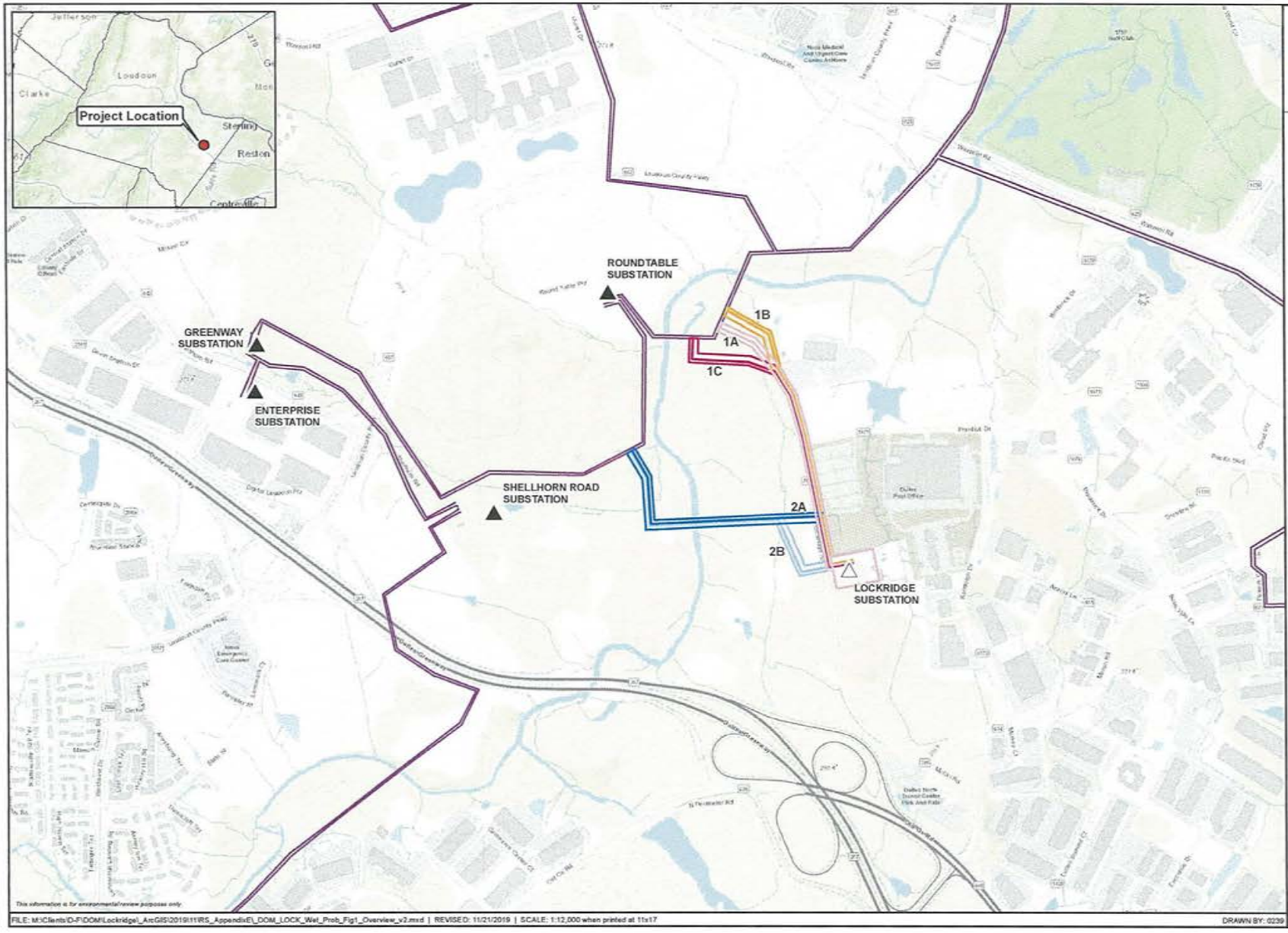


Dominion Energy

Figure 1
General Location Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

- Proposed Substation
- Existing Substation
- Existing Dominion Transmission Lines

Centerlines
- Route 1A
- Route 1B
- Route 1C
- Route 2A
- Route 2B

Right of Ways
- Route 1A Right of Way
- Route 1B Right of Way
- Route 1C Right of Way
- Route 2A Right of Way
- Route 2B Right of Way

