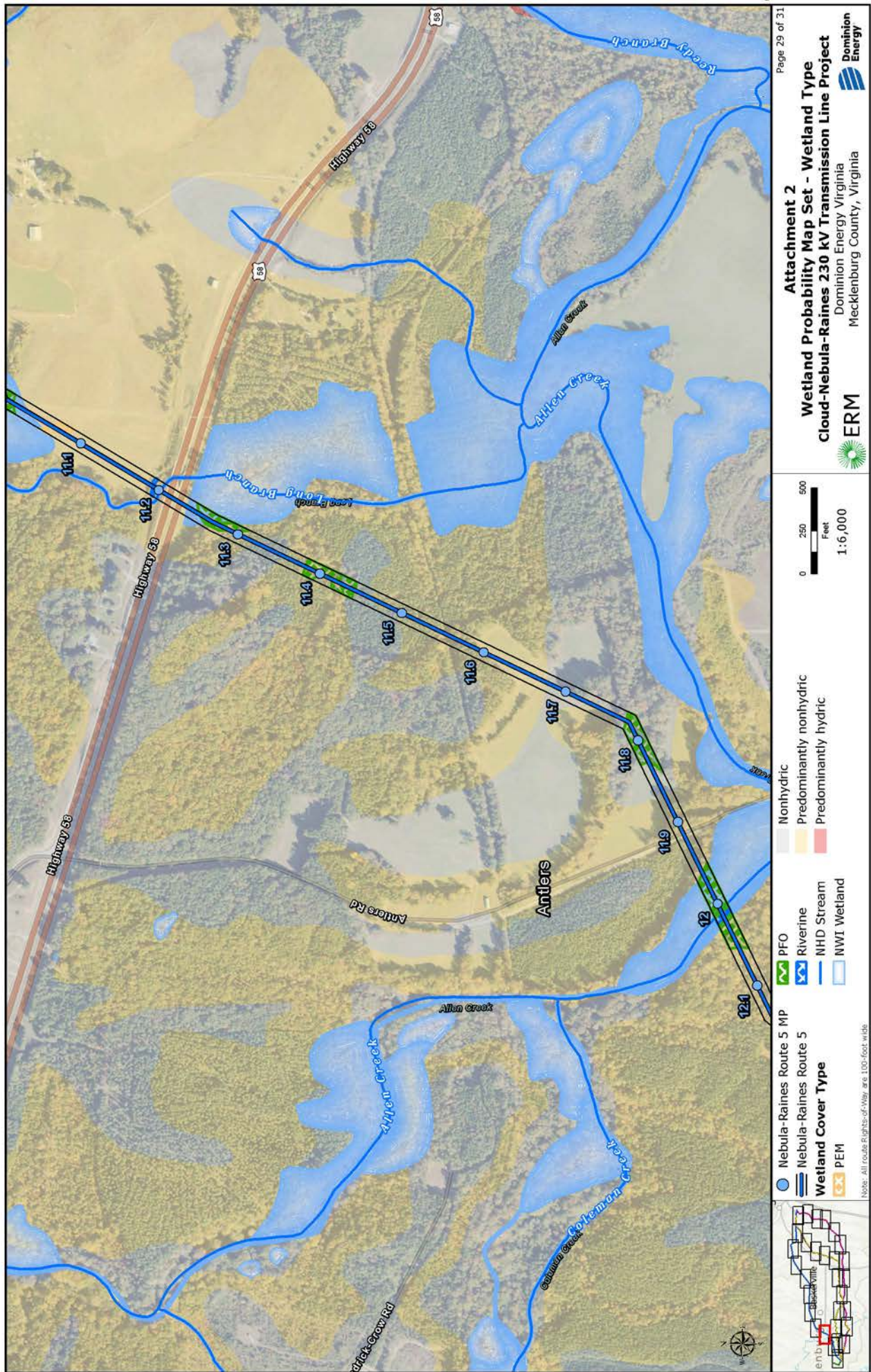




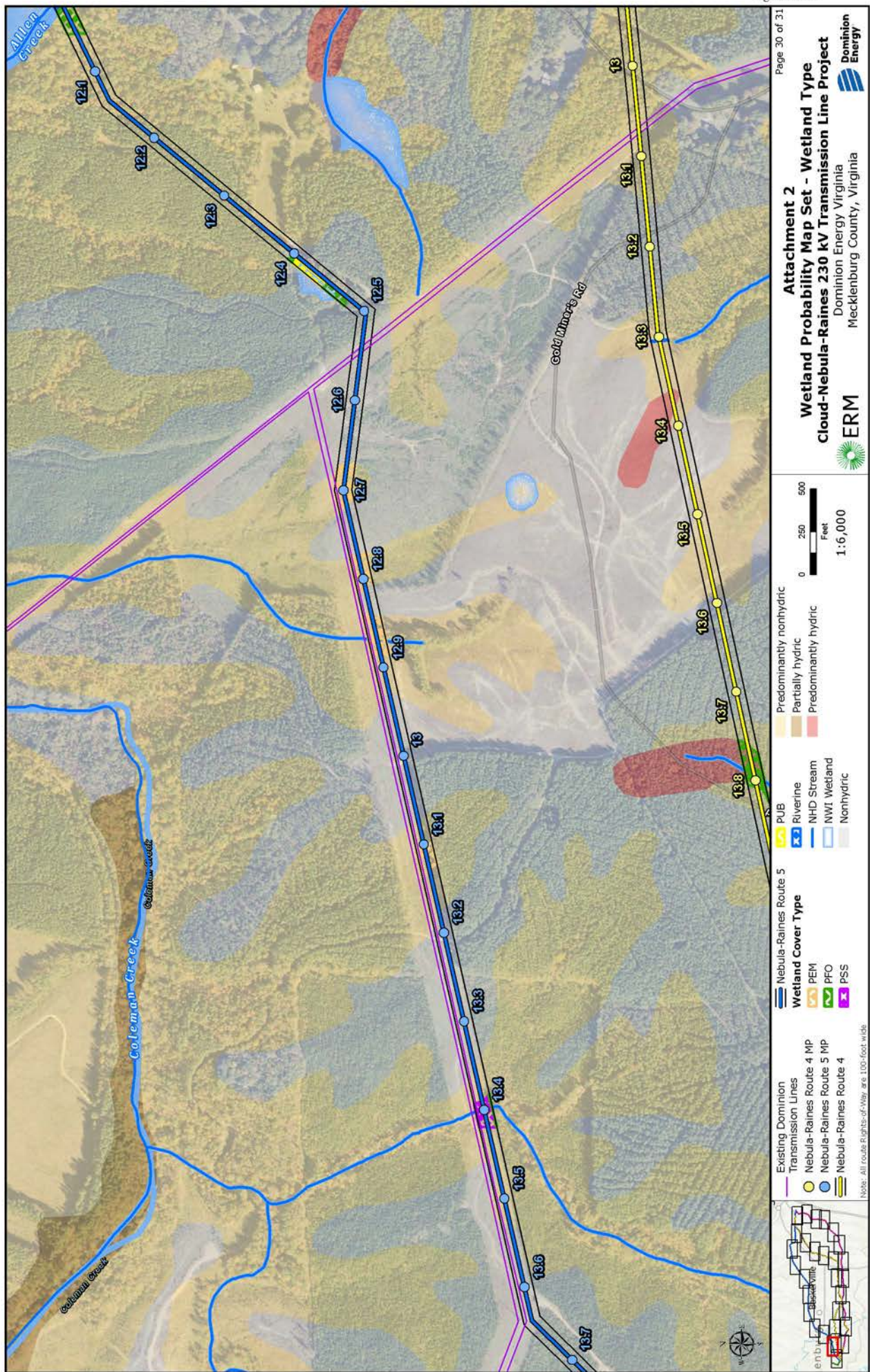




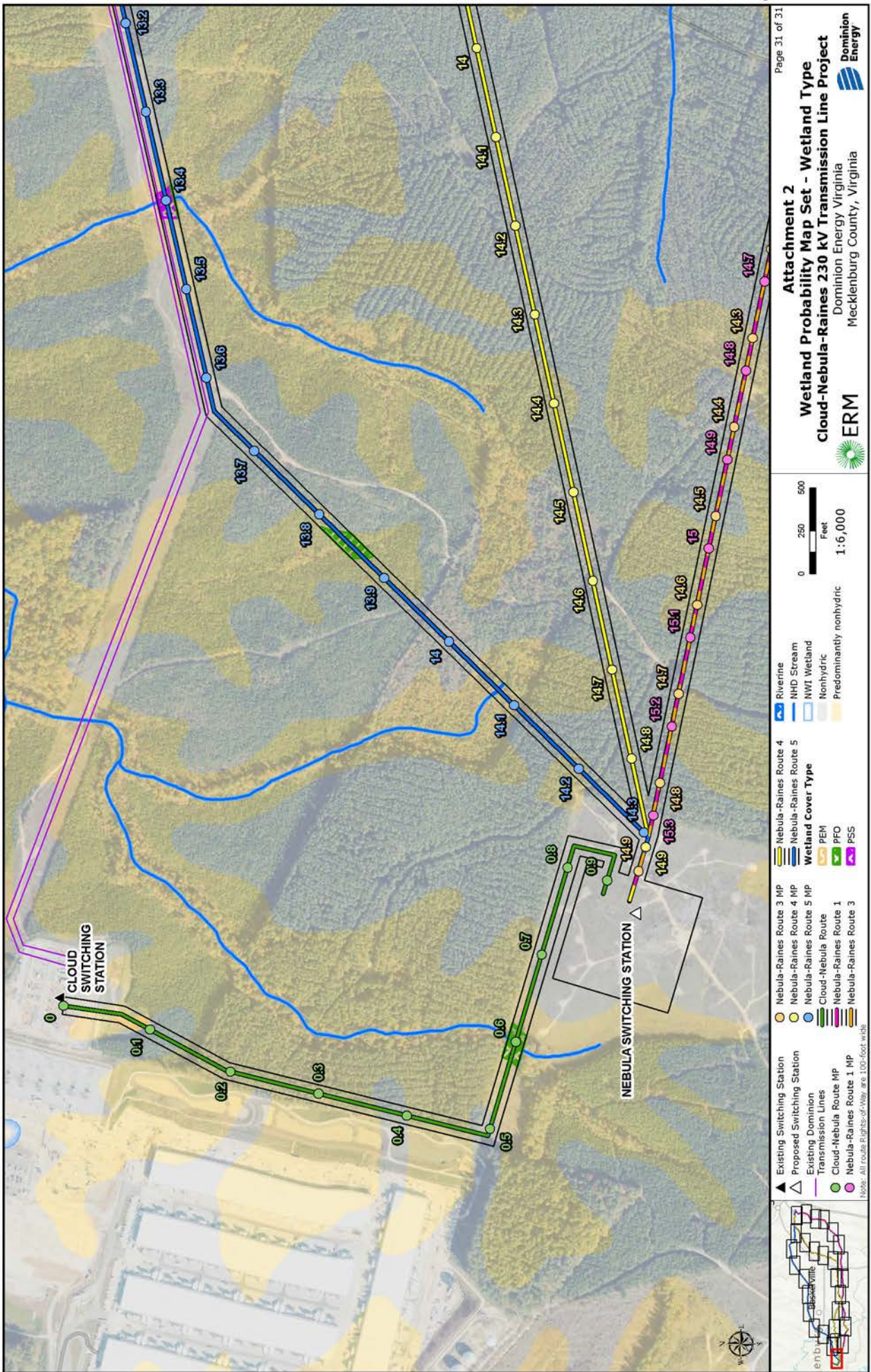




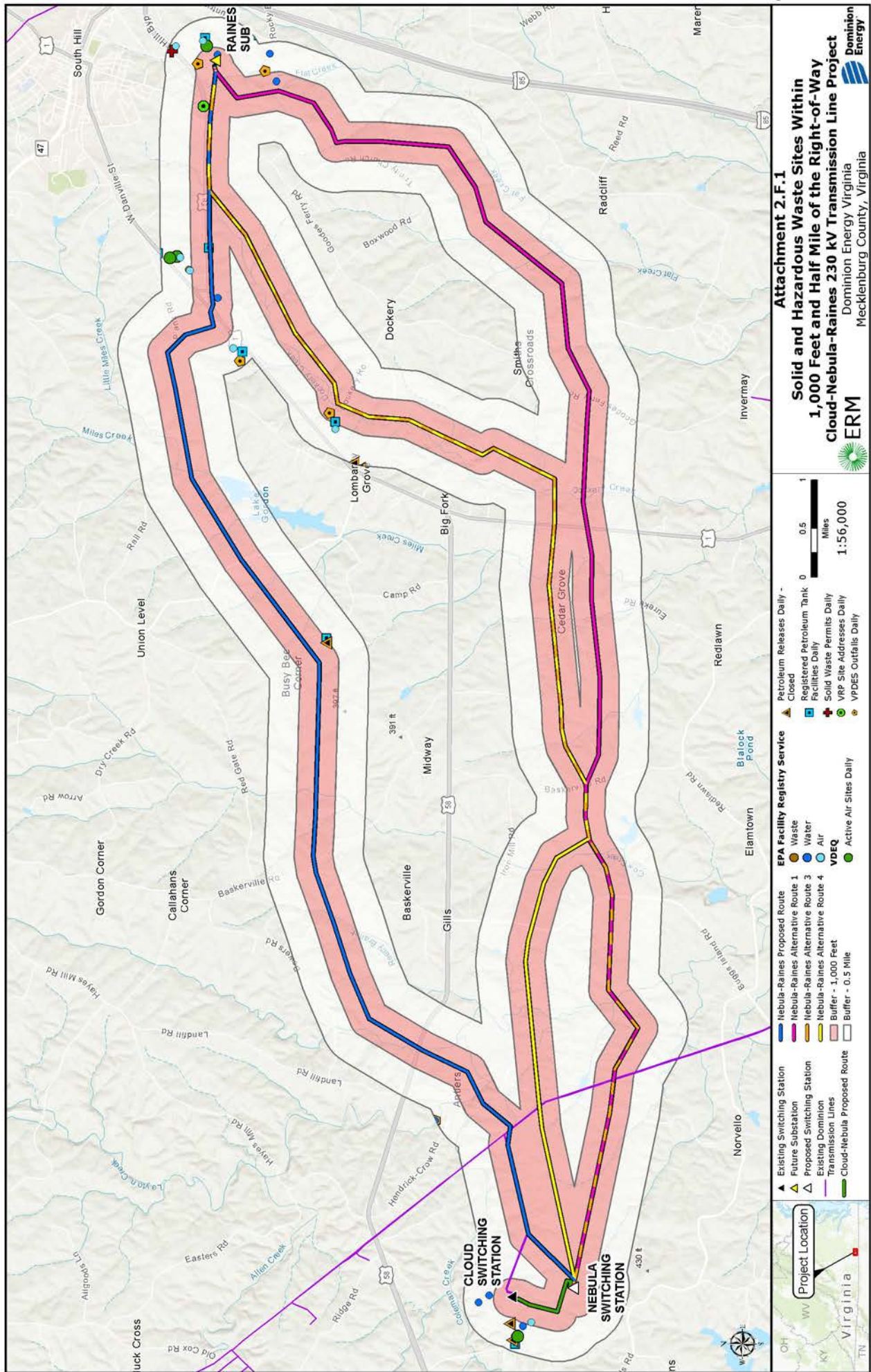
















**COMMONWEALTH of VIRGINIA**  
DEPARTMENT OF CONSERVATION AND RECREATION

September 11, 2024

Briana Cooney  
Environmental Resource Management, Inc.  
222 South 9<sup>th</sup> Street, Suite 2900  
Minneapolis, MN 55402

Re: 0706631, Nebula-Raines

Dear Ms. Cooney:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

**Boydton and La Crosse Quadrangles**

According to the information currently in Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100-foot buffer. The absence of data may indicate that the study area has not been surveyed, rather than confirm that the area lacks natural heritage resources. In addition, the study area does not intersect any of the predictive models identifying potential habitat for natural heritage resources.

**Baskerville, H Kerr Dam, and South Hill Quadrangles**

According to DCR's predicted suitable habitat modeling and review by a DCR biologist, there is a potential for the Carolina Darter (*Etheostoma collis*, G3/S2/NL/LT) and the Whitemouth shiner (*Notropis alborus*, G4/S1/NL/LT) in the study area if suitable habitat exists on site. In addition, according to the information currently in our files, Kettles Creek, Mines Creek, Unnamed tributary of Kettles Creek and Unnamed tributary of Mines Creek have been designated by the VDWR as a "Threatened and Endangered Species Water" for the Whitemouth shiner and the Carolina Darter. Allen Creek has also been designated as a "Threatened and Endangered Species Water" for the Whitemouth shiner.

In Virginia, the Carolina darter is known from lower and middle piedmont streams of the Roanoke River drainage. Additional populations occur in North and South Carolina (NatureServe, 2009). This fish inhabits small creeks and rivulets in wooded and deforested areas, living in open and stick-littered portions of pools and very slow runs, usually on sand, gravel, and detritus substrates. Please note that this species is currently listed as threatened by the Virginia Department of Wildlife Resources (VDWR).

Chemical runoff from agricultural land may be a factor limiting this species. In addition, this sight-feeding fish may be adversely affected by moderate or high levels of turbidity caused by excessive amounts of silt in the waters (Burkhead & Jenkins, 1991).



The Whitemouth shiner is known from the Roanoke River drainage in Virginia and from other Atlantic Slope drainages in North Carolina and South Carolina (NatureServe, 2009). It inhabits warm, clear or somewhat turbid, small to medium sized creeks in the middle and lower Piedmont. This species may be found in shallow, small pools and in deep and shallow portions of long pools, in places having a silt, sand, and bedrock substrate. Please note that this species is currently classified as threatened by the Virginia Department of Wildlife (VDWR).

Impoundment, channelization, siltation, and agricultural runoff are threats to the habitat of the Whitemouth shiner (Burkhead and Jenkins, 1991).

Due to the potential for the Carolina darter and the Whitemouth shiner to occur within the study area, DCR recommends avoidance of impacts to streams. To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of the Carolina darter and the Whitemouth shiner, DCR recommends coordination with Virginia's regulatory authority for the management and protection of these species, the VDWR, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

### **All Quads**

DCR recommends the development and implementation of an invasive species plan to be included as part of the maintenance practices for the right-of-way (ROW). The invasive species plan should include an invasive species inventory for the project area based on the current DCR Invasive Species List (<http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf>) and methods for treating the invasives. DCR also recommends the ROW restoration and maintenance practices planned include appropriate revegetation using native species in a mix of grasses and forbs, robust monitoring and adaptive management plan to provide guidance if initial revegetation efforts are unsuccessful or if invasive species outbreaks occur.

The proposed project will impact multiple Ecological Cores (C2, C3, C4 and C5) as identified in the Virginia Natural Landscape Assessment (<https://www.dcr.virginia.gov/natural-heritage/vaconvisvnl>). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: <http://vanhde.org/content/map>.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

The proposed project will impact one or more cores with very high (C2) to outstanding (C1) ecological integrity. Further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact



analysis upon request. This analysis would estimate impacts to cores and habitat fragments, providing an estimate of the total acreage of direct and indirect impacts of the project. For more information about the analysis and service charges, please contact Joe Weber, DCR Chief of Biodiversity Information and Conservation Tools at [Joseph.Weber@dcr.virginia.gov](mailto:Joseph.Weber@dcr.virginia.gov).

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of \$1000.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24<sup>th</sup> Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed <https://services.dwr.virginia.gov/fwis/> or contact Hannah Schul at [Hannah.Schul@dwr.virginia.gov](mailto:Hannah.Schul@dwr.virginia.gov).

Should you have any questions or concerns, feel free to contact me at 804-625-3979. Thank you for the opportunity to comment on this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicki Gustafson". The signature is fluid and cursive, with the first name "Nicki" being more prominent and the last name "Gustafson" written in a more compact, cursive style.

Nicki Gustafson  
Natural Heritage Project Review Assistant

Cc: Hannah Schul, VDWR

### Literature Cited

Burkhead, N.M. and R.E. Jenkins. 1991. Carolina darter. In *Virginia's Endangered Species: Proceedings of a Symposium*. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, VA.

Burkhead, N.M. and R.E. Jenkins. 1991. Whitemouth shiner. In *Virginia's Endangered Species: Proceedings of a Symposium*. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, VA.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: June 15, 2010).

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: June 16, 2010).





## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Virginia Ecological Services Field Office  
6669 Short Lane  
Gloucester, VA 23061-4410  
Phone: (804) 693-6694



In Reply Refer To:  
Project Code: 2024-0133035  
Project Name: Nebula-Raines

08/20/2024 22:31:11 UTC

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see [Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service \(fws.gov\)](#).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List



## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Virginia Ecological Services Field Office**

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

## PROJECT SUMMARY

Project Code: 2024-0133035

Project Name: Nebula-Raines

Project Type: Transmission Line - New Constr - Above Ground

Project Description: The Project would provide two new single circuit 230 kV transmission lines, measuring up to approximately 13 to 16 miles in length, between a pending Raines Substation near South Hill, and a new substation (proposed as part of the Project) adjacent to the existing Cloud Switching Station east of Boydton in Mecklenburg County, Virginia. Both circuits would be located adjacent to each other in the same corridor, likely on independent structures.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.6850343,-78.24102153445746,14z>



Counties: Mecklenburg County, Virginia



## ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

**MAMMALS**

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

**INSECTS**

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

**CRITICAL HABITATS**

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.



**IPAC USER CONTACT INFORMATION**

Agency: Private Entity  
Name: Madison Adams  
Address: 222 South 9th Street, Suite 2900  
City: Minneapolis  
State: MN  
Zip: 55402  
Email: madisonkadams16@gmail.com  
Phone: 2188397343

**VAFWIS - Department  
of Wildlife Resources**

36.67607 -78.24740

is the Search Point

**Search Point**

- ☒ **Change** to "clicked" map point
- ☐ **Fixed** at 36.67607 -78.24740

**Show Position Rings**

- ☐ Yes ☒ No

4 miles and 1 mile at the Search Point

**Show Search Area**

- ☒ Yes ☐ No

2 Search distance miles buffer

Search Point is at map center

**Base Map Choices**

Color Aerial Photography ▾

**Map Overlay Choices**

Current List: Search

**Map Overlay Legend**

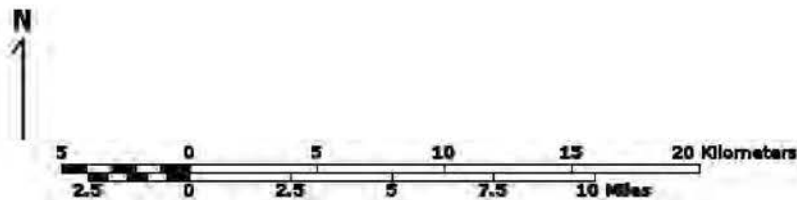
2 mile radius  
Search Area

[back](#) [Refresh Browser Page](#) [Help](#)

Map Click [Pan](#) [Zoom In](#) [Zoom Out](#) Map Scale [Screen Size](#) [Small](#) [Size](#) [Big](#)



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Point of Search 36.67607 -78.24740

Map Location 36.67607 -78.24740

- Select **Coordinate System**: ☐ Degrees, Minutes, Seconds Latitude - Longitude
- ☒ Decimal Degrees Latitude - Longitude
- ☐ Meters UTM NAD83 East North Zone
- ☐ Meters UTM NAD27 East North Zone

Base Map source: Color Aerial Photography 2002 - Virginia Base Mapping Program, Virginia Geographic Information Network

Map projection is UTM Zone 17 NAD 1983 with left 726777 and top 4081671. Pixel size is 50. . Coordinates displayed are decimal Degrees North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 38400 meters east to west by 38400 meters north to south for a total of 1474.5 square kilometers. The map display



represents 126005 feet east to west by 126005 feet north to south for a total of 569.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+-  
are from the United States Department of the Interior, United States Geological Survey.  
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia  
Geographic Information Network.

Shaded topographic maps are from TOPO! ©2006 National Geographic

<http://www.national.geographic.com/topo>

All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2024-09-10 16:21:47 (qa/qc March 21, 2016 12:20 - tn=2408962 dist=3218 I  
)

\$poi=36.7267900 -78.3413700

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**VaFWIS Search Report** Compiled on 9/10/2024, 4:24:39 PM[Help](#)

Known or likely to occur within a **2 mile buffer around polygon; center 36.7267900 -78.3413699**  
in **117 Mecklenburg County, VA**

[View Map of  
Site Location](#)

440 Known or Likely Species ordered by Status Concern for Conservation  
(displaying first 23) (23 species with Status\* or Tier I\*\* or Tier II\*\*)

<a href="#">BOVA Code</a>	<a href="#">Status*</a>	<a href="#">Tier**</a>	<a href="#">Common Name</a>	<a href="#">Scientific Name</a>	<a href="#">Confirmed</a>	<a href="#">Database(s)</a>
050022	FEST	Ia	<a href="#">Bat, northern long-eared</a>	Myotis septentrionalis		BOVA
010214	FESE	IIa	<a href="#">Logperch, Roanoke</a>	Percina rex		BOVA
060173	FTST	Ia	<a href="#">Pigtoe, Atlantic</a>	Fusconaia masoni	<a href="#">Potential</a>	BOVA,Habitat,HU6
050020	SE	Ia	<a href="#">Bat, little brown</a>	Myotis lucifugus		BOVA
050027	FPSE	Ia	<a href="#">Bat, tri- colored</a>	Perimyotis subflavus		BOVA
040293	ST	Ia	<a href="#">Shrike, loggerhead</a>	Lanius ludovicianus	<a href="#">Potential</a>	BOVA,BBA,HU6
040385	ST	Ia	<a href="#">Sparrow, Bachman's</a>	Peucaea aestivalis		BOVA,HU6
040379	ST	Ia	<a href="#">Sparrow, Henslow's</a>	Centronyx henslowii		BOVA
060081	FPST	IIa	<a href="#">Floater, green</a>	Lasmigona subviridis		HU6
010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	<a href="#">Yes</a>	BOVA,TEWaters,Habitat,SppObs,HU6
010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>	BOVA,TEWaters,Habitat,SppObs,HU6
040292	ST		<a href="#">Shrike, migrant loggerhead</a>	Lanius ludovicianus migrans		BOVA
030063	CC	IIIa	<a href="#">Turtle, spotted</a>	Clemmys guttata	<a href="#">Yes</a>	BOVA,SppObs,HU6
010174		Ia	<a href="#">Bass, Roanoke</a>	Ambloplites cavifrons		BOVA,HU6
040052		IIa	<a href="#">Duck, American black</a>	Anas rubripes		BOVA,HU6
040036		IIa	<a href="#">Night-heron, yellow-</a>	Nyctanassa violacea		BOVA



			<a href="#">crowned</a>	violacea		
040181		IIa	<a href="#">Tern, common</a>	Sterna hirundo		BOVA,HU6
040320		IIa	<a href="#">Warbler, cerulean</a>	Setophaga cerulea		BOVA,HU6
040140		IIa	<a href="#">Woodcock, American</a>	Scolopax minor		BOVA,HU6
060071		IIa	<a href="#">Lampmussel, yellow</a>	Lampsilis cariosa		BOVA,HU6
040203		IIb	<a href="#">Cuckoo, black-billed</a>	Coccyzus erythrophthalmus	<a href="#">Potential</a>	BOVA,BBA
040105		IIb	<a href="#">Rail, king</a>	Rallus elegans		BOVA
060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Potential</a>	BOVA,Habitat,HU6

To view **All 440 species** [View 440](#)

\*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 Wildlife 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.

[View Map of All Query Results from All  
Observation Tables](#)

Bat Colonies or Hibernacula: **Not Known**

**Anadromous Fish Use Streams**

N/A

**Impediments to Fish Passage**

N/A

**Colonial Water Bird Survey**

N/A

**Threatened and Endangered Waters** ( 52 Reaches - displaying first 20 )

[View Map of All  
Threatened and Endangered Waters](#)

Page 10 of 51

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
(0341509.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0341530.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0341576.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0343292.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0343410.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0343494.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0344536.)	ST	010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	<a href="#">Yes</a>
(0345486.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0346612.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0346858.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	



<a href="#">(0347177.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347365.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347834.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0348275.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0352334.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0352412.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Allen Creek (0341512.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0341762.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0343400.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0343936.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0344282.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0345337.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0347171.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>

To view All 52 Threatened and Endangered Waters records [View 52](#)

**Managed Trout Streams**

N/A

**Bald Eagle Concentration Areas and Roosts**

N/A

**Bald Eagle Nests** ( 7 records )[View Map of All Query Results  
Bald Eagle Nests](#)

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
<a href="#">ME0002</a>	12	May 6 2008	UNKNOWN	<a href="#">Yes</a>
<a href="#">ME0201</a>	11	May 6 2008	Unknown	<a href="#">Yes</a>
<a href="#">ME0701</a>	4	May 6 2008	UNKNOWN	<a href="#">Yes</a>
<a href="#">ME0801</a>	2	May 13 2008	Unknown	<a href="#">Yes</a>
<a href="#">ME9703</a>	8	Mar 9 2000	HISTORIC	<a href="#">Yes</a>
<a href="#">ME9704</a>	3	Jan 1 2005	HISTORIC	<a href="#">Yes</a>
<a href="#">ME9901</a>	4	Mar 9 2000	HISTORIC	<a href="#">Yes</a>

Displayed 7 Bald Eagle Nests

**Species Observations** ( 167 records - displaying first 20 ,  
15 Observations with Threatened or  
Endangered species )[View Map of All Query Results  
Species Observations](#)

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE *	Highest Tier **	
<a href="#">3168</a>	SppObs	Mar 2 1991	Robert E. Jenkins, Kaitlin M. Nahil	9	ST	II	<a href="#">Yes</a>
<a href="#">4786</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	3	ST	II	<a href="#">Yes</a>
<a href="#">4791</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">4790</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	1	ST	II	<a href="#">Yes</a>
<a href="#">4788</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">4787</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power,	1	ST	II	<a href="#">Yes</a>



			Bill Kittrel, VDGIF				
<a href="#">4789</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">4785</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	1	ST	II	<a href="#">Yes</a>
<a href="#">337923</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	10	ST	II	<a href="#">Yes</a>
<a href="#">337900</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	9	ST	II	<a href="#">Yes</a>
<a href="#">337941</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	9	ST	II	<a href="#">Yes</a>
<a href="#">337922</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	5	ST	II	<a href="#">Yes</a>
<a href="#">337902</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	5	ST	II	<a href="#">Yes</a>
<a href="#">332795</a>	SppObs	Jan 1 1962	VPI-B-VA. POLY. INST.	5	ST	II	<a href="#">Yes</a>
<a href="#">363254</a>	SppObs	Jan 1 1900		1	CC	III	<a href="#">Yes</a>
<a href="#">627146</a>	SppObs	Mar 29 2017	Chad Coley	1		III	<a href="#">Yes</a>
<a href="#">635229</a>	SppObs	Mar 29 2017	Chad Coley	1		III	<a href="#">Yes</a>
<a href="#">623501</a>	SppObs	Jun 8 2013	Paul; Sattler  Jason; Gibson  Susan; Watson  Dave; Perry  Mike ; Clifford	14		III	<a href="#">Yes</a>
<a href="#">100276</a>	SppObs	Jun 18 2007	Harding, Sergio	13		III	<a href="#">Yes</a>
<a href="#">100271</a>	SppObs	Jun 18 2007	Harding, Sergio	14		III	<a href="#">Yes</a>

Displayed 20 Species Observations

Selected 167 Observations [View all 167 Species Observations](#)

**Habitat Predicted for Aquatic WAP Tier I & II Species** ( 19 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 <sup>*</sup>	BOVA Code, Status <sup>*</sup> , Tier <sup>**</sup> , Common & Scientific Name					
Allen Creek (30101061)	ST	010070	ST	Iic	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
Allen Creek (30101062)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>

Cotton Creek (30101061)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
Cotton Creek (30101062)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
Flat Creek (30101061)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
Kettles Creek (30101061)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Kettles Creek (30101061)	ST	010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	<a href="#">Yes</a>
Kettles Creek (30101062)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Kettles Creek (30101062)	ST	010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	<a href="#">Yes</a>
Miles Creek (30101061)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
Miles Creek (30101062)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
Mines Creek (30101061)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Parham Creek (30101061)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
Roanoke River (30101062)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
tributary (03010204)	FTST	060173	FTST	Ia	<a href="#">Pigtoe, Atlantic</a>	Fusconaia masoni	<a href="#">Yes</a>
tributary (30101061)		060175		IIb	<a href="#">Slabshell, Roanoke</a>	Elliptio roanokensis	<a href="#">Yes</a>
Unnamed trib. of Kettles Creek (30101061)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Kettles Creek (30101062)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>



		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Mines Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	

### 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 **	
44026	<a href="#">Baskerville, SE</a>	68		III	<a href="#">Yes</a>
44025	<a href="#">Baskerville, SW</a>	62		III	<a href="#">Yes</a>
43024	<a href="#">Boydton, CE</a>	1		III	<a href="#">Yes</a>
43026	<a href="#">Boydton, SE</a>	65		III	<a href="#">Yes</a>
45012	<a href="#">Bracey, NE</a>	69		III	<a href="#">Yes</a>
45011	<a href="#">Bracey, NW</a>	47	ST	I	<a href="#">Yes</a>
44012	<a href="#">John H. Kerr Dam, NE</a>	67		III	<a href="#">Yes</a>
44011	<a href="#">John H. Kerr Dam, NW</a>	32		III	<a href="#">Yes</a>
46021	<a href="#">La Crosse, NW</a>	59	ST	I	<a href="#">Yes</a>
45036	<a href="#">North View, SE</a>	68		III	<a href="#">Yes</a>
45026	<a href="#">South Hill, SE</a>	57		III	<a href="#">Yes</a>
44036	<a href="#">Wightman, SE</a>	66		III	<a href="#">Yes</a>

### Public Holdings: (2 names)

Name	Agency	Level
Dick Cross Wildlife Management Area	Va DGIF	
Kerr Reservoir/Buggs Island Lake	Army Corps of Engineers	Federal

### 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
117	<a href="#">Mecklenburg</a>	390	FESE	I

### USGS 7.5' Quadrangles:

Tungsten  
Boydton

John H. Kerr Dam  
Baskerville  
Wightman  
Bracey  
South Hill  
North View  
South Hill SE  
La Crosse

## 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
CM09	<a href="#">Meherrin River-Crooked Creek</a>	64	FTST	I
CM11	<a href="#">Meherrin River-Stony Creek</a>	66	FTST	I
CM12	<a href="#">Meherrin River-Taylors Creek</a>	69	FTST	I
CM13	<a href="#">Genito Creek</a>	63	FTST	I
RL07	<a href="#">Butcher Creek/John H Kerr Reservoir</a>	59	ST	I
RL09	<a href="#">Roanoke River/John H Kerr Reservoir-Eastland Creek</a>	56	ST	I
RL10	<a href="#">Allen Creek-Layton Creek</a>	58	ST	I
RL11	<a href="#">Allen Creek-Cox Creek</a>	62	ST	I
RL12	<a href="#">Lake Gaston-Cotton Creek</a>	57	ST	I
RL13	<a href="#">Miles Creek-Dockery Creek</a>	58	ST	I
RL14	<a href="#">Lake Gaston-Flat Creek</a>	58	ST	I
RL18	<a href="#">Roanoke River/Lake Gaston-Great Creek</a>	58	ST	I

Compiled on 9/10/2024, 4:24:39 PM I2408962.0 report=all searchType= P dist= 3218 poi= 36.7267900 -78.3413699 siteDD= 36.7267897 -78.3413753;36.7268047 -78.3379632;36.7268195 -78.3345512;36.7268342 -78.3311392;36.7268489 -78.3277271;36.7268634 -78.3243151;36.7268778 -78.3209031;36.7268922 -78.3174910;36.7269064 -78.3140790;36.7269205 -78.3106669;36.7269346 -78.3072549;36.7269485 -78.3038429;36.7269624 -78.3004308;36.7269761 -78.2970188;36.7269897 -78.2936067;36.7270033 -78.2901947;36.7270167 -78.2867826;36.7270301 -78.2833706;36.7270433 -78.2799585;36.7270565 -78.2765464;36.7270695 -78.2731344;36.7270824 -78.2697223;36.7270953 -78.2663103;36.7271080 -78.2628982;36.7271207 -78.2594862;36.7271332 -78.2560741;36.7271457 -78.2526620;36.7271580 -78.2492500;36.7271703 -78.2458379;36.7271824 -78.2424258;36.7271945 -78.2390138;36.7272064 -78.2356017;36.7272183 -78.2321896;36.7272300 -78.2287776;36.7272417 -78.2253655;36.7272533 -78.2219534;36.7272647 -78.2185413;36.7272761 -78.2151293;36.7272873 -78.2117172;36.7272985 -78.2083051;36.7273095 -78.2048930;36.7273205 -78.2014810;36.7273314 -78.1980689;36.7273421 -78.1946568;36.7273528 -78.1912447;36.7273633 -78.1878326;36.7273738 -78.1844206;36.7273842 -78.1810085;36.7273944 -78.1775964;36.7274046 -78.1741843;36.7274147 -78.1707722;36.7274246 -78.1673601;36.7274345 -78.1639480;36.7274443 -78.1605359;36.7274539 -78.1571239;36.7274635 -78.1537118;36.7274730 -78.1502997;36.7274777 -78.1485996;36.7259941 -78.1457281;36.7245105 -78.1428567;36.7230268 -78.1399854;36.7215430 -78.1371142;36.7200591 -78.1342432;36.7185752 -78.1313722;36.7170912 -78.1285014;36.7156072 -78.1256306;36.7141231 -78.1227600;36.7126389 -78.1198895;36.7111546 -78.1170191;36.7096703 -78.1141488;36.7084886 -78.1118641;36.7057545 -78.1121888;36.7030204 -78.1125135;36.7002862 -78.1128381;36.6975521 -78.1131628;36.6948179 -78.1134874;36.6920838 -78.1138120;36.6893497 -78.1141365;36.6866155 -78.1144611;36.6838814 -78.1147856;36.6811472 -78.1151101;36.6784131 -78.1154345;36.6756789 -78.1157590;36.6729448 -78.1160834;36.6702107 -78.1164078;36.6674765 -78.1167322;36.6647424 -78.1170566;36.6620082 -78.1173809;36.6592741 -78.1177052;36.6565399 -78.1180295;36.6538058 -78.1183537;36.6510716 -78.1186780;36.6483375 -78.1190022;36.6456033 -78.1193264;36.6428692 -78.1196505;36.6401350 -78.1199747;36.6374009 -78.1202988;36.6346667 -78.1206229;36.6319326 -78.1209470;36.6291984 -78.1212710;36.6264642 -78.1215951;36.6260109 -78.1216488;36.6259985 -78.1250563;36.6259860 -78.1284638;36.6259734 -78.1318714;36.6259607 -78.1352789;36.6259479 -78.1386864;36.6259350 -78.1420939;36.6259220 -78.1455015;36.6259089 -78.1489090;36.6258957 -78.1523165;36.6258824 -78.1557240;36.6258690 -78.1591315;36.6258555 -78.1625390;36.6258419 -78.1659466;36.6258282 -78.1693541;36.6258144 -78.1727616;36.6258005 -78.1761691;36.6257866 -78.1795766;36.6257725 -78.1829841;36.6257583 -78.1863916;36.6257440 -78.1897991;36.6257296 -78.1932066;36.6257151 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-78.3431354;36.6249798 -78.3465428;36.6249608 -78.3499503;36.6249418 -78.3533577;36.6249226 -78.3567651;36.6249087 -78.3592281;36.6248818 -78.3622307;36.6247223 -78.3680691;36.6246729 -78.3719153;36.6246174 -78.3760716;36.6245629 -78.3806409;36.6245073 -78.3853117;36.6244528 -78.3899109;36.6243876 -78.3936837;36.6243266 -78.3974503;36.6242656 -78.4012273 -78.3652894;36.6241623 -78.3637486;36.6240776 -78.3622078;36.6240129 -78.3606669;36.6239578 -78.3591259;36.7010285 -78.3575848;36.7034787 -78.3560436;36.7059289 -78.3545023;36.7083792 -78.3529609;36.7108293 -78.3514193;36.7132795 -78.3498777;36.7157297 -78.3483360;36.7181798 -78.3467942;36.7206299 -78.3452523;36.7230800 -78.3437103;36.7255301 -78.3421682;36.7273634 -78.3407569;36.7298180 -78.3382289;36.7322726 -78.3363814;36.7347272 -78.3345440;36.7371817 -78.3366873;36.7396363 -78.3384026;36.7420908 -78.3399321;36.7444543 -78.3371461;36.7466998 -78.3372991;36.7494542 -78.3452101;36.7519087 -78.3465083;36.7543631 -78.3477580;36.7568175 -78.3491108;36.7592719 -78.3506409;36.7617263 -78.3521711;

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# CCB Mapping Portal



**Layers:** VA Eagle Nest Locator

**Map Center [longitude, latitude]:** [-78.24050903320312, 36.626411878849005]

**Map Link:**

<https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&zoom=12&lat=36.626411878849005&lng=-78.24050903320312&base=Street+Map+%28OSM%2FCarto%29>

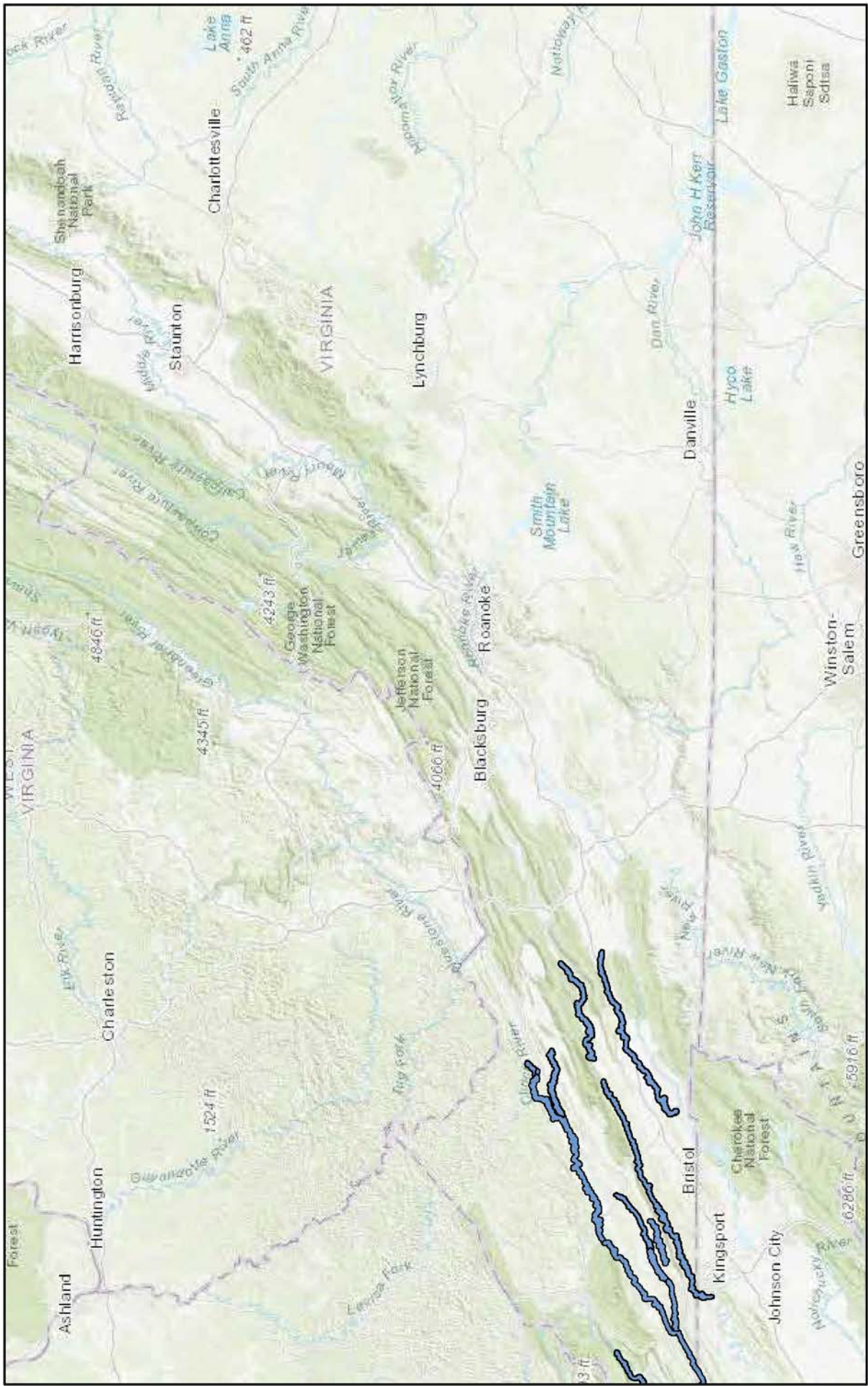
**Report Generated On:** 11/07/2024

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the [Data Use Agreement](#) to ensure compliance with our data use policies. For additional data access questions, view our [Data Distribution Policy](#), or contact our Data Manager, Marie Pitts, at [mlpitts@wm.edu](mailto:mlpitts@wm.edu) or 757-221-7503.