N
W E
S

0 500 1,000
Feet

1:12,000

ERM

FIGURE 2

Dominion Energy®

Figure 2
Wetland Probability Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

- Substation Polygon
- Existing Dominion Transmission Line
- NHD Flowline
- NWI Wetland

Wetland Probability
- High
- Medium/High
- Medium

Wetland Cover Type
- PEM
- PFO
- PSS
- Riverine

Hydric Soil - SSURGO
- Hydric
- Partially Hydric
- Not Hydric

N
W E
S

0 175 350
Feet

1:4,200

ERM

DOMINION ENERGY
LOCKRIDGE 230 kV LINE LOOP AND LOCKRIDGE SUBSTATION PROJECT

Environmental Routing Study

Appendix E
Cultural Resource Assessment

REPORT >

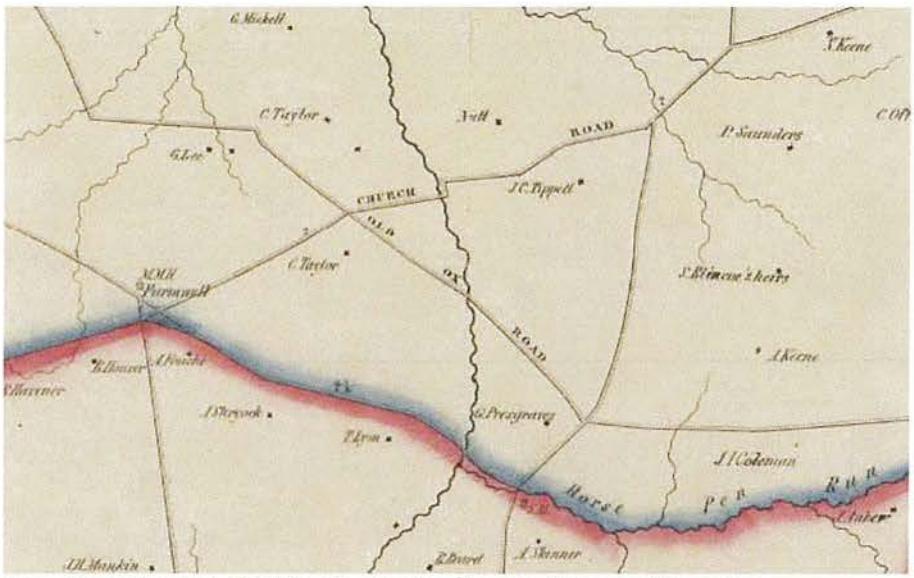
Pre-Application Analysis Of Cultural Resources for the Lockridge 230kV Line Loop and Substation

LOCATION > Loudoun County, Virginia

DATE> DECEMBER 2019

PREPARED FOR >

Dominion Energy Virginia



"Loudoun County", 1854 Yardley Taylor. Source: Library of Congress

PREPARED BY >

Dutton + Associates, LLC

PROJECT REVIEW # >

Dutton + Associates

CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

SCC Pre-Application Analysis of Cultural Resources for the Lockridge 230kV Line Loop and Lockridge Substation

Loudoun County, Virginia

PREPARED FOR:
DOMINION ENERGY VIRGINIA

PREPARED BY:
DUTTON + ASSOCIATES, LLC
1115 Crowder Drive
Midlothian, Virginia 23236
804.644.8290

PRINCIPAL INVESTIGATOR:
Robert J. Taylor, Jr.

December 2019

ABSTRACT

In October 2019, Dutton + Associates, LLC (D+A) conducted a Pre-Application Analysis (analysis) of cultural resources for the Lockridge 230kV Line Loop and Substation project in Loudoun County, Virginia. The analysis was performed for Dominion Energy Virginia (Dominion) in support of a State Corporation Commission (SCC) application. The analysis was conducted in accordance with Virginia Department of Historic Resources' (VDHR) guidance titled Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (January 2008) and Commonwealth of Virginia State Corporation Commission Division of Public Utility Regulation Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia (August 2017).

The Lockridge 230kV Line Loop and Substation project entails the construction of a new electric substation connected to an existing transmission line by a new 230kV line loop in the Sterling vicinity of Loudoun County. The project is proposed in order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards.