Report generated by [The Center for Conservation Biology Mapping Portal](#).

To learn more about CCB visit [ccbbirds.org](https://ccbbirds.org) or contact us at [info@ccbbirds.org](mailto:info@ccbbirds.org)

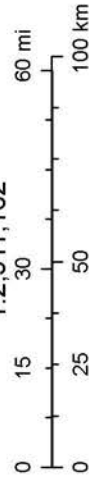
# Critical Habitat - Nebula-Raines



October 7, 2024

Virginia Critical Habitat (published)

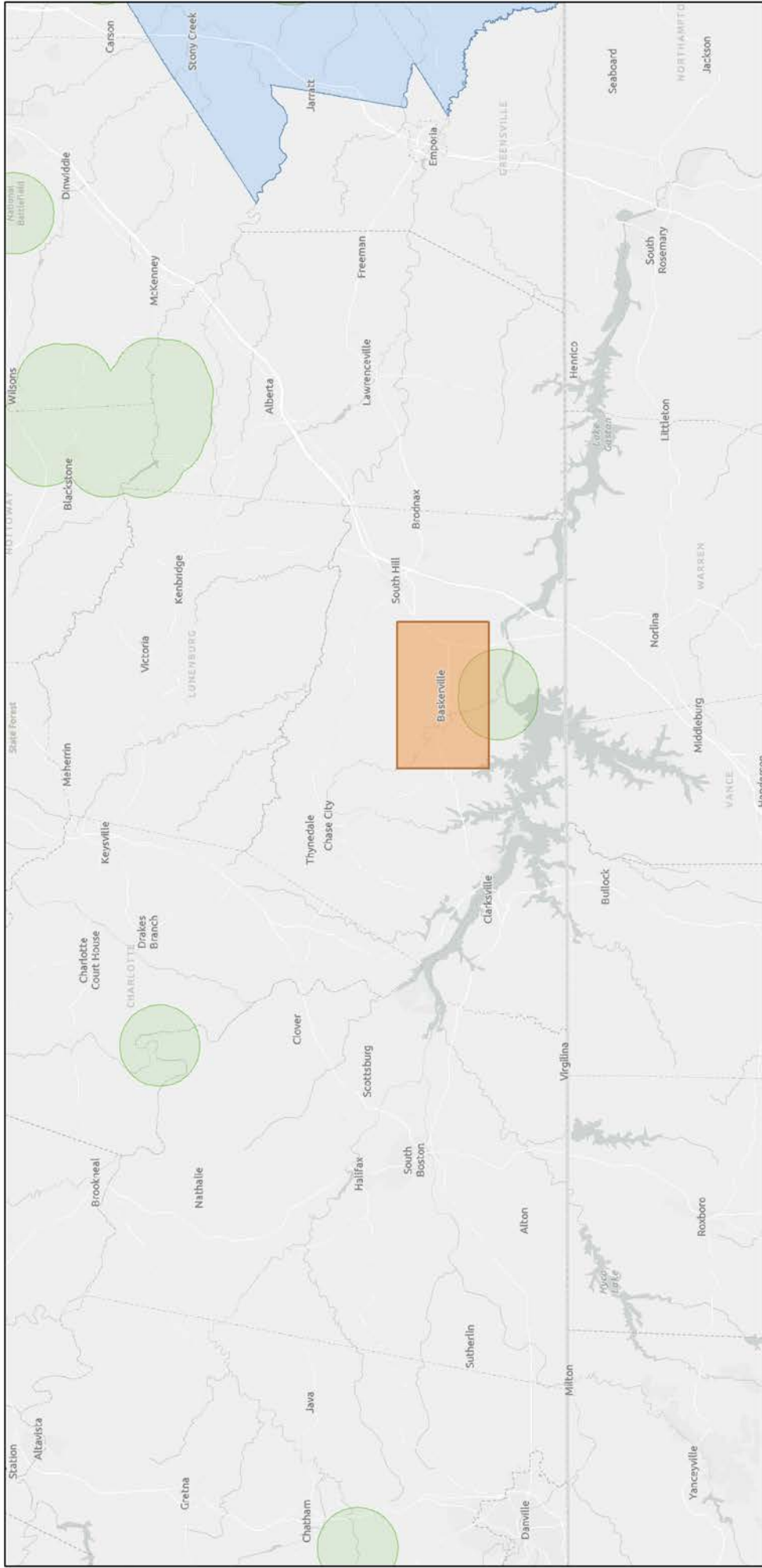
1:2,311,162



Esri, HERE, Garmin, FAO, USGS, EPA, NPS



# NLEB Locations and Roost Trees - Nebula-Raines



10/7/2024, 5:28:41 PM

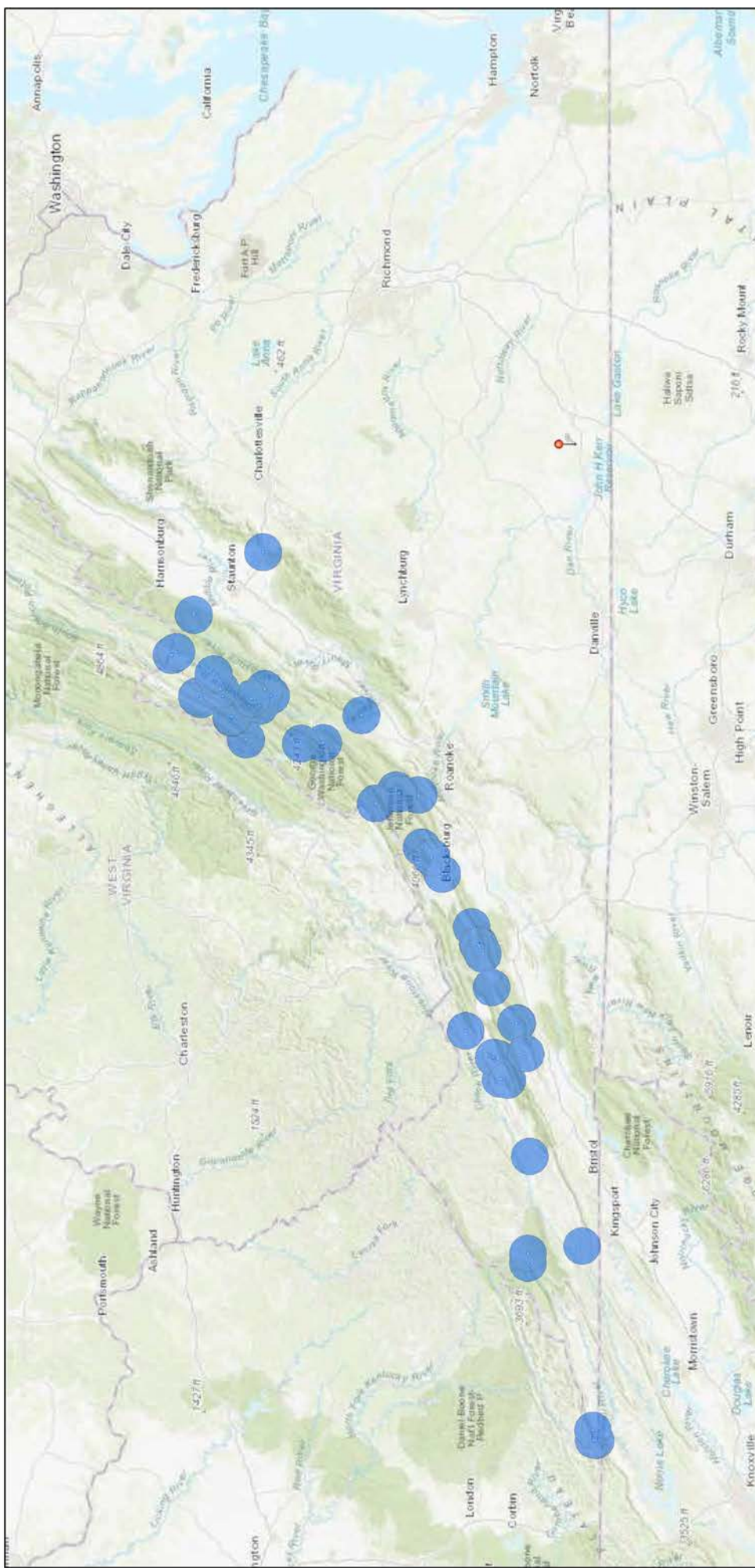
- NLEB Capture 3 Mile Buffer
- NLEB Year-Round Presence

1:577,791

0 5 10 20 mi  
0 5 10 20 km

Southside PDC, VGIN, Esri, TomTom, Garmin, SafeGraph, FAO, MET/INASA, USGS, EPA, NPS, USFWS

# MYLU-PESU Locations and Roost Trees - Nebula-Raines



10/7/2024, 5:22:32 PM

- Tri-colored and Little Brown Hibernaculum Half Mile Buffer
- Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

1:2,311,162

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

Dept. Game and Inland Fisheries  
Esri, HERE, Garmin, FAO, USGS, EPA, NPS



**Tier Reaches Group  
tributary (03010204)**36,43,36.4 -78,20,28.9  
is the Search Point

Display	Item Location is
at center	not at map center

**Show Position Rings**☒ Yes ☐ No

4 miles and 1 mile at the Search Point



**Show Search Area**☒ Yes ☐ No2 Search distance miles  
buffer

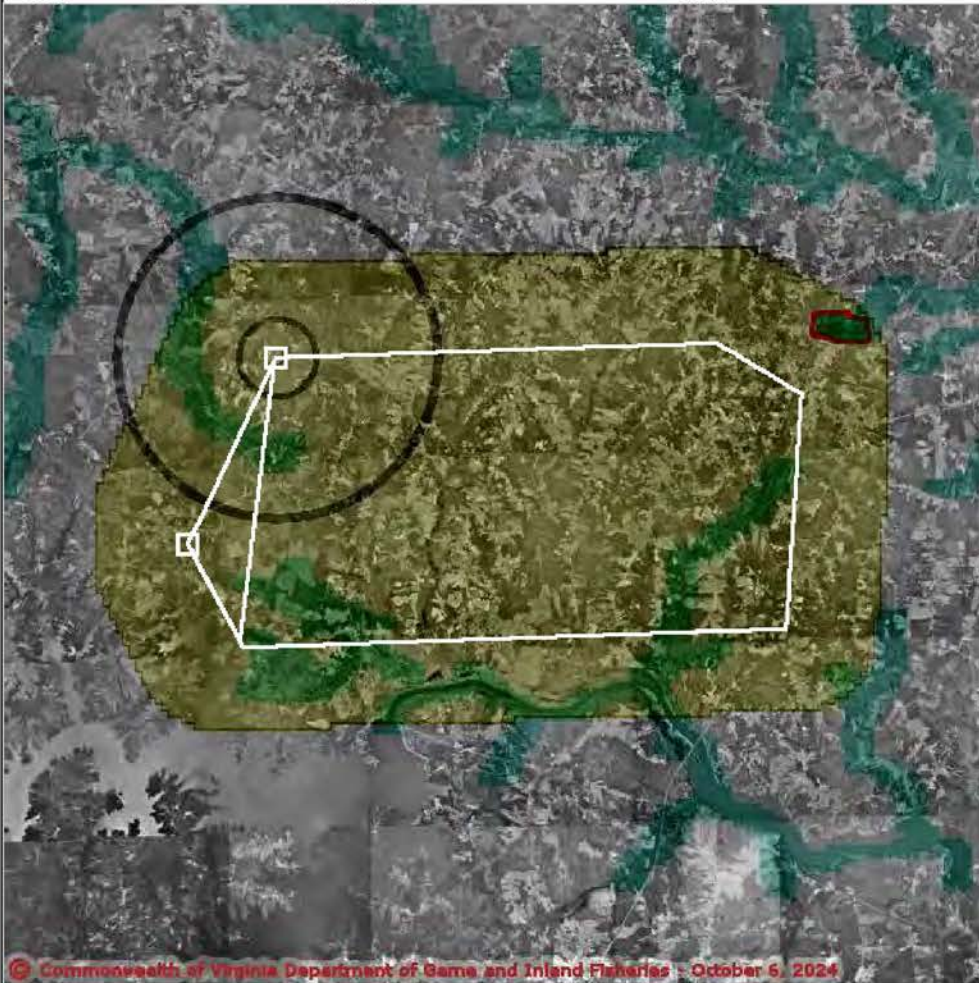
Display	Search Point is not
at center	at map center

**Base Map Choices**

BW Aerial Photography ▾

**Map Overlay Choices**Current List: Position, Search,  
Observation**Map Overlay Legend**

-  Position Rings  
4 miles and 1 mile at the  
Search Point
-  2 mile radius  
Search Area
-  Data  
Observation Site

[back](#)Map  
Click[Pan](#) [Zoom](#) [Map](#)Map  
Scale[Refresh Browser Page](#)[Zoom](#)Screen  
Size[Small](#)[Size](#)[Big](#)[Help](#)

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5 0 5 10 15 20 Kilometers  
2.5 0 2.5 5 7.5 10 Miles

Point of Search 36,43,36.4 -78,20,28.9

Map Location 36,40,33.8 -78,14,50.6

Select **Coordinate System**: ☒ Degrees, Minutes, Seconds Latitude - Longitude☐ Decimal Degrees Latitude - Longitude☐ Meters UTM NAD83 East North Zone☐ Meters UTM NAD27 East North ZoneBase Map source: Black & White USGS Aerial Photography (see [Microsoft terraserver-usa.com](https://microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 17 NAD 1983 with left 726777 and top 4081671. Pixel size is 50. .  
Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed  
as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 38400 meters  
east to west by 38400 meters north to south for a total of 1474.5 square kilometers. The map

display represents 126005 feet east to west by 126005 feet north to south for a total of 569.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

Shaded topographic maps are from TOPO! ©2006 National Geographic  
<http://www.national.geographic.com/topo>

All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2024-10-06 23:07:58 (qa/qc March 21, 2016 12:20 - tn=2700532.1 dist=3218 I)  
\$poi=36.7267900 -78.3413699\$query=select Convert(varchar(10),floor((minx+maxx)/2))  
+ '' + Convert(varchar(10),floor((miny+maxy)/2)) from  
vafwis\_tables.dbo.cvTierReaches where SEG\_ID in ('0301020412594')

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# Virginia Department of Wildlife Resources

10/6/2024 11:07:32 PM

## Fish and Wildlife Information Service

**VaFWIS Search Report** Compiled on 10/6/2024, 11:07:32 PM

[Help](#)

Observations reported or potential habitat occurs within a **2 mile buffer around polygon;**  
**center 36.7267900 -78.3413699**  
 in **117 Mecklenburg County, VA**  
 where (060173) [Pigtoe, Atlantic](#) observed.

[View Map of  
Site Location](#)

### Habitat Predicted for Aquatic WAP Tier I & II Species where Pigtoe, Atlantic (060173) observed

( 1 Reach )

[View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species](#)

Stream Name	Tier Species						View Map
	Highest TE <sup>*</sup>	BOVA Code, Status <sup>*</sup> , Tier <sup>**</sup> , Common & Scientific Name					
tributary (03010204)	FTST	060173	FTST	Ia	<a href="#">Pigtoe, Atlantic</a>	Fusconaia masoni	<a href="#">Yes</a>

\*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 Wildlife 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.

### Habitat Predicted for Terrestrial WAP Tier I & II Species where Pigtoe, Atlantic (060173) observed

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
CM09	<a href="#">Meherrin River-Crooked Creek</a>	64	FTST	I

CM11	<a href="#">Meherrin River-Stony Creek</a>	66	FTST	I
CM12	<a href="#">Meherrin River-Taylors Creek</a>	69	FTST	I
CM13	<a href="#">Genito Creek</a>	63	FTST	I

Compiled on 10/6/2024, 11:07:32 PM I2700532.1 report=BOVA searchType= P dist= 3218 poi= 36.7267900 -78.3413699

**audit no. 2700532 10/6/2024 11:07:32 PM Virginia Fish and Wildlife Information Service**  
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# Virginia Department of Wildlife Resources

10/6/2024 11:41:54 PM

## Fish and Wildlife Information Service

**VaFWIS Search Report** Compiled on 10/6/2024, 11:41:54 PM

[Help](#)

Known or likely to occur within a **2 mile buffer around polygon; center 36.7267900 -78.3413699**  
 in **117 Mecklenburg County, VA**  
 where (010353) [Darter, Carolina](#) observed.

[View Map of Site Location](#)

### Threatened and Endangered Waters where Darter, Carolina (010353) observed

( 39 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					
(0341509.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0341530.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0341576.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0343292.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0343410.)	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	

<a href="#">(0343494.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0344536.)</a>	ST	010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	<a href="#">Yes</a>
<a href="#">(0345486.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0346612.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0346858.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347177.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347365.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347834.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0348275.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0352334.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0352412.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>



		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Kettles Creek (0339691.)</a>	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Kettles Creek (0341307.)</a>	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Kettles Creek (0341621.)</a>	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Kettles Creek (0341949.)</a>	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Kettles Creek (0343444.)</a>	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Kettles Creek (0343887.)</a>	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIc	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">Kettles Creek (0343941.)</a>	ST	010070	ST	IIc	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>

To view **All 39 Threatened and Endangered Waters records** [View 39](#)

\*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

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**Species Observations where Darter, Carolina (010353) observed** ( 12 records , 12 Observations with Threatened or Endangered species )

[View Map of All Query Results](#)[Species Observations where Darter, Carolina \(010353\) observed](#)

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE *	Highest Tier **	
<a href="#">3168</a>	SppObs	Mar 2 1991	Robert E. Jenkins, Kaitlin M. Nahil	9	ST	II	<a href="#">Yes</a>
<a href="#">4786</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	3	ST	II	<a href="#">Yes</a>
<a href="#">4788</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">4789</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">4790</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	1	ST	II	<a href="#">Yes</a>
<a href="#">4791</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">337900</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	9	ST	II	<a href="#">Yes</a>
<a href="#">337902</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	5	ST	II	<a href="#">Yes</a>
<a href="#">337922</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	5	ST	II	<a href="#">Yes</a>
<a href="#">337923</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	10	ST	II	<a href="#">Yes</a>
<a href="#">337941</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	9	ST	II	<a href="#">Yes</a>
<a href="#">332795</a>	SppObs	Jan 1 1962	VPI-B-VA. POLY. INST.	5	ST	II	<a href="#">Yes</a>

Displayed 12 Species Observations where Darter, Carolina (010353) observed

### Habitat Predicted for Aquatic WAP Tier I & II Species where Darter, Carolina (010353) observed

( 8 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					
Kettles Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Kettles Creek (30101061)	ST	010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	<a href="#">Yes</a>
Kettles Creek (30101062)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Kettles Creek (30101062)	ST	010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	<a href="#">Yes</a>
Mines Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Kettles Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Kettles Creek (30101062)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Mines Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	

**Habitat Predicted for Terrestrial WAP Tier I & II Species where Darter, Carolina (010353) observed**

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
RL07	<a href="#">Butcher Creek/John H Kerr Reservoir</a>	59	ST	I
RL10	<a href="#">Allen Creek-Layton Creek</a>	58	ST	I
RL11	<a href="#">Allen Creek-Cox Creek</a>	62	ST	I
RL13	<a href="#">Miles Creek-Dockery Creek</a>	58	ST	I
RL14	<a href="#">Lake Gaston-Flat Creek</a>	58	ST	I
RL18	<a href="#">Roanoke River/Lake Gaston-Great Creek</a>	58	ST	I

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**Threatened and  
Endangered Waters  
where Darter, Carolina  
(010353) observed**36,43,36.4 -78,20,28.9  
is the Search Point**Show Position Rings**☒ Yes ☐ No4 miles and 1 mile at the Search  
Point**Show Search Area**☒ Yes ☐ No2 Search distance miles  
buffer

Display	Search Point is not at center
---------	----------------------------------

**Base Map** [Choices](#)

BW Aerial Photography ▾

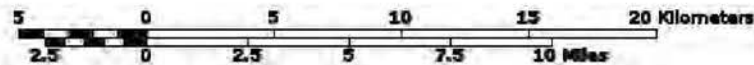
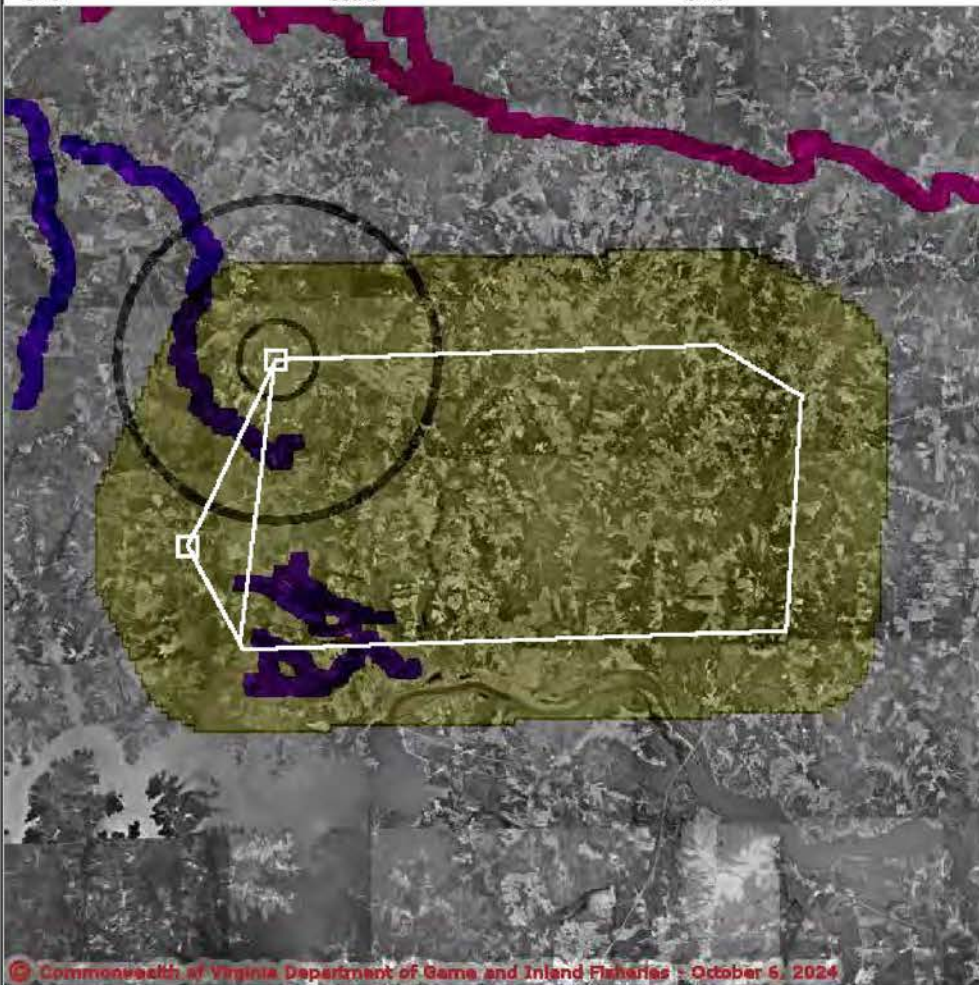
**Map Overlay** [Choices](#)Current List: Position, Search,  
TEWaters**Map Overlay Legend****T & E Waters**

Federal

State

Position Rings  
4 miles and 1  
mile at the  
Search Point2 mile radius  
Search Area

back Map Click **Pan** **Zoom** **Map Scale** **In** **Zoom** **Screen Size** **Small** **Size** **Big** [Help](#) [Refresh Browser Page](#)



Point of Search 36,43,36.4 -78,20,28.9

Map Location 36,40,33.8 -78,14,50.6

Select **Coordinate System**: ☒ Degrees, Minutes, Seconds Latitude - Longitude☐ Decimal Degrees Latitude - Longitude☐ Meters UTM NAD83 East North Zone☐ Meters UTM NAD27 East North ZoneBase Map source: Black & White USGS Aerial Photography (see [Microsoft terraserver-usa.com](https://microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 17 NAD 1983 with left 726777 and top 4081671. Pixel size is 50. .  
Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed  
as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 38400 meters  
east to west by 38400 meters north to south for a total of 1474.5 square kilometers. The map

display represents 126005 feet east to west by 126005 feet north to south for a total of 569.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography acquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

Shaded topographic maps are from TOPO! ©2006 National Geographic  
<http://www.national.geographic.com/topo>

All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2024-10-06 23:42:54 (qa/qc March 21, 2016 12:20 - tn=2700537.1 dist=3218 I)  
\$poi=36.7267900 -78.3413699

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**Virginia Breeding Bird  
Atlas Blocks**

36,43,36.4 -78,20,28.9  
is the Search Point

**Show Position Rings**

☒ Yes ☐ No

4 miles and 1 mile at the Search  
Point

**Show Search Area**

☒ Yes ☐ No

2 Search distance miles  
buffer

Display	Search Point is not at center
---------	----------------------------------

**Base Map [Choices](#)**

BW Aerial Photography ▼

**Map Overlay [Choices](#)**

Current List: Position, Search,  
BBA

**Map Overlay Legend**

-  Position Rings  
4 miles and 1  
mile at the  
Search Point
-  2 mile radius  
Search Area
-  Data  
Observation Site

[back](#)  
Map  
Click

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Map  
Scale

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[Zoom](#)

Screen  
Size

[Small](#)

[Size](#)

[Big](#)

[Help](#)



5 0 5 10 15 20 Kilometers  
2.5 0 2.5 5 7.5 10 Miles

Point of Search 36,43,36.4 -78,20,28.9

Map Location 36,40,33.8 -78,14,50.6

Select **Coordinate System**: ☒ Degrees, Minutes, Seconds Latitude - Longitude

☐ Decimal Degrees Latitude - Longitude

☐ Meters UTM NAD83 East North Zone

☐ Meters UTM NAD27 East North Zone

Base Map source: Black & White USGS Aerial Photography (see [Microsoft terraserver-usa.com](https://microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 17 NAD 1983 with left 726777 and top 4081671. Pixel size is 50. . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 38400 meters east to west by 38400 meters north to south for a total of 1474.5 square kilometers. The map

display represents 126005 feet east to west by 126005 feet north to south for a total of 569.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography acquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

Shaded topographic maps are from TOPO! ©2006 National Geographic  
<http://www.national.geographic.com/topo>

All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2024-10-06 23:37:01 (qa/qc March 21, 2016 12:20 - tn=2700537.1 dist=3218 I)  
\$poi=36.7267900 -78.3413699

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# Virginia Department of Wildlife Resources

10/6/2024 11:36:37 PM

## Fish and Wildlife Information Service

**VaFWIS Search Report** Compiled on 10/6/2024, 11:36:37 PM

[Help](#)

Observations reported or potential habitat occurs within a **2 mile buffer around polygon;**  
**center 36.7267900 -78.3413699**  
 in **117 Mecklenburg County, VA**  
 where (040293) [Shrike, loggerhead](#) observed.

[View Map of  
Site Location](#)

### Virginia Breeding Bird Atlas Blocks where Shrike, loggerhead (040293) observed

( 2 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 **	
45011	<a href="#">Bracey, NW</a>	47	ST	I	<a href="#">Yes</a>
46021	<a href="#">La Crosse, NW</a>	59	ST	I	<a href="#">Yes</a>

\*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 Wildlife 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.

### 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
RL07	<a href="#">Butcher Creek/John H Kerr Reservoir</a>	59	ST	I

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# Virginia Department of Wildlife Resources

10/6/2024 11:40:23 PM

## Fish and Wildlife Information Service

**VaFWIS Search Report** Compiled on 10/6/2024, 11:40:23 PM

[Help](#)

Known or likely to occur within a **2 mile buffer around polygon; center 36.7267900 -78.3413699**  
 in **117 Mecklenburg County, VA**  
 where (010070) **Shiner, whitemouth** observed.

[View Map of Site Location](#)

### Threatened and Endangered Waters where Shiner, whitemouth (010070) observed

( 51 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					
(0341509.)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0341530.)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0341576.)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0343292.)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
(0343410.)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	



<a href="#">(0343494.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0345486.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0346612.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0346858.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347177.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347365.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0347834.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0348275.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0352334.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
<a href="#">(0352412.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	

<a href="#">Allen Creek (0341512.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0341762.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0343400.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0343936.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0344282.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0345337.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0347171.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
<a href="#">Allen Creek (0347738.)</a>	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>

To view **All 51 Threatened and Endangered Waters records** [View 51](#)

\*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 Wildlife 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.

### Species Observations where Shiner, whitemouth (010070) observed

( 10 records , 10 Observations with Threatened or Endangered species )

[View Map of All Query Results](#)

[Species Observations where Shiner, whitemouth \(010070\) observed](#)

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE *	Highest Tier **	
<a href="#">3168</a>	SppObs	Mar 2 1991	Robert E. Jenkins, Kaitlin M. Nahil	9	ST	II	<a href="#">Yes</a>
<a href="#">4785</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	1	ST	II	<a href="#">Yes</a>
<a href="#">4786</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R.	3	ST	II	<a href="#">Yes</a>



			Willis, Va Power, Bill Kittrel, VDGIF				
<a href="#">4787</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	1	ST	II	<a href="#">Yes</a>
<a href="#">4788</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">4789</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">4791</a>	SppObs	Oct 19 1990	Bob Graham, R. S. Andrews, Va Power, W. R. Willis, Va Power, Bill Kittrel, VDGIF	2	ST	II	<a href="#">Yes</a>
<a href="#">337900</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	9	ST	II	<a href="#">Yes</a>
<a href="#">337923</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	10	ST	II	<a href="#">Yes</a>
<a href="#">337941</a>	SppObs	Jan 1 1984	SPM-B-MCINICH	9	ST	II	<a href="#">Yes</a>

Displayed 10 Species Observations where Shiner, whitemouth (010070) observed

### Habitat Predicted for Aquatic WAP Tier I & II Species where Shiner, whitemouth (010070) observed

( 7 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					
Allen Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
Kettles Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Kettles Creek (30101062)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	

Mines Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Kettles Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Kettles Creek (30101062)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	
Unnamed trib. of Mines Creek (30101061)	ST	010070	ST	IIC	<a href="#">Shiner, whitemouth</a>	Miniellus alborus	<a href="#">Yes</a>
		010353	ST	IIC	<a href="#">Darter, Carolina</a>	Etheostoma collis	

#### Habitat Predicted for Terrestrial WAP Tier I & II Species where Shiner, whitemouth (010070) observed

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
CM09	<a href="#">Meherrin River-Crooked Creek</a>	64	FTST	I
CM11	<a href="#">Meherrin River-Stony Creek</a>	66	FTST	I
CM12	<a href="#">Meherrin River-Taylor's Creek</a>	69	FTST	I
CM13	<a href="#">Genito Creek</a>	63	FTST	I
RL07	<a href="#">Butcher Creek/John H Kerr Reservoir</a>	59	ST	I
RL09	<a href="#">Roanoke River/John H Kerr Reservoir-Eastland Creek</a>	56	ST	I
RL10	<a href="#">Allen Creek-Layton Creek</a>	58	ST	I
RL11	<a href="#">Allen Creek-Cox Creek</a>	62	ST	I
RL12	<a href="#">Lake Gaston-Cotton Creek</a>	57	ST	I
RL13	<a href="#">Miles Creek-Dockery Creek</a>	58	ST	I
RL14	<a href="#">Lake Gaston-Flat Creek</a>	58	ST	I
RL18	<a href="#">Roanoke River/Lake Gaston-Great Creek</a>	58	ST	I

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audit no. 2700537 10/6/2024 11:40:23 PM Virginia Fish and Wildlife Information Service





**Threatened and  
Endangered Waters  
where Shiner,  
whitemouth (010070)  
observed**36,43,36.4 -78,20,28.9  
is the Search Point**Show Position Rings**☒ Yes ☐ No4 miles and 1 mile at the Search  
Point**Show Search Area**☒ Yes ☐ No2 Search distance miles  
buffer

Display	Search Point is not at center
---------	----------------------------------

**Base Map Choices**

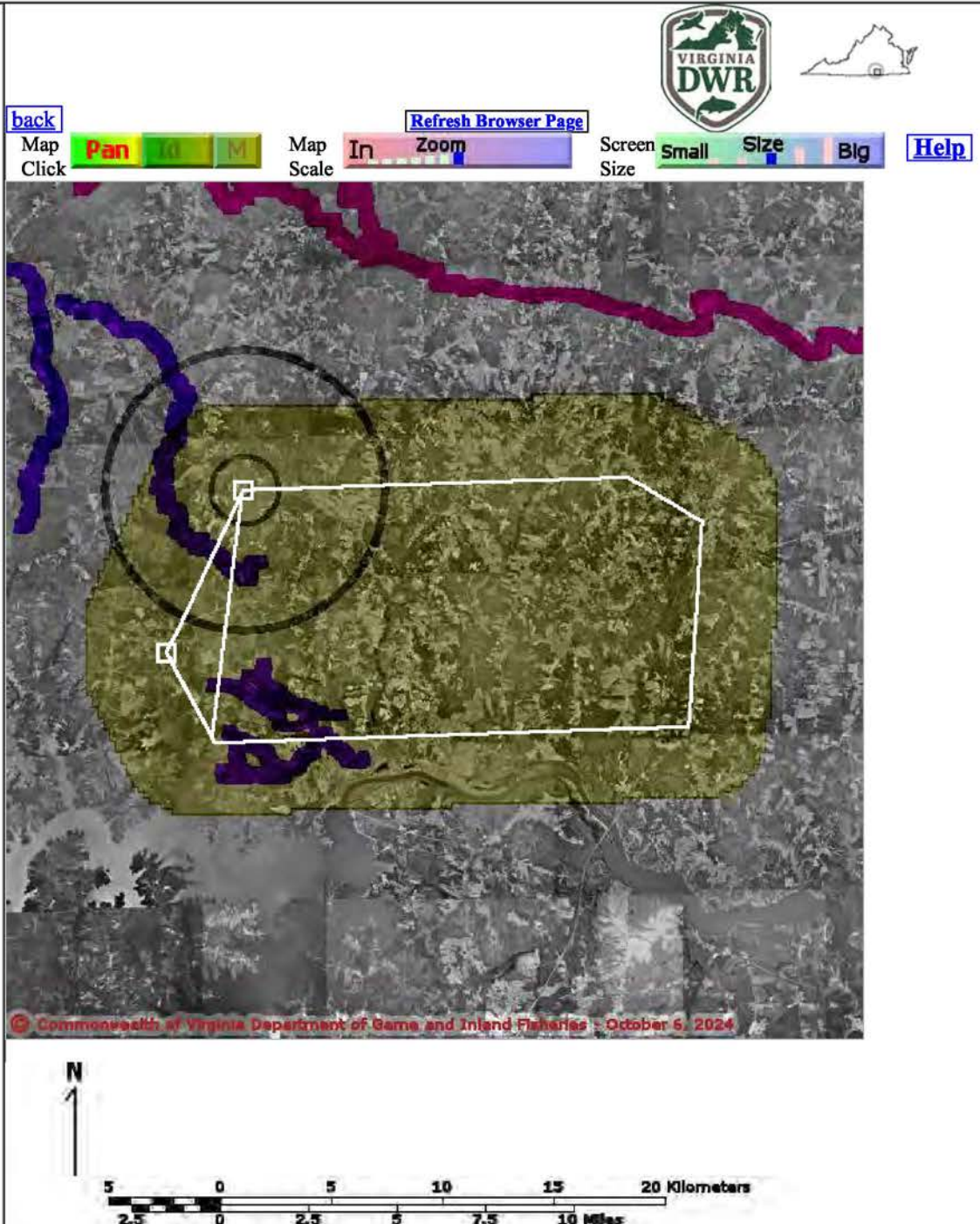
BW Aerial Photography ▾

**Map Overlay Choices**Current List: Position, Search,  
TEWaters**Map Overlay Legend****T & E Waters**

Federal

State


**Position Rings**  
4 miles and 1  
mile at the  
Search Point


**2 mile radius  
Search Area**


Point of Search 36,43,36.4 -78,20,28.9

Map Location 36,40,33.8 -78,14,50.6

Select **Coordinate System**: ☒ Degrees, Minutes, Seconds Latitude - Longitude☐ Decimal Degrees Latitude - Longitude☐ Meters UTM NAD83 East North Zone☐ Meters UTM NAD27 East North ZoneBase Map source: Black & White USGS Aerial Photography (see [Microsoft terraserver-usa.com](https://microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 17 NAD 1983 with left 726777 and top 4081671. Pixel size is 50. .  
Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed  
as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 38400 meters  
east to west by 38400 meters north to south for a total of 1474.5 square kilometers. The map



display represents 126005 feet east to west by 126005 feet north to south for a total of 569.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

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map assembled 2024-10-06 23:43:31 (qa/qc March 21, 2016 12:20 - tn=2700537.1 dist=3218 I)  
\$poi=36.7267900 -78.3413699

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**From:** [nhreview \(DCR\)](#)  
**To:** [Briana Cooney](#)  
**Cc:** [Hypes, Rene \(DCR\)](#); [Weber, Joseph \(DCR\)](#)  
**Subject:** Re: 0642267, Golden-Mars  
**Date:** Thursday, May 23, 2024 9:58:13 AM  
**Attachments:** [image002.png](#)  
[image003.png](#)  
[image.png](#)  
[image.png](#)

---

**EXTERNAL MESSAGE**

Briana,

Thanks for your patience with this. I've reiterated your questions in blue, with answers below.

I was reviewing the SCS shapefile you all sent, and I noticed that there are pieces of the SCS that are now developed. Have there been any studies of this area recently? Are you able to tell me when this SCS area was created or last modified?

- Our **Chief of Biodiversity Information and Conservation Tools** said that there does seem to be areas of the SCS that were developed since it was created. Much of the SCS is still intact, however, and perhaps even more important for maintaining water quality for NHR.
- It looks like the SCS was last modified 7/6/2023. Stream Conservation Sites do not represent protected areas, but waterways and terrestrial areas that contribute to the habitat quality of the documented resource. These areas will affect the water quality of the Yellow lampmussel habitat regardless of their current land use.

I also noticed that the natural heritage resource associated with this SCS is the Yellow lampmussel; however, in my database searches, I haven't seen a documented occurrence of this species within the SCS or study area. Do you have additional information on the presence of this species?

- Generally we do not share the location of our documented resources, only the associated SCS or Conservation Site. Looking at my data, the Yellow lampmussel **is documented within the SCS**. The documented locations are in Broad Run, the main branch of the SCS in the northern portion. The other stream areas included in the SCS are upstream of documented occurrences and changes to the water quality within the SCS will impact the documented resource.
- I can't really comment on the lack of the Yellow lampmussel in the databases without knowing which ones you used. It would not be found in DWR or USFWS databases as it is not a listed species. NHDE (*Natural Heritage Database Explorer*) only shows documented occurrences to Tier 3 users, which is only available to our conservation partners.

I've also noticed in this project and previous projects that some ecological cores identified are less than 100 acres, and the VDCR letter states: "Ecological Cores are areas of at least 100 acres of continuous interior..." Should we continue to study cores that are under 100 acres?