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

Review of the VDHR VCRIS inventory records revealed a total of 30 previously recorded architectural resources are located 1.5-miles of the project study area. Of these, there are no NHLs located within 1.5-miles of the study area, no NRHP-listed properties, battlefields, or historic landscapes located within 1-mile of the study area, and one property that is considered eligible for listing in the NRHP within 0.5-mile of the study area. One additional previously recorded architectural resource is located directly within the footprint of the proposed substation, although this resource was determined not eligible for listing in the NRHP by the VDHR in 2016. Field inspection and desktop analysis reveal that the one NRHP-eligible

resource within 0.5 mile of the project area, Broad Run Ford and Ox Road (053-6416) has historical significance related to early transportation in the region and is considered significant for its representation of a colonial-era ford and road, however, its setting has been compromised by a variety of nonhistoric development in the vicinity. This includes large-scale private development and utility corridors, including an existing transmission line corridor between it and the project study area. As shown by ground-based photography, views from the resource are already interrupted by these features, and the proposed Lockridge 230kV Line Loop and Substation is to be set beyond the compromised setting. This is confirmed by photo simulation that reveals most of the project improvements proposed for each alternative would be set beneath and completely screened by intervening vegetation. Just a single tap structure on Options 1A, 1B, and 1C would be visible amongst existing other structures, while all structures associated with Options 2A and 2B would be screened. Additionally, the proposed substation will be set over 0.6 mile away and be completely screened by intervening development and vegetation. As such, none of the alternatives or the project as a whole will introduce any substantial new or uncharacteristic features into the already compromised setting, and therefore, the proposed project will have no more than a ***minimal impact*** *on the Broad Run Ford and Ox Road.*

A summary of findings and recommendations is provided in the table below.

Potential Impacts Summary for Architectural Resources

VDHR ID #	*Resource Name*	*NRHP Status*	*Impact*
053-6416	*Broad Run Ford and Ox Road*	*NRHP- Eligible*	*Minimal to None*

With regards to archaeology, there are no known sites within or immediately adjacent to the study area and therefore the project will pose ***no impact*** *to previously recorded archaeological sites.*

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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1. INTRODUCTION

In October 2019, Dutton + Associates, LLC (D+A) conducted a Pre-Application Analysis (analysis) of cultural resources for the Lockridge 230kV Line Loop and Substation project in Loudoun County, Virginia (Figure 1-1). The analysis was performed for Dominion Energy Virginia (Dominion) in support of a State Corporation Commission (SCC) application. The analysis was conducted in accordance with Virginia Department of Historic Resources' (VDHR) guidance titled *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (January 2008) and Commonwealth of Virginia State Corporation Commission Division of Public Utility Regulation *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia* (August 2017).