- The cores are found in [Virginia Natural Landscape Assessment](#) Ecological Cores and Habitat Fragments data layer. It looks like the feature in question is a habitat fragment, the link above can give you some more information about Cores and Habitat Fragments.
- From our Chief of Biodiversity Information and Conservation Tools: "**Smaller areas of continuous interior cover (i.e., 10 to 99 acres) called Habitat Fragments support Ecological**



**Cores and provide similar functions and values.** Both feature types are discussed on the website.

- Ecological Cores and Habitat Fragments are ranked by Ecological Integrity based on variables including rare species habitats, habitat diversity, resilience, and water quality, to reflect the wide range of important benefits and ecosystem services they provide. Brief descriptions of Ecological Integrity rankings are:
  - C1 – Outstanding: These cores tend to be large in area, of deepest interior, of greatest water quality protections, highest in habitat diversity and rich in rare species, including species listed as threatened or endangered. Of all Ecological Cores in the Commonwealth 1% are ranked as C1.
  - C2 – Very High: These cores have all or many of the same characteristics and values as C1 cores, though to a lesser extent. About 2.5% of all cores in the Commonwealth are ranked C2.
  - C3 – High, C4 – Moderate, and C5 – General: These cores, as well as **habitat fragments**, have some of the same quantifiable values and characteristics as higher-ranked cores, though much reduced due to their having substantially less interior area and smaller area overall.
  -
- There are no Habitat Fragments ranked above C3. "
- Due to Habitat Fragments ability to provide important ecological functions and values, we do still recommend avoiding impacts and when impacts can not be avoided to keep them to the edge of the fragment/core. We only recommend a formal impact analysis for C1 and C2 Cores, which never include fragments.

Hopefully this information is helpful. I have Cc'd Joe Weber our Chief of Biodiversity Information and Conservation Tools and Rene' Hypes our Project Review Coordinator. Let me know if you have anymore questions or if any of the information here needs clarification.

Thank you,

**Nicki Gustafson** (*she/her*)

**Project Review Assistant**

Division of Natural Heritage

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Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus  
Director  
(804) 698-4020

February 27, 2024

Dominion Energy  
120 Tredegar Street  
Richmond, VA 23219  
Attn: Elizabeth L. Hester

Transmitted Via Email: (Elizabeth.l.hester@dominionenergy.com)

Re: Dominion Energy (Electric Transmission) - AS&S - Program Renewal – 2024/2025

Dear Ms. Hester:

The Virginia Department of Environmental Quality (DEQ) hereby approves the Annual Standards and Specifications for Erosion & Sediment Control and Stormwater Management for Construction and Maintenance of Linear Electric Transmission Facilities for Dominion Energy's document dated "February 2024". This coverage is effective from February 27, 2024, to February 26, 2025.

To ensure compliance with approved specifications, the Virginia Erosion and Sediment Control Law and the Virginia Stormwater Management Act, DEQ staff will conduct random site inspections, respond to complaints, and provide on-site technical assistance with specific erosion and sediment control and stormwater management measures and plan implementation.

Please note that your approved Annual Standards and Specifications include the following requirements:

1. Variance, exception, and deviation requests must be submitted to DEQ separately from this Annual Standards and Specifications' submission. DEQ may require project-specific plans associated with such requests to be submitted for review and approval.
2. The following information must be submitted to DEQ for each project at least two weeks in advance of the commencement of regulated land-disturbing activities. Notifications shall be sent by email to: [StandardsandSpecs@deq.virginia.gov](mailto:StandardsandSpecs@deq.virginia.gov)
  - a. Project name or project number;
  - b. Project location (including nearest intersection, latitude and longitude, access point);
  - c. On-site project manager name and contact info;



February 27, 2024  
Page 2 of 2

- d. Responsible Land Disturber (RLD) name and contact info;
  - e. Project description;
  - f. Acreage of disturbance for project;
  - g. Project start and finish date; and
  - h. Any variances/exceptions/deviations associated with this project.
3. Project tracking of all regulated land disturbing activities (LDA) must be submitted to DEQ once per 6-month period. Project tracking records shall contain the same information as required in the two week e-notifications for each regulated LDA.
  4. Erosion & Sediment Control and Stormwater Management plans must be reviewed by DEQ-certified Plan Reviewers. Dominion Energy, as the AS&S holder, retains the authority to approve plans and must do so in writing. Should an AS&S holder contract out to a third-party to fulfill the plan review function, the third-party Plan Reviewer may recommend approval of the plan, but final approval must come from the AS&S holder.

To ensure an efficient information exchange and response to inquiries, DEQ Central Office is your primary point of contact. Central Office staff will coordinate with our Regional Office staff as appropriate

Please contact Abigail Snider at 804-486-0365 or [Abigail.Snider@deq.virginia.gov](mailto:Abigail.Snider@deq.virginia.gov) if you have any questions about this letter.

Respectfully,

A handwritten signature in black ink, appearing to read 'Kyle Kennedy', with a stylized, flowing script.

Kyle Kennedy, Manager  
Office of Stormwater Management

Cc: Larry Gavan, DEQ-CO  
Antony Angueira, DEQ-CO



# 230 kV Nebula-Raines Line, 230 kV Nebula Switching Station, and 230 kV Cloud-Nebula Line Project

Pre-Application Analysis Report

**Redacted**

PREPARED FOR



Dominion Energy Virginia

DATE

22 January 2025

REFERENCE

0706631





SIGNATURE PAGE

# 230 kV Nebula-Raines Line, 230 kV Nebula Switching Station, and 230 kV Cloud-Nebula Line Project

Pre-Application Analysis Report **Redacted**  
0706631



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Senior Architectural Historian



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CLIENT: Dominion Energy Virginia  
PROJECT NO: 0706631      DATE: 22 January 2025      VERSION: 01

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## ACRONYMS AND ABBREVIATIONS

Acronyms	Description
3D	Three dimensional
DP	Delivery Point
ERM	Environmental Resources Management
ESRI	Environmental Systems Research Institute
GNSS	Global Navigation Satellite System
HABS	Historic American Buildings Survey
ISO	International Organization for Standardization
JPEG	Joint Photographic Experts Group format
KOP	Key Observation Point
kV	Kilovolt
MEC	Mecklenburg Electric Cooperative
MP	Mile Post
NHL	National Historic Landmark
NPS	National Park Service
NRHP	National Register of Historic Places
PBR	Physically Based Rendering
PDF	Portable Document Format
Project	230 kV Nebula-Raines Line, 230 kV Nebula Switching Station, and 230 kV Cloud-Nebula Line Project
RAW	an unprocessed image
ROW	Right-of-Way
SCC	State Corporation Commission
SLR	Single-Lens Reflex
UTM	Universal Transverse Mercator
UVA	University of Virginia
VCRIS	Virginia Cultural Resource Information System
VDHR	Virginia Department of Historic Resources
VDOT	Virginia Department of Transportation



## EXECUTIVE SUMMARY

This report presents the findings of the pre-application analysis prepared by Environmental Resources Management (ERM) on behalf of Virginia Electric and Power Company (herein referred to as Dominion Energy Virginia, Dominion, or the Company) for the proposed 230 kilovolt (kV) Nebula-Raines Line, 230 kV Nebula Switching Station, and 230 kV Cloud-Nebula Line Project (Project) in Mecklenburg County, Virginia.

Dominion Energy Virginia proposes to construct and operate new single circuit 230 kV transmission lines to (1) provide service to a new delivery point (DP) pursuant to a request by Old Dominion Electric Cooperative on behalf of Mecklenburg Electric Cooperative (MEC or the Customer) to provide service to one of its data center customers; (2) to relieve identified violations of mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards; and (2) maintain the structural integrity and reliability of the transmission system.

To provide the service requested by the Customer, Dominion proposes to construct and operate the following facilities:

- An approximately 14.4-mile-long overhead single circuit<sup>1</sup> 230 kV transmission line in new right-of-way from the future Raines Substation, located just south of South Hill, Virginia, to the proposed Nebula Switching Station located east of Boydton, Virginia;
- An approximately 0.9-mile-long overhead single circuit 230 kV transmission line in new right-of-way from the proposed Nebula Switching Station to the existing Cloud Substation, located just north of the proposed Nebula Switching Station; and
- The new Nebula Switching Station, which will be a new 230 kV switching station and will be located approximately 0.5 mile south of the existing Cloud Substation.

In developing alternative routes for the new transmission line, the Company considered the facilities required to construct and operate the Project, the length of new rights-of-way that would be required, the amount of existing development in the area, the potential for environmental impacts and impacts on communities, and cost. As discussed in detail below, ERM identified four viable route options for the Nebula-Raines portion of the Project; only one option has been identified for the Cloud-Nebula portion of the Project.

This pre-application analysis assesses and compares potential impacts on previously recorded historic and archaeological resources in relation to each alternative route. Impacts associated with construction and operations of the proposed Nebula Switching Station were also considered. ERM conducted the analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible project design that minimizes impacts to historic resources. The pre-application analysis is a required study for transmission line projects regulated by the State Corporation Commission (SCC). The study was completed in accordance with the Virginia Department of Historic Resources' (VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and*

---

<sup>1</sup> The Company believes that it is reasonable and prudent to construct the Nebula-Raines and Cloud-Nebula Lines utilizing 230 kV double circuit construction with an idle 230 kV conductor installed on the proposed double circuit monopole to allow for the future addition of a 230 kV circuit. The Company will seek Commission approval to energize the idle 230 kV single circuit line in the future.



*Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008)  
(Guidelines).

Eight known archaeological sites were identified within the right-of-way of the route alternatives. None of the archaeological sites have been formally evaluated for National Register of Historic Places (NRHP) eligibility. Because portions of some routes share common alignments, the same sites may be impacted by more than one route. [REDACTED]

[REDACTED] No archaeological sites were identified within the right-of-way of the Cloud-Nebula Route, nor within the proposed Nebula Switching Station. The archaeological sites associated with each route and their current NRHP status are summarized in the table below (Table 1).

Nine resources meeting the criteria specified in the Guidelines fall within study tiers defined by the VDHR for identifying aboveground historic sites along and near transmission line routes: eight historic resources recorded in the Virginia Cultural Resource Information System (VCRIS) and one historic site of local significance. The likely impacts on individual historic resources associated with each route are presented in the table below (Table 2).

The Cloud-Nebula Route passes near one historic resource meeting the criteria specified in the Guidelines, the Nebula-Raines Route 1 passes near three historic resources, the Nebula-Raines Route 3 passes near five historic resources, the Nebula-Raines Route 4 passes near eight historic resources, and Nebula-Raines Route 5 passes near four historic resources. ERM recommends that the Cloud-Nebula Route would have no impact on the one resource near this route. For the Nebula-Raines transmission line alternatives, ERM recommends that Nebula-Raines Route 1 would have no impact on one resource, and a minimal impact on two resources; Nebula-Raines Route 3 would have no impact on two resources and a minimal impact on three; Nebula-Raines Route 4 would have no impact on four resources and a minimal impact on four resources; and finally that Nebula-Raines Route 5 would have no impact on three resources and a severe impact on one resource.

Considering both archaeological and historic resources, for the Nebula-Raines Line, Nebula-Raines Route 1 appears to present the least impact on cultural resources with one archaeological site in the right-of-way, and the smallest number of considered historic resources near this alternative with no more than a minimal impact. Although Nebula-Raines Route 5 only has five archaeological sites within the right-of-way and four considered historic resources, one of the resources would be severely impacted, and thus, this route appears to present the greatest impact on cultural resources. The Cloud-Nebula Route is the only route option for the Cloud-Nebula Line. This route has no archaeological sites in the right-of-way and no impact on the considered historic resources.

**TABLE 1 EXECUTIVE SUMMARY OF CONSIDERED ARCHAEOLOGICAL RESOURCES IN THE STUDY AREA OF THE ROUTES REDACTED**

Route Alternatives	
--------------------	--



Considered Resource	Cloud-Nebula Route	Nebula-Raines Route 1	Nebula-Raines Route 3	Nebula-Raines Route 4	Nebula-Raines Route 5

Source: VDHR 2024

**TABLE 2 EXECUTIVE SUMMARY OF PROJECT IMPACTS TO CONSIDERED ABOVEGROUND HISTORIC RESOURCES IN THE STUDY AREA OF THE ROUTES**

Considered Resource	Route Alternatives				
	Cloud-Nebula Route	Nebula-Raines Route 1	Nebula-Raines Route 3	Nebula-Raines Route 4	Nebula-Raines Route 5
058-0057			None	None	
058-0073			Minimal	Minimal	
058-0140		Minimal	Minimal	Minimal	None
058-0141				None	Severe
058-0175				Minimal	
058-0309				None	None
058-5092	None	None	None	None	None
058-5412		Minimal			
East End High School			Minimal	Minimal	

Source: VDHR 2024

## 1. INTRODUCTION

This report presents the findings of the pre-application analysis conducted for Dominion Energy Virginia's 230 kV Nebula-Raines Line, 230 kV Nebula Switching Station, and 230 kV Cloud-Nebula Line Project in Mecklenburg County, Virginia. For this Project, the Company is proposing to construct and operate:

- An approximately 14.4-mile-long overhead single circuit<sup>2</sup> 230 kV transmission line in new right-of-way from the future Raines Substation, located just south of South Hill, Virginia, to the proposed Nebula Switching Station located east of Boydton, Virginia;
- An approximately 0.9-mile-long overhead single circuit 230 kV transmission line in new right-of-way from the proposed Nebula Switching Station to the existing Cloud Substation, located just north of the proposed Nebula Switching Station; and
- The new Nebula Switching Station, which will be a new 230 kV switching station and will be located approximately 0.5 mile south of the existing Cloud Substation.

The pre-application analysis assesses potential impacts on previously recorded historic and archaeological resources relative to each route. ERM conducted the pre-application analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts on historic resources. The study was completed in accordance with Virginia Department of Historic Resources' (VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008) (Guidelines).

### 1.1 OVERVIEW

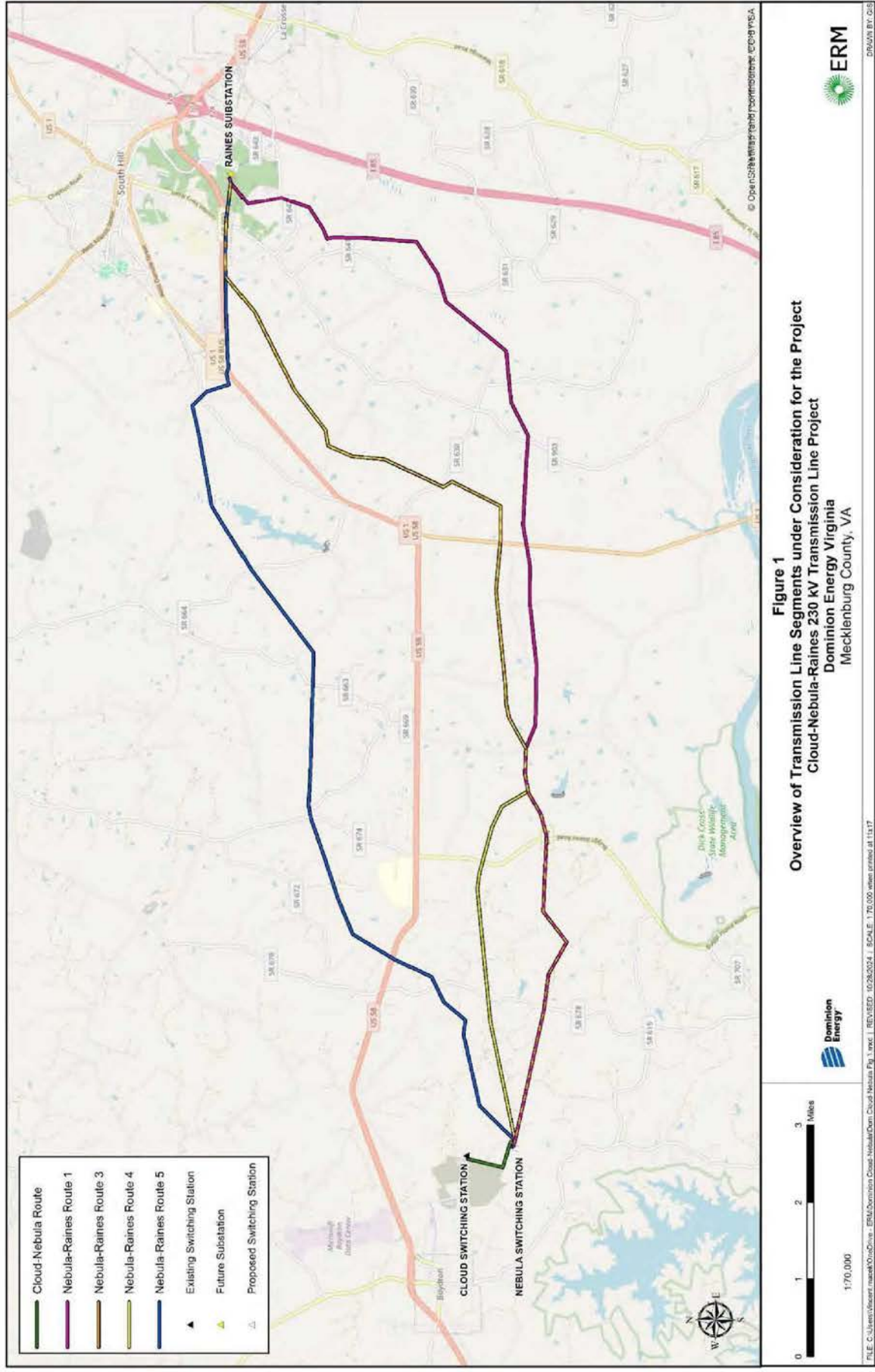
In developing alternative routes for the new transmission line, the Company considered the facilities required to construct and operate the Project, the length of new rights-of-way that would be required, the amount of existing development in the area, the potential for environmental impacts and impacts on communities, and cost. As discussed in detail below, ERM identified four viable route options for the Nebula-Raines portion of the Project; only one option has been identified for the Cloud-Nebula portion of the Project (Figure 1).

---

<sup>2</sup> The Company believes that it is reasonable and prudent to construct the Nebula-Raines and Cloud-Nebula Lines utilizing 230 kV double circuit construction with an idle 230 kV conductor installed on the proposed double circuit monopole to allow for the future addition of a 230 kV circuit. The Company will seek Commission approval to energize the idle 230 kV single circuit line in the future.



FIGURE 1 OVERVIEW OF TRANSMISSION LINE SEGMENTS UNDER CONSIDERATION FOR THE PROJECT



### 1.1.1 CLOUD-NEBULA ROUTE

Starting at the existing Cloud Switching Station, the Cloud-Nebula Route heads south for 0.5 mile adjacent to the station's western parcel boundary, crossing through mostly managed timber land. The route then turns to the east for 0.3 mile before turning south and terminating at the proposed Nebula Switching Station.

The Cloud-Nebula Route measures approximately 0.8 mile in length. Existing land uses along the route largely consist of managed timber lands with some previously cleared timber lands.

### 1.1.2 NEBULA-RAINES ROUTE 1

Starting at the future Raines Substation, Route 1 heads southwest for about 0.4 mile through forested areas and crosses Flat Creek before turning south for an additional 0.8 mile, crossing Rocky Branch Road at approximately milepost (MP) 0.8, just west of the South Hill WWTP. The route then turns to the southwest for 0.5 mile, crossing Turtle Road at approximately MP 1.5. The route then turns to the south for 1.1 miles, crossing through mostly forested areas (including managed timber land). At this point, the route turns southwest for 1.9 miles, crossing Trinity Church Road at approximately MP 3.6. This segment of the route crosses through mostly dense forested areas. The route then runs west then southwest then west for 1.2 miles, crossing Belfield Road at approximately MP 5.2. The route then turns west and continues for 3.7 miles, crossing Goodes Ferry Road at approximately MP 6.0, US 1 at MP 7.3, and Eureka Road at MP 8.1. This segment of the route is primarily through heavily forested land up to approximately MP 8.4, at which point the route crosses through mixed forest and agricultural land. At approximately MP 9.6, the route turns northwest and crosses Baskerville Road at approximately MP 10.0. The route then turns to the west and then southwest for 1.2 miles across forested and agricultural land before crossing Buggs Island Road at approximately MP 11.2. The route continues to the west for 1.0 mile, crossing mostly recently cleared timber lands and some agricultural grazing fields before turning southwest for 0.5 mile, and then northeast for 0.5 mile through primarily agricultural and grazing land. At this point the route turns to the west-northwest for the remaining 2.3 miles, crossing the Company's existing Kerr Dam-Ridge Road Line #137 and Cloud-Kerr Dam Line #38 at approximately MP 13.2 and Antlers Road at approximately MP 13.5, before terminating at the proposed Nebula Station. The segment of the route west of approximate MP 13.5 is through dense managed timber land. Nebula-Raines Route 1 measures 15.4 miles in length. Existing land uses along the route largely consist of a mix of agricultural and forested lands with scattered residences and other developments at and near road crossings. Some of the forested land along the route is managed or replanted timber.

### 1.1.3 NEBULA-RAINES ROUTE 3

Starting at the future Raines Substation, Nebula-Raines Route 3 heads west for about 0.5 mile through forested areas before continuing west and collocating with the south side of US 58 for 0.8 mile across primarily agricultural lands. The route then turns to the southwest and crosses through mostly forested areas for 2.4 miles. At this point, the route turns to the west for 0.2 mile and then southwest for 0.3 mile across forested land, crossing Dockery Road at approximately MP 3.9. The route then turns south for 0.4 mile, crossing through dense forested areas before turning southwest for 0.8 mile and crossing Smith Cross Road at approximately MP 5.5. After crossing



Smith Cross Road, the route turns southeast for 0.1 mile and then southwest for 0.7 mile, crossing through mostly dense forested areas. The route then turns to the west, crossing through a mix of forested areas and cleared agricultural lands for 2.7 miles and crossing US 1 at approximately MP 6.8 and Cedar Grove Road at approximately MP 8.5. At this point the route heads southwest for 0.4 mile, crossing through open agricultural lands. At approximately MP 9.5, Nebula-Raines Route 3 crosses Baskerville Road and intersects Route 1. From this point, Nebula-Raines Route 3 follows the same alignment as Nebula-Raines Route 1 for the remaining 5.4 miles to the proposed Nebula Station. Nebula-Raines Route 3 measures approximately 14.9 miles in length. Existing land uses along the route largely consist of a mix of agricultural and forested lands with scattered residences and other developments at and near road crossings. Some of the forested land along the route is managed or replanted timber.

#### 1.1.4 NEBULA-RAINES ROUTE 4

Nebula-Raines Route 4 follows the same alignment as Nebula-Raines Route 3 for the first 10.1 miles from the future Raines Substation to a point 0.6 mile west of Baskerville Road. At this point, the route turns to the northwest for 0.4 mile, crossing through mostly forested lands, then turns to the west-northwest for 0.8 mile, crossing Cox Creek at approximately MP 10.5, Buggs Island Road at approximately MP 11.2. The route then turns to the west/southwest for 3.7 miles, crossing Antlers Road at approximately MP 13.0, the Company's existing Lines #137 and #38 at approximately MP 13.1, and Gold Miners Road at approximately MP 13.2. The route then turns northwest for 0.1 mile (using the same right-of-way as Routes 1 and 3) and terminates at the proposed Nebula Station. Nebula-Raines Route 4 measures approximately 15.0 miles in length. Existing land uses along the route largely consist of a mix of agricultural and forested lands with scattered residences and other developments at and near road crossings. Some of the forested land along the route is managed or replanted timber.

#### 1.1.5 NEBULA-RAINES ROUTE 5

Starting at the future Raines Substation, Nebula-Raines Route 5 follows the same alignment as Nebula-Raines Route 3 for the first 1.3 miles from the future Raines Substation along the south side of US 58. From this point, the route continues along the south side of US 58 for another 1.1 miles before turning to the northwest for 0.1 mile, crossing US 58 and US 1 (where the two roads divide) at approximately MP 2.5, before turning west for 0.1 mile. The route then turns north-northwest for 0.6 mile, crossing Plank Road at approximately MP 3.1. The route then turns to the west for 1.3 miles and then southwest for 2.3 miles, crossing Miles Creek at approximately MP 4.5, Union Level Road at approximately MP 5.6, and Gordon Lake Road at approximately MP 6.8. At this point the route turns to the west for 2.0 miles, crossing Busy Bee Road at approximately MP 7.3. The route turns to the west/southwest for 1.7 miles, crossing Baskerville Road and Wooden Bridge Road at approximately MP 9.0 and then running through mainly forested areas. The route then heads southwest for 1.9 miles, across agricultural land east of the county landfill and crossing U.S. 58 at approximately MP 11.2 and Antlers Road at approximately MP 11.9. At approximately MP 12.5 the route turns to the west, crosses the Company's existing right-of-way for Lines #137 and #38, and shares right-of-way with the south side of the Company's existing right-of-way for Lines #1041 and #38 for 0.9 mile. The route then turns to the southwest (away from Lines #1041 and #38) for 0.6 mile across managed timber lands, before turning west for 0.1



mile (using the same right-of-way as Routes 1 and 3) and terminating at the proposed Nebula Station. Nebula-Raines Route 5 measures approximately 14.4 miles in length. Existing land uses along the route largely consist of a mix of agricultural and forested lands with scattered residences and other developments at and near road crossings. Some of the forested land along the route is managed or replanted timber.

## 1.2 MANAGEMENT SUMMARY

Eight known archaeological sites were identified within the rights-of-way for the various route alternatives. One site was identified within the right-of-way for Nebula-Raines Route 1. Five archaeological sites were identified within the right-of-way for Nebula-Raines Route 3. Six were identified within the right-of-way for Nebula-Raines Route 4. Finally, five archaeological sites were identified within the right-of-way for Nebula-Raines Route 5. None of the eight sites have been formally evaluated to determine their eligibility for listing in the NRHP. No previously recorded archaeological sites were identified within the right-of-way for the Cloud-Nebula Route or the proposed Nebula Switching Station.

Eight previously recorded historic architectural resources and one previously unrecorded architectural resource meeting criteria specified in the Guidelines fall within study tiers defined by the VDHR for identifying aboveground historic sites along and near transmission line routes. Of these, the Cloud-Nebula Route passes through the least number of resources (one), while Nebula-Raines Route 1 passes near three resources, Nebula-Raines Route 3 passes near five resources, Nebula-Raines Route 4 passes near eight resources, and Nebula-Raines Route 5 passes near four resources. ERM recommends that the Cloud-Nebula Route would have no impact on the one resource within the vicinity of the route. For the Nebula-Raines Line, ERM recommends that Nebula-Raines Route 1 would have no impact on one resource, and a minimal impact on two resources; Nebula-Raines Route 3 would have no impact on two resources and a minimal impact on three resources; Nebula-Raines Route 4 would have no impact on four resources and a minimal impact on four resources; and finally that Nebula-Raines Route 5 would have no impact on two resources, a minimal impact on one resource, and a severe impact on one resource.

Considering both archaeological and historic resources, for the Nebula-Raines Line, Nebula-Raines Route 1 appears to present the least impact on cultural resources with one archaeological site in the right-of-way for the route, and the smallest number of considered historic resources near this alternative with no more than a minimal impact. Although Nebula-Raines Route 5 only has five archaeological sites within the right-of-way and four considered historic resources, one of the resources has a severe impact, and thus, this route appears to present the greatest impact on cultural resources. The Cloud-Nebula Route is the only route option for the Cloud-Nebula Transmission Line. This route would have no archaeological sites in the right-of-way and no impact on the considered historic resources.



## 2. RECORDS REVIEW

### 2.1 DATA COLLECTION APPROACH

ERM conducted an analysis of potential cultural resource impacts for the routes under consideration in accordance with the VDHR Guidelines. For each route, this analysis identified and considered the following previously recorded resources.

- National Historic Landmarks (NHLs) within a 1.5-mile radius of the centerline;
- NRHP-listed properties, NHLs, battlefields, and historic landscapes within a 1.0-mile radius of the centerline;
- NRHP-eligible and NRHP-listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of the centerline; and
- All of the above qualifying resources as well as archaeological sites within the right-of-way for the route.

Data on previously recorded cultural resources within each study tier was obtained from the Virginia Cultural Resources Information System (VCRIS). Among the resources identified in VCRIS that meets the criteria for including in the study tiers, one was demolished in the 1990s, and is therefore only discussed in Section 2.4, and is not included in the assessment of potential impacts. In addition to the information gleaned from VCRIS, ERM collected information from the Historically Black Schools of Mecklenburg County Virginia (2024) and Preservation Virginia (2024), and contacted several possibly interested parties (South Central Virginia Genealogical Society, Virginia Museum of History and Culture, Virginia Genealogical Society, Mecklenburg County Planning Commission, and the Tobacco Heritage Trail) to find locally significant resources within a 1.0-mile radius of each proposed route centerline. ERM also included historic architectural resources within a 1.0-mile radius of each centerline that were mentioned in a May 30, 2024 email response from Logan Parham of Preservation Virginia about sensitive resources in the area. These resources were included in the locally significant category.

Along with the records review, ERM conducted field assessments of the considered aboveground resources along the routes in accordance with the Guidelines. Digital photographs of each historic resource and views to the proposed transmission line were taken. Photo simulations were then prepared to assess the potential for visual impacts from the new transmission infrastructure on the resources. For previously recorded archaeological sites under consideration, aerial photographs were examined to assess the current land condition and the spatial relationship between the sites and any existing development.

### 2.2 ARCHAEOLOGICAL RESOURCES

Crossings of archaeological sites were considered a constraint in this study due to the potential for an electric transmission line to impact cultural deposits in these areas (for example, due to transmission structure placement, tree clearing, or heavy equipment traffic within a site). Information on the known archaeological sites in the right-of-way for each transmission line route are summarized in Table 3 and the site locations are depicted on Figure 2. Individual maps for each route alternative are provided in Attachment 1.

None of the eight previously recorded sites within the rights-of-way for the routes have been formally evaluated for NRHP eligibility. Because portions of some routes share common alignments, the same sites may occur in the same tier for more than one route. Of the eight known archaeological sites proximate to the routes, one is located along Nebula-Raines Route 1 ([REDACTED]); five along Nebula-Raines Route 3 ([REDACTED]); six along Nebula-Raines Route 4 ([REDACTED]); and five along Nebula-Raines Route 5 ([REDACTED]). No archaeological sites were identified within the right-of-way of the Cloud-Nebula Route or the proposed Nebula Switching Station. A confident evaluation of the nature of archaeological deposits at each site and impacts on the sites from prior land use activities would require a field survey.



**FIGURE 1 LOCATIONS OF ARCHAEOLOGICAL RESOURCES WITHIN THE RIGHT-OF-WAY FOR EACH ROUTE REDACTED**

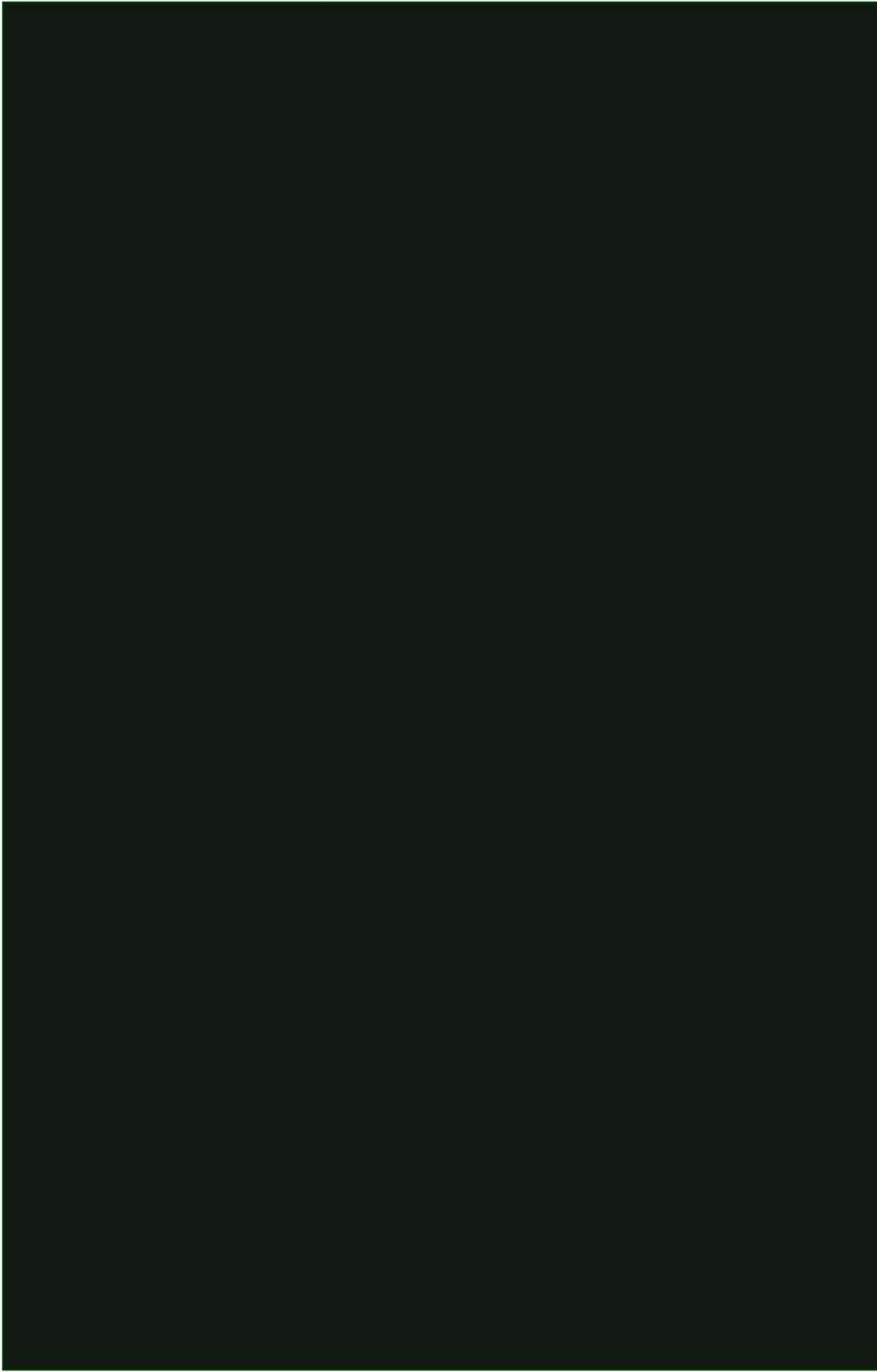


TABLE 3    ARCHAEOLOGICAL RESOURCES IN THE RIGHT-OF-WAY FOR EACH ROUTE  
REDACTED

Project Component	Greenfield or Existing/ Expanded ROW?	Site Number	Description	NRHP Status
[REDACTED]				

Source: VDHR 2024  
ROW = right-of-way



## 2.3 HISTORIC RESOURCES

The following discussion summarizes the known historic resources in the vicinity of each route based on the VDHR's tiered study model defined in the Guidelines. The locations of the considered historic resources and the various routes are shown on Figure 3. Individual maps for each proposed route are provided in Attachment 1.

Resources located within the right-of-way of a route may be subject to both direct impacts from placement of the line across the property as well as visual impacts from changes to the viewshed introduced by the new transmission line structures and conductors. Resources in the 0.5-mile tier would not be directly impacted, but would likely be visually impacted, unless topography, vegetation, or the built environment obscures the view to the transmission line. At a distance of over 0.5 mile, it becomes less likely that a resource would be within line-of-sight of the proposed transmission line. Beyond 1.0 mile, it becomes even less likely that a given resource would be within line-of-sight of a transmission line.

The nature of the impacts, while estimated in this study with the assistance of photo simulations, would depend on the final Project design in which the exact placement and height of transmission structures are determined. The purpose of the simulations and associated assessments in this report are to provide data on likely impacts and to compare those impacts to support the selection of a preferred route.

Once a route is selected by the SCC, that route would be subject to a full historic architectural survey in which additional (as of yet, unrecorded) historic properties could be identified and Project impacts assessed. The survey area would be defined based on the design height of the transmission line structures, topography, tree cover, and other factors impacting line-of-sight from historic resources to the selected route.

### 2.3.1 CLOUD-NEBULA ROUTE

The considered resource that lies within the VDHR tiers for the Cloud-Nebula Route is presented in Table 4 and depicted in the map provided as Attachment 1, Sheet 1. The considered resource was subjected to field reconnaissance and a preliminary assessment of impact, discussed in the next chapter.

**TABLE 4 HISTORIC RESOURCES IN VDHR TIERS FOR THE CLOUD-NEBULA ROUTE**

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant (National Register – Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery

Source: VDHR 2024

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

[illegible]



### 2.3.2 NEBULA-RAINES ROUTE 1

The three considered resources that lie within the VDHR tiers for Nebula-Raines Route 1 are presented in Table 5 and depicted in the map provided as Attachment 1, Sheet 2. The considered resources were subjected to field reconnaissance and a preliminary assessment of impact, discussed in the next chapter.

**TABLE 5 HISTORIC RESOURCES IN VDHR TIERS FOR NEBULA-RAINES ROUTE 1**

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant (National Register – Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery
	Locally Significant	058-5412	Carey Farmhouse
0.0 to 0.5	Locally Significant	058-0140	M.H. Upton House

Source: VDHR 2024

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

### 2.3.3 NEBULA-RAINES ROUTE 3

The five considered resources that lie within the VDHR tiers for Nebula-Raines Route 3 are presented in Table 6 and depicted in the map provided as Attachment 1, Sheet 3. The considered resources were subjected to field reconnaissance and a preliminary assessment of impact, discussed in the next chapter.

**TABLE 6 HISTORIC RESOURCES IN VDHR TIERS FOR NEBULA-RAINES ROUTE 3**

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant (National Register – Eligible)	058-0073	Lombardy Grove Tavern
		058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery
0.0 to 0.5	Locally Significant	058-0057	Sycamore Lodge
		058-0140	M.H. Upton House
		Not applicable	East End High School

Source: VDHR 2024

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

### 2.3.4 NEBULA-RAINES ROUTE 4

The eight considered resources that lie within the VDHR tiers for Nebula-Raines Route 4 are presented in Table 7 and depicted in the map provided as Attachment 1, Sheet 4. The considered resources were subjected to field reconnaissance and a preliminary assessment of impact, discussed in the next chapter.

**TABLE 7 HISTORIC RESOURCES IN VDHR TIERS FOR NEBULA-RAINES ROUTE 4**

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant (National Register – Eligible)	058-0073	Lombardy Grove Tavern
	Locally Significant	058-0175	Tobacco barns
		058-0309	Tobacco barn
	Locally Significant (National Register – Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery
0.0 to 0.5	Locally Significant	058-0057	Sycamore Lodge
		058-0140	M.H. Upton House
		058-0141	Sanders Farm
		Not applicable	East End High School

Source: VDHR 2024

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

### 2.3.5 NEBULA-RAINES ROUTE 5

The four considered resources that lie within the VDHR tiers for Nebula-Raines Route 5 are presented in Table 8 and depicted in the map provided as Attachment 1, Sheet 5. The considered resources were subjected to field reconnaissance and a preliminary assessment of impact, discussed in the next chapter.

**TABLE 8 HISTORIC RESOURCES IN VDHR TIERS FOR NEBULA-RAINES ROUTE 5**

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	058-0140	M.H. Upton House
	Locally Significant (National Register – Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery
0.0 to 0.5	Locally Significant	058-0309	Tobacco barn
0.0 (within the ROW)	Locally Significant	058-0141	Sanders Farm

Source: VDHR 2024

ROW = right-of-way

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

## 2.4 RESOURCE NO LONGER EXTANT EXCLUDED FROM ANALYSIS

One resource on file with VCRIS appears in the study tiers for Nebula-Raines Routes 3 and 4 (Figure 4). However, the resource, Baisey's Grocery (058-0245), is no longer extant (Figures 5 and 6), so it was excluded from the analysis. The resource is described below.



FIGURE 4 MAPPED LOCATION OF BAISEY'S GROCERY (058-0245) RELATIVE TO NEBULA-RAINES ROUTES 3 AND 4





FIGURE 5 AERIAL IMAGERY SHOWING THE ACTUAL LOCATION OF BAISEY'S GROCERY (058-0245) IN 2002 AFTER DEMOLITION

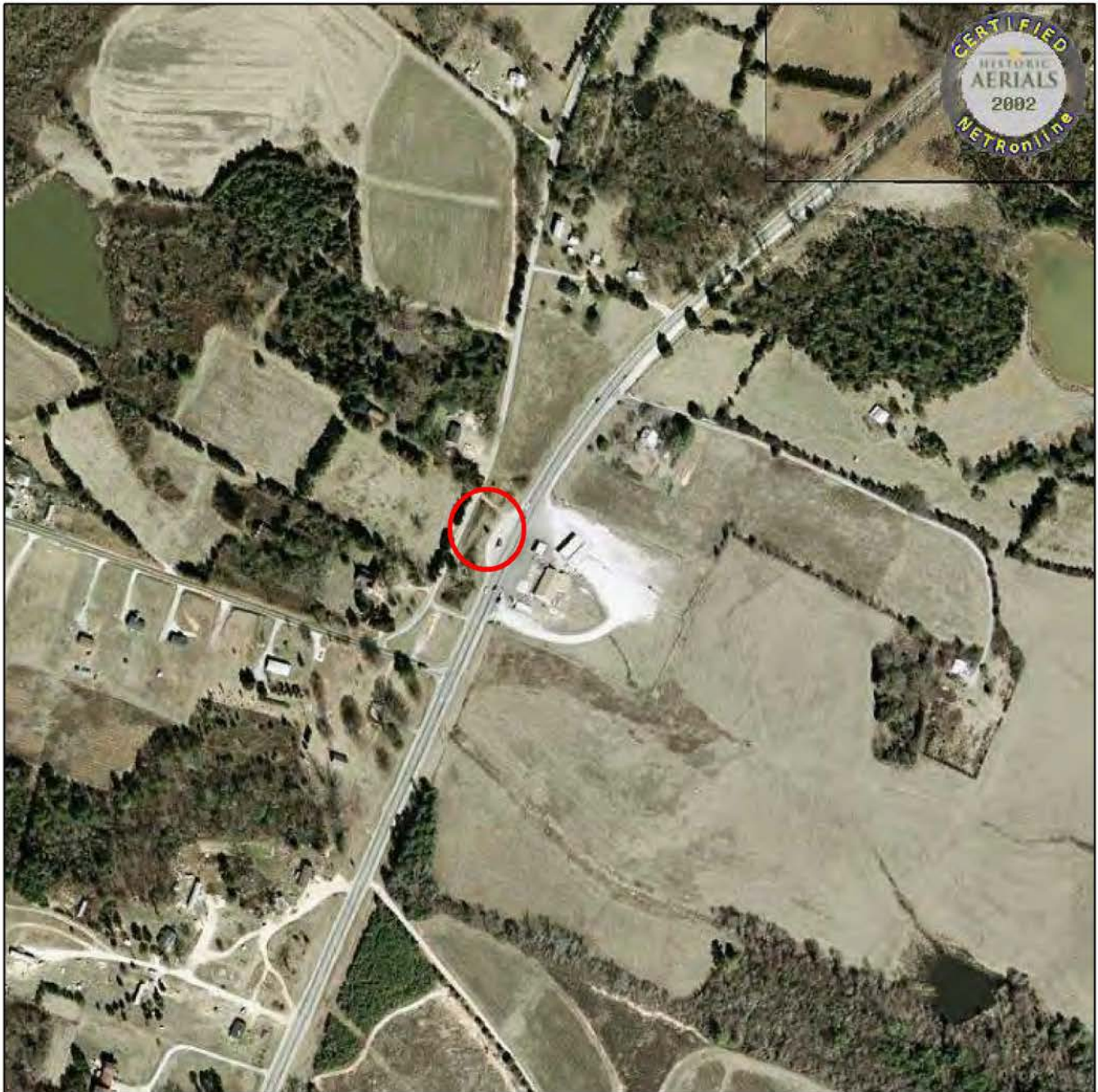




FIGURE 6 SURVEY PHOTOGRAPH OF THE LOCATION OF BAISEY'S GROCERY (058-0245),  
VIEW FACING NORTHEAST (RESOURCE WOULD HAVE BEEN BETWEEN PLANK ROAD, TO THE  
LEFT, AND ROUTE 58, TO THE RIGHT)



### 2.4.1 058-0245, BAISEY'S GROCERY

058-0245 was located on the west side of Route 58 and on the east side of Route 651 (now Plank Road) on a narrow parcel of land between two buildings in South Hill, prior to the widening of Route 58. The property was mis-mapped in VCRIS as being located on the east side of Route 58 (see Figure 4). The actual location was approximately 300 feet to the west of the mis-mapped location, directly off the east side of Plank Road and west of Route 58, prior to its widening (see Figure 5). The actual location of the resource was depicted in a topographic map in a survey report and verified using historic aerial photographs and topographic maps (NETROnline 2024; Smead and Stevens 1994). The surrounding environment is mostly rural with agricultural land and a few dwellings. A gas station is located to the east.

058-0245 was previously recorded multiple times, with the most recent being in 1993 (Smead 1993b). Smead described the resource as a circa 1915–1930 one-story T-shaped vernacular store/service station and residence with Craftsman details. The T-shape building was comprised of two rectangular sections: the eastern commercial section and the western residential section. The building had a hipped, asphalt shingle roof, weatherboard siding, and a brick pier foundation. The store's entrance was located on the southeast elevation through a recessed three-part store front covered by a porte cochere, which also sheltered the gas station service area. The windows included single pane glass windows and two-over-two double-hung wood sash. The residential section of the building consisted of four rooms and was accessed via a porch on the southeast elevation's southernmost corner. Smead also mentioned three outbuildings: a hipped-roof garage, a pyramidal-roofed shed, and a shed-roofed storage building. All the outbuildings featured weatherboard siding. At the time of the 1993 survey, the buildings were in poor condition. ERM visited the resource in 2024, and no buildings were visible (see Figure 6). A more detailed desktop analysis was completed in October 2024, which showed that the resource was demolished between 1994 and 2002 (NETROnline 2024), as shown in Figure 5.

058-0245 was determined eligible for the NRHP in 1994 under Criteria A and C for associations with domestic, transportation, and commerce/trade themes, as well as architecture. The resource was located within the half-mile study tiers for Nebula-Raines Routes 3 and 4 (see Figure 4). However, because the resource has no longer been extant for at least 20 years, ERM is not including it in the analysis of potential Project impacts. It is discussed here to provide VDHR with updated records on its status.

## 2.5 PREVIOUS SURVEYS

Some portions of the routes under consideration and associated facilities were previously surveyed for cultural resources. Research indicates that 22 prior Phase I cultural resource surveys have been conducted within 1.0 mile of the routes, including 11 that overlap portions of various individual routes. Because the routes share some common segments, many of the previous surveys have covered portions of multiple routes. Information on these previous surveys—including VDHR survey number, report title, report authors, and report date—is provided in Table 9. The extent of the previous survey coverage is depicted in Attachment 2.



**TABLE 9 CULTURAL RESOURCE SURVEYS WITHIN 1.0 MILE OF THE PROPOSED PROJECT**

<b>VDHR Survey #</b>	<b>Title</b>	<b>Author(s)</b>	<b>Date</b>
MC-010	A Phase I Archaeological Survey South Hill Wastewater Treatment System Mecklenburg County, Virginia Project	Antony F. Opperman	1984
MC-011	A Preliminary Archaeological Reconnaissance of Selected Locations in Mecklenburg County, Virginia	William M. Gardner	1985
MC-014	Phase I Archaeological Reconnaissance Survey, Route 663, Mecklenburg County, Virginia	J. Cooper Wamsley	1984
MC-018	A Phase I Cultural Resource Survey of the Proposed Route 58 Widening, Mecklenburg County, Virginia	Joe B. Jones, Dennis B. Blanton, Charles M. Downing, Willie Graham, Lawrence McLaughlin, and Christopher McDaid	1990
MC-019	Phase I Cultural Resource Survey of the Proposed Route 58, South Hill Bypass, Mecklenburg County, Virginia	Joe B. Jones, Dennis B. Blanton, Charles M. Downing, and Willie Graham	1990
MC-020	Phase I Cultural Resource Reconnaissance of the Proposed Interstate Industrial Park in the Town of South Hill, Virginia	Christopher Egghart and Luke Boyd	1991
MC-025	A Phase I Cultural Resource Survey of The Proposed Route 708 Widening in Mecklenburg County, Virginia	Craig R. Lukezic	1992
MC-031	Phase I Cultural Resources Investigation for the U.S. Route 58 Widening Study Between Boydton and South Hill, Mecklenburg County, Virginia	J. Sanderson Stevens, Margarita Jerabek Wuellner, and Joshua Lea Thackston	1992
MC-032	An Additional Phase I Cultural Resource Survey of Redesigned Sections of The Proposed Route 58 South Hill Bypass Project, Mecklenburg County, Virginia	Stevan C. Pullins and Charles M. Downing	1993
MC-045	A Phase I Archaeological Survey of a Realignment of Section E23 of the Proposed Route 58, South Hill Bypass, Mecklenburg County, Virginia	Kenneth E. Stuck and Charles M. Downing	1996
MC-050	A Supplemental Archaeological Survey of Route 58 Widening, Mecklenburg County, Virginia	Maureen Myers	1999
MC-068	Roanoke Rapids and Gaston Hydropower Project: Cultural Resources Overview and Survey of Eroded Shoreline in Locations of Previously Recorded Sites, Brunswick and Mecklenburg Counties, Virginia	Lawrence E. Abbott, Erica E. Sanborn, and John S. Cable	1998
MC-070	Roanoke Rapids and Gaston Hydropower Project: Cultural Resources Survey of	Lawrence E. Abbott and Peter E. Siegel	1998

VDHR Survey #	Title	Author(s)	Date
	High Probability Areas Parallel to the Shoreline, Brunswick and Mecklenburg Counties, Virginia		
MC-074	Archaeological Survey of the Proposed Routes 1/58 to Route 47 Connector Project, Town of South Hill, Mecklenburg County, Virginia	Courtney J. Birkett	2005
MC-081	A Phase I Cultural Resources Survey of Approximately 0.5 Acres for the Baskerville Cellular Tower Site Mecklenburg County, Virginia	Aimee J. Leithoff and Ellen M. Brady	2007
MC-084	Phase I Cultural Resources Survey and Cemetery Delineation Study for the Proposed Boydton Horse Park, Mecklenburg County, Virginia	Mike Klein, Tracy McDonald, Emily J. Lindtveit, and Dane T. Magoon	2010
MC-099	Phase I Cultural Resources Survey of the ±69.6 Hectare (±172 Acre) Mecklenburg County Public Schools Project Area, Mecklenburg County, Virginia	David Dutton	2019
MC-100	Phase I Cultural Resources Survey of the ±105 Hectare (±260 Acre) Prison Property Project Area, Mecklenburg County, Virginia	David Dutton and Hope Smith	2017
MC-101	Phase I Cultural Resources Survey of the ±12.92-Hectare (±31.93-Acre) Prison Expansion Project Area, Mecklenburg County, Virginia	Hope Smith	2019
MC-104	Dominion Virginia Power Cloud Breaker Station and Coleman Creek Delivery Point Project, Phase I Cultural Resource Survey Report	Tanner Haynes and Derek Parrott	2020
MC-119	Phase I Cultural Resources Survey of the Line #235 Extension to Cloud 230-kV And Related Projects, Mecklenburg County, Virginia	Robert J. Taylor and David H. Dutton	2023
MC-122	Phase IA Cultural Resource Assessment of the ±53.8-Hectare (±133-Acre) AVC43 Project Area, Mecklenburg County, Virginia	David Dutton	2021

\* Gray shaded rows denote surveys that overlap portions of the route alternatives



### 3. STAGE I PRE-APPLICATION ANALYSIS FINDINGS

#### 3.1 METHODS FOR ANALYSIS

Fieldwork for the pre-application analysis was conducted by Haley Hoffman and Emma Jennings under the direction of Secretary of the Interior Qualified architectural historian Mary Beth Derrick between August 13–15, 2024. The fieldwork involved photographing the resources requiring visual assessment according to the Guidelines and examining potential line-of-sight views from each resource toward the Project. For resources where property owner approval was granted for historic resource documentation, photographs were taken toward the proposed transmission line from the property at the most prominent view of the landscape. When such permission was not available, photographs were taken from the public right-of-way (typically a road) nearest to the resource facing toward the route and/or substation/switching station.

Panoramic photographs were taken from each resource, with an effort to capture the direction with the clearest, most unobstructed view toward the route. The precise location of the photograph was captured with a mobile tablet device connected to a sub-meter accurate Global Navigation Satellite System (GNSS) receiver, the Trimble R1. The locations where photographs were taken were noted as Key Observation Points (KOP). Site visits to the KOPs were prioritized based on their location relative to the resource, so that viewpoints east of the resource were visited in the morning and viewpoints west of the resource were visited in the afternoon. This helped ensure, where possible, that the sun was behind the photographer at the time the viewpoint photography was captured. Additionally, minor adjustments to position were made to obtain as clear a view to the site center as possible, avoiding trees, landscaping, or built obstructions. Tablets recorded the center bearing, angle of view, altitude, and camera lens height. Upon receipt of the viewpoint location information, the viewpoints were plotted onto open source mapping from the Environmental Systems Research Institute (ESRI) using the Universal Transverse Mercator (UTM) 18N coordinate system.

The process of taking panoramas included setting up the tripod and camera. The camera was placed on the panoramic head in a landscape orientation where its lens height was confirmed and set at 1.5 meters (note: a portrait camera orientation was sometimes used in situations where the viewpoint is very close to a development so that the top of the development is not cut off by the image boundaries). The tripod head and camera combination were then leveled. With the camera's viewfinder centered on the perceived site center, exposure and focus settings were taken. These were then fixed manually on the camera so that they could not be inadvertently altered. The head was rotated 90 degrees to the left where the first frame of the 360-degree sequence was then taken. Each subsequent frame was taken using a 50 percent overlap of the previous frame until the full 360-degree sequence was captured. The camera was then removed from the tripod and a viewpoint location photograph was captured showing the tripod in its position.



The following camera and tripod configuration was used:

- Camera body: Nikon D800 professional specification digital SLR (full frame CMOS sensor)
- Camera lens: Nikkor AF 50mm f1.8 prime
- Tripod: Manfrotto 055MF4 with Manfrotto 438 ball leveller
- Panoramic head: Manfrotto 303SPH

The following camera settings were used for all photography:

- Camera mode: Manual Priority
- ISO: 100
- Aperture: f13
- Image format: RAW

After the photos were complete, they were uploaded to a server to begin the simulation/visualization process. The single-frame photographs were opened in Adobe Photoshop CC 2022 where they were checked, and any camera sensor dust spots were removed before being saved as high-resolution JPEG images. If required, discrete color and tonal adjustments were made to each frame before they were saved. The single-frame photographs were stitched together in PTGui Pro version 12.11 professional photographic stitching software using cylindrical projection settings. The camera locations were plotted in Global Mapper version 23.1. Digital models of the transmission line structures were provided by Dominion, then cleaned up and textured in Autodesk 3DS Max 2021. The transmission structures along each route were rendered in Vray version 5.2 from each KOP camera location. 3D imagery was produced at the field of view using camera matching. Renderings for each route and each tower combination were then exported for use as an overlay.

Detailed, correctly dimensioned 3D computer models of the transmission structures were generated using Autodesk 3DS Max 2021 and iToo RailClone. The virtual 3D model of the structures was created using real-world measurements and elevation drawings provided by the Company (see Attachment 3). These were textured using Vray Physically Based Rendering (PBR) materials to simulate the weathering steel texture. The detailed, textured models were rendered to a digital image using a simulated physical camera and a sun and sky simulation lighting model in the computer software consistent with conditions within the original viewpoint photography.

Photomontages were produced by overlaying the rendered image on the photograph, using known control points and the wireline imagery showing the tower columns at the correct height and distance. Final adjustments were then made to the brightness and contrast of the rendered images to match them to the photograph. Final photomontages were prepared from each viewpoint for the route. These were then opened in Adobe Photoshop CC 2022 where minor changes were made such as placing relevant tree/building/hedge screening or telegraph wires over the proposed development renders where necessary. Finally, the final images were cropped to the proportions required for the visual simulation figures, and the visualization figures were prepared in Adobe InDesign CC2022 and exported in a Portable Document Format (PDF) format.



## 3.2 STRUCTURE TYPES AND RIGHT-OF-WAY WIDTHS

The proposed transmission line would be constructed on new right-of-way supported primarily by double circuit capable, galvanized steel monopoles. The proposed right-of-way width for the Project is 100 feet. For the Nebula-Raines Line, the estimated minimum structure height is 105 feet, the estimated maximum structure height is 175 feet, and the estimated average structure height is 124 feet. For the Cloud-Nebula Line, the estimated minimum structure height is 105 feet, the estimated maximum structure height is 130 feet, and the estimated average structure height is 122 feet. The estimated heights are based on preliminary conceptual design, do not include foundation reveal, and are subject to change based on final engineering design. Section views depicting typical right-of-way widths and structure configurations are provided in provided in Attachment 3.

## 3.3 ASSESSMENT OF POTENTIAL IMPACTS

The assessment of potential Project impacts on individual resources made use of the visual assessment findings and categorized the severity level of impacts according to the following scale devised by VDHR:

- **None**—Project is not visible from the resource.
- **Minimal**—Viewsheds have existing transmission lines, there would be only a minor change in height, and/or other views are partially obscured by topography or vegetation.
- **Moderate**—Viewsheds have more expansive views of the transmission line, more dramatic changes in height are proposed, and/or the overall visibility of the Project would be greater.
- **Severe**—Existing viewshed contains no transmission line, the view to the Project would be relatively unobstructed, the new transmission line would introduce a significant change to the setting of historic properties, and/or a dramatic change in the height of an existing transmission line would take place in close proximity to historic properties.

## 3.4 HISTORIC RESOURCE DESCRIPTIONS

### 3.4.1 058-0057, SYCAMORE LODGE

Sycamore Lodge, 058-0057 is located at 4586 Goodes Ferry Road/Route 903 in South Hill. The resource is accessible via a long private single lane gravel driveway enclosed by automated 3-foot iron gates attached to a wood fence. The property consists of manicured lawn and mature trees near the entrance and along the driveway. Included on the property is a manmade pond to the northeast of the dwelling. The surrounding neighborhood is relatively rural, with residential dwellings on similarly sized parcels of land with land use consisting of manicured lawns, cultivated fields, and forest.

Sycamore Lodge was last surveyed in June of 1958 by Robert Wiggins for a Historic American Buildings Survey (HABS) inventory on behalf of the University of Virginia (UVA) (Wiggins 1958). It was home to Henry Deloney, the owner of the famous racehorse, Polly Williams. Wiggins described the circa 1788 one-and-half story wood frame dwelling as featuring a gambrel roof clad in standing metal and weatherboard siding. The 1958 survey noted four-over-four and nine-over-nine, double-hung wood sash windows. The dwelling included an exterior end chimney



constructed of brick laid in a Flemish bond pattern. Finally, Wiggins noted the dwelling sat on a continuous stone foundation. ERM was unable to view the resource from the public right-of-way due to vegetation and the long driveway that blocks the view (Attachment 4, Figure 1). However, desktop analysis showed that between 2003 and 2007 the dwelling's northwest elevation was expanded (NETROnline 2024). At the time of the 1958 survey, there were several auxiliary structures to the northwest of the dwelling. However, the majority of these were demolished by circa 1996 (NETROnline 2024). As of 2024 only two gabled structures located close to the dwelling's driveway remain.

Although 058-0057 has not been evaluated for listing on the NRHP, the previous surveyor recommended additional research should be completed on the resource. An email from Logan Parham of Preservation Virginia noted this resource as a significant property in the area. Thus, ERM has included it in this report as a locally significant resource. Sycamore Lodge is located within the half-mile study tier for Nebula-Raines Routes 3 and 4.

### 3.4.2 058-0073, LOMBARDY GROVE TAVERN

Lombardy Grove Tavern, 058-0073, is located at 4782 Plank Road in South Hill. The resource is shrouded by mature trees. The driveway from Plank Road that once provided access to the resource has been consumed by the trees. To the north is an agricultural field and to the south of Union Level Road are dwellings.

058-0073 is a circa 1790 two-story building that underwent an enlargement during the mid-nineteenth century (Smead 1993a). The original one-and-a-half story section is located to the west (rear) and represents what remains of the eight-room building. It has a steep-pitched gabled roof clad in standing seam metal with a large brick exterior chimney at the west end laid in an irregular Flemish bond pattern. The chimney sits on a rough stone foundation. The original block also features a central brick flue. Two narrow gable-roofed dormers project from the roof's east elevation. Along the north and south elevations of the original block are single-story shed-roofed enclosed porches sitting on brick piers. A second interior brick flue is located on the south shed-roofed enclosed porch. This circa 1790 block sits on a rough-faced stone foundation. Four rooms were removed from the east end prior to the construction of the tavern's circa 1850–1865 addition.

The circa 1850–1865 east addition reoriented the building to face east (Smead 1993a). It features two stories and a standing seam metal-clad gabled roof. This addition is five bays wide with a center-passage plan. There is a single shouldered, exterior chimney laid in four-course common bond at the north elevation. A second interior chimney is located at the south end. The addition features a Craftsman style single-story, four-bay front porch with paneled square wood posts on square brick piers. This porch replaced an earlier, simpler Colonial Revival porch of similar size. The entrance under the porch is flanked by five-light sidelights. This addition is sitting on a raised foundation of oversized brick laid in a five-course common bond pattern.

The ornamentation uniting the original one-and-a-half story building and two-story consists of the beaded clapboards, narrow cornerboards, and the boxed cornice (Smead 1993a). The windows throughout the tavern are double-hung wood sash windows. The first floor of the front section has



nine-over-nine windows with six-over-six windows on the second floor. The rear section features four-over-four and six-over-six windows.

In circa 1943, the tavern underwent remodeling, which included the reconstruction of the front porch, the replacement of a one-bay-wide section on the circa 1850–1865 addition's south elevation with a one-bay, hipped roof garage (Smead 1993a). The interior of the tavern had the stairs on the first floor reconstructed, but otherwise went through minimal remodeling in circa 1943.

During the 1993 survey, a circa 1790 smokehouse, garage, barn, log storage building, stable, and three sheds were noted, but not described (Smead 1993a).

ERM visited the resource in 2024 and was unable to see any buildings from the nearest public right-of-way due to thick vegetation (Attachment 4, Figure 2). Based on available historic aerial imagery, the outbuildings mentioned in the 1993 survey were located to the west of the tavern. By 2002, only two gabled outbuildings were visible from aerial views amongst the vegetation that had begun overtaking the western property boundary (NETROnline 2024). The outbuilding farthest west appears to have collapsed by 2019, and only the smaller gabled outbuilding closer to the tavern appears to remain in a 2024 aerial image (GoogleEarth Pro 2024).

Lombardy Grove Tavern was determined eligible for listing on the NRHP by VDHR staff in August of 1994 under Criteria A and C after an intensive survey was completed in the year prior. An email from Logan Parham of Preservation Virginia noted this resource as a significant property in the area. Thus, ERM has also included it in this report as a locally significant resource. 058-0073 is located within the 1-mile study tier for Nebula-Raines Routes 3 and 4.

### 3.4.3 058-0140, M.H. UPTON HOUSE

M.H. Upton House, 058-0140, is located at 3642 Antlers Road/Route 678 in Boydton. The resource is set back from the road by approximately 1,440 feet and is accessible via a gravel driveway that winds through cultivated fields. The Johnsons Pond is located near Antlers Road, to the southwest corner of the resource's parcel. A forest is to the north.

058-0140 was last surveyed by EAC/WJG in October of 1984 (EAC/WJG 1984). At the time of the survey, a circa 1900 two-story T-plan dwelling with a central passage and simple Italianate features was noted. The dwelling was further described as having a standing seam metal clad roof and wood siding with front and right side octagonal projections (EAC/WJG 1984). The projections and gables are finished with decorative shingles. The front gable of the dwelling has elaborate sawn work. The dwelling featured an interior end brick chimney. The fenestration described included two-over-two double-hung wood sash windows. The survey further described an exterior door providing access to a parlor in a projecting wing. During the 1984 survey, a corncrib and two barns were noted but not described.

ERM visited the resource in 2024, but was not able to view any structures due to the resource's distance from the nearest public right-of-way and intervening vegetation (Attachment 4, Figure 3). However, based on available historic aerial imagery, the dwelling was demolished prior to 1994 and a mobile home was moved to its location between 2003 and 2004. Aerial views also show that



the three outbuildings are still extant, and two additional, small outbuildings are also present (GoogleEarth Pro 2024; NETROnline 2024).

The M.H. Upton House has not been formally evaluated for listing on the NRHP. However, an email from Logan Parham of Preservation Virginia noted this resource as a significant property in the area. Thus, ERM has included it in this report as a locally significant resource. 058-0140 lies within the half-mile study tiers for Nebula-Raines Routes 1, 3, and 4 and within the 1-mile study tier for Nebula-Raines Route 5.

#### 3.4.4 058-0141, SANDERS FARM

Sanders Farm is located at 4357 Antlers Road/Route 678 in Boydton. The resource sits on a 40-acre lot pushed back from the road and is accessible via a gravel driveway. To the south of the architectural components is a small pond, while to the west is an agricultural field. Surrounding the parcel is dense woodland.

058-0141 was last surveyed in January of 2017 by Robert Taylor (Taylor 2017). In the survey, Taylor described a circa 1900 two-story vernacular I-house with minimal Folk Victorian embellishments. The dwelling had a standing seam metal roof, replacement vinyl siding, and a continuous concrete block foundation. It featured louvered shutters bracketing the two-over-two, double-hung, wood sash windows and a molded cornice. Attached to the rear of the main block was a full-width two-story rear ell (Taylor 2017). The primary entrance was accessible via a hipped-roof, partial-width, single-story porch with a concrete floor and turned wood posts. Attached to the rear ell was a single-story addition. To the east of the primary dwelling was a circa 1800 single-room square-notched log house. The log house had a front-gabled, metal clad roof and a stuccoed exterior stone chimney with a rebuilt brick cap. There was a single centered window on the rear wall and two gable windows for the attic.

In addition to the I-house and log house, several outbuildings were noted on the property, including a pre-1900 smokehouse, a circa 1900 corncrib, a circa 1900 wood-frame shed, a circa 1990 rectangular barn, and a circa 1990 garage (Taylor 2017). A 1984 survey also noted two diamond notched log tobacco barns; however, they were not observed by Taylor in 2017 possibly due to limited visibility of the property.

ERM visited the resource in 2024 and was not able to see any buildings due to thick vegetation surrounding the parcel (Attachment 4, Figure 4). However, desktop analysis shows that the two tobacco barns were demolished prior to 2002 (GoogleEarth Pro 2024). The other outbuildings, along with the dwelling and the log house are still extant and no obvious changes have occurred since the 2017 survey.

Sanders Farm has not been formally evaluated for listing on the NRHP. However, an email from Logan Parham of Preservation Virginia noted this resource as a significant property in the area. Thus, ERM has included it in this report as a locally significant resource. The resource's northern boundary lies within the right-of-way for Nebula-Raines Route 5 and the half-mile study tier for Nebula-Raines Route 4.



### 3.4.5 058-0175, TOBACCO BARN

058-0175 is located at 10733 Buggs Island Road/Route 4 in Baskerville (Office of the Commissioner of the Revenue 2024). The parcel includes a cleared agricultural field and is surrounded by other agricultural and residential lots in all directions. Densely wooded areas encroach on the lots immediately to the east and south.

058-0175 was previously recorded in 1984, but the VCRIS form contains limited information on the resource. Three tobacco barns were present at the site. The surveyor noted that “each contains five tier levels and an open frame shed” (Unknown 1984). The previous surveyor also noted that the exterior walls of the barns were covered by shingled pent roofs known colloquially as “bonnets”. No other information regarding the barns, or the previous surveyor was available.

ERM visited the resource in 2024, and the barns were not visible behind a mobile home which is now on the property (Attachment 4, Figure 5). Aerial imagery shows that two of the barns were demolished between 1996 and 2003 (NETROnline 2024). The barns have been replaced by two sheds and a mobile home. A single tobacco barn appears to be extant in aerial imagery and has a gabled, metal roof.

058-0175 is currently unevaluated for listing in the NRHP, but is considered locally significant by Preservation Virginia due to the type and function of the structures. It is located within the 1-mile study tier for Nebula-Raines Route 4.

### 3.4.6 058-0309, TOBACCO BARNs

058-0309 is located on Antlers Road/Route 678 in Boynton. The property was mis-mapped in VCRIS and the resource is actually located about 0.4 mile north of location marked on VCRIS, which was verified in the original report (Stevens et al. 1992). The correct location of the resource is depicted on the maps in this report. The surrounding environment is rural, and the barns sit within a large cleared field. Immediately north, west, and south of the property are dense woodlands, and past a tree line on the east are additional large, open fields.

058-0309 was previously surveyed by Margarita Ja. in 1992. Ja speculated that the resource may have been a part of the Rolfe House property, and that the barns were of typical design and construction for their function and time period. The resource was described as a pair of one-story, circa 1900 tobacco barns with standing seam metal, gabled roofs, wood frames, and concrete foundations. Both barns also displayed low door openings on the front, and the northern barn contains an open-bay side porch (Ja 1992). No other architectural details were provided from the previous surveys.

ERM visited the resource in 2024 and noted some changes from the earlier survey. Only one tobacco barn was visible (Attachment 4, Figure 6). This barn has a side-gabled roof, and diagonally slanted wooden plank cladding on the exterior, which create a “V” pattern. Peeling asphalt siding with brick patterning covers a portion of the upper story. Two lean-to shed extensions are located on the north and south elevations. A hinged wooden door located on the

east elevation provides access to the interior. According to aerial imagery, the other tobacco barn was demolished between 2019 and 2020 (GoogleEarth Pro 2024).

058-0309 was previously determined ineligible for listing on the NRHP by the VDHR in 1993. However, due to the function of the structures and their continued existence, they are considered locally significant by Preservation Virginia. 058-0309 is located within the 1-mile tier for Nebula-Raines Route 4 and the half-mile tier for Nebula-Raines Route 5.

### 3.4.7 058-5092, MECKLENBURG COUNTY POORHOUSE CEMETERY

058-5092 occupies 1.42 rural acres located east of Prison Road. The parcel is heavily wooded and is enclosed on three sides by a driveway and a parking lot. Residential and commercial lots are located to the north, south, and east, and a densely wooded area is located immediately to the west.

Poorhouse Cemetery is associated with the Mecklenburg Poor House (058-0321), which has been relocated. The cemetery was recorded as an archaeological site (44MC0813) and was most recently surveyed in March of 2010 by Mike Klein (Klein 2010). The investigator interviewed a Dr. Shelton, who provided the approximate location of the cemetery. The association of the cemetery with the Mecklenburg Poor House, which was constructed in circa 1780, dates the cemetery to the 1780s–1790s (Klein 2010). The cemetery grounds measure approximately 350 feet east-west and 225 feet north-south. Despite the size, the cemetery has only 1–5 identified gravestones. The cemetery was in use until about 1950.

ERM visited the cemetery in 2024, but was not able to survey the resource in deference to a sign noting that it was a restricted area (Attachment 4, Figure 7). However, aerial views show no changes to the cemetery since the previous survey (GoogleEarth Pro 2024).

058-5092 was recommend potentially eligible for listing on the NRHP by Klein in 2010 under Criterion D. The VDHR concurred with this recommendation the same year. In addition to its NRHP eligibility, ERM considers the cemetery to be a locally significant resource because of its association with the local African American community. The cemetery is located within the 1-mile study tier for the Cloud-Nebula Route, Nebula-Raines Routes 1, 3, 4, and 5 and the proposed Nebula Switching Station.

### 3.4.8 058-5412, CAREY FARMHOUSE

058-5412 is located on a 100-acre parcel at 630 Spring Road/Route 837 in South Hill. The resource is far removed from the main road and is only accessible via a single lane dirt road. The farm consists of woodlands, manicured lawn, and agricultural fields. A manmade pond is situated at the center of the parcel.

Carey Farmhouse is a farmstead that was most recently surveyed in August of 2022 by Amanda Gibson (Gibson 2022). The farmstead originally was constructed circa 1920 and remained in the Parham family until 1958, when it was purchased by Snead Sr. and Goldie White Carey (Gibson 2022). The family farmed tobacco and food crops. The farmstead is currently retained by the Carey family.



The primary dwelling on the farmstead is a circa 1920 one-and-a-half story Craftsman Bungalow, which is in fair condition. At the time of 2022 survey, Gibson described the dwelling as having the original wooden clapboard siding and a standing seam tin roof (Gibson 2022). The dwelling had a low-pitched gabled roof with exposed rafters on the overhang and a single shed-roof dormer protruding from the half story. Gibson noted three interior brick chimneys and a fourth block chimney that was added in the 1970s. The primary entrance is accessible via a full-width porch. At an unknown point in time, the front porch's columns were replaced with brick and the deck the columns sit on was rebuilt (Gibson 2022). There is a secondary, enclosed porch on the rear. ERM could not view the dwelling from the vantage point of the nearest public right-of-way. However, a desktop review of the dwelling using aerial imagery showed no major changes to the resource (GoogleEarth Pro 2024).

In addition to the Craftsman Bungalow, Gibson recorded two circa 1920 smokehouses, a tobacco barn, and two storage barns. The two smokehouses were described as small outbuildings behind the dwelling (Gibson 2022). One of the smokehouses was built of stacked logs, similar to the tobacco barn. The second smokehouse featured clapboard siding with a shed to one side. The two storage barns sit to the east of the dwelling, but were not described. When ERM revisited the location, no outbuildings were visible from the right-of-way and a desktop review revealed that all the outbuildings are still extant (Attachment 4, Figure 8; GoogleEarth Pro 2024).

058-5412 is currently unevaluated for NRHP eligibility; however, Gibson recommended further research be completed on the resource to understand the significance Carey Farmstead had with respect to local history. An email from Logan Parham of Preservation Virginia noted this resource as a significant property in the area. Thus, ERM has included it in this report as a locally significant resource. 058-5412 is located inside the 1-mile study tier for Nebula-Raines Route 1.

### 3.4.9 EAST END HIGH SCHOOL

The former East End High School was located at 365 Dockery Road in South Hill, just east of its intersection with U.S. Highway 1, and about 4.0 miles southwest of South Hill, in Mecklenburg County. The building, constructed in 1953 to serve the African American community of eastern Mecklenburg County, was demolished in March 2024 (Snead 2024), although the foundation remains (Attachment 4, Figure 9). It was located on a 23-acre parcel of maintained lawn, woods, and an athletic field. A row of trees was planted along Dockery Road in front of the school. Vehicular access was via a circular drive in front of the school. A driveway along the west side of the building connected with the circular drive and provided bus access. A parking lot was between Dockery Road and the east wing of the school. The main building was roughly H-shaped, with a connected wing off the southeast corner. An additional building was located to the north and was connected to the main building by walkways (NETROnline 2024).

East End High School was a historically black school that operated from 1953 until county schools were integrated under a court order in 1969. The building was then converted to a middle school serving both black and white students (Snead 2021; VDHR 2022).

The school had its origins in a school for Black students established in 1916 in the old True Reformer Hall. A three-room school building was constructed in 1918 with funds from the county school board and parent contributions. This school became the Mecklenburg County Training



School. The East End High School was built in 1953 with a grant from the Battle Fund, a program instituted under Governor John S. Battle to directly fund local school construction. Students came to the new high school from the Mecklenburg County Training School, the Thyne Institute, and other schools for African Americans in eastern Mecklenburg County. Initial enrollment at the school was 450 students under its first and only principal, Mr. Emmett Taliaferro.

Historic aerial photographs show that the main building and the separate building to the north were part of the original plan, and that the southeast wing was added between 1958 and 1967. The athletic field was originally located behind the building to the north, but by 1967 an additional field had been constructed on the east side of the building. By 1983, the original field to the north was used as a baseball field, while a track was constructed in the field to the east (NETROnline 2024). A circa 1960 photograph and an architectural rendering show that the school was a one-story flat-roofed brick building with a central entryway covered by a projecting portico. The wings had rows of tall 3 x 6-paned windows (Classmates 2024). The style was typical of mid twentieth century International Style-influenced public buildings.

East End High School was not recorded in VDHR's historic architectural database. It appears to have been a well-preserved example of a public school building from the period, and was an important part of the social and educational history of Mecklenburg County. The school represented an effort to provide "separate but equal" facilities for African Americans in the segregated South and was later adapted as an integrated school. However, because the building has been demolished, the resource no longer possesses sufficient integrity to be considered an historic architectural resource. The foundation of the school remains and an historical marker was installed near the site in 2022 (VDHR 2022). ERM included the resource as locally significant historic site because of its status as an important African-American institution in the county (Historically Black Schools of Mecklenburg County Virginia 2024) that it is still memorialized by a historical marker. The resource was located within the half-mile study tier for Nebula-Raines Routes 3 and 4.

### 3.5 HISTORIC RESOURCE FINDINGS FOR CLOUD-NEBULA ROUTE

#### 3.5.1 058-5092, MECKLENBURG COUNTY POORHOUSE CEMETERY

058-5092 is located approximately 0.5 mile to the west of the Cloud-Nebula Route where the route would use a greenfield alignment and connects to Dominion's existing Cloud Switching Station. It is also approximately 0.8 mile to the northwest of the proposed Nebula Switching Station (Attachment 5, Figure 1). The area between the resource and the route is occupied by data centers and paved roads. The resource itself is surrounded by dense vegetation. One simulation was prepared for the resource, KOP 112, near Herbert Drive. As shown by the simulation, the resource would have no view of either the switching station or the route due to the distance between the resource and the Project, vegetation surrounding the resource, and higher ground directly east of the resource (Attachment 5, Figure 2). Thus, ERM recommends that there would be **No Impact** on Mecklenburg County Poorhouse Cemetery from this route or the proposed Nebula Switching Station.



### 3.6 HISTORIC RESOURCE FINDINGS FOR NEBULA-RAINES ROUTE 1

#### 3.6.1 058-0140, M.H. UPTON HOUSE

058-0140 is located approximately 0.3 mile to the north of Nebula-Raines Route 1 in an area where the route would use a greenfield alignment (Attachment 5, Figure 3). The area between the resource and the route consists of pastureland intersected by a tree-lines drainage. The route intersects with Dominion's existing Lines #38 and #137 in this area.

One simulation was prepared for the resource at KOP 104, on Antlers Road. This point was chosen because it was the closest point to the resource from the public right-of-way and represented a similar view across pastureland to the south. The simulation indicates that the conductors would be visible between the trees (Attachment 5, Figure 4). Most vantage points from within the resource itself would likely have no line of sight to the route due to intervening tree cover. Moreover, the existing Dominion transmission line located to the west of the resource already occupies the resource's viewshed, and would be in the foreground along the sight line from the resource southwest to Route 1. Although there are trees and dense vegetation bordering the southern resource boundary, the transmission line route would be visible from at least one vantage point at the resource's southwest corner and it would add an additional modern element to the viewshed. Because the historic viewshed has already been diminished by the existing transmission line, ERM recommends the route would have a **Minimal Impact** on the M.H. Upton House.

#### 3.6.2 058-5092, MECKLENBURG COUNTY POORHOUSE CEMETERY

058-5092 is located approximately 0.9 mile to the northwest of Nebula-Raines Route 1 where the route would use a greenfield alignment and approximately 0.8 mile to the northwest of the proposed Nebula Switching Station (Attachment 5, Figure 5). The area between the resource and the route consists of forest and data centers. The resource itself is surrounded by dense vegetation and trees. One simulation was prepared for the resource, KOP 112, near Herbert Drive. As shown by the simulation, the resource would have no view of the switching station or route due to the resource being surrounded by trees, along with the distance between the resource and the Project and the higher elevation of the land directly east of the resource (Attachment 5, Figure 6). Thus, ERM recommends that there would be **No Impact** on Mecklenburg County Poorhouse Cemetery from this route or the proposed Nebula Switching Station.

#### 3.6.3 058-5412, CAREY FARMHOUSE

058-5412 is located approximately 0.6 mile to the northwest of Nebula-Raines Route 1 where the route would use a greenfield alignment (Attachment 5, Figure 7). The space between the resource and the route consists of pastureland, agricultural land, and forested areas.

One simulation was taken for the resource at KOP 113, along Spring Road. As shown in the simulation, most of the resource would have no view of the route (Attachment 5, Figure 8). However, the top of one transmission structure could be visible from the eastern and southern edges of the resource. Although this would be a minor change, it would introduce a modern



element to the southern viewshed where there currently are none. Thus, ERM recommends that the route would have a **Minimal Impact** on the Carey Farmhouse.

### 3.7 HISTORIC RESOURCE FINDINGS FOR NEBULA-RAINES ROUTE 3

#### 3.7.1 058-0057, SYCAMORE LODGE

058-0057 is located approximately 0.5 mile to the southeast of Nebula-Raines Route 3 in an area where the route would use a greenfield alignment (Attachment 5, Figure 9). The area between the resource and the route consists of agricultural land, pastureland, and dense forest. One simulation was prepared for the resource, KOP 101, on Dockery Road. As shown by the simulation, the resource would have no view of the route due to the distance and the vegetation to the south of the route (Attachment 5, Figure 10). Thus, ERM recommends that there would be **No Impact** on Sycamore Lodge from this route.

#### 3.7.2 058-0073, LOMBARDY GROVE TAVERN

058-0073 is located approximately 0.6 mile to the west of Nebula-Raines Route 3 in an area where the route would use a greenfield alignment (Attachment 5, Figure 11). The area between the resource and the route consists of pastureland and forest. Additionally, the resource is surrounded by trees and dense vegetation.

One simulation was taken for the resource: KOP 103. The KOP is located in the median between Plank Road and Highway 1, near their connection with Union Level Road. As shown in the simulation, the tops of three structures would be visible from the eastern boundary of the resource when looking to the east (Attachment 5, Figure 12). Because of the dense vegetation surrounding the tavern, the route would not be visible from the tavern itself or anywhere other than the eastern edge of the resource boundary, where it would present a minor change to the existing viewshed. Thus, ERM recommends that Nebula-Raines Route 3 would have a **Minimal Impact** on the Lombardy Grove Tavern.

#### 3.7.3 058-0140, M.H. UPTON HOUSE

058-0140 is located approximately 0.3 mile to the north of Nebula-Raines Route 3 in an area where the route would use a greenfield alignment, but intersects with Dominion's existing Lines #38 and #137 (Attachment 5, Figure 13). The area between the resource and the route consists of pastureland intersected by a tree-lined drainage.

One simulation was prepared for the resource at KOP 104, on Antlers Road. This point was chosen because it was the closest point to the resource from the public right-of-way and represents a similar view across pastureland to the south. According to the simulation, the conductors would be visible between the trees (Attachment 5, Figure 14). Most vantage points from within the resource itself would likely have no line of sight to the transmission line due to intervening tree cover. Moreover, the existing Dominion transmission line located to the west of the resource, already occupies the resource's viewshed, and would be in the foreground along the sight line from the resource southwest to Nebula-Raines Route 1. Although there are trees and dense vegetation bordering the southern resource boundary, the route would be visible from at least one vantage point at the resource's southwest corner and it would add an additional modern element



to the viewshed. Because the historic viewshed has already been diminished by the existing transmission line, ERM recommends the route would have a **Minimal Impact** on the M.H. Upton House.