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

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

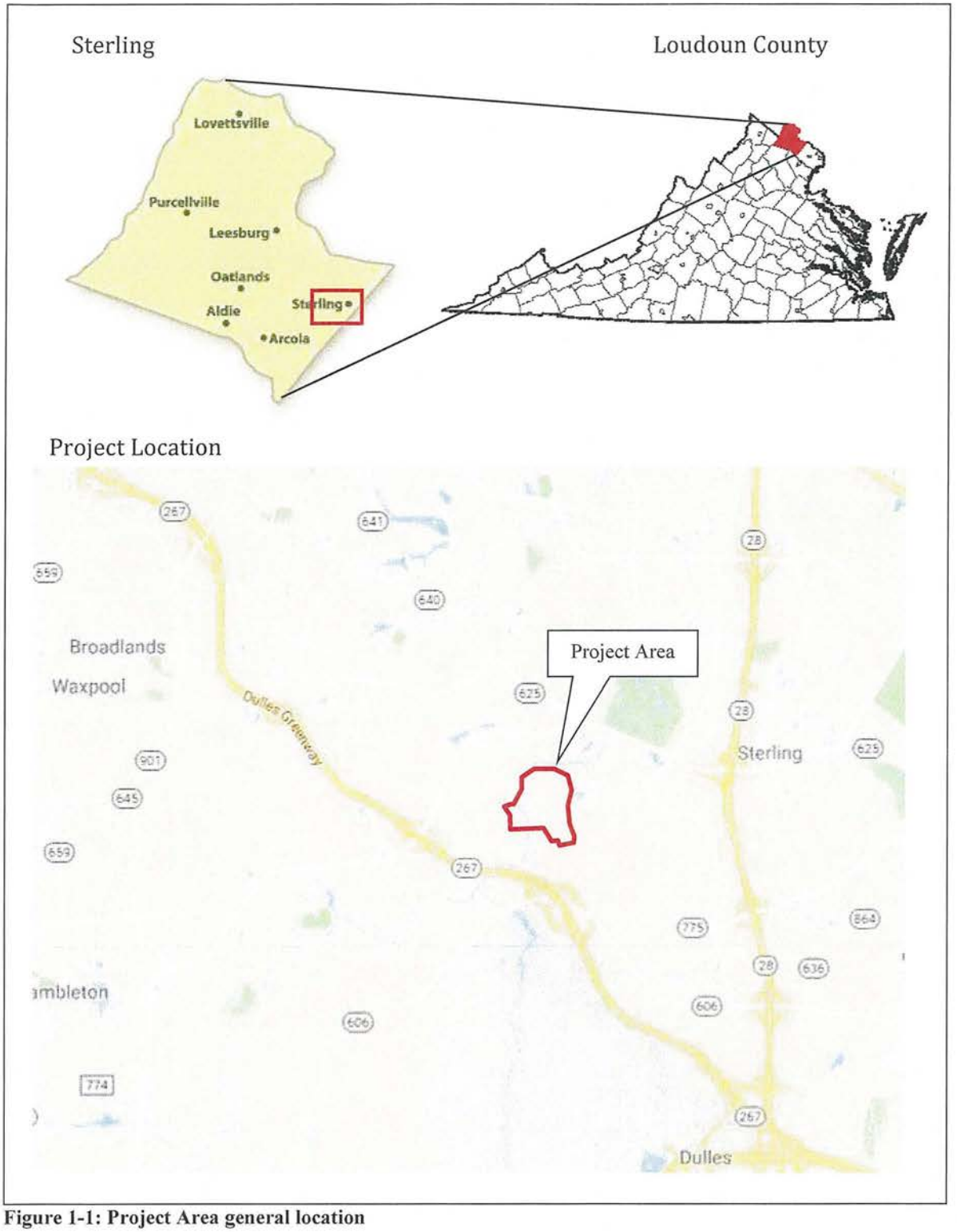


Figure 1-1: Project Area general location

2. PROJECT DESCRIPTION

The Lockridge 230kV Line Loop and Substation project entails the construction of a new electric substation connected to an existing transmission line by a new 230kV line loop in the Sterling vicinity of Loudoun County. The project is proposed in order to provide service requested by a retail electric service customer (the Customer); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation (NERC) Reliability Standards. As such, the project entails:

(i) a new approximately 0.7-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single shaft galvanized steel poles and utilizing three-phase twin bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214 approximately 0.3 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the Lockridge Loop); and

(ii) a new 230-34.5 kV Lockridge Substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia (Lockridge Substation) (the Lockridge Loop and Lockridge Substation, collectively, the Project).

After review of the potential electrical solutions, Dominion Energy Virginia decided to more closely investigate two options both located entirely within Loudoun County, Virginia. Both options would require the construction of the proposed Lockridge Substation located on a parcel south of the United Stated Postal Service (USPS) Dulles Post Office property and fronting Lockridge Road, and less than one mile of new overhead transmission line.

At this time, two line loop options to connect the substation to existing transmission lines are proposed, with five alternative alignments. The five potential transmission line route alternatives are located within close proximity to one another and tie into an existing transmission line corridor just south of where it crosses Broad Run near Loudoun County Parkway (Figure 2-1). All five route alternatives would require additional new right-of-way (ROW), however, the Option 1 alternatives follow an existing road ROW, and Option 2 alternatives follow an existing utility easement for at least a portion of their alignments. For both options, the proposed structures would be centered within a 100-foot ROW and be steel monopoles averaging approximately 105-feet tall (Figures 2-2 through 2-12). The currently preferred alternative is *Option 1, Route A*. Option 1, Routes 1B, 1C, and Option 2, Route 2A and 2B will be alternative routes. Detailed descriptions of each option and alternative are provided in the following section.