### 3.7.4 058-5092, MECKLENBURG COUNTY POORHOUSE CEMETERY

058-5092 is located approximately 0.9 mile to the northwest of Nebula-Raines Route 3 where the route would use a greenfield alignment and approximately 0.8 mile to the northwest of the proposed Nebula Switching Station (Attachment 5, Figure 15). The area between the resource and the route consists of dense forest and data centers. The resource itself is surrounded by dense vegetation. One simulation was prepared for the resource, KOP 112, near Herbert Drive. As shown by the simulation, the resource would have no view of the switching station or route due to the resource being surrounded by trees, along with the distance between the resource and the Project and the higher elevation of the land directly east of the resource (Attachment 5, Figure 16). Thus, ERM recommends that there would be **No Impact** on Mecklenburg County Poorhouse Cemetery from Nebula-Raines Route 3 or the proposed Nebula Switching Station.

### 3.7.5 EAST END HIGH SCHOOL

The East End High School historic site is located approximately 192 feet to the west of Nebula-Raines Route 3 where the route would use a greenfield alignment (Attachment 5, Figure 17). The area between the resource and the route consists of forest with some areas of open agricultural land.

One simulation was prepared for the resource at KOP 114, located alongside Dockery Road and the school parking lot. This location was chosen because the areas closer to the eastern boundary of the resource, which is closest to the route, did not have a point of access to safely take photos from. As shown in the simulation, there would be no view of the structures associated with the route from that location; it is likely that the conductors would only be visible from a vantage point at the resource's southern corner, looking down Dockery Road to the point where the route spans the road (Attachment 5, Figure 18). The construction of the route would also include tree clearing, which could be visible from the southern corner of the resource. In addition, the route might be visible from the resource's eastern boundary during the leaf off portion of the year. The other portions of the resource would have no view of the route. Thus, ERM recommends that Nebula-Raines Route 3 would have a **Minimal Impact** on the site of East End High School.

## 3.8 HISTORIC RESOURCE FINDINGS FOR NEBULA-RAINES ROUTE 4

### 3.8.1 058-0057, SYCAMORE LODGE

058-0057 is located approximately 0.5 mile to the southeast of Nebula-Raines Route 4 in an area where the route would use a greenfield alignment (Attachment 5, Figure 19). The area between the resource and the route consists of agricultural land, pastureland, and forest. One simulation was prepared for the resource, KOP 101, on Dockery Road. As shown by the simulation, the resource would have no view of the route due to distance and vegetation to the south of the route (Attachment 5, Figure 20). Thus, ERM recommends that there would be **No Impact** on Sycamore Lodge from Nebula-Raines Route 4.



### 3.8.2 058-0073, LOMBARDY GROVE TAVERN

058-0073 is located approximately 0.6 mile to the west of Nebula-Raines Route 4 in an area where the route would use a greenfield alignment (Attachment 5, Figure 21). The area between the resource and the route consists of pastureland and forest. In addition, the resource itself is surrounded by trees.

One simulation was prepared for the resource, at KOP 103, located on the median between Plank Road and Highway 1, near their connection with Union Level Road. As shown in the simulation, the tops of three structures would be visible from the eastern boundary of the resource when looking to the east (Attachment 5, Figure 22). Because of the dense vegetation surrounding the tavern itself, the route would not be visible from the tavern itself or anywhere other than the eastern edge of the resource boundary. Thus, ERM recommends that Nebula-Raines Route 4 would have a **Minimal Impact** on the Lombardy Grove Tavern.

### 3.8.3 058-0140, M.H. UPTON HOUSE

058-0140 is located approximately 0.3 mile to the south of Nebula-Raines Route 4 in an area where the route would use a greenfield alignment but intersects with Dominion's existing Lines #38 and #137 (Attachment 5, Figure 23). The area between the resource and the route consists of pastureland, forest, and dense vegetation.

One simulation was prepared for the resource at KOP 105, along Antlers Road. This point was chosen because it was the closest point to the resource along a public right-of-way. As shown in the simulation, a small portion of the conductors would be visible where the route intersects the existing Dominion transmission line to the north of the KOP (Attachment 5, Figure 24). However, the resource is farther away from the route than the KOP and it is unlikely that the resource itself would have line of sight to the route due to the intervening vegetation and trees, except perhaps in one location on the resource's western boundary looking northwest. However, that sight line would have the existing transmission line in the foreground, largely obscuring the new line associated with Nebula-Raines Route 4. Because the new transmission line could be visible from at least one location within the resource, introducing a new element of modern infrastructure to the viewshed, ERM recommends that Nebula-Raines Route 4 would have a **Minimal Impact** on the M.H. Upton House.

### 3.8.4 058-0141, SANDERS FARM

058-0141 is located approximately 0.3 mile to the north of Nebula-Raines Route 4 in an area where the route would use a greenfield alignment but intersects with Dominion's existing Lines #38 and #137 (Attachment 5, Figure 25). The area between the resource and the route consists of dense vegetation and forest. One simulation was taken for the resource, at KOP 106 on Antlers Road. As shown in the simulation, Nebula-Raines Route 4 would not be visible from the resource due to distance and intervening vegetation (Attachment 5, Figure 26). Thus, ERM recommends Nebula-Raines Route 4 would have **No Impact** on Sanders Farm.



### 3.8.5 058-0175, TOBACCO BARN

058-0175 is located approximately 0.6 mile to the north of Nebula-Raines Route 4 in an area where the route would use a greenfield alignment (Attachment 5, Figure 27). The area between the resource and the route consists of mobile homes, mid-century modern dwellings, industrial buildings, open agricultural land, and forested areas.

One simulation was prepared for the resource at KOP 108, on Buggs Island Road/Route 4. Although the resource is over a half-mile north of the route, the top of one structure would be visible when looking south from the road (Attachment 5, Figure 28). While this is a minor change, the construction of Nebula-Raines Route 4 would introduce a modern element to the southern viewshed, which currently consists of rural land and vegetation. Thus, ERM recommends that the route would have a **Minimal Impact** on 058-0175.

### 3.8.6 058-0309, TOBACCO BARN

058-0309 is located approximately 1.0 mile to the north of Nebula-Raines Route 4 in an area where the route would use a greenfield alignment but intersects with Dominion's existing Lines #38 and #137 (Attachment 5, Figure 29). The area between the resource and the route consists of forest and a farmstead. In addition, the road turns to the east between the resource and the route. One simulation was prepared for the resource at KOP 110, alongside Antlers Road. As shown in the simulation, the route would not be visible from the resource due to the bend in the road and distance (Attachment 5, Figure 30). Thus, ERM recommends that Nebula-Raines Route 4 would have **No Impact** on the tobacco barn.

### 3.8.7 058-5092, MECKLENBURG COUNTY POORHOUSE CEMETERY

058-5092 is located approximately 0.9 mile to the northwest of Nebula-Raines Route 4 where the route would use a greenfield alignment and approximately 0.8 mile to the northwest of the proposed Nebula Switching Station (Attachment 5, Figure 31). The area between the resource and the route consists of dense forest and data centers. The resource itself is surrounded by dense vegetation. One simulation was prepared for the resource, KOP 112, near Herbert Drive. As shown by the simulation, the resource would have no view of the switching station or route due to the resource being surrounded by trees, along with the distance between the resource and the Project and the higher elevation of the land directly east of the resource (Attachment 5, Figure 32). Thus, ERM recommends that there would be **No Impact** on Mecklenburg County Poorhouse Cemetery from Nebula-Raines Route 4 or the proposed Nebula Switching Station.

### 3.8.8 EAST END HIGH SCHOOL

The East End High School historic site is located approximately 192 feet to the west of Nebula-Raines Route 4 where the route would use a greenfield alignment (Attachment 5, Figure 33). The area between the resource and the route consists of forest with some areas of open agricultural land.

One simulation was prepared for the resource at KOP 114, located alongside Dockery Road and the school parking lot. This location was chosen because the areas closer to the eastern boundary of the resource, closest to the route, did not have access area to safely take photos from. As



shown in the simulation, there would be no view of the structures associated with the route from that location; it is likely that the conductors would only be visible from a vantage point at the resource's southern corner, looking down Dockery Road to the point where the route spans the road (Attachment 5, Figure 34). The construction of the route would also include tree clearing, which could be visible from the southern corner of the resource. In addition, the route might be visible from the resource's eastern boundary during the leaf off portion of the year. The other portions of the resource would have no view of the route. Thus, ERM recommends that Nebula-Raines Route 4 would have a **Minimal Impact** on the East End High School site.

### 3.9 HISTORIC RESOURCE FINDINGS FOR NEBULA-RAINES ROUTE 5

#### 3.9.1 058-0140, M.H. UPTON HOUSE

058-0140 is located approximately 0.8 mile to the southeast of Nebula-Raines Route 5 in an area where the route would use a greenfield alignment but intersects with Dominion's existing Lines #38 and #137 (Attachment 5, Figure 35). The area between the resource and the route consists of pastureland, forest, and dense vegetation. One simulation was prepared for the resource at KOP 105, alongside Antlers Road. This KOP was chosen because it was the closest ERM could get to the resource from a public right-of-way. As shown in the simulation, the route would not be visible from the resource due to distance and intervening vegetation (Attachment 5, Figure 36). Although the simulation was not taken from the edge of the resource, the KOP chosen is closer to the route and features less intervening vegetation than the resource does. Thus, ERM recommends Nebula-Raines Route 5 would have **No Impact** on the M.H. Upton House.

#### 3.9.2 058-0141, SANDERS FARM

Nebula-Raines Route 5 traverses approximately 575 feet of 058-0141's northernmost boundary where the route would use a greenfield alignment but connects to Dominion's existing Lines #38 and #137 to the southwest of the resource (Attachment 5, Figure 37). The area surrounding the resource is heavily wooded.

One simulation was taken for the resource at KOP 107, located on Antlers Road. As shown in the simulation, the route's conductors would be visible from the KOP when looking to the north, at its intersection with Antlers Road (Attachment 5, Figure 38). In addition, because the route intersects the resource's northern tip, it directly impacts the resource. Moreover, the outbuildings associated with the dwelling are likely to have views of the route where it turns south, to the west of the resource, before tying into the existing Dominion transmission line. The construction of Nebula-Raines Route 5 would include tree removal and introduce modern elements to the western viewshed and the resource itself. Thus, ERM recommends that the route would have a **Severe Impact** on Sanders Farm.

#### 3.9.3 058-0309, TOBACCO BARN

058-0309 is located approximately 0.3 mile to the west of Nebula-Raines Route 5 in an area where the route would use a greenfield alignment (Attachment 5, Figure 39). The area between the resource and the route consists of a tree line and an open field.



One simulation was prepared for the resource at KOP 110, located along Antlers Road. As shown in the simulation, the route would not be visible to the southwest or southeast due to the dense vegetation between the resource and the route and the curvature of Antlers Road looking south to the point where Nebula-Raines Route 5 crosses the road (Attachment 5, Figure 40). Even from a vantage point at the far southern edge of the resource, there would be enough curvature along Antlers Road and change in elevation to hide the transmission line. For this reason, ERM recommends the route would have a **No Impact** on the tobacco barn.

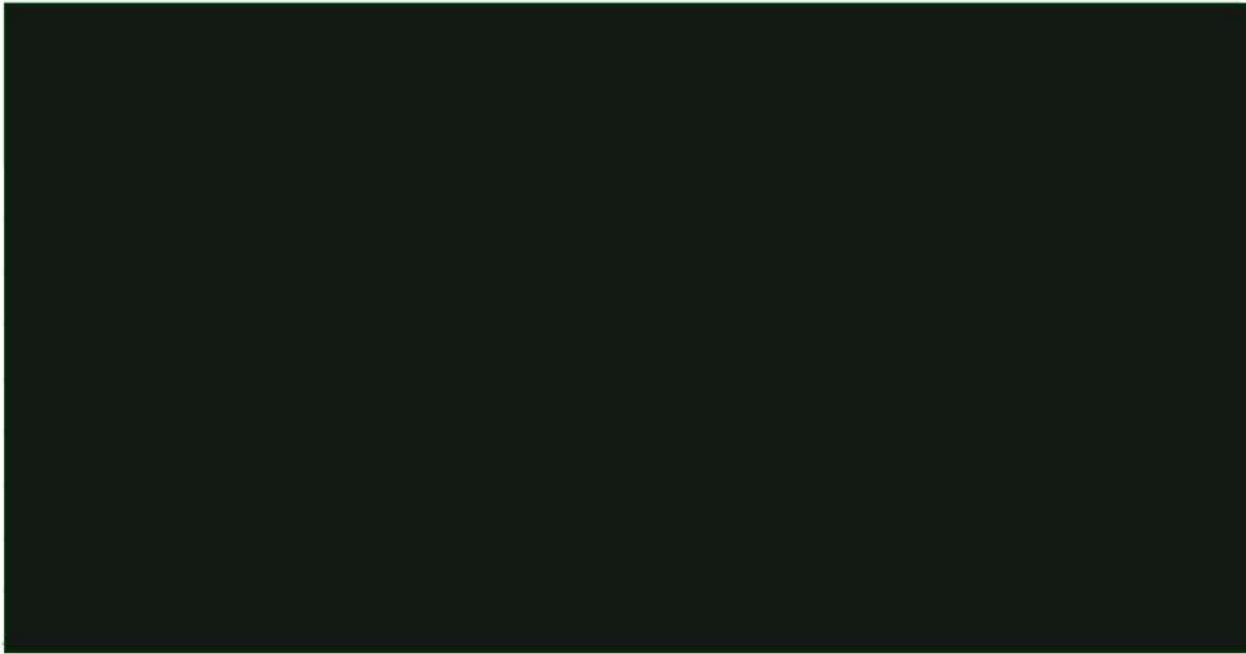
#### 3.9.4 058-5092, MECKLENBURG COUNTY POORHOUSE CEMETERY

058-5092 is located approximately 0.9 mile to the northwest of Nebula-Raines Route 5 where the route would use a greenfield alignment and approximately 0.8 mile to the northwest of the proposed Nebula Switching Station (Attachment 5, Figure 41). The area between the resource and the route consists of dense forest and data centers. The resource itself is surrounded by dense vegetation. One simulation was prepared for the resource, KOP 112, near Herbert Drive. As shown by the simulation, the resource would have no view of the switching station or route due to the resource being surrounded by trees, along with the distance between the resource and the Project and the higher elevation of the land directly east of the resource (Attachment 5, Figure 42). Thus, ERM recommends that there would be **No Impact** on Mecklenburg County Poorhouse Cemetery from this route or the proposed Nebula Switching Station.

### 3.10 ARCHAEOLOGY FINDINGS

The known archaeological sites along each route are listed in Table 10 and the sites associated with each route are discussed in the sections that follow.

**TABLE 10 ARCHAEOLOGICAL RESOURCES WITHIN THE RIGHT-OF-WAY FOR THE ROUTE ALTERNATIVES REDACTED**



### 3.10.1 CLOUD-NEBULA ROUTE

No archaeological sites were identified within this route's right-of-way.

### 3.10.2 NEBULA-RAINES ROUTE 1

There is one previously recorded archaeological resource mapped within the Nebula-Raines Route 1 right-of-way: [REDACTED]. Site [REDACTED] is a prehistoric (Archaic and Woodland) temporary camp site that has previous ground disturbance due to cultivation activities; it is currently unevaluated for the NRHP (Gardner 1985; VCRIS 2024a). [REDACTED]

### 3.10.3 NEBULA-RAINES ROUTE 3

There are five previously recorded archaeological resources that overlap Nebula-Raines Route 3: [REDACTED].

Site [REDACTED] is a multi-component unknown prehistoric lithic scatter and historic (1850–1874) church site that has previous ground disturbance due to historic cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024b). The site was subjected to a Phase II archaeological evaluation in 1990 performed by the William and Mary Archaeological Project Center for the Virginia Department of Transportation (VDOT), at which time the site was recommended as ineligible for the NRHP due to the sparse artifacts recovered and the lack of intact cultural features from either the prehistoric or historic components (Jones et al. 1990b).

<sup>3</sup> The term "centerline" as used herein refers to the center of the right-of-way for the transmission line.



The site has been at least partially impacted by construction of the South Hill Bypass east of Goods Ferry Road. [REDACTED]

Site [REDACTED] is a prehistoric (Archaic and Woodland) temporary camp site that has previous ground disturbance due to cultivation activities; it is currently unevaluated for the NRHP (Gardner 1985; VCRIS 2024a). [REDACTED]

Site [REDACTED] is a multi-component unknown temporal affiliation prehistoric lithic scatter and historic (1850–1874) domestic artifact scatter that has previous ground disturbance from cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024c). [REDACTED]

Site [REDACTED] is an unknown temporal affiliation prehistoric lithic scatter that has previous ground disturbance due to cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024d). [REDACTED]

Site [REDACTED] is a multi-component unknown temporal affiliation prehistoric temporary camp site and historic (1900–1949) tobacco barn and associated artifact scatter that has previous ground disturbance due to the grading and development of South Hill Bypass. It is currently unevaluated for the NRHP (VCRIS 2024e). A previous Phase I survey performed by the William and Mary Archaeological Project Center for VDOT in 1996 recommended the site as ineligible for the NRHP due to the sparse recovery of artifacts from the prehistoric component and the lack of lack of cultural integrity of the historic component (Stuck and Downing 1996). [REDACTED]

### 3.10.4 NEBULA-RAINES ROUTE 4

There are six previously recorded archaeological resources that overlap Nebula-Raines Route 4: [REDACTED]

Site [REDACTED] is a multi-component unknown prehistoric lithic scatter and historic (1850–1874) church site that has previous ground disturbance due to historic cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024b). The site was subjected to a Phase II archaeological evaluation in 1990 performed by the William and Mary Archaeological Project Center for VDOT and was recommended as ineligible for the NRHP due to the paucity of artifacts recovered and the lack of intact cultural features from either the prehistoric or historic components (Jones et al. 1990b). [REDACTED]

[REDACTED]

Site [REDACTED] is a prehistoric (Archaic) temporary camp site that that has previous ground disturbance due to timbering activities; it is currently unevaluated for the NRHP (Gardner 1985; VCRIS 2024f). [REDACTED]

[REDACTED]

Site [REDACTED] is a prehistoric (Middle Archaic) temporary camp site that has previous ground disturbance due to timbering activities; it is currently unevaluated for the NRHP (Gardner 1985; VCRIS 2024g). [REDACTED]

[REDACTED]

Site [REDACTED] is a multi-component unknown temporal affiliation prehistoric lithic scatter and historic (1850–1874) domestic artifact scatter that has previous ground disturbance from cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024c). [REDACTED]

[REDACTED]

Site [REDACTED] is prehistoric lithic scatter of unknown temporal affiliation that has previous ground disturbance due to cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024d). [REDACTED]

[REDACTED]

Site [REDACTED] is a multi-component prehistoric temporary camp site of unknown temporal affiliation and historic (1900–1949) tobacco barn and associated artifact scatter that has previous ground disturbance due to the grading and development of South Hill Bypass; it is currently unevaluated for the NRHP (VCRIS 2024e). A previous Phase I survey performed by the William and Mary Archaeological Project Center for VDOT in 1996 recommended the site as ineligible for the NRHP due to the sparse recovery of artifacts from the prehistoric component and the lack of cultural integrity of the historic component (Stuck and Downing 1996). [REDACTED]

[REDACTED]

### 3.10.5 NEBULA-RAINES ROUTE 5

There are five previously recorded archaeological resources that overlap Nebula-Raines Route 5: [REDACTED].

Site [REDACTED] is a multi-component unknown prehistoric lithic scatter and historic (1850–1874) church site that has previous ground disturbance due to historic cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024b). The site was subjected to a Phase II archaeological evaluation in 1990 performed by the William and Mary Archaeological Project Center for VDOT and was recommended as ineligible for the NRHP due to the paucity of



artifacts recovered and the lack of intact cultural features from either the prehistoric or historic components (Jones et al. 1990b). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Site [REDACTED] is an unknown historic site that contains structure foundation remnants. The site has been disturbed by timbering and land clearing for an existing transmission line ROW. The site is currently unevaluated for the NRHP (VCRIS 2024h). A previous Phase I archaeological survey performed by Power Engineers, Inc. in 2019 for Dominion Energy was unable to relocate the site and it was determined to be destroyed by previous ground disturbance (Haynes and Parrott 2020). [REDACTED]

[REDACTED]

[REDACTED] Based on the fact that the site was not relocated during a previous survey, it is unlikely that any intact cultural remains that would be evaluated as eligible for the NRHP are present at the site.

Site [REDACTED] is a multi-component unknown temporal affiliation prehistoric lithic scatter and historic (1850–1874) domestic artifact scatter that has previous ground disturbance from cultivation activities; it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024c). [REDACTED]

[REDACTED]

[REDACTED]

Site [REDACTED] is an unknown temporal affiliation prehistoric lithic scatter that has previous ground disturbance due to cultivation activities, it is currently unevaluated for the NRHP (Jones et al. 1990a; VCRIS 2024d). [REDACTED]

[REDACTED]

[REDACTED]

Site [REDACTED] is a multi-component unknown temporal affiliation prehistoric temporary camp site and historic (1900–1949) tobacco barn and associated artifact scatter that has previous ground disturbance due to the grading and development of South Hill Bypass; it is currently unevaluated for the NRHP (VCRIS 2024e). A previous Phase I survey performed by the William and Mary Archaeological Project Center for VDOT in 1996 recommended the site as ineligible for the NRHP due to the sparse recovery of artifacts from the prehistoric component and the lack of lack of cultural integrity of the historic component (Stuck and Downing 1996). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

### 3.11 VELA CEMETERY REDACTED

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



## 4. CONCLUSIONS AND RECOMMENDATIONS

The pre-application analysis gathered information on archaeological and historic architectural resources that qualify for consideration according to the VDHR Guidelines for transmission line projects.

Eight known archaeological sites are located in the right-of-way of the transmission line routes reviewed in this study. An assessment of the condition and research potential of those sites is contingent upon archaeological field investigations, which will be conducted at relevant sites once a preferred route for the Project is selected by the SCC. Potential impacts to sites along the preferred route will be assessed as part of the field survey.

Nine aboveground historic resources fall within the VDHR study tiers for the routes under consideration. A comparison of the number of resources impacted and the degree of impact of each route is presented in Table 11. The specific resources affected by each route are covered in the subsections that follow.

**TABLE 11 COMPARISON OF PROJECT IMPACTS ON HISTORIC RESOURCES IN THE STUDY AREAS OF THE ROUTES**

Route	Number of Considered Resources in Each Impact Category				
	None	Minimal	Moderate	Severe	Total
Cloud-Nebula Route 1	1				1
Nebula-Raines Route 1	1	2			3
Nebula-Raines Route 3	2	3			5
Nebula-Raines Route 4	4	4			8
Nebula-Raines Route 5	2	1		1	4

Final assessments of Project impacts will be dependent on the completion of identification-phase archaeological and historic structure surveys along the routes selected by the SCC followed by review of survey results by VDHR and other consulting parties. For any resources where the agencies concur in a finding of moderate or severe impact, the Company will propose treatments to avoid, minimize, or mitigate those impacts. Treatment options for archaeological sites could include selective structure placement to avoid direct impacts on sites, minor route adjustments to avoid crossing sites, or archaeological data recovery. Treatment options for aboveground historic resources could include detailed site documentation, historic research, and historic preservation studies; preparation of digital media or museum-type exhibits on sites for public interpretation; installation of historic markers or signs; installation of vegetative screening; or contributions to historic preservation organizations or specific preservation projects. Additional mitigation options could be identified through consultation with VDHR and other consulting parties.

## 4.1 CLOUD-NEBULA ROUTE

One previously recorded historic resource meets the criteria specified in the Guidelines within the VDHR study tiers for the Cloud-Nebula Route (Table 12). The route would have no impact on this resource.

**TABLE 12 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR CLOUD-NEBULA ROUTE**

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified	Not applicable
0.5 to 1.0	National Register Properties (listed)	Not applicable	None identified	Not applicable
	Locally Significant (National Register—Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery	No Impact
0.0 to 0.5	National Register—Eligible	Not applicable	None identified	Not applicable
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified	Not applicable

Source: VDHR 2024

ROW = right-of-way

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

## 4.2 NEBULA-RAINES ROUTE 1

Three previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR tiers for Nebula-Raines Route 1 (Table 13). The route would have no impact on one resource and a minimal impact on two resources.



**TABLE 13 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR NEBULA-RAINES ROUTE 1**

<b>Buffer (miles)</b>	<b>Resource Category</b>	<b>Resource Number</b>	<b>Description</b>	<b>Impact</b>
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified	Not applicable
0.5 to 1.0	National Register Properties (listed)	Not applicable	None identified	Not applicable
	Locally Significant (National Register—Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery	No Impact
	Locally Significant	058-5412	Carey Farmhouse	Minimal Impact
0.0 to 0.5	National Register—Eligible	Not applicable	None identified	Not applicable
	Locally Significant	058-0140	M.H. Upton House	Minimal Impact
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified	Not applicable

Source: VDHR 2024

ROW = right-of-way

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

### 4.3 NEBULA-RAINES ROUTE 3

Four previously recorded and one as of yet unrecorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Nebula-Raines Route 3 (Table 14). This route would have no impact on two resources and a minimal impact on three resources.

**TABLE 14 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR NEBULA-RAINES ROUTE 3**

<b>Buffer (miles)</b>	<b>Resource Category</b>	<b>Resource Number</b>	<b>Description</b>	<b>Impact</b>
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified	Not applicable
0.5 to 1.0	National Register Properties (listed)	Not applicable	None identified	Not applicable
	Locally Significant (National Register—Eligible)	058-0073	Lombardy Grove Tavern	Minimal Impact
	Locally Significant (National Register—Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery	No Impact
0.0 to 0.5	National Register—Eligible	Not applicable	None identified	Not applicable
	Locally Significant	058-0057	Sycamore Lodge	No Impact
		058-0140	M.H. Upton House	Minimal Impact
		Not applicable	East End High School	Minimal Impact
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified	Not applicable

Source: VDHR 2024

ROW = right-of-way

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

#### 4.4 NEBULA-RAINES ROUTE 4

Eight previously recorded and one as of yet unrecorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Nebula-Raines Route 4 (Table 15). This route would have no impact on four resources and a minimal impact on four resources.



**TABLE 15 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR NEBULA-RAINES ROUTE 4**

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified	Not applicable
0.5 to 1.0	National Register Properties (listed)	Not applicable	None identified	Not applicable
	Locally Significant (National Register—Eligible)	058-0073	Lombardy Grove Tavern	Minimal Impact
	Locally Significant	058-0175	Tobacco barns	Minimal Impact
		058-0309	Tobacco barn	No Impact
	Locally Significant (National Register—Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery	No Impact
0.0 to 0.5	National Register—Eligible	Not applicable	None identified	Not applicable
	Locally Significant	058-0057	Sycamore Lodge	No Impact
		058-0140	M.H. Upton House	Minimal Impact
		058-0141	Sanders Farm	No Impact
		Not applicable	East End High School	Minimal Impact
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified	Not applicable

Source: VDHR 2024

ROW = right-of-way

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

## 4.5 NEBULA-RAINES ROUTE 5

Four previously recorded historic architectural resources meet the criteria specified in the Guidelines within the VDHR study tiers for Nebula-Raines Route 5 (Table 16). This route would have no impact on three resources and a severe impact on one resource.

**TABLE 16 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR NEBULA-RAINES ROUTE 5**

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified	Not applicable
0.5 to 1.0	National Register Properties (listed)	Not applicable	None identified	Not applicable
	Locally Significant	058-0140	M.H. Upton House	No Impact
	Locally Significant (National Register—Eligible)	058-5092 <sup>a</sup>	Mecklenburg County Poor House Cemetery	No Impact
0.0 to 0.5	National Register—Eligible	Not applicable	None identified	Not applicable
	Locally Significant	058-0309	Tobacco barn	No Impact
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified	Not applicable
	Locally Significant	058-0141	Sanders Farm	Severe Impact

Source: VDHR 2024

ROW = right-of-way

<sup>a</sup> Resource is within the designated tiers for the proposed Nebula Switching Station

## 4.6 FUTURE INVESTIGATIONS

The next stage of assessing impacts on historic resources will be to conduct an identification-phase field survey to identify and assess resources along the specific routes selected by the SCC that could be impacted by the Project. Survey will be conducted in accordance with the following guidelines:

- Guidelines for Assessing Impacts of Proposed Electrical Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (VDHR 2008);
- Guidelines for Conducting Historic Resources Survey in Virginia (VDHR 2017);
- National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation (National Park Service [NPS] 1995).

The survey teams will be led by individuals meeting the Secretary of the Interior's professional qualifications standards for archaeology and architectural history, respectively. Teams will traverse the length of the Project corridor, revisiting previously recorded historic architectural resources and documenting additional as-of-yet unrecorded cultural resources in the survey area defined in the Guidelines for the Project design. The archaeological survey will adhere to VDHR survey standards (VDHR 2017) and will entail systematic coverage of the approved route. All material



culture, including artifacts and features, that could be 50 years old or older will be recorded. Sites will be delineated within the proposed right-of-way and investigations will include subsurface testing sufficient to inform recommendations of potential eligibility for the NRHP under Criterion D. Each site will be fully documented with appropriate mapping, digital photography, and artifact collection/analysis. Site forms will be prepared for V-CRIS submittal along with full descriptions in the technical report. The historic architectural survey will likewise adhere to VDHR standards. While the NPS Bulletin 15 (NPS 1995) defines a historic property as a resource that is 50 years or older, for the purposes of this Project, survey will include those 45 years or older to accommodate the length of time needed to complete the permitting phase for the Project. Furthermore, the survey will also record those resources that may have reached significance prior to the 50 (45) year age in accordance with NPS guidance if they are integral parts of districts or have merit to be considered eligible for the NRHP on their own.

Digital photographs will be taken to record resources' overall appearance and details. Sketch maps will be drawn depicting the relationship of dwellings to outbuildings and associated landscape features. Additional information on the structures' appearance and integrity will be recorded to assist in making recommendations of NRHP eligibility. Historic maps, aerial photographs, and tax assessor data will be consulted to assist in dating the resources. Resources identified in the field effort will be reported to the VDHR, VCRIS numbers will be obtained, and shapefiles and database information will be provided. Sufficient information will be collected to make recommendations for each identified historic resource regarding eligibility for listing on the NRHP and to assess Project impacts.

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**ATTACHMENT 1 LOCATIONS OF CONSIDERED HISTORIC  
RESOURCES ASSOCIATED WITH  
PROPOSED PROJECT ALTERNATIVES**

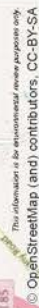


**Attachment 1, Sheet 1**  
**Locations of Considered Resources Associated with Proposed Project Alternatives - Cloud-Nebula Route**  
**Cloud-Nebula-Raines 230 kV Transmission Line Project**  
**Dominion Energy Virginia**  
**Mecklenburg County, VA**



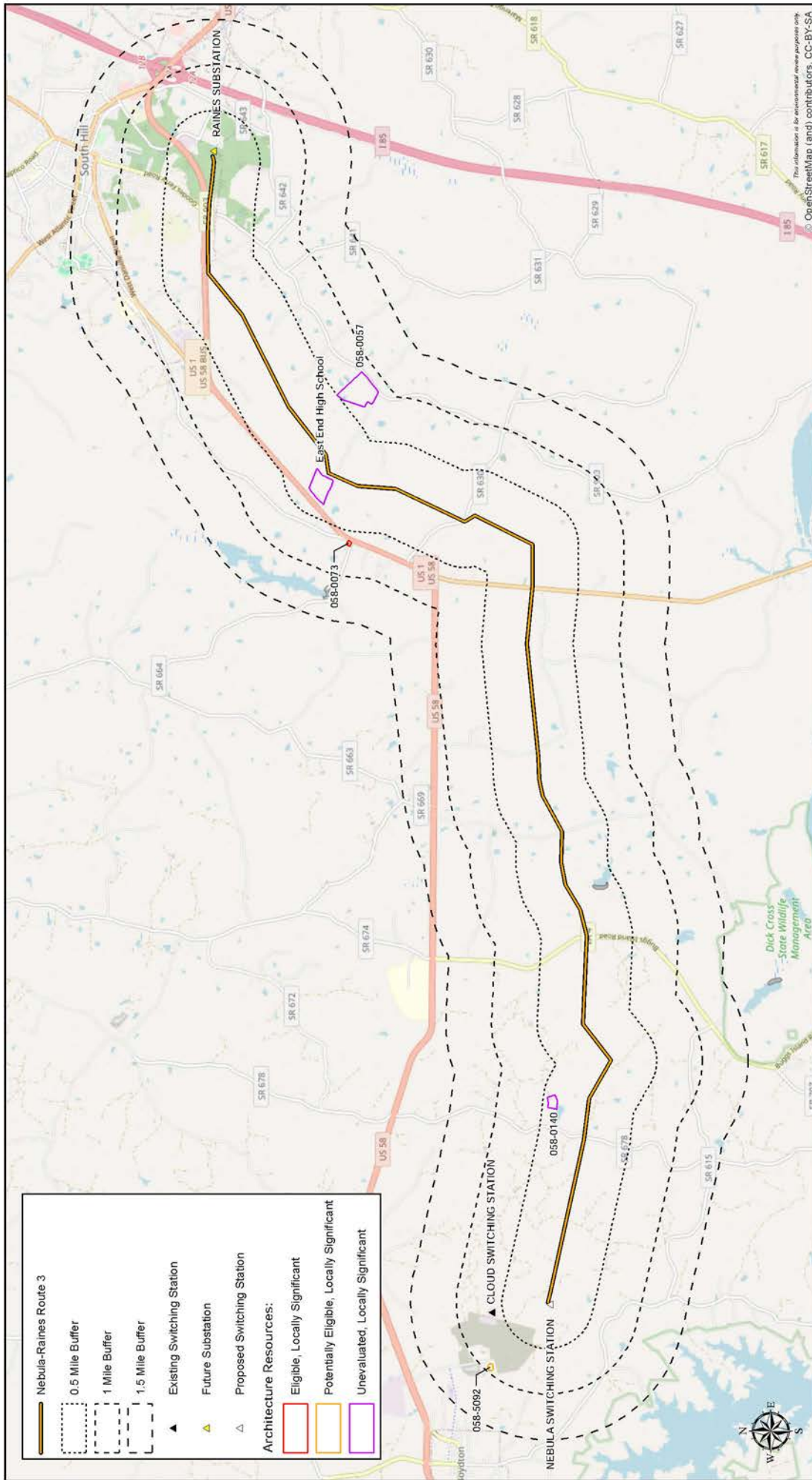
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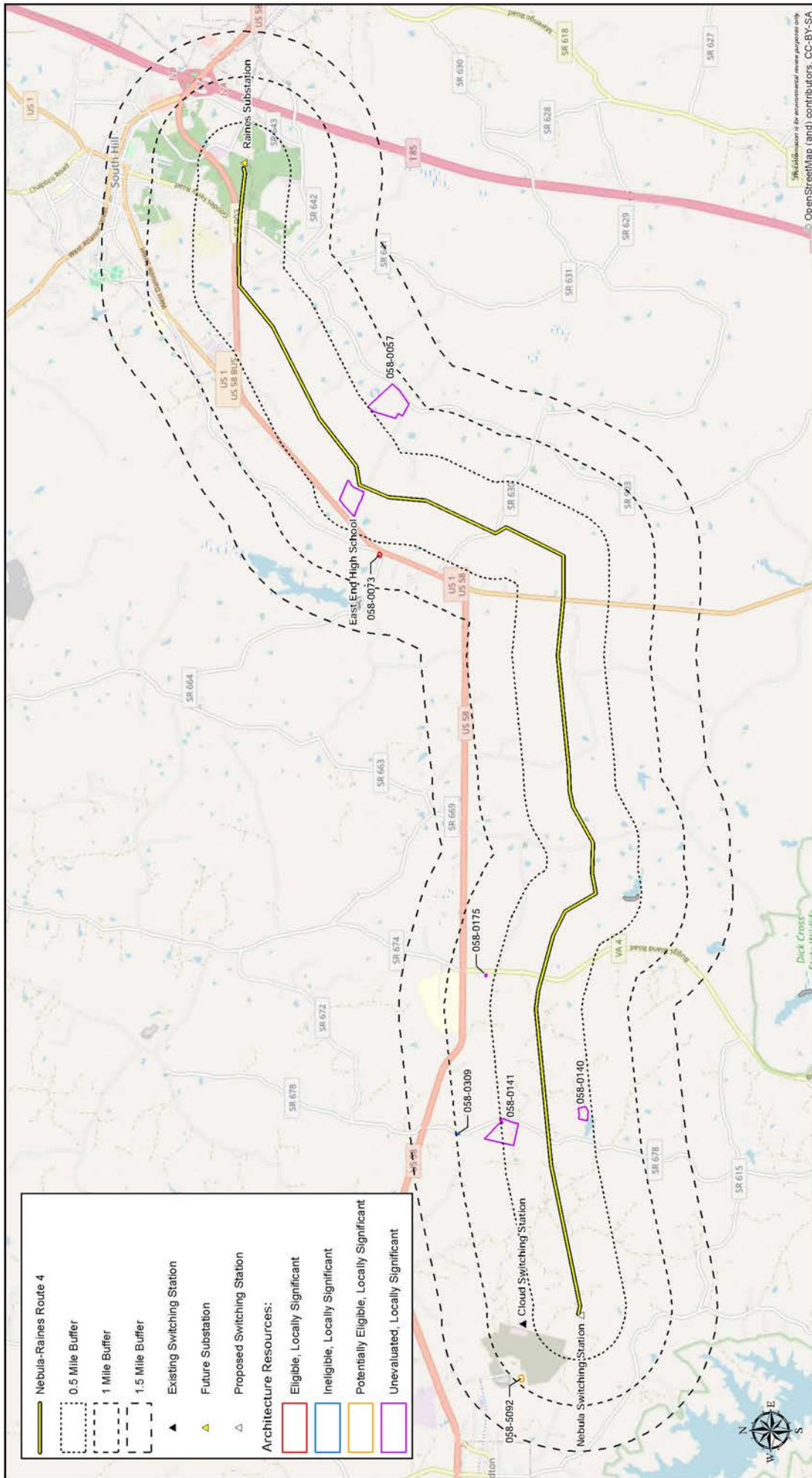


Dominion Energy

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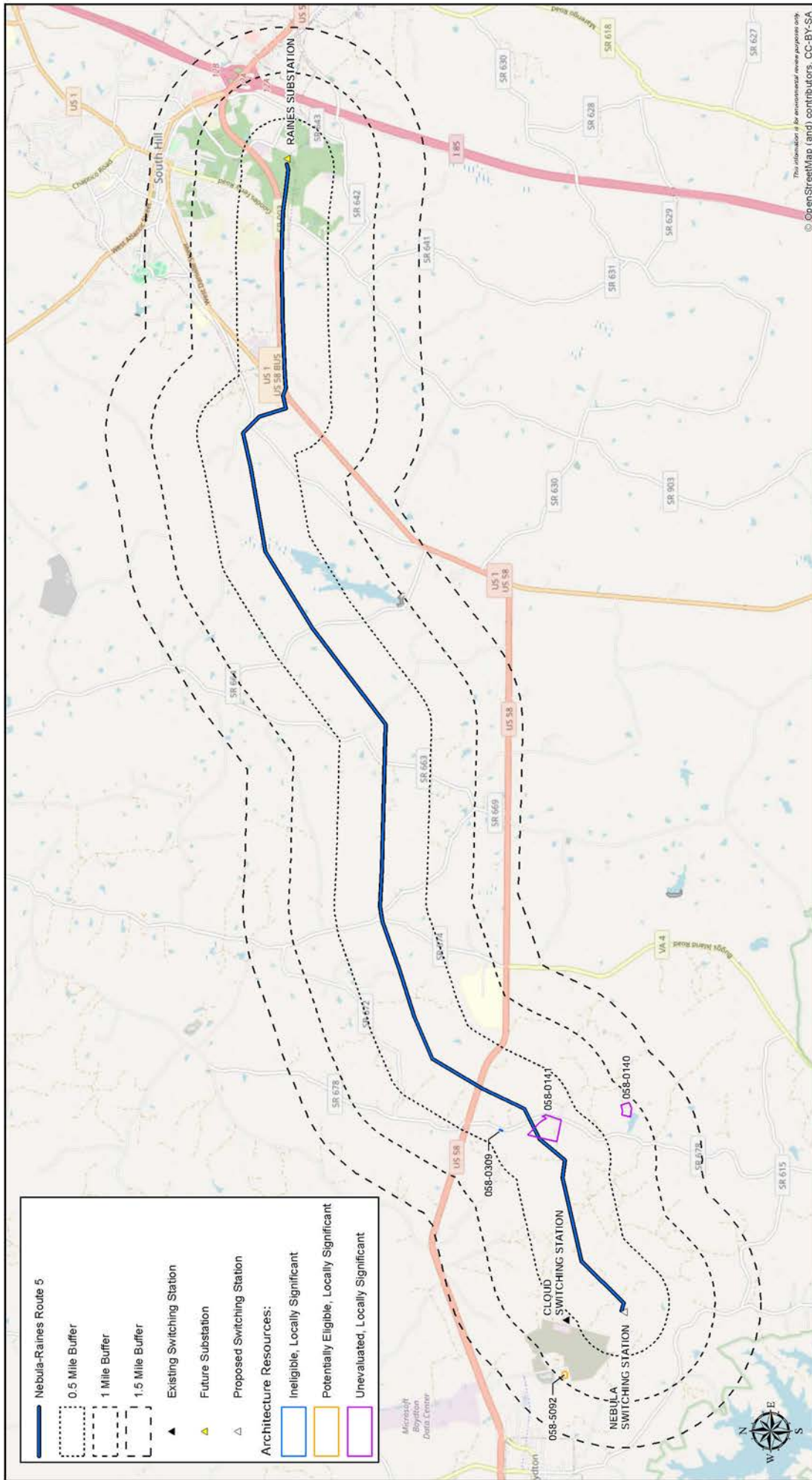




Attachment 1, Sheet 4  
Locations of Considered Resources Associated with Proposed Project Alternatives - Nebula-Raines Route 4  
Cloud-Nebula-Raines 230 kV Transmission Line Project  
Dominion Energy Virginia  
Mecklenburg County, VA



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Attachment 1, Sheet 5  
Locations of Considered Resources Associated with Proposed Project Alternatives - Nebula-Raines Route 5  
Cloud-Nebula-Raines 230 kV Transmission Line Project  
Dominion Energy Virginia  
Mecklenburg County, VA

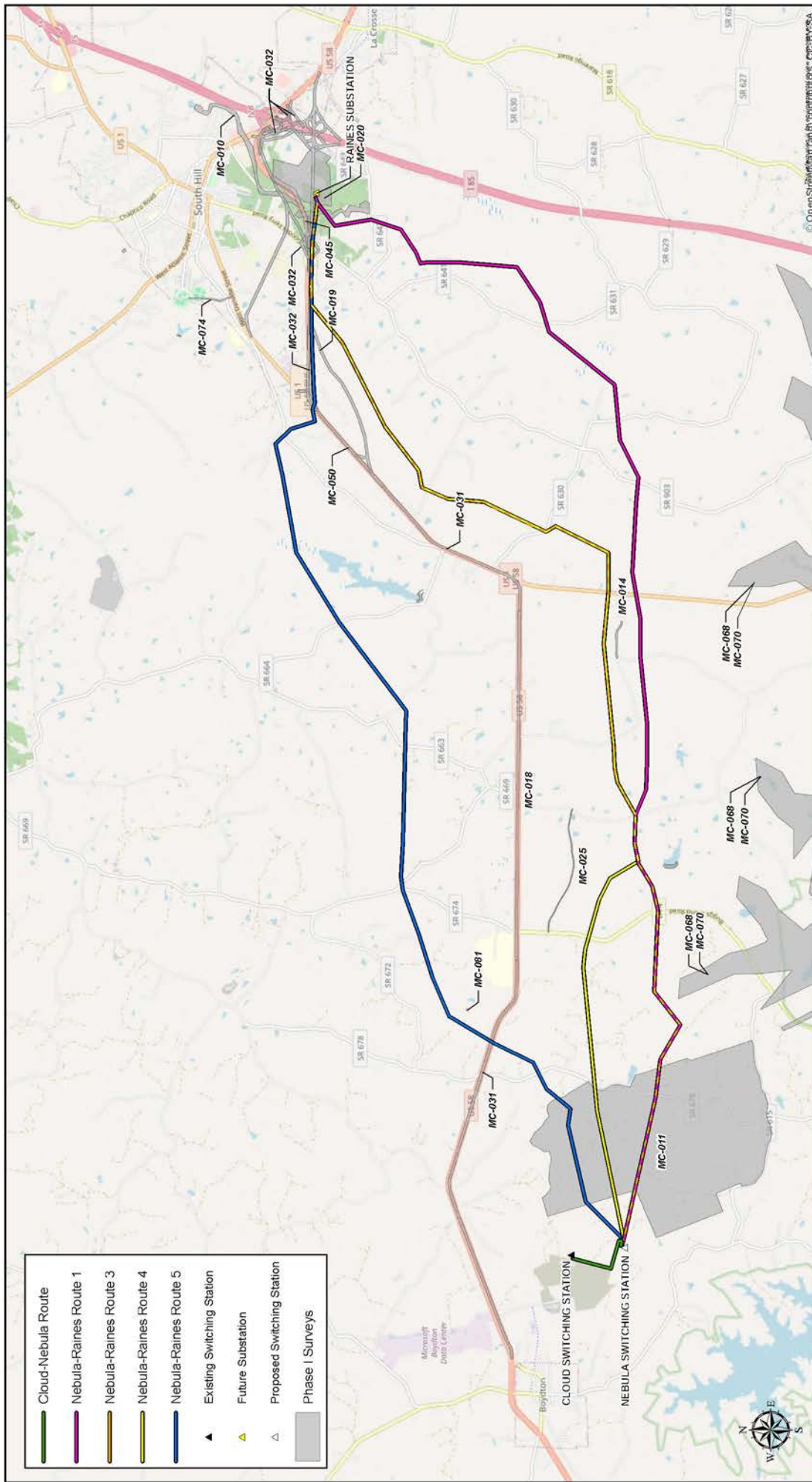


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ATTACHMENT 2 CULTURAL RESOURCES SURVEYS  
COVERING PORTIONS OF ROUTE  
ALTERNATIVES



Attachment 2  
Cultural Resources Surveys Covering Portions of Route Alternatives  
Cloud-Nebula-Raines 230 kV Transmission Line Project  
Dominion Energy Virginia  
Mecklenburg County, VA

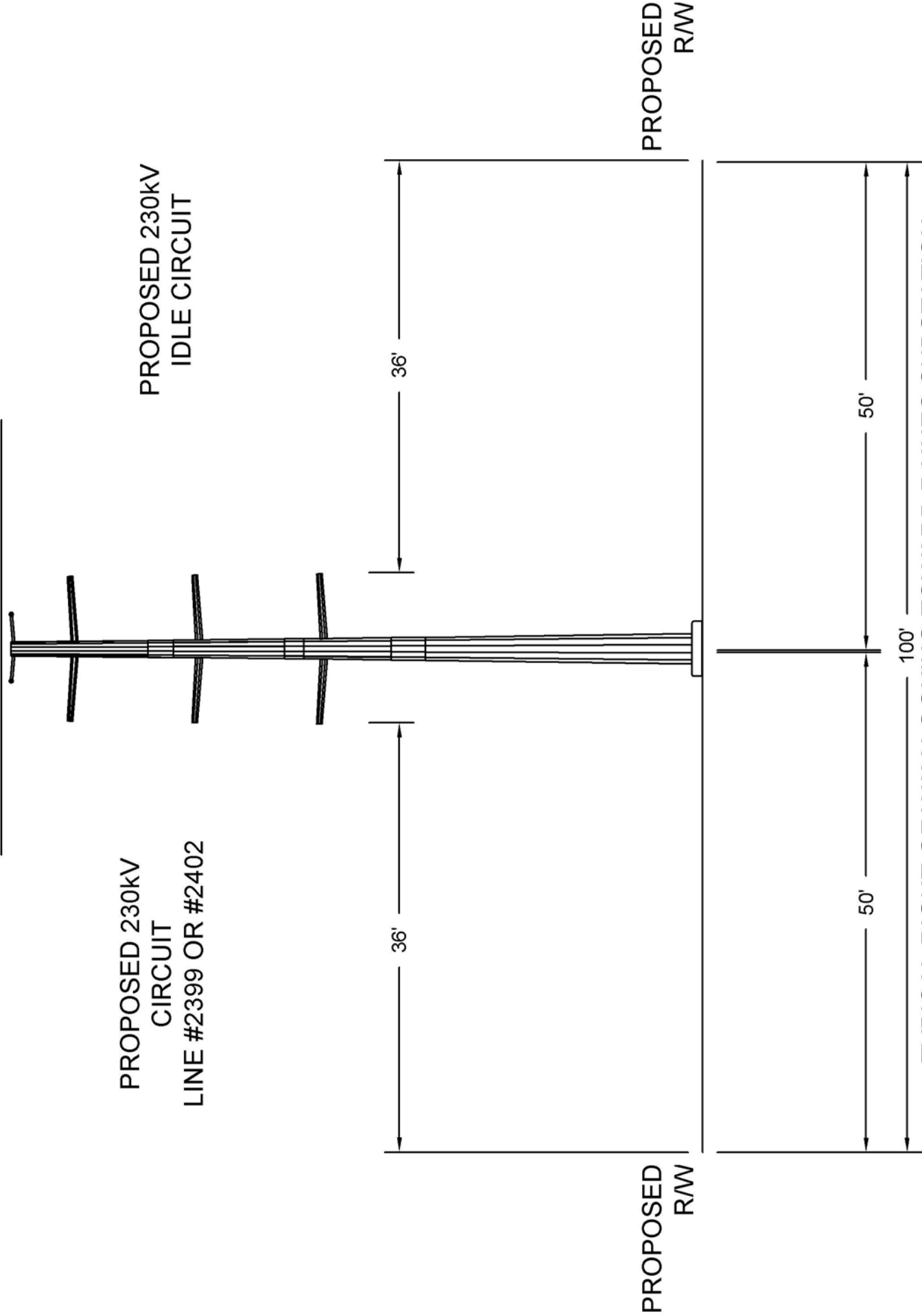






## ATTACHMENT 3 TYPICAL DESIGN AND LAYOUT

NEBULA - RAINES, LINE #2399  
 CLOUD - NEBULA, LINE #2402  
 PROPOSED CONFIGURATION

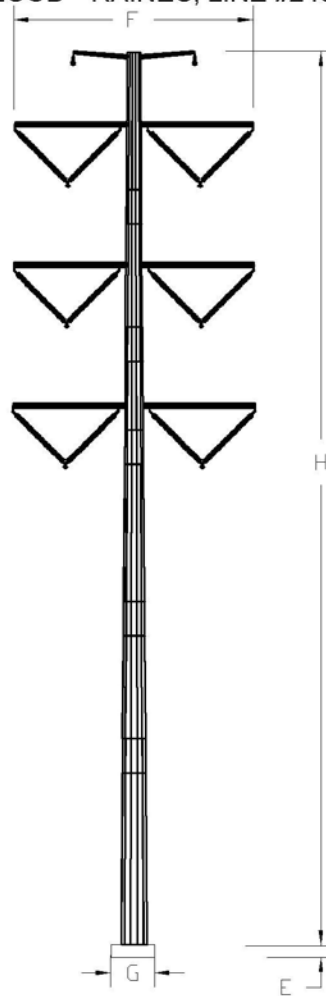


TYPICAL RIGHT OF WAY LOOKING TOWARD RAINES SUBSTATION

NOTE: INFORMATION CONTAINED ON DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL DESIGN



NEBULA - RAINES, LINE #2399  
CLOUD - RAINES, LINE #2402

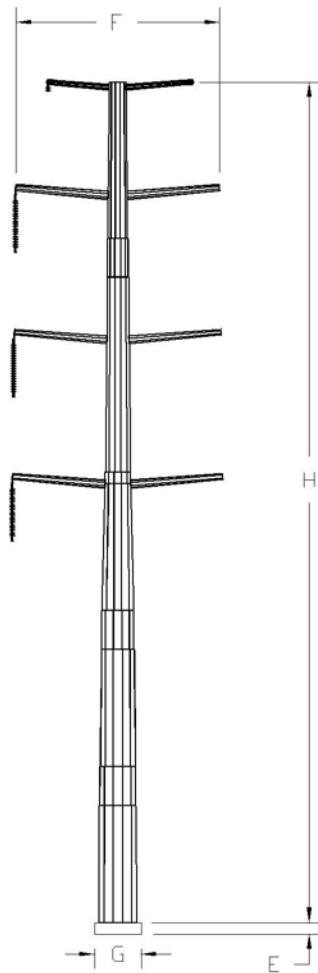


### 230kV DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE

- |                                   |  |
|-----------------------------------|--|
| A. MAPPING OF THE ROUTE:          | SEE ATTACHMENT II.B.3.iv                                       |
| B. RATIONALE FOR STRUCTURE TYPE:  | TO MINIMIZE RIGHT OF WAY                                       |
| C. LENGTH OF R/W (STRUCTURE QTY): | 15.2 MILES (81 STRUCTURES)                                     |
| D. STRUCTURE MATERIAL:            | WEATHERING STEEL   |
| RATIONALE FOR MATERIAL:           | WEATHERING STEEL WAS SELECTED TO MATCH OTHER LINES IN THE AREA |
| E. FOUNDATION MATERIAL:           | CONCRETE   |
| AVERAGE FOUNDATION REVEAL:        | SEE NOTE 2   |
| F. AVERAGE WIDTH AT CROSS ARM:    | 33'  |
| G. AVERAGE WIDTH AT BASE:         | SEE NOTE 2   |
| H. MINIMUM STRUCTURE HEIGHT:      | 110'   |
| MAXIMUM STRUCTURE HEIGHT:         | 150'   |
| AVERAGE STRUCTURE HEIGHT:         | 124'   |
| I. AVERAGE SPAN LENGTH (RANGE):   | 740' (739'-1255') (SEE NOTE 4)                                 |
| J. MINIMUM CONDUCTOR-TO-GROUND:   | 22.5' (AT MAXIMUM OPERATING TEMPERATURE)                       |

- NOTES: 1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

NEBULA - RAINES, LINE #2399  
CLOUD - RAINES, LINE #2402

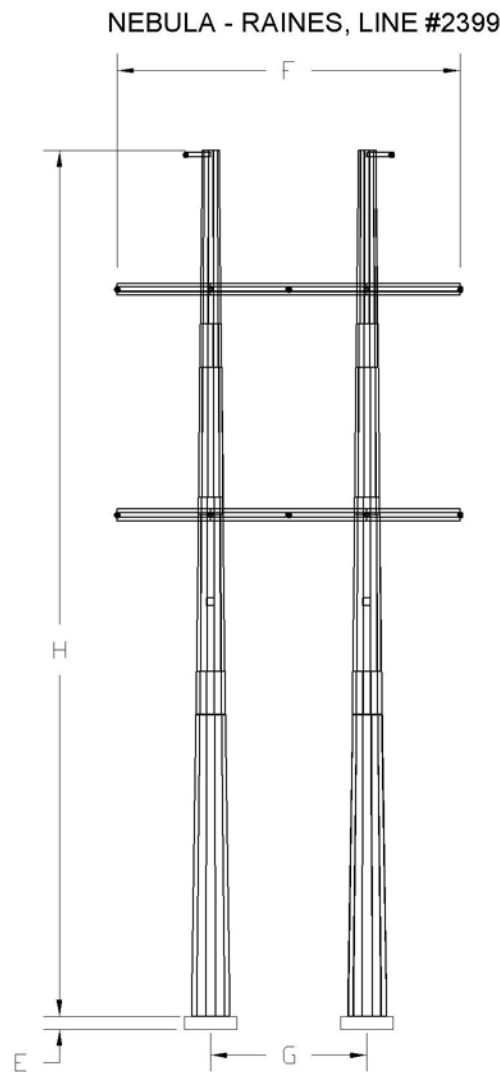


### 230kV DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE

- |                                   |  |
|-----------------------------------|--|
| A. MAPPING OF THE ROUTE:          | SEE ATTACHMENT II.B.3.iv                                       |
| B. RATIONALE FOR STRUCTURE TYPE:  | TO MINIMIZE RIGHT OF WAY                                       |
| C. LENGTH OF R/W (STRUCTURE QTY): | 15.2 MILES (27 STRUCTURES)                                     |
| D. STRUCTURE MATERIAL:            | WEATHERING STEEL   |
| RATIONALE FOR MATERIAL:           | WEATHERING STEEL WAS SELECTED TO MATCH OTHER LINES IN THE AREA |
| E. FOUNDATION MATERIAL:           | CONCRETE   |
| AVERAGE FOUNDATION REVEAL:        | SEE NOTE 2   |
| F. AVERAGE WIDTH AT CROSS ARM:    | 25'  |
| G. AVERAGE WIDTH AT BASE:         | SEE NOTE 2   |
| H. MINIMUM STRUCTURE HEIGHT:      | 105'   |
| MAXIMUM STRUCTURE HEIGHT:         | 135'   |
| AVERAGE STRUCTURE HEIGHT:         | 119'   |
| I. AVERAGE SPAN LENGTH (RANGE):   | 712' (342'-1030') (SEE NOTE 4)                                 |
| J. MINIMUM CONDUCTOR-TO-GROUND:   | 22.5' (AT MAXIMUM OPERATING TEMPERATURE)                       |

- NOTES: 1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.





### 230kV DC ENGINEERED H-FRAME DDE STRUCTURE

- |                                   |  |
|-----------------------------------|--|
| A. MAPPING OF THE ROUTE:          | SEE ATTACHMENT II.B.3.iv                                       |
| B. RATIONALE FOR STRUCTURE TYPE:  | TO FACILITATE TRANSMISSION CROSSING                            |
| C. LENGTH OF R/W (STRUCTURE QTY): | 14.2 MILES (2 STRUCTURE)                                       |
| D. STRUCTURE MATERIAL:            | WEATHERING STEEL   |
| RATIONALE FOR MATERIAL:           | WEATHERING STEEL WAS SELECTED TO MATCH OTHER LINES IN THE AREA |
| E. FOUNDATION MATERIAL:           | CONCRETE   |
| AVERAGE FOUNDATION REVEAL:        | SEE NOTE 2   |
| F. AVERAGE WIDTH AT CROSS ARM:    | 50'  |
| G. AVERAGE WIDTH AT BASE:         | SEE NOTE 2   |
| H. MINIMUM STRUCTURE HEIGHT:      | 165'   |
| MAXIMUM STRUCTURE HEIGHT:         | 175'   |
| AVERAGE STRUCTURE HEIGHT:         | 170'   |
| I. AVERAGE SPAN LENGTH (RANGE):   | 522' (503'-540') (SEE NOTE 4)                                  |
| J. MINIMUM CONDUCTOR-TO-GROUND:   | 22.5' (AT MAXIMUM OPERATING TEMPERATURE)                       |

- NOTES: 1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.



## ATTACHMENT 4 HISTORIC RESOURCE PHOTOS





Figure 1. 058-0057, Sycamore Lodge, view to the north-northwest.



Figure 2. 058-0073, Lombardy Grove Tavern, view to the east, no visibility.



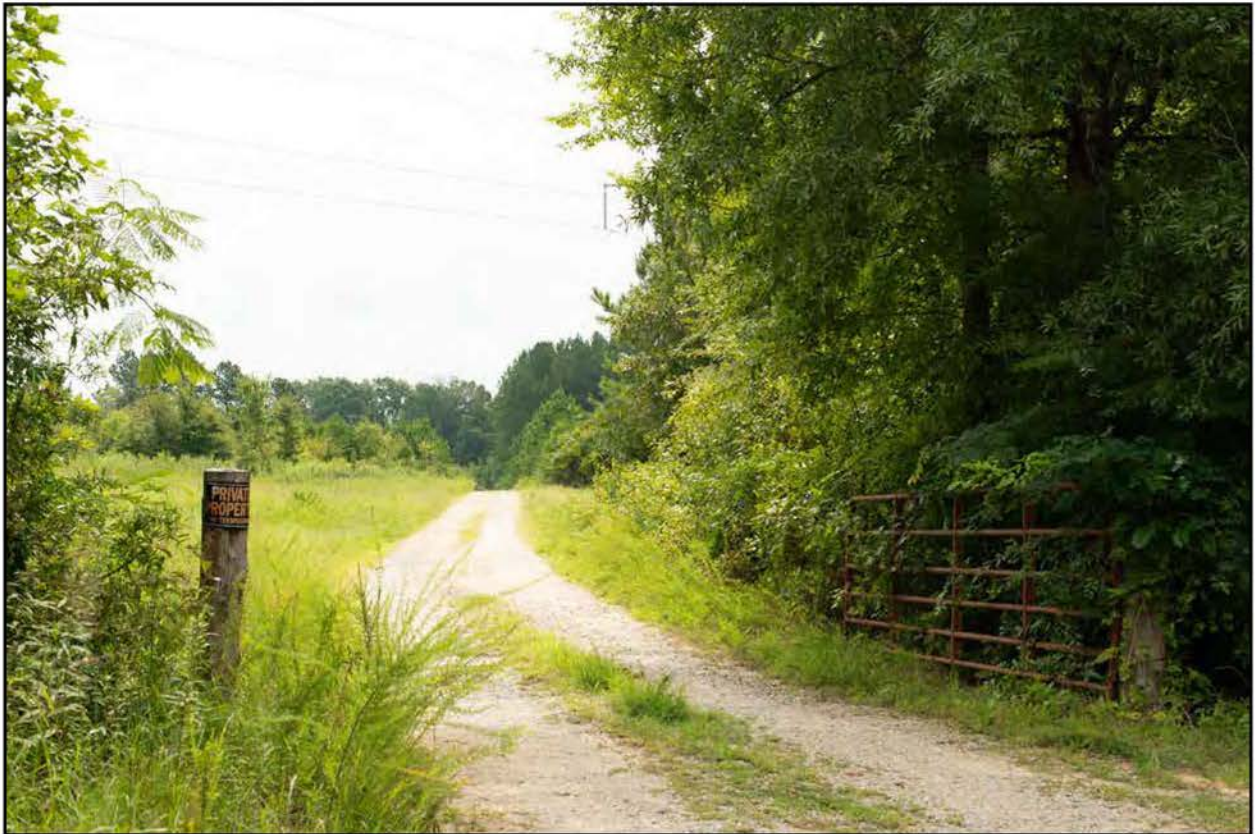


Figure 3. 058-0140, M.H. Upton House, view to the southeast, no visibility.



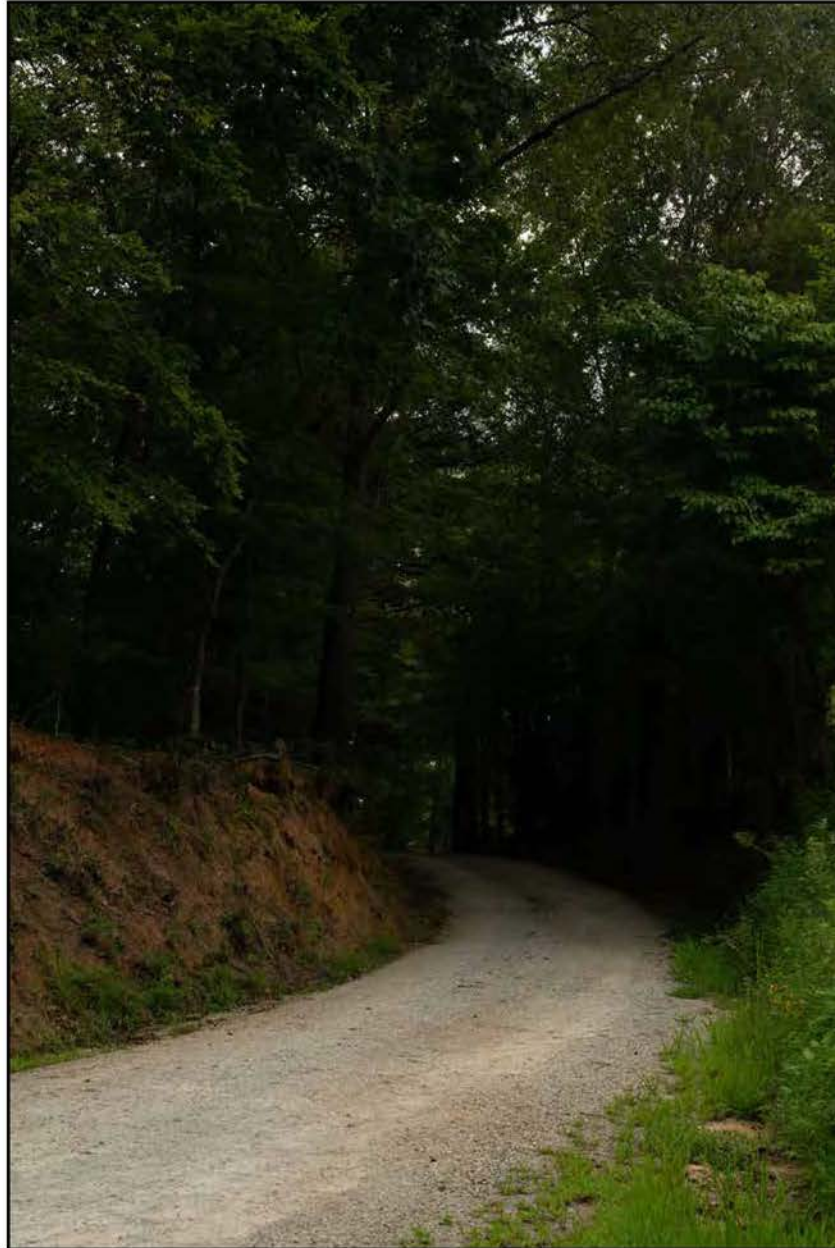


Figure 4. 058-0141, Sanders Farm, view to the west, no visibility.



Figure 5. 058-0175, Tobacco Barn, view to the west, no visibility.





Figure 6. 058-0309, Tobacco Barns, view to the west.



Figure 7. 058-5092, Poorhouse Cemetery, sign, view to the north, no visibility.





Figure 8. 058-5412, Carey Farmhouse, view to the south, no visibility.





Figure 9. East End High School, foundation, view to the northeast.



## ATTACHMENT 5 PHOTO SIMULATIONS



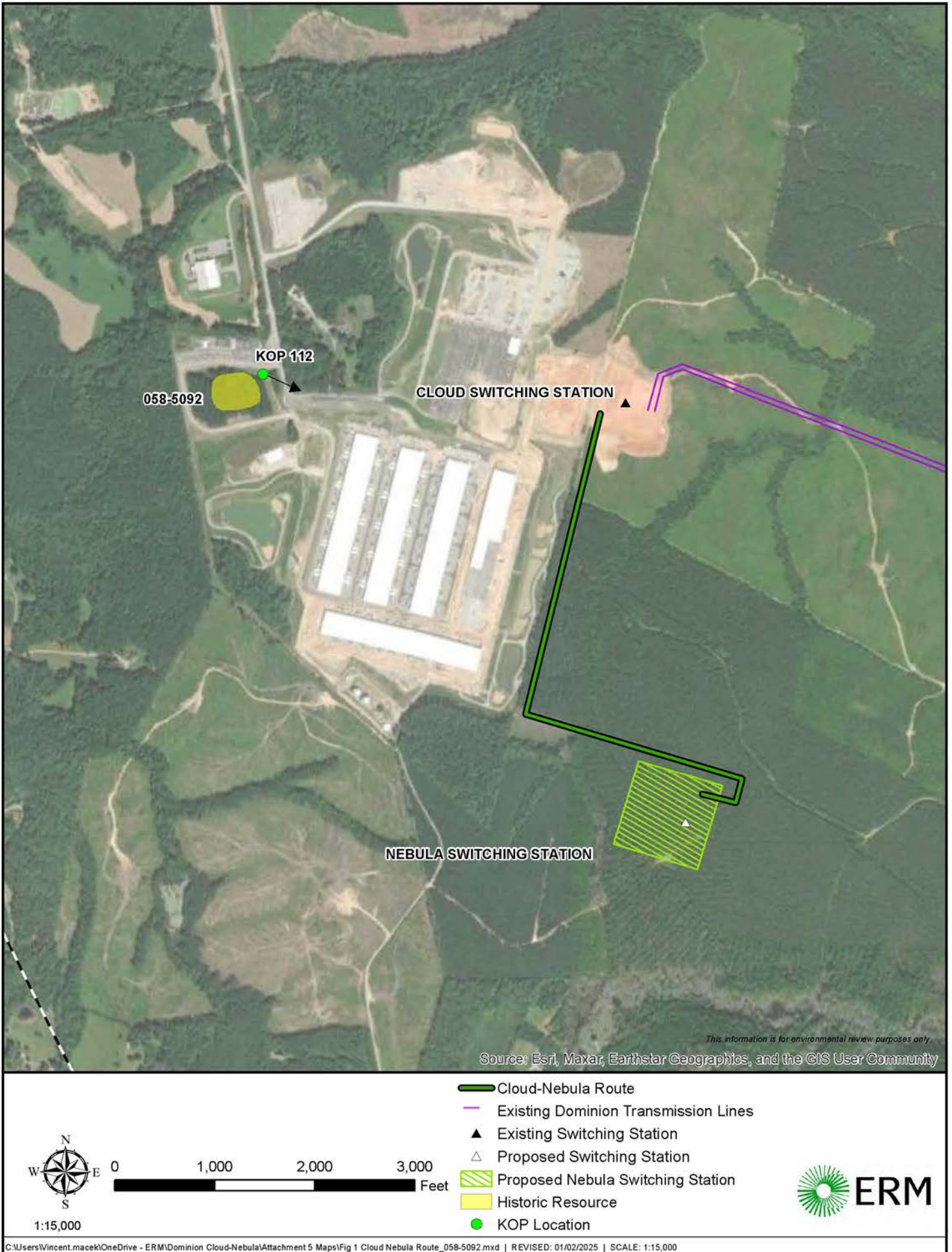


Figure 1. Aerial photography depicting land use and photo view for 058-5092.





## KOP 112

Herbert Dr

**Figure 2**  
**Route: Cloud-Nebula Route**  
**Date: 08/13/2024**  
**Time: 10:47 am**  
**Viewing Direction: Southeast**  
**Distance to closest feature: 0.5 miles**



**Legend**  
▲ Existing Switching Station  
▲ Proposed Switching Station  
— Existing Dominion Transmission Lines  
— Cloud-Nebula Route  
KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



**EXISTING CONDITIONS**



**YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE**





Figure 3. Aerial photography depicting land use and photo view for 058-0140.



KOP 104

Antlers Rd

Figure 4

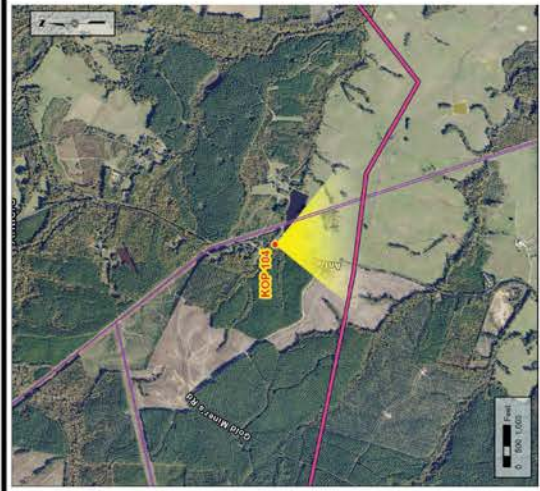
Route: Nebula-Raines Route 1

Date: 08/13/2024

Time: 11:15 am

Viewing Direction: South

Distance to closest feature: 0.4 miles



Legend

Existing Dominion Transmission Lines

KOP View Direction

Nebula-Raines Route 1

Note: Project components illustrated are based on proposed preliminary designs.

The images contained on this page show the proposed project within a wider landscape context

and are not representative of scale and distance when viewed from the actual view point.

8/13/2024 2:11

Page 59 of 128



EXISTING CONDITIONS



PROPOSED CONDITIONS



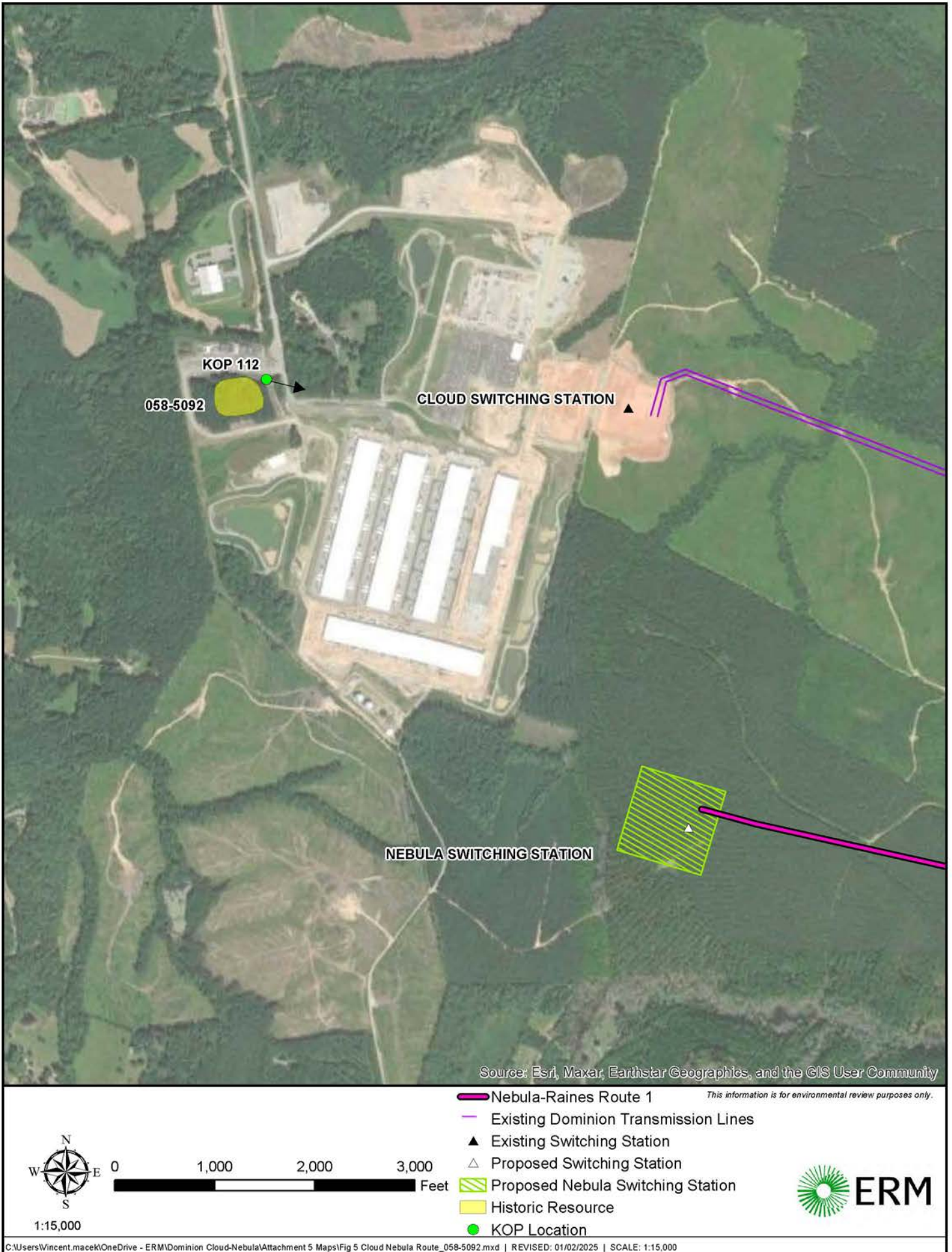
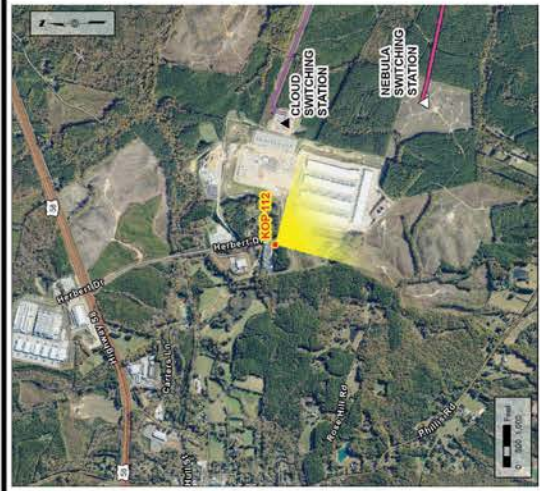


Figure 5. Aerial photography depicting land use and photo view for 058-5092.



**KOP 112**  
Herbert Dr

**Figure 6**  
Route: Nebula-Raines Route 1  
Date: 08/13/2024  
Time: 10:47 am  
Viewing Direction: Southeast  
Distance to closest feature: 1.0 miles



EXISTING CONDITIONS



YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



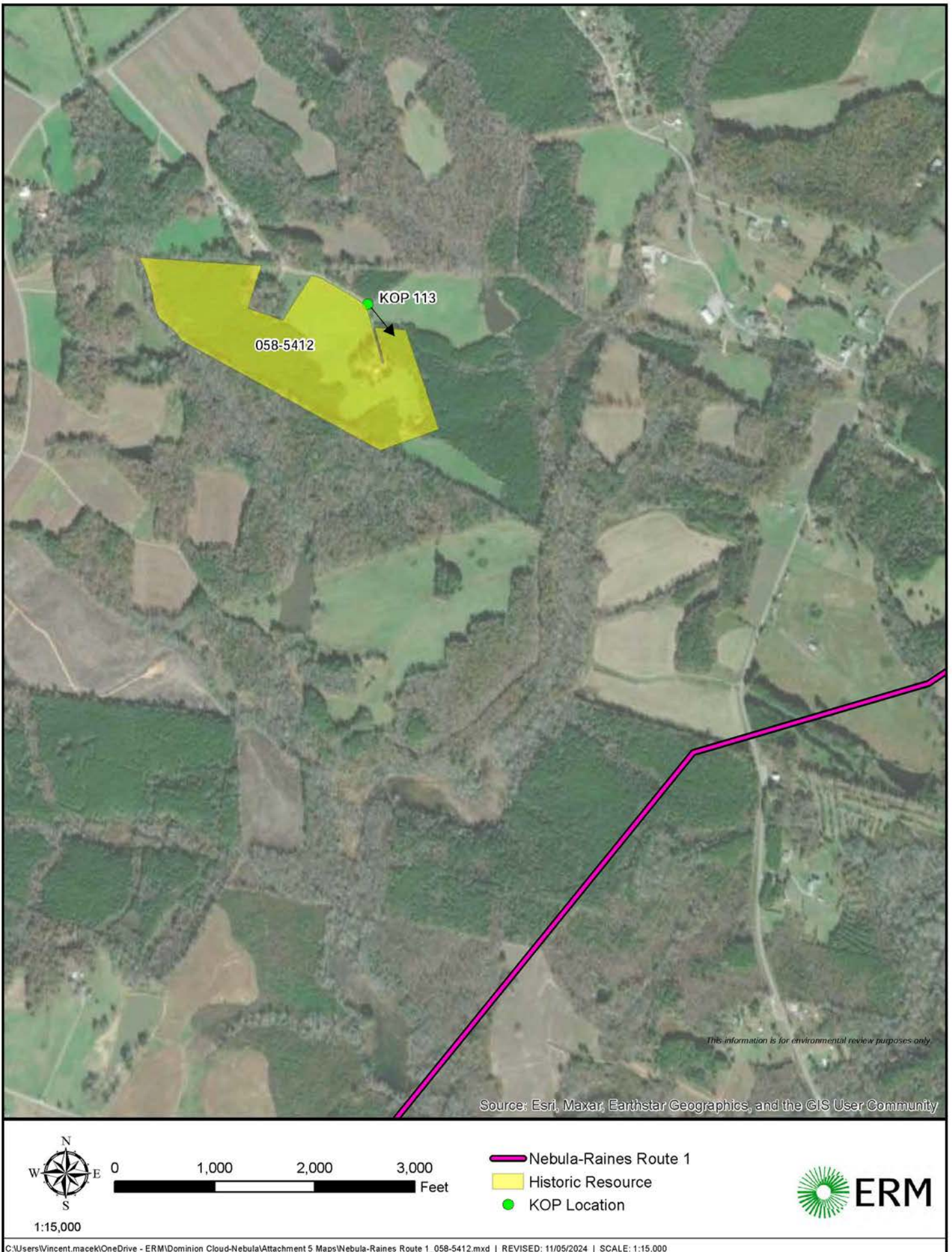


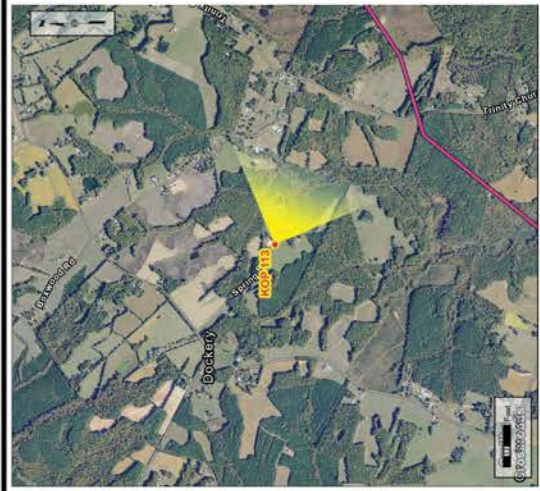
Figure 7. Aerial photography depicting land use and photo view for 058-5412.