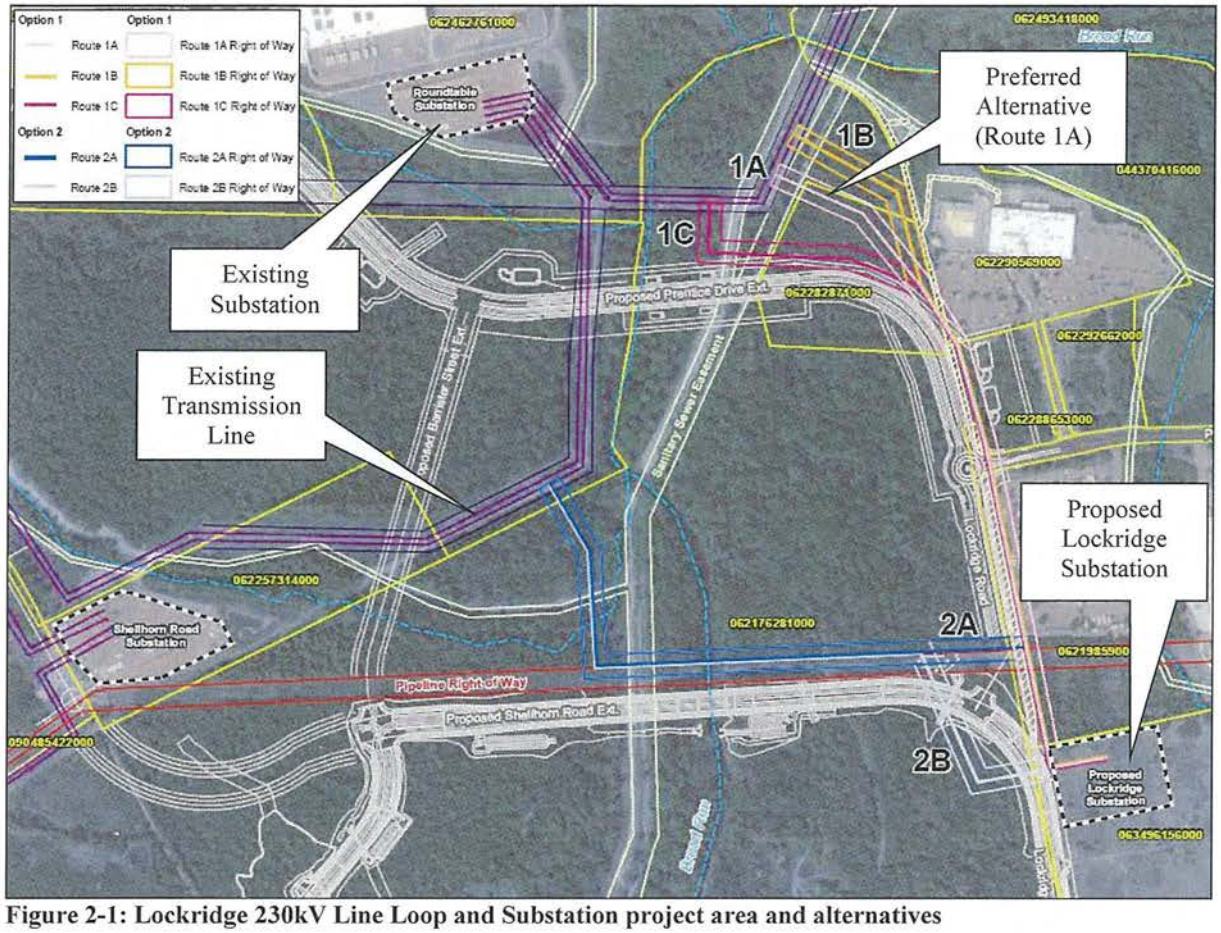


Figure 2-1: Lockridge 230kV Line Loop and Substation project area and alternatives