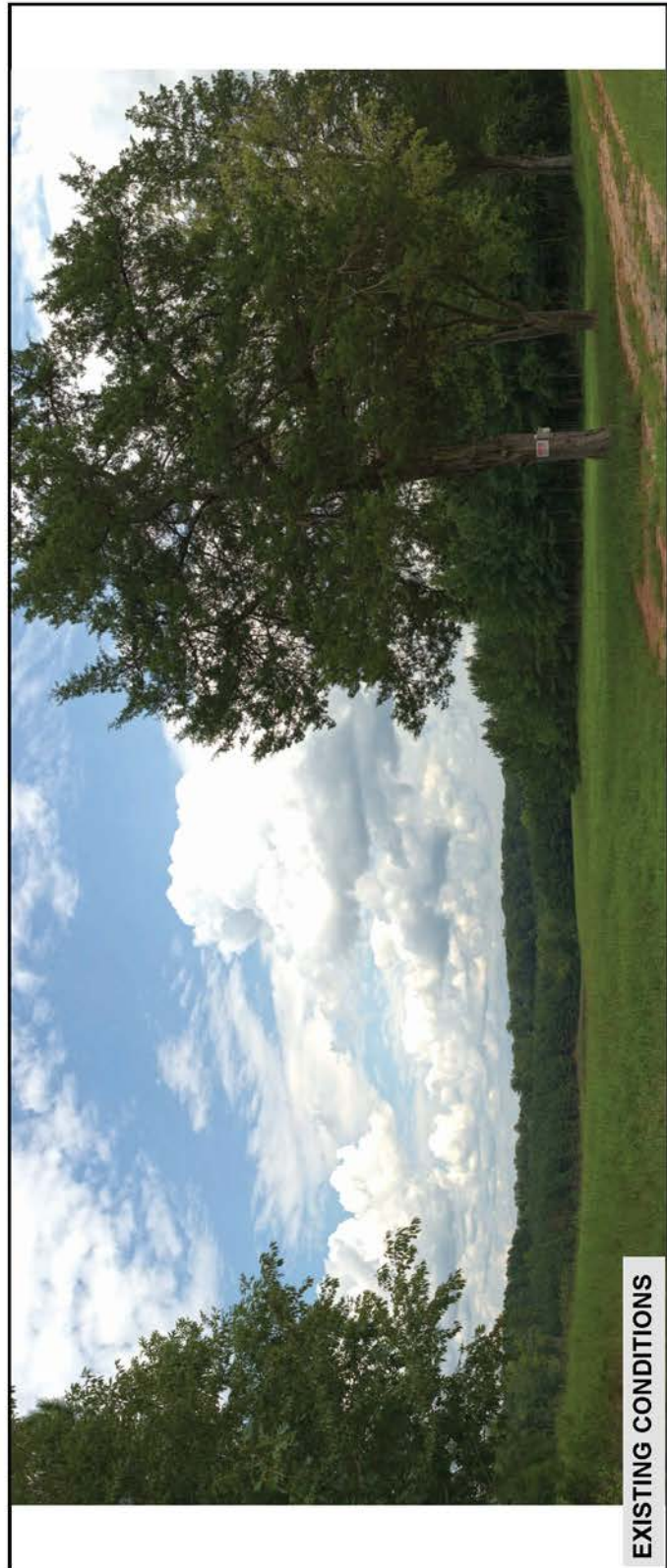
**KOP 113**  
Spring Rd

**Figure 8**  
Route: Nebula-Raines Route 1  
Date: 08/13/2024  
Time: 2:18 pm  
Viewing Direction: East  
Distance to closest feature: 0.8 miles

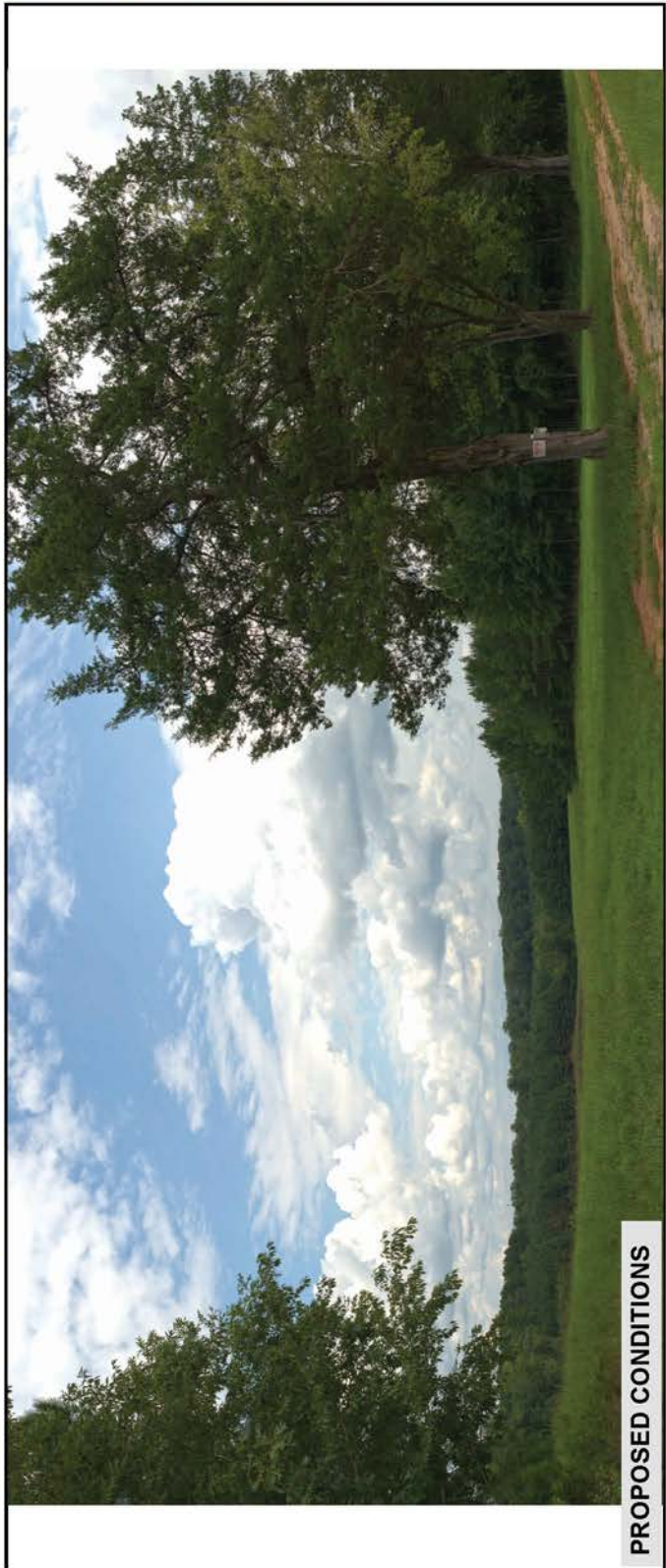


**Legend**  
→ KOP View Direction  
— Nebula-Raines Route 1

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



**EXISTING CONDITIONS**



**PROPOSED CONDITIONS**



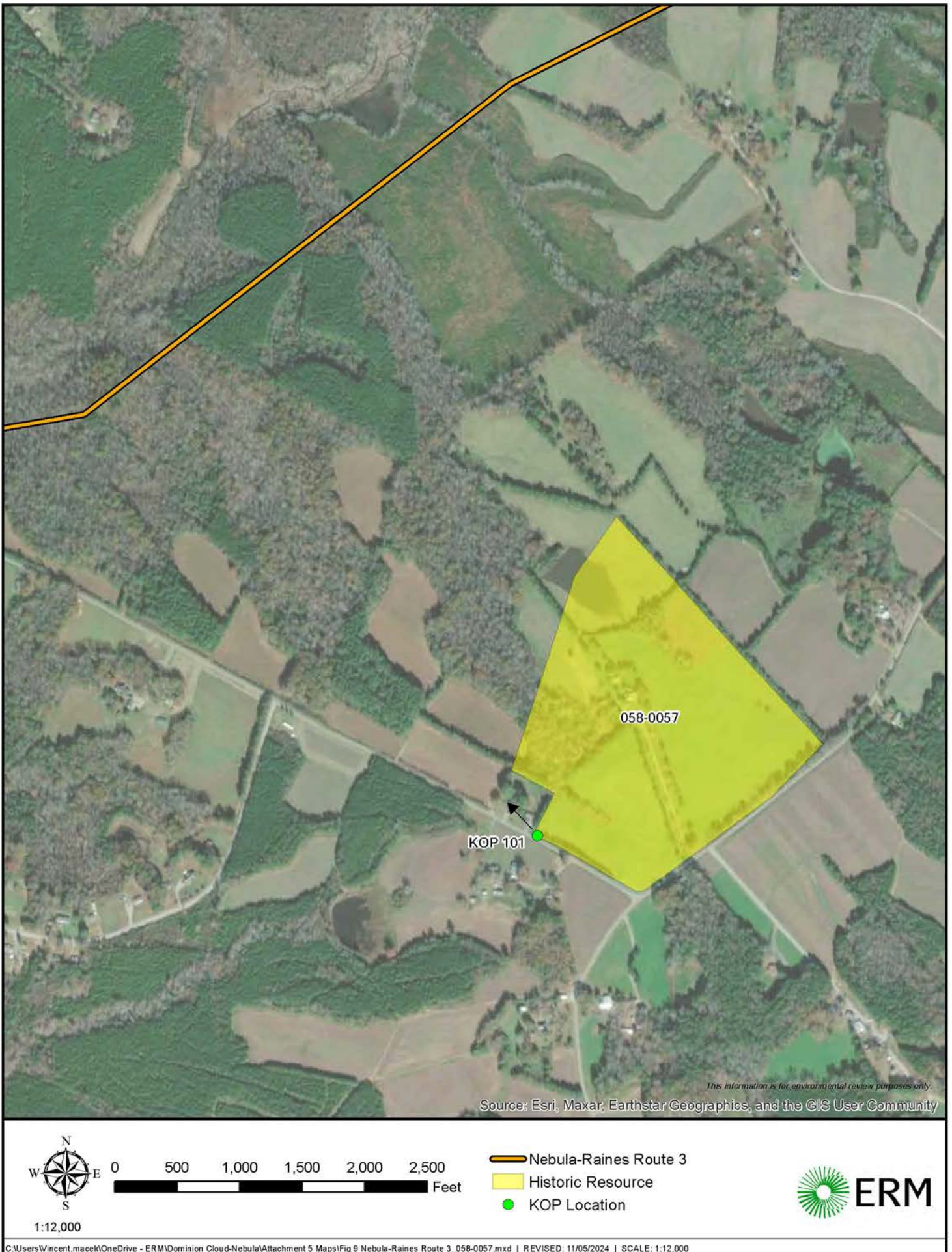
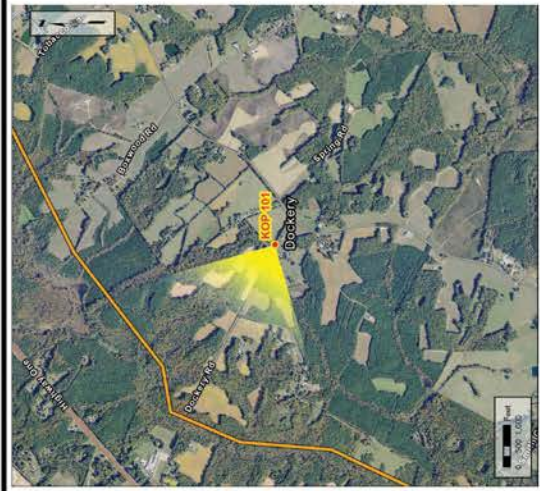


Figure 9. Aerial photography depicting land use and photo view for 058-0057.



**KOP 101**  
Dockery Rd

**Figure 10**  
Route: Nebula-Raines Route 3  
Date: 08/13/2024  
Time: 2:45 pm  
Viewing Direction: West  
Distance to closest feature: 0.7 miles



**Legend**  
→ KOP View Direction  
— Nebula-Raines Route 3

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.







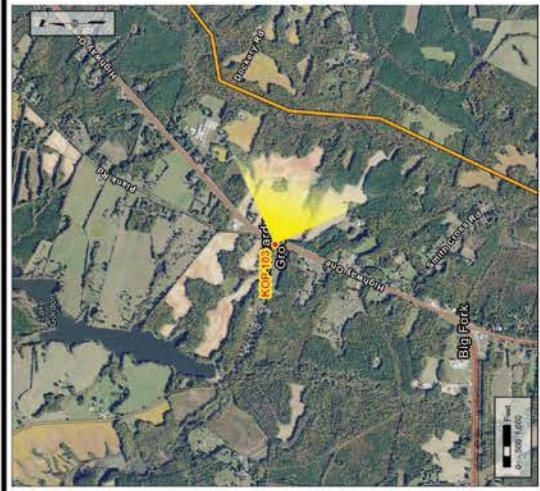
Figure 11. Aerial photography depicting land use and photo view for 058-0073.





**KOP 103**  
Union Level Rd

**Figure 12**  
**Route: Nebula-Raines Route 3**  
**Date: 08/13/2024**  
**Time: 2:58 pm**  
**Viewing Direction: East**  
**Distance to closest feature: 0.6 miles**



**Legend**  
→ KOP View Direction  
— Nebula-Raines Route 3

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



**EXISTING CONDITIONS**



**PROPOSED CONDITIONS**



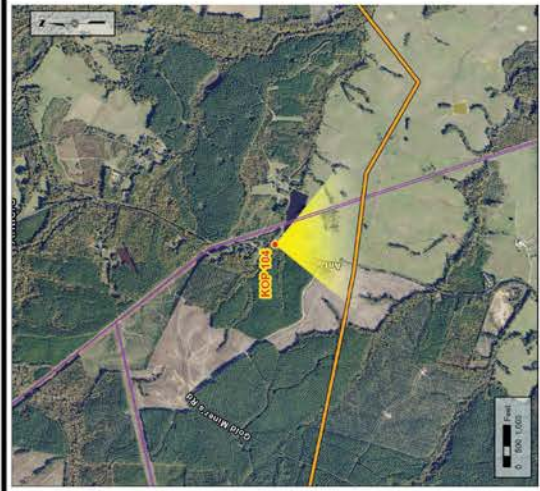


Figure 13. Aerial photography depicting land use and photo view for 058-0140.



**KOP 104**  
Antlers Rd

**Figure 14**  
Route: Nebula-Raines Route 3  
Date: 08/13/2024  
Time: 11:15 am  
Viewing Direction: South  
Distance to closest feature: 0.4 miles



**Legend**

- Existing Dominion Transmission Lines
- KOP View Direction
- Nebula-Raines Route 3

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.







Figure 15. Aerial photography depicting land use and photo view for 058-5092.





EXISTING CONDITIONS



YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

**CLOUD-NEBULA-RAINES**  
230 kV Electric Transmission Project  
Dominion Energy Virginia  
Mecklenburg County, Virginia



**KOP 112**  
Herbert Dr

**Figure 16**  
Route: Nebula-Raines Route 3  
Date:08/13/2024  
Time: 10:47 am  
Viewing Direction: Southeast  
Distance to closest feature: 1.0 miles



**Legend**  
▲ Existing Switching Station  
△ Proposed Switching Station  
— Existing Dominion Transmission Lines  
→ KOP View Direction  
— Nebula-Raines Route 3

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



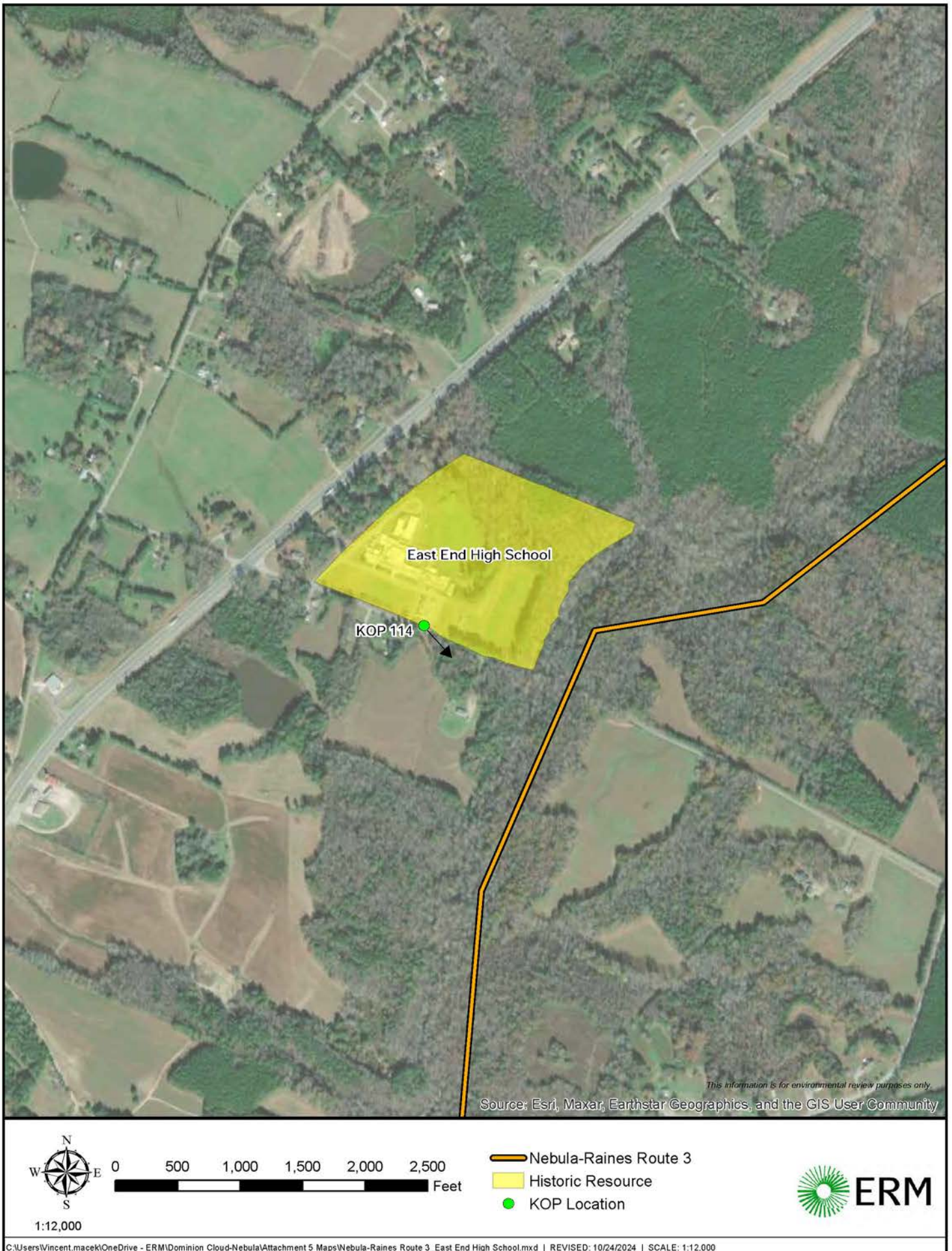
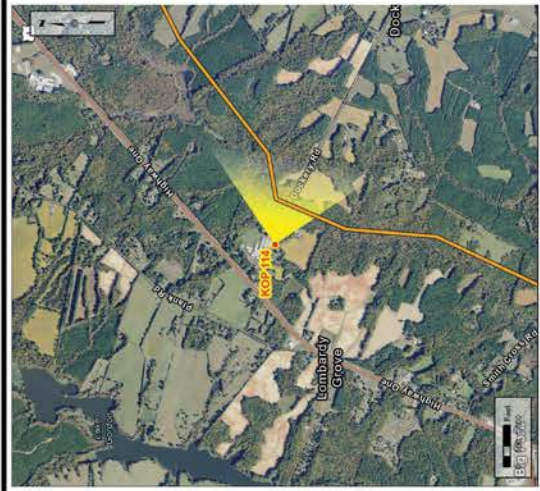


Figure 17. Aerial photography depicting land use and photo view for East End High School.

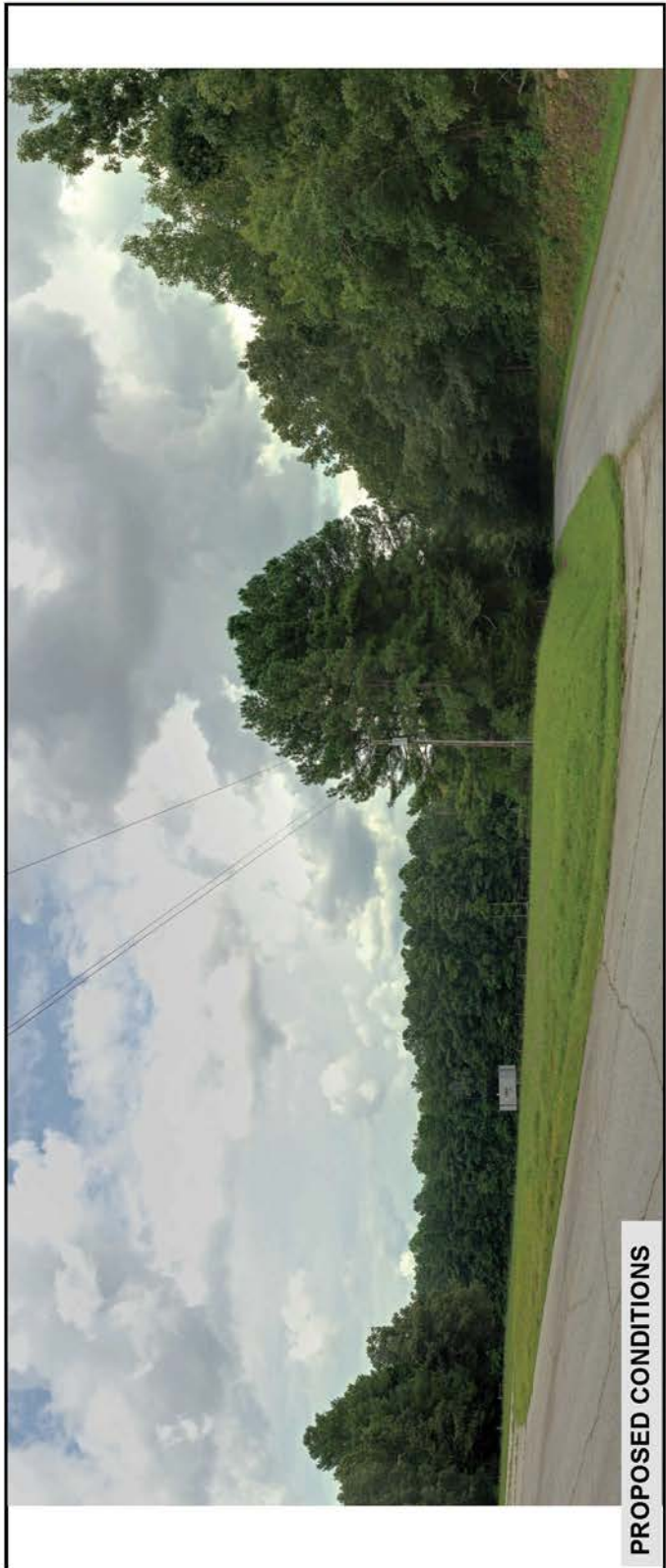


**KOP 114**  
Dockery Rd

**Figure 18**  
Route: Nebula-Raines Route 3  
Date: 08/13/2024  
Time: 1:54 pm  
Viewing Direction: East  
Distance to closest feature: 0.2 miles



Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





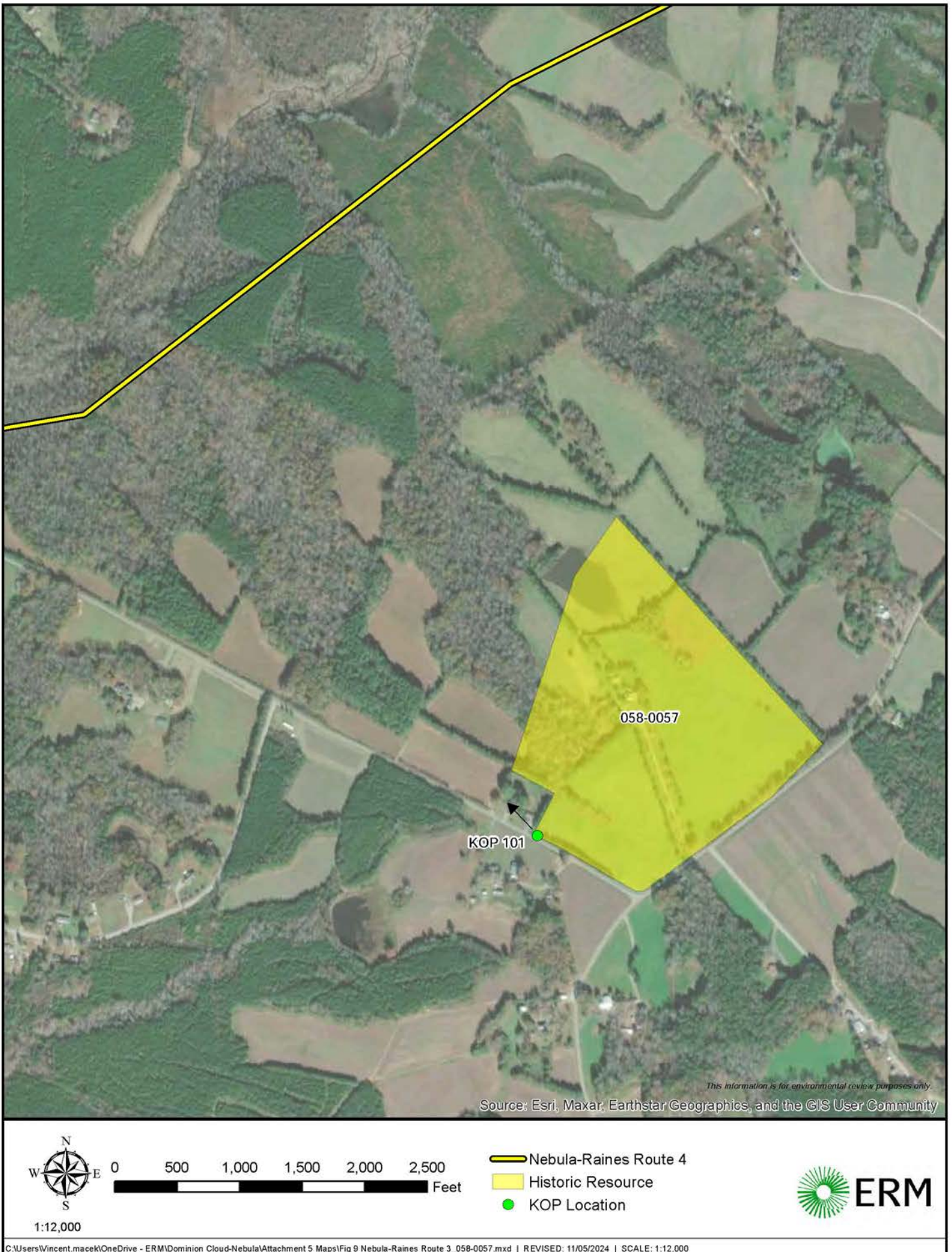


Figure 19. Aerial photography depicting land use and photo view for 058-0057.





EXISTING CONDITIONS



YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

**CLOUD-NEBULA-RAINES**  
230 kV Electric Transmission Project  
Dominion Energy Virginia  
Mecklenburg County, Virginia



**KOP 101**  
Dockery Rd

**Figure 20**  
Route: Nebula-Raines Route 4  
Date:08/13/2024  
Time: 2:45 pm  
Viewing Direction: West  
Distance to closest feature: 0.7 miles



**Legend**  
KOP View Direction  
Nebula-Raines Route 4

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





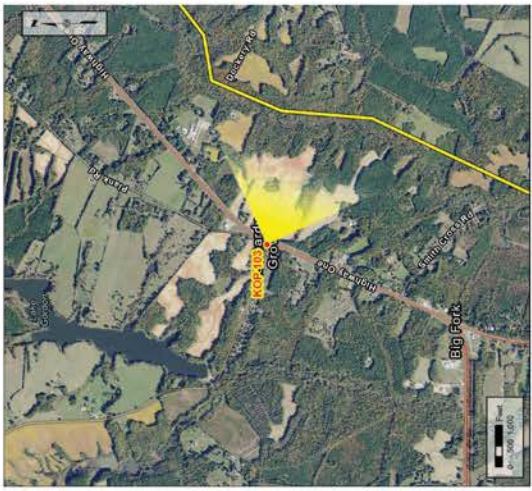
Figure 21. Aerial photography depicting land use and photo view for 058-0073.





**KOP 103**  
Union Level Rd

**Figure 22**  
**Route: Nebula-Raines Route 4**  
**Date: 08/13/2024**  
**Time: 2:58 pm**  
**Viewing Direction: East**  
**Distance to closest feature: 0.6 miles**



**Legend**  
→ KOP View Direction  
— Nebula-Raines Route 4

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



**EXISTING CONDITIONS**



**PROPOSED CONDITIONS**





Figure 23. Aerial photography depicting land use and photo view for 058-0140.





EXISTING CONDITIONS



YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



**KOP 105**  
Antlers Rd

**Figure 24**  
Route: Nebula-Raines Route 4  
Date: 08/13/2024  
Time: 11:32 am  
Viewing Direction: North  
Distance to closest feature: 0.3 miles



**Legend**  
— Existing Dominion Transmission Lines  
→ KOP View Direction  
— Nebula-Raines Route 4

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



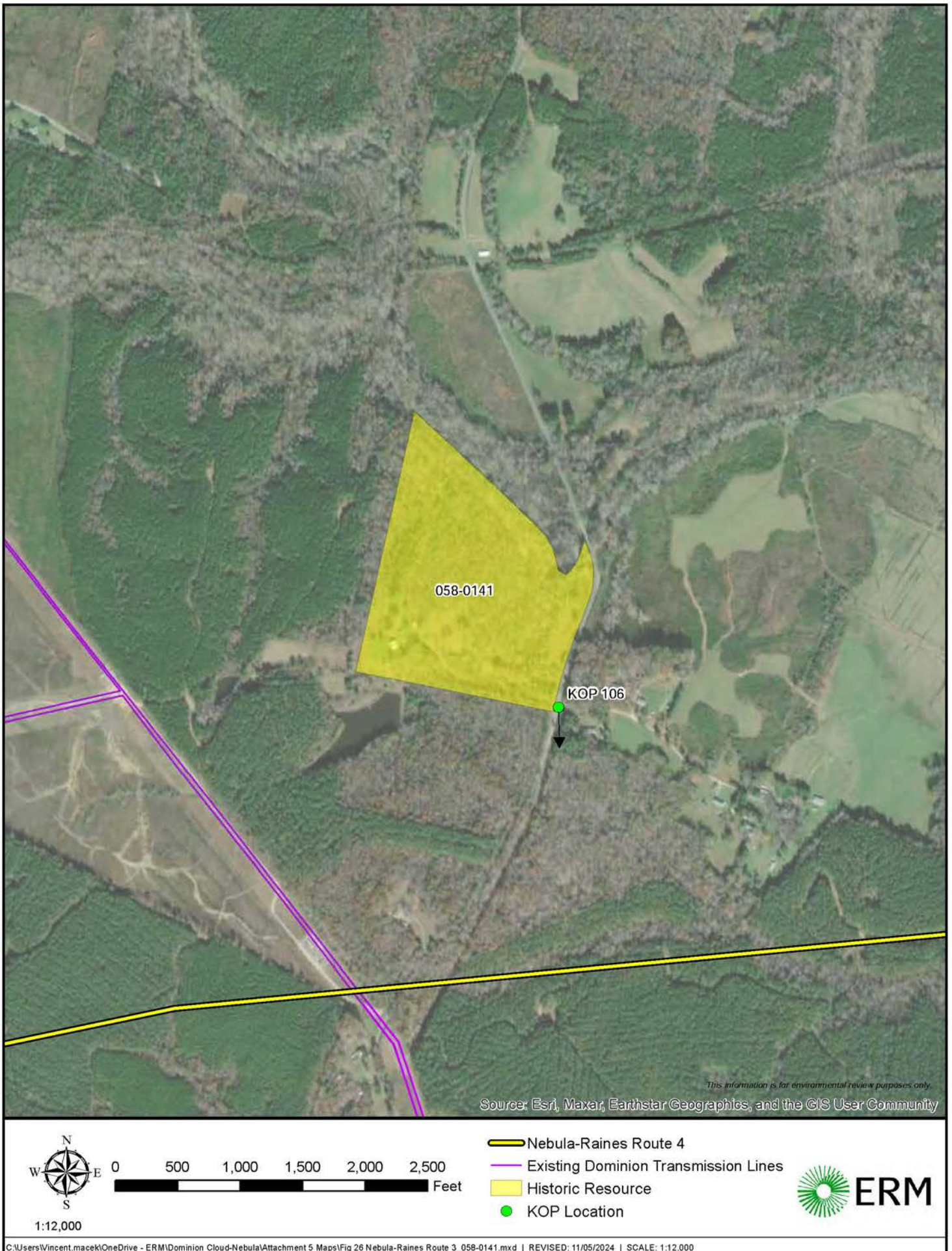


Figure 25. Aerial photography depicting land use and photo view for 058-0141.





## KOP 106

Antlers Rd

Figure 26

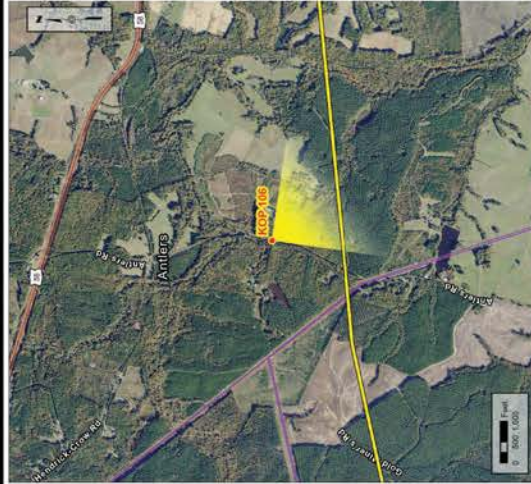
Route: Nebula-Raines Route 4

Date: 08/13/2024

Time: 11:48 am

Viewing Direction: Southeast

Distance to closest feature: 0.3 miles





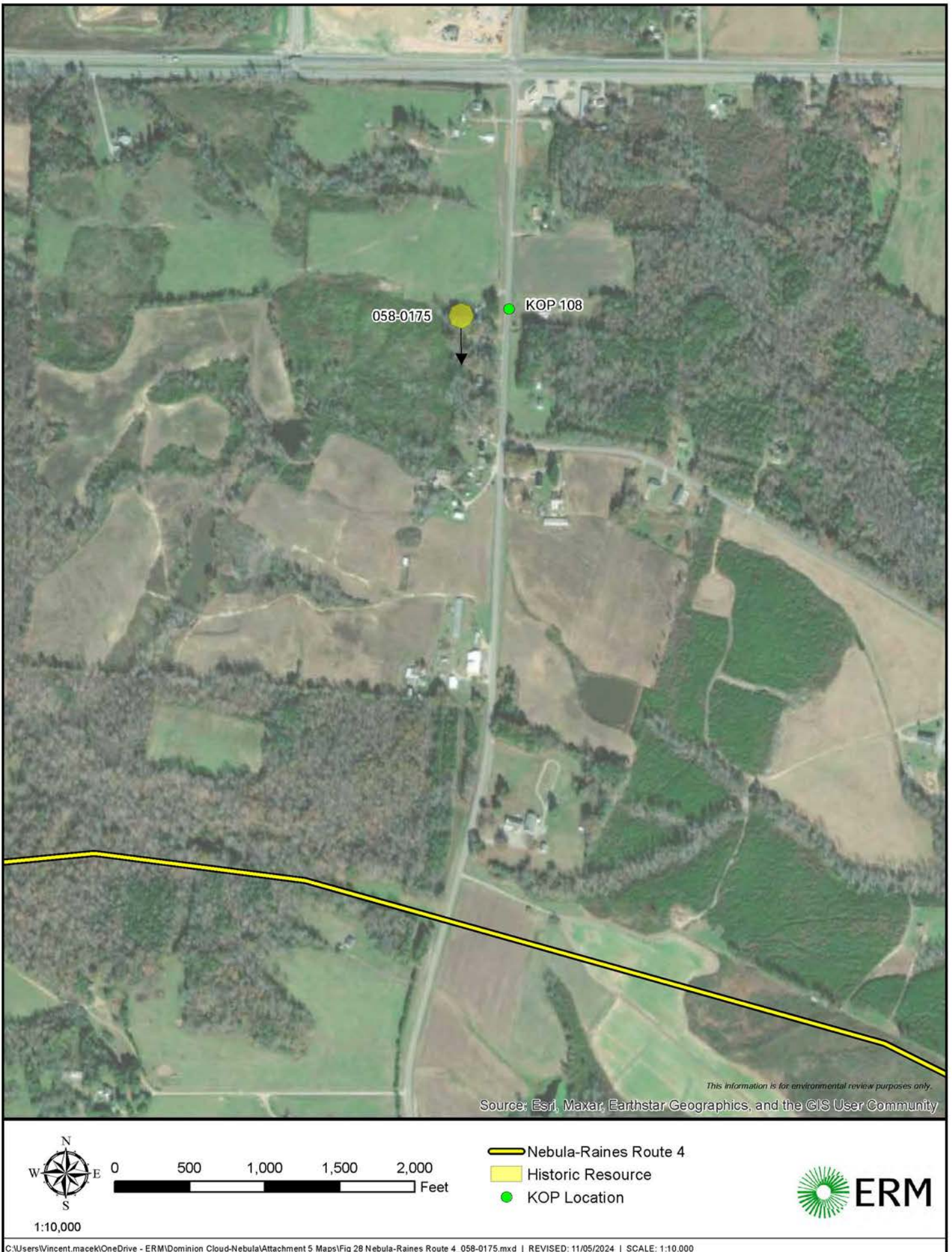


Figure 27. Aerial photography depicting land use and photo view for 058-0175.





EXISTING CONDITIONS



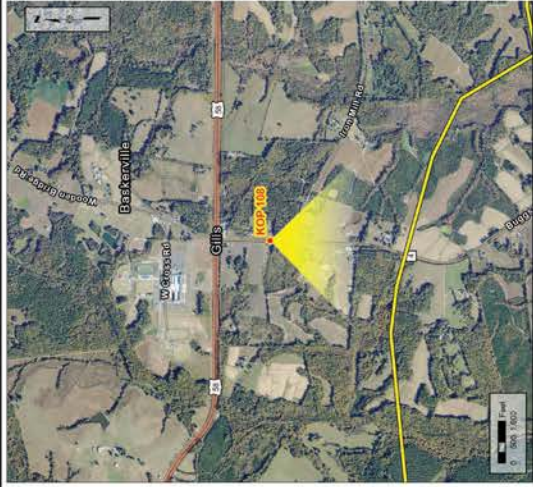
PROPOSED CONDITIONS

**CLOUD-NEBULA-RAINES**  
 230 kV Electric Transmission Project  
 Dominion Energy Virginia  
 Mecklenburg County, Virginia



# **KOP 108** Buggs Island Rd

**Figure 28**  
 Route: Nebula-Raines Route 4  
 Date: 08/14/2024  
 Time: 2:31 pm  
 Viewing Direction: South  
 Distance to closest feature: 0.6 miles



**Legend**  
 KOP View Direction  
 Nebula-Raines Route 4

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



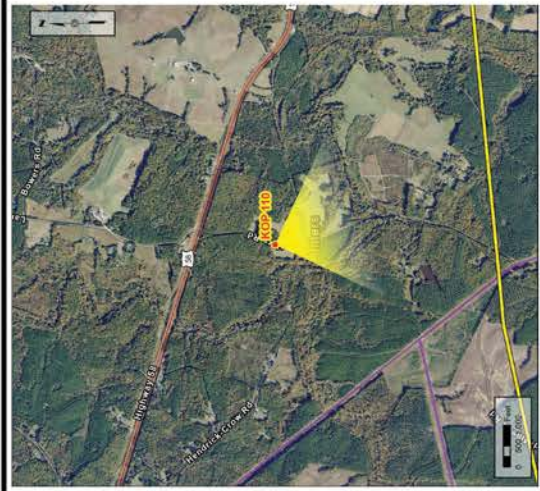


Figure 29. Aerial photography depicting land use and photo view for 058-0309.