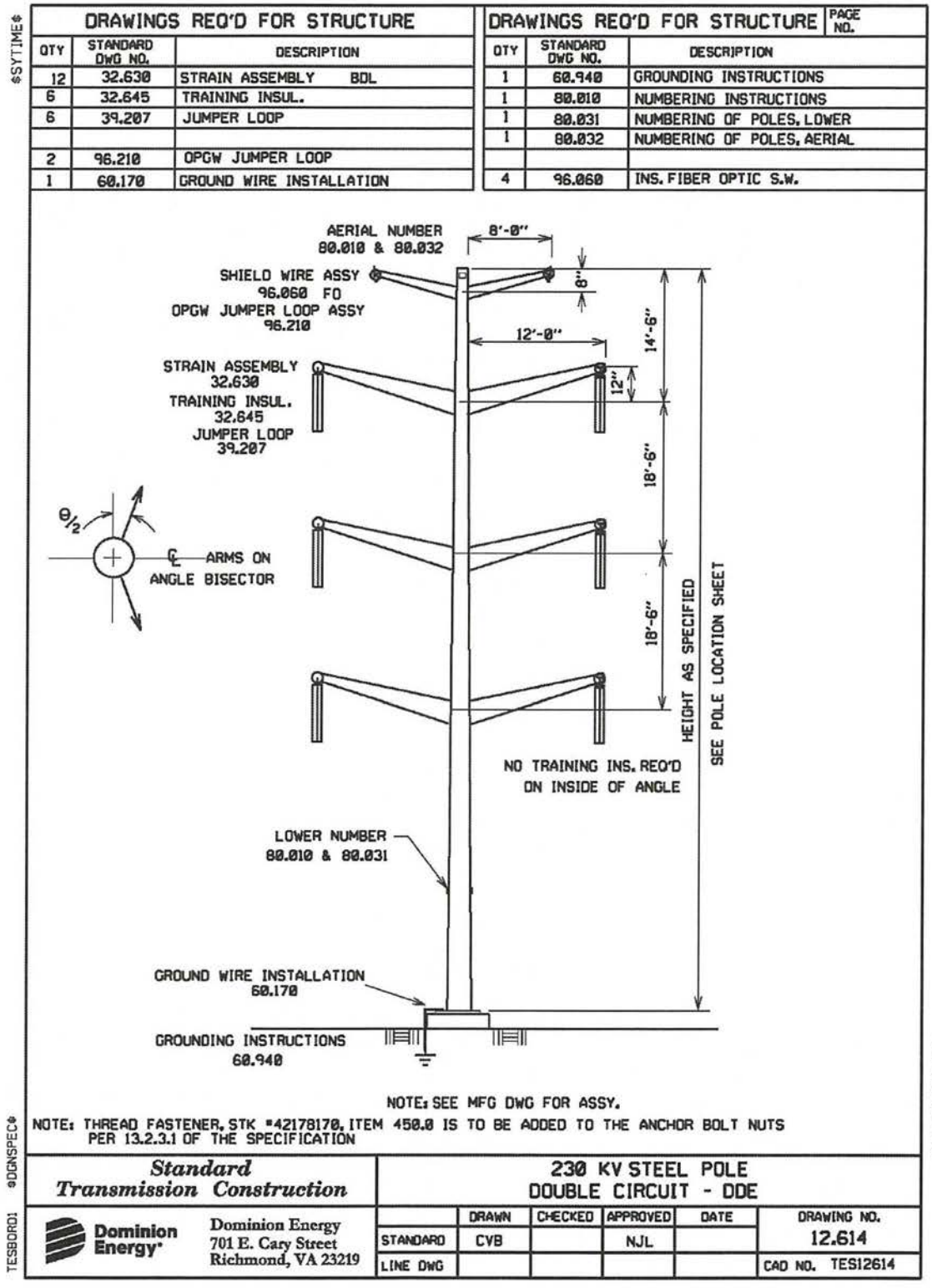


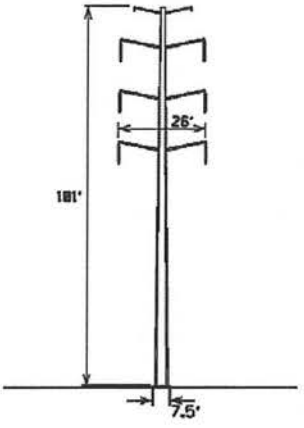
Figure 2-2: Lockridge 230kV Line Loop Detail of representative typical structure. Source: Dominion Energy Virginia

Attachment II.B.3

PROPOSED STRUCTURES - ROUTE 1A

2205 LINE 2214 LINE

PRELIMINARY



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD LOCKRIDGE

A: MAPPING OF PREFERRED ROUTE:	SEE ATTACHMENT I.F.1
B: RATIONALE FOR STRUCTURE TYPE :	VERTICAL PROFILE MINIMIZES REQUIRED ROW, RESEMBLES THE STRUCTURE TYPES IN THAT VICINITY
C: LENGTH OF R/W (STRUCTURE QTY.)	0.62 MI (8 STRUCTURES)
D: STRUCTURE MATERIAL :	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL :	TO MATCH THE STRUCTURE MATERIAL OF THE ADJACENT TRANSMISSION LINES IN THE VICINITY
E: FOUNDATION/FOUNDATION MATERIAL :	DRILLED PIER/CONCRETE
AVERAGE FOUNDATION REVEAL :	1.5 FEET, SEE NOTE 4
F: AVERAGE WIDTH AT CROSSARM :	26 FEET
G: AVERAGE WIDTH AT BASE :	7.5 FEET
H: MINIMUM STRUCTURE HEIGHT :	90 FEET
MAXIMUM STRUCTURE HEIGHT :	115 FEET
AVERAGE STRUCTURE HEIGHT :	101 FEET
I: AVERAGE SPAN LENGTH :	408 FEET
J: MINIMUM GROUND CLEARANCE AT MOT:	22.5 FEET

NOTES:
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. INDIVIDUAL POLE HEIGHTS ABOVE GROUND MAY VARY SUBJECT TO FINAL LOCATION AND TERRAIN
3. STRUCTURE HEIGHTS ARE MEASURED FROM CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

$DGNSPEC$

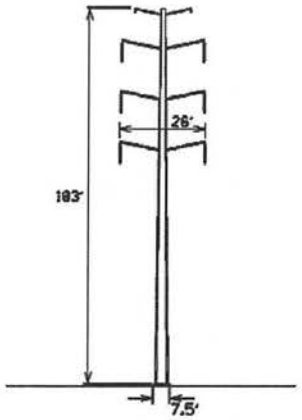
Figure 2-3: Proposed structure configuration for Route 1A. Source: Dominion Energy Virginia

Attachment II.B.3.b

PROPOSED STRUCTURES - ROUTE 1B

2205 LINE 2214 LINE

PRELIMINARY



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD LOCKRIDGE

B: RATIONALE FOR STRUCTURE TYPE :	VERTICAL PROFILE MINIMIZES REQUIRED ROW, RESEMBLES THE STRUCTURE TYPES IN THAT VICINITY
C: LENGTH OF R/W (STRUCTURE QTY.)	Ø.64 MI (8 STRUCTURES)
D: STRUCTURE MATERIAL :	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL :	TO MATCH THE STRUCTURE MATERIAL OF THE ADJACENT TRANSMISSION LINES IN THE VICINITY
E: FOUNDATION/FOUNDATION MATERIAL :	DRILLED PIER/CONCRETE
AVERAGE FOUNDATION REVEAL :	1.5 FEET, SEE NOTE 4
F: AVERAGE WIDTH AT CROSSARM :	26 FEET
G: AVERAGE WIDTH AT BASE :	7.5 FEET
H: MINIMUM STRUCTURE HEIGHT :	90 FEET
MAXIMUM STRUCTURE HEIGHT :	115 FEET
AVERAGE STRUCTURE HEIGHT :	103 FEET
I: AVERAGE SPAN LENGTH :	421 FEET
J: MINIMUM GROUND CLEARANCE AT MOT:	22.5 FEET

NOTES:
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. INDIVIDUAL POLE HEIGHTS ABOVE GROUND MAY VARY SUBJECT TO FINAL LOCATION AND TERRAIN
3. STRUCTURE HEIGHTS ARE MEASURED FROM CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

ØDGNSPEC#

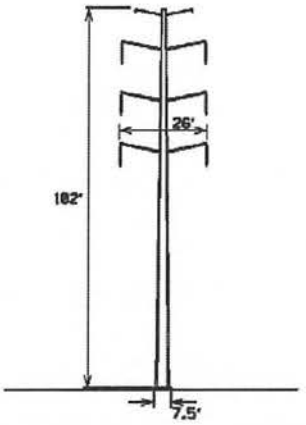
Figure 2-4: Proposed structure configuration for Route 1B. Source: Dominion Energy Virginia

Attachment II.B.3.c

PROPOSED STRUCTURES - ROUTE 1C

2205 LINE 2214 LINE

PRELIMINARY



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD LOCKRIDGE

B: RATIONALE FOR STRUCTURE TYPE :	VERTICAL PROFILE MINIMIZES REQUIRED ROW, RESEMBLES THE STRUCTURE TYPES IN THAT VICINITY
C: LENGTH OF R/W (STRUCTURE