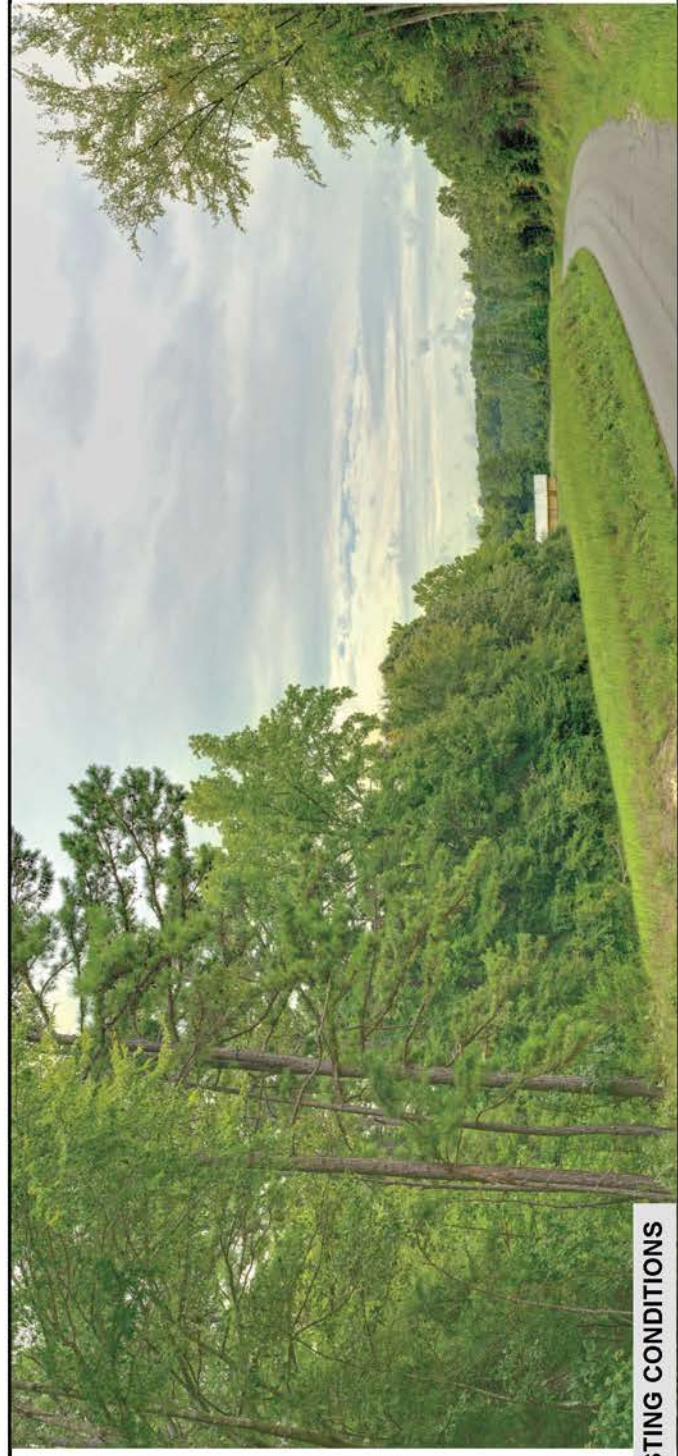


**KOP 110**  
Antlers Rd

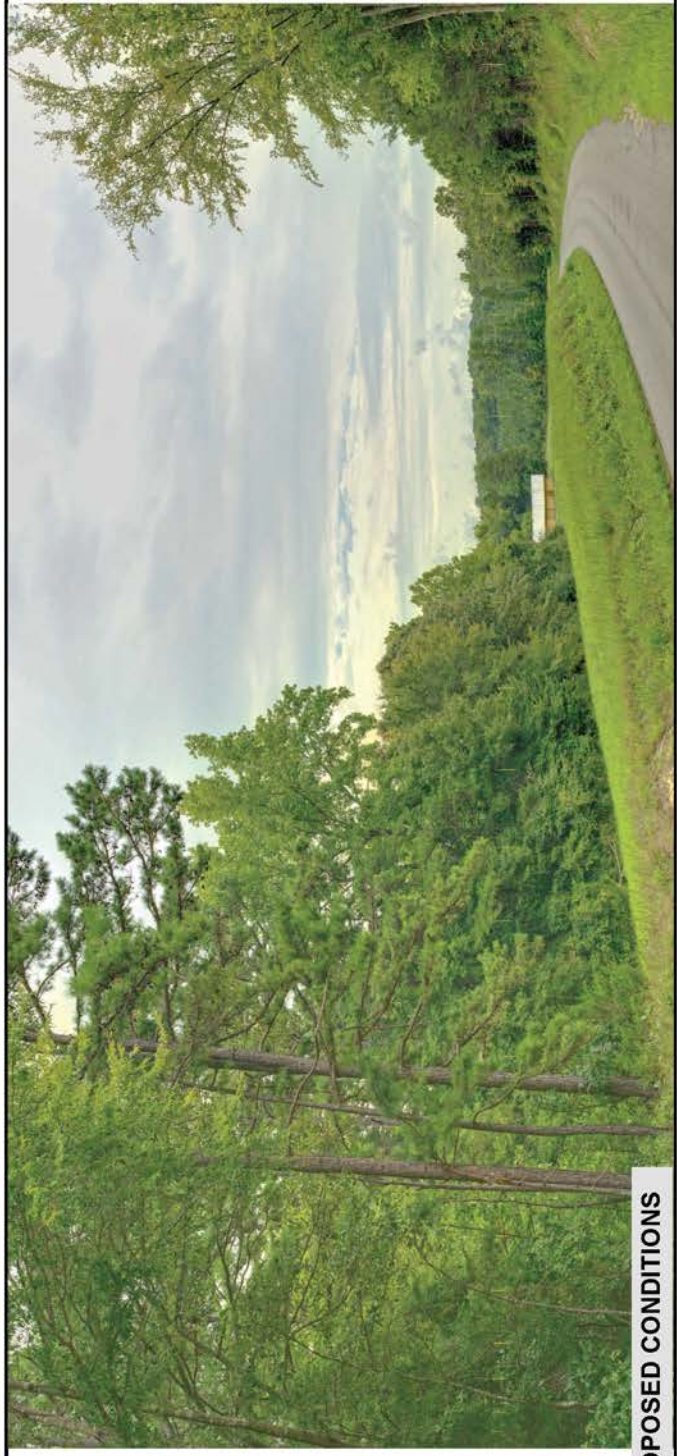
**Figure 30**  
**Route: Nebula-Raines Route 4**  
**Date: 08/13/2024**  
**Time: 12:17 pm**  
**Viewing Direction: South**  
**Distance to closest feature: 1.0 miles**



Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



**EXISTING CONDITIONS**



**PROPOSED CONDITIONS**



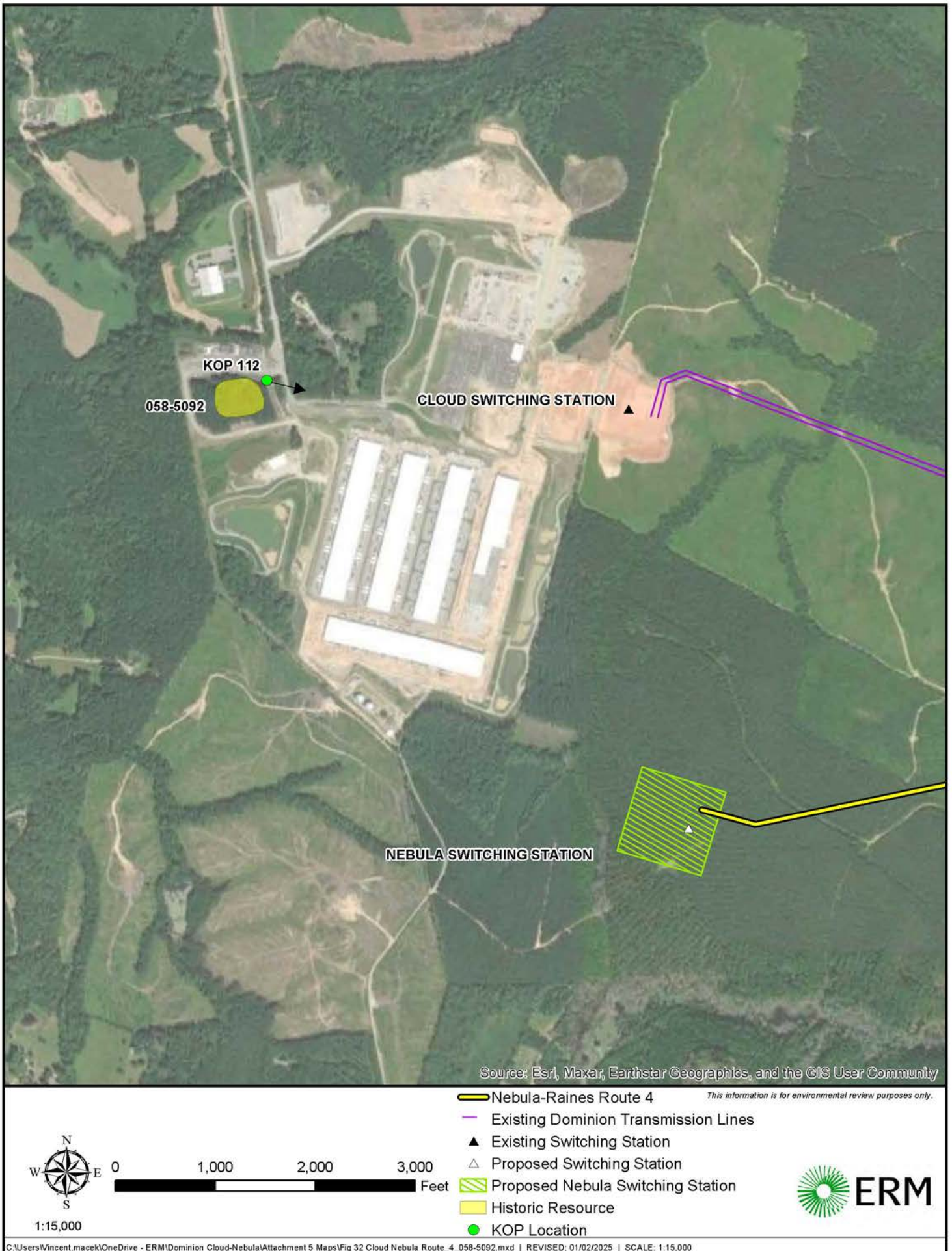


Figure 31. Aerial photography depicting land use and photo view for 058-5092.





EXISTING CONDITIONS



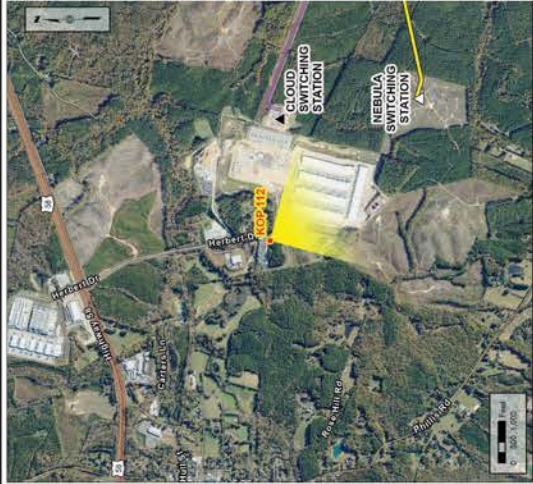
YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

**CLOUD-NEBULA-RAINES**  
230 kV Electric Transmission Project  
Dominion Energy Virginia  
Mecklenburg County, Virginia



**KOP 112**  
Herbert Dr

**Figure 32**  
Route: Nebula-Raines Route 4  
Date:08/13/2024  
Time: 10:47 am  
Viewing Direction: Southeast  
Distance to closest feature: 1.0 miles



**Legend**  
▲ Existing Switching Station  
△ Proposed Switching Station  
— Existing Dominion Transmission Lines  
→ KOP View Direction  
— Nebula-Raines Route 4

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



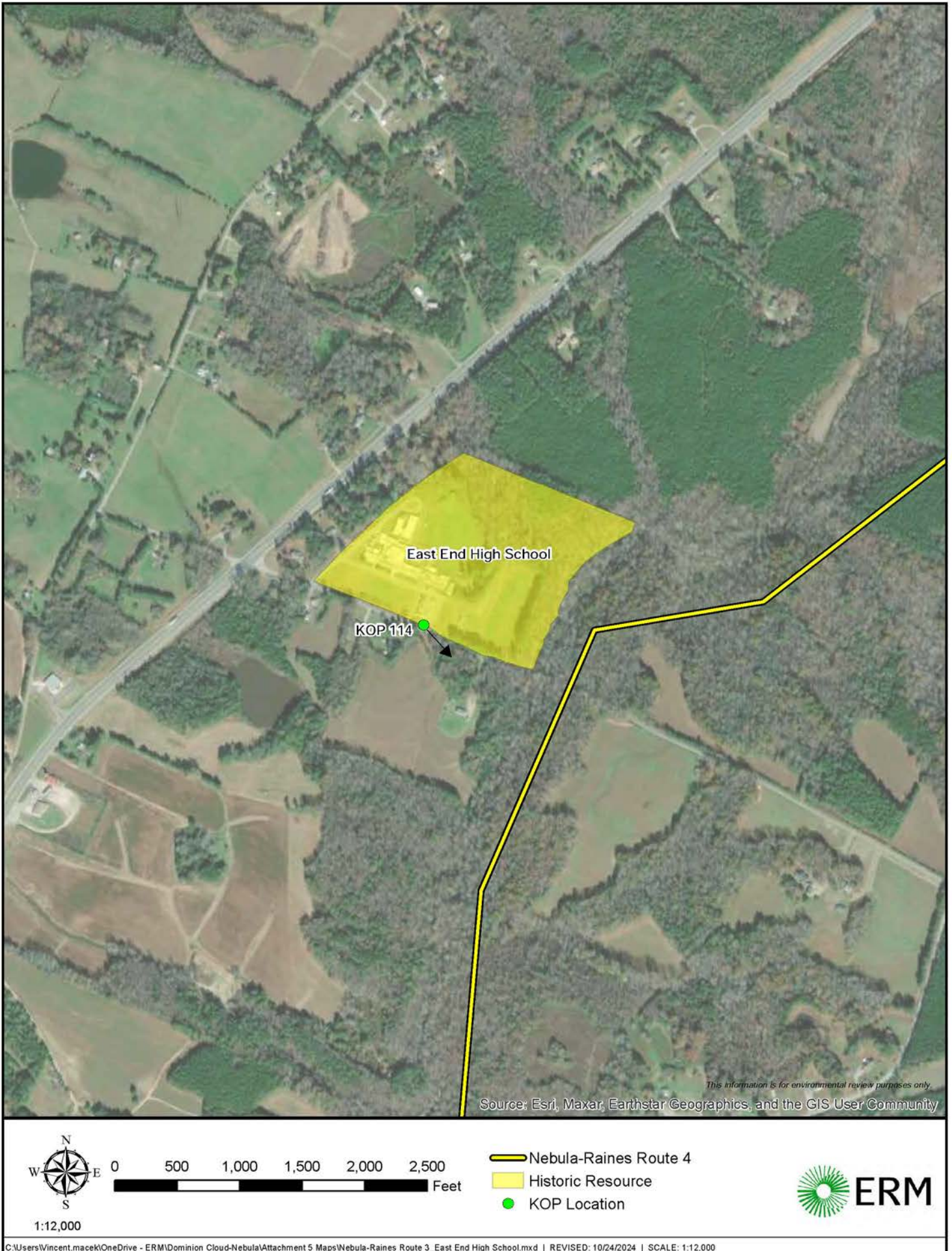
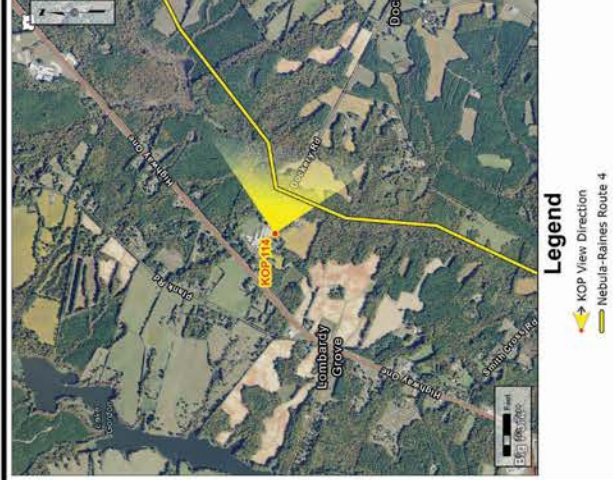


Figure 33. Aerial photography depicting land use and photo view for East End High School.

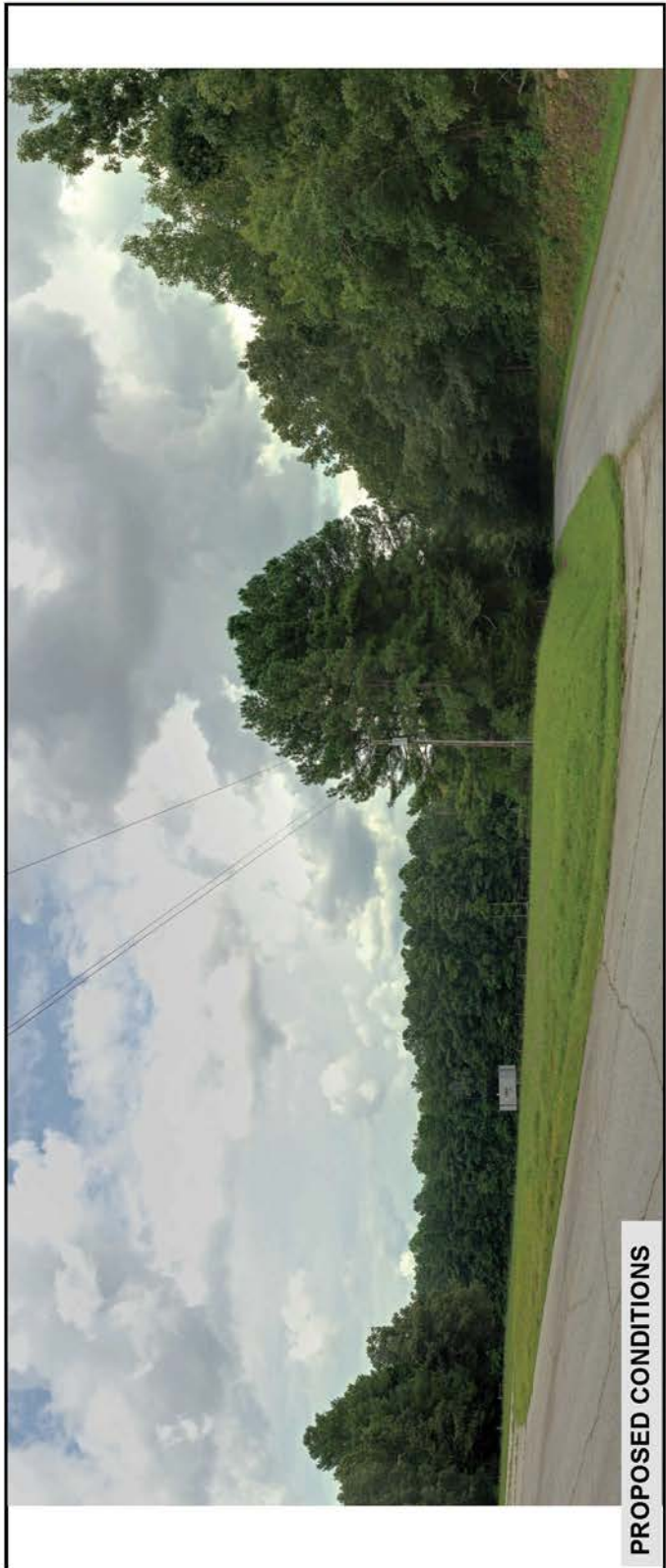


**KOP 114**  
Dockery Rd

**Figure 34**  
Route: Nebula-Raines Route 4  
Date: 08/13/2024  
Time: 1:54 pm  
Viewing Direction: East  
Distance to closest feature: 0.2 miles



Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.







Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community  
This information is for environmental review purposes only.



0 490 980 1,470 1,960  
Feet

1:12,000

- Nebula-Raines Route 5
- Existing Dominion Transmission Lines
- Historic Resource
- KOP Location

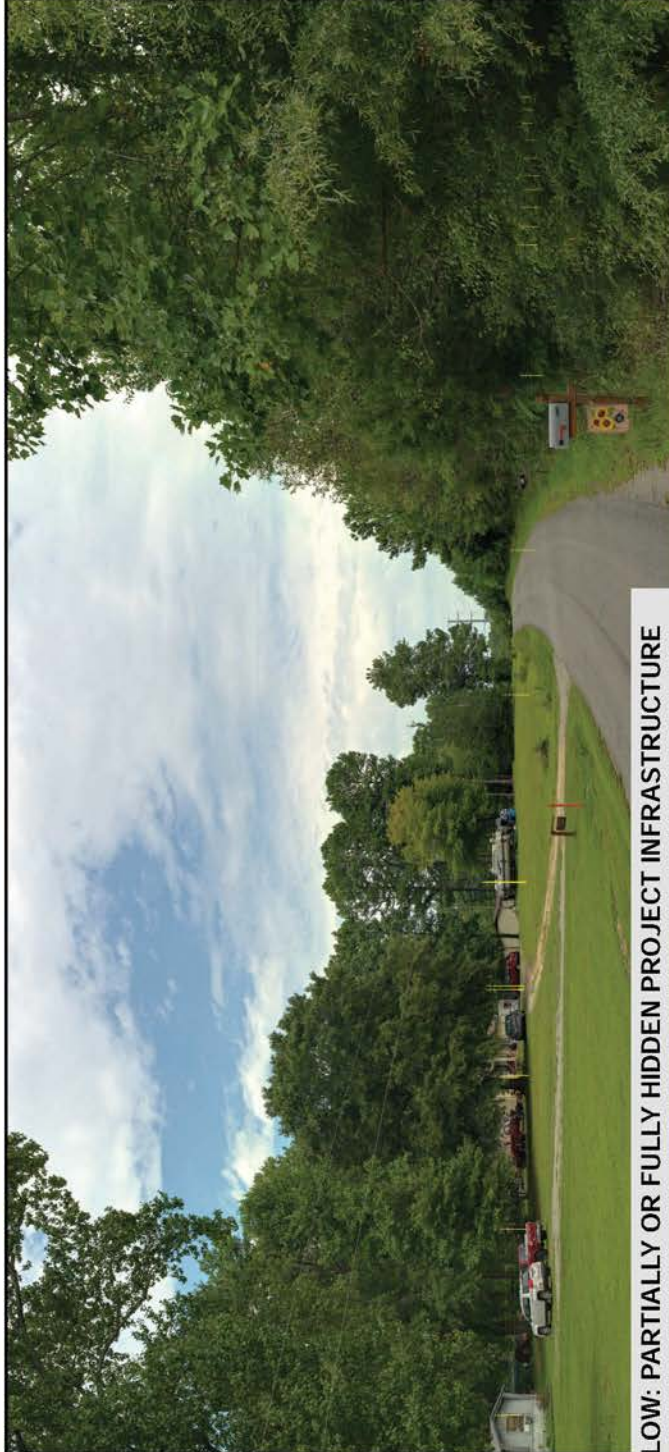


Figure 35. Aerial photography depicting land use and photo view for 058-0140.





EXISTING CONDITIONS



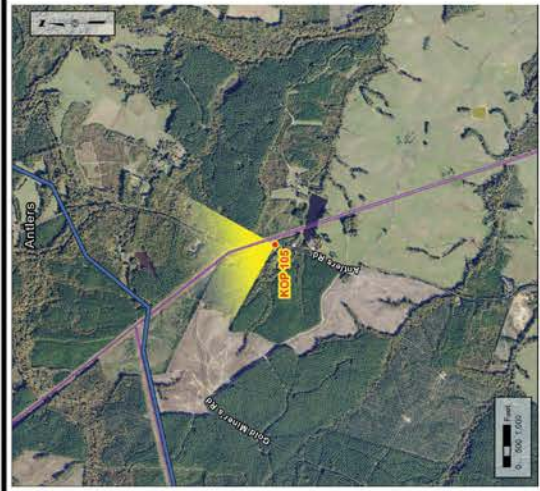
YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



## KOP 105

Antlers Rd

**Figure 36**  
Route: Nebula-Raines Route 5  
Date: 08/13/2024  
Time: 11:32 am  
Viewing Direction: North  
Distance to closest feature: 0.6 miles



**Legend**  
— Existing Dominion Transmission Lines  
— KOP View Direction  
— Nebula-Raines Route 5

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



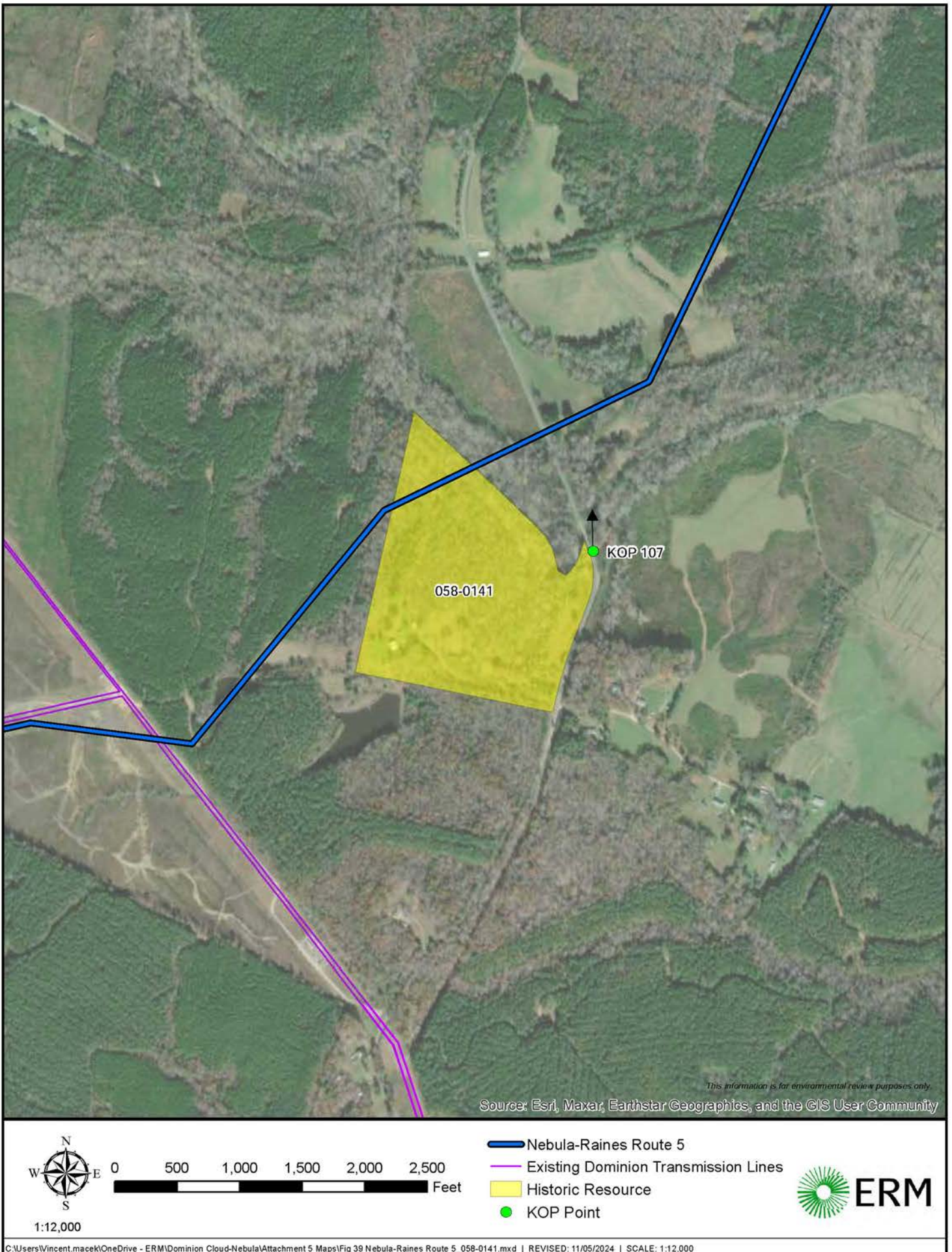


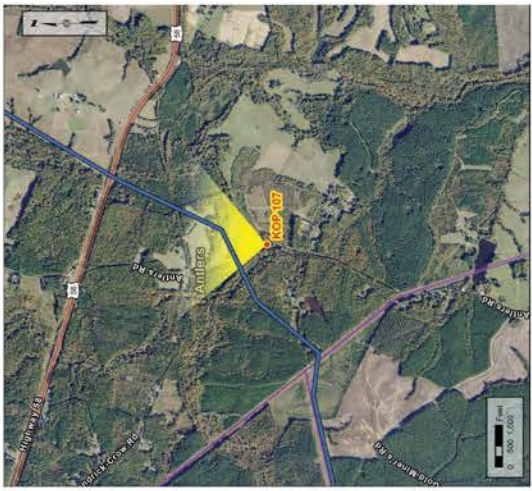
Figure 37. Aerial photography depicting land use and photo view for 058-0141.





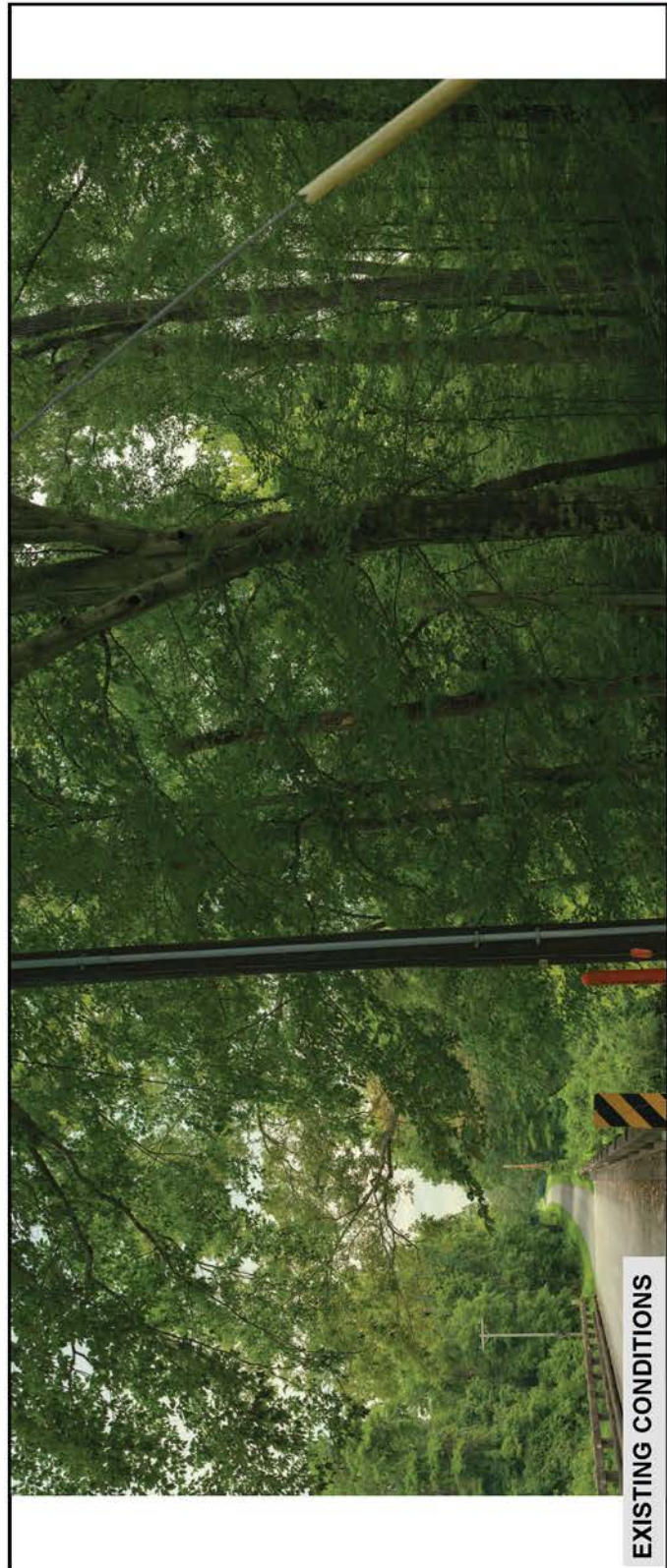
**KOP 107**  
Antlers Rd

**Figure 38**  
**Route: Nebula-Raines Route 5**  
**Date: 08/13/2024**  
**Time: 12:03 pm**  
**Viewing Direction: North**  
**Distance to closest feature: 0.2 miles**



**Legend**  
— Existing Dominion Transmission Lines  
➤ KOP View Direction  
— Nebula-Raines Route 5

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



**EXISTING CONDITIONS**



**PROPOSED CONDITIONS**





Figure 39. Aerial photography depicting land use and photo view for 058-0309.





## KOP 110

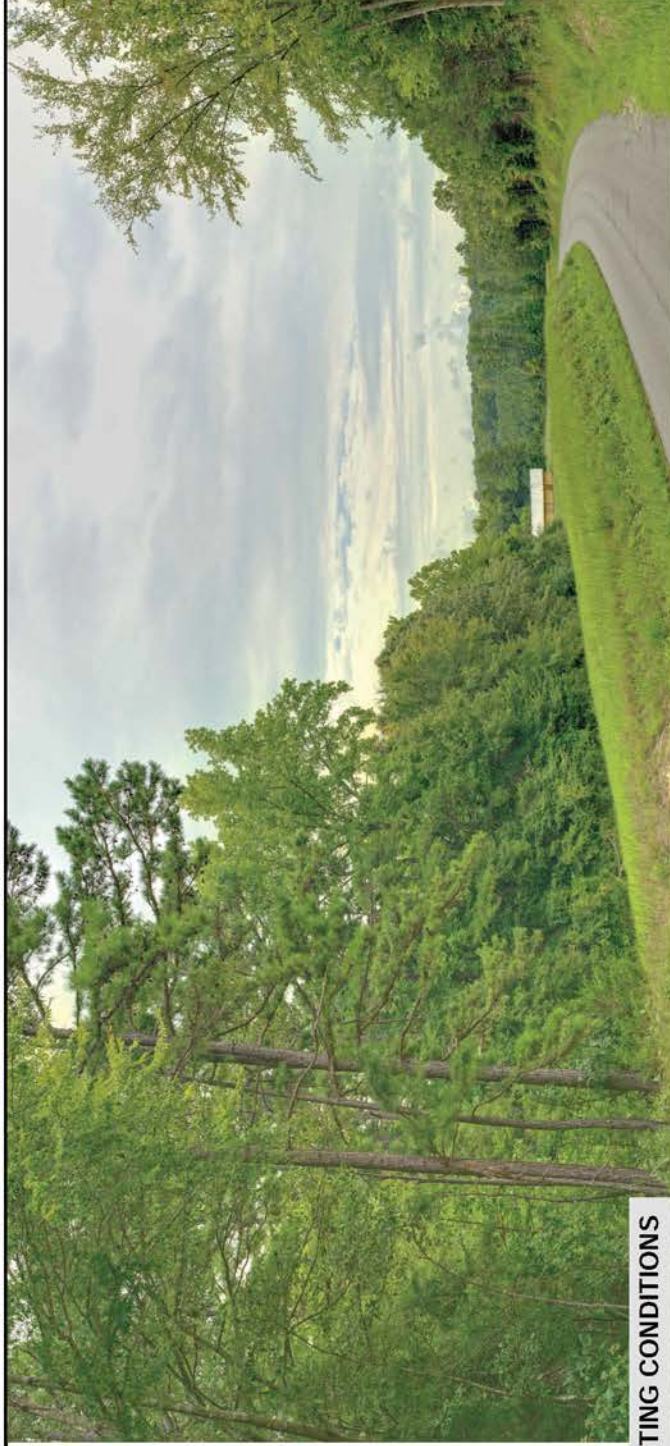
Antlers Rd

**Figure 40**  
Route: Nebula-Raines Route 5  
Date: 08/13/2024  
Time: 12:17 pm  
Viewing Direction: South  
Distance to closest feature: 0.3 miles

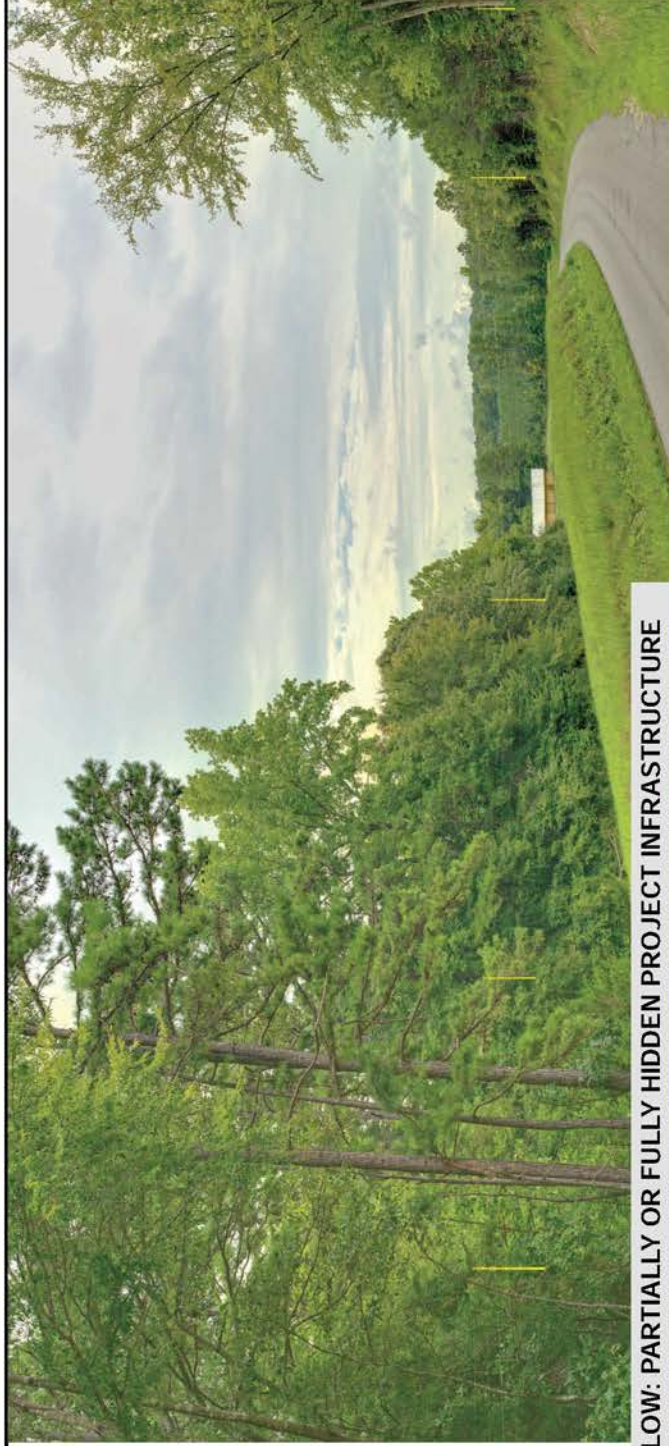


**Legend**  
— Existing Dominion Transmission Lines  
→ KOP View Direction  
— Nebula-Raines Route 5

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



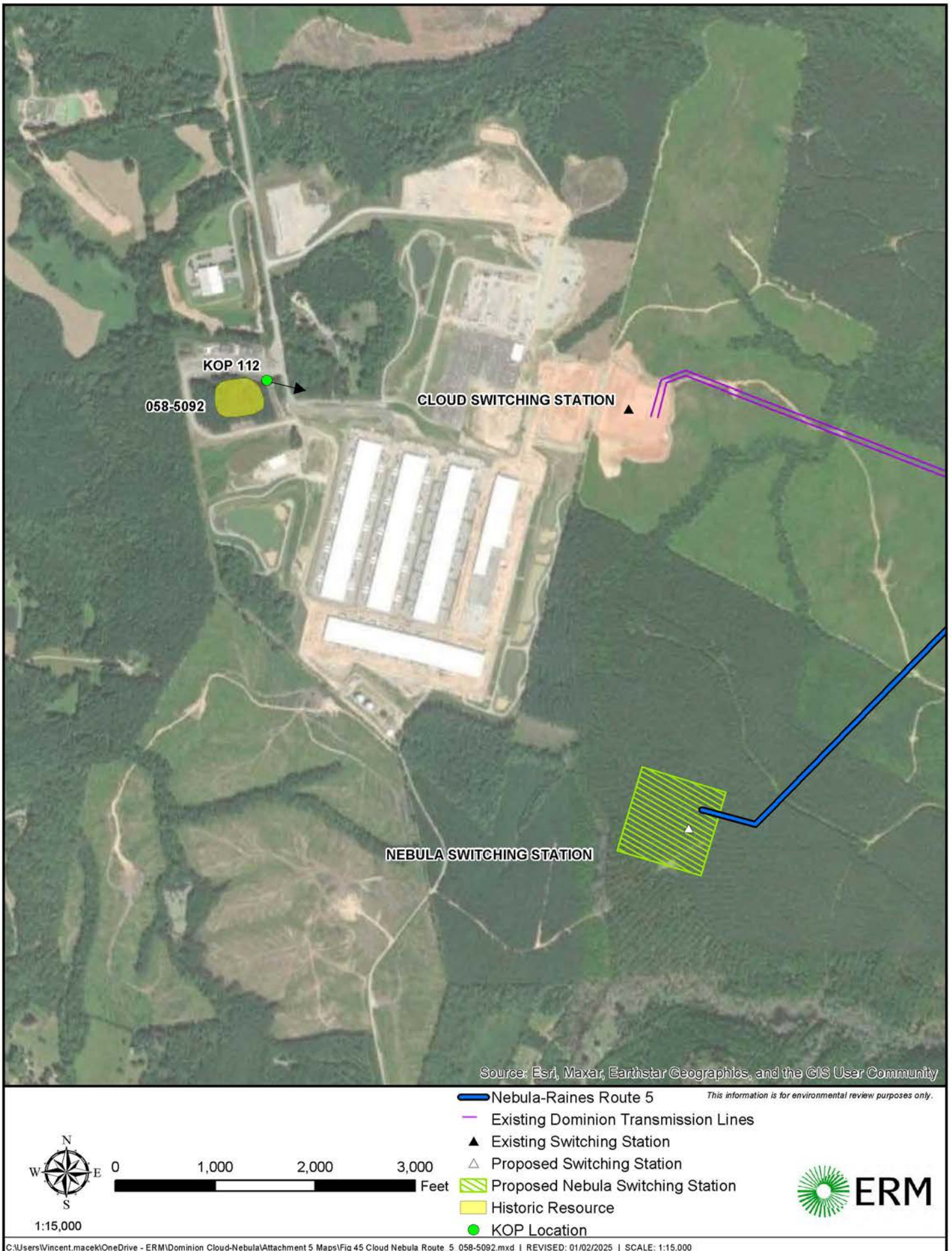


Figure 41. Aerial photography depicting land use and photo view for 058-5092.





EXISTING CONDITIONS



YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

**CLOUD-NEBULA-RAINES**  
230 kV Electric Transmission Project  
Dominion Energy Virginia  
Mecklenburg County, Virginia



**KOP 112**  
Herbert Dr

**Figure 42**  
Route: Nebula-Raines Route 5  
Date:08/13/2024  
Time: 10:47 am  
Viewing Direction: Southeast  
Distance to closest feature: 1.0 miles



**Legend**  
▲ Existing Switching Station  
△ Proposed Switching Station  
— Existing Dominion Transmission Lines  
→ KOP View Direction  
— Nebula-Raines Route 5

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





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Guyana	South Korea
Hong Kong	Spain
India	Switzerland
Indonesia	Taiwan
Ireland	Tanzania
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Duluth, GA 30096

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**From:** Warren, Arlene <arlene.warren@vdh.virginia.gov>  
**Sent:** Tuesday, June 22, 2021 7:53 AM  
**To:** Rachel.M.Studebaker@dominionenergy.com  
**Subject:** [EXTERNAL] Re: FW: SCC Case No. PUR-2021-00010/DEQ21-013S

\*\*\*This is an EXTERNAL email that was NOT sent from Dominion Energy. Are you expecting this message? Are you expecting a link or attachment? DO NOT click links or open attachments until you verify them\*\*\*

The proposal from Dominion is reasonable and we consider it acceptable.

Best Regards,

Arlene Fields Warren

**GIS Program Support Technician**

**Office of Drinking Water**

**Virginia Department of Health**

109 Governor Street

Richmond, VA 23219

(804) 864-7781

On Thu, Jun 17, 2021 at 4:33 PM [Rachel.M.Studebaker@dominionenergy.com](mailto:Rachel.M.Studebaker@dominionenergy.com)  
<[Rachel.M.Studebaker@dominionenergy.com](mailto:Rachel.M.Studebaker@dominionenergy.com)> wrote:

Hello Ms. Warren,

I am reaching out in regard to the DEQ Report for SCC Case No. PUR-2021-00010/DEQ21-013S (230 kV lines #2113 and #2154 Transmission Line Rebuilds and Related Projects). As part of the VDH ODW review, it was recommended that all wells within a 1,000-foot radius of the project site be field marked and protected from accidental damage. It is our custom construction process to not conduct any work outside of the existing right-of-way (ROW), with the exception of entry using existing access roads, and use DEQ approved erosion and sediment controls. These well are located outside of the project area ROW on private land and Dominion Energy does not have permission to enter private property to field mark the wells.



Therefore, we are proposing to plot and call out the wells on the Erosion and Sediment control plans as a way of flagging them for the construction team for protection from accidental damage. Is this a sufficient approach to comply with the ODW recommendation?

Thank you,

*Rachel Studebaker*

Environmental Specialist II

Dominion Energy Services

120 Tredegar Street, Richmond, VA 23219

Office: (804) 273-4086

Cell: (804) 217-1847

#



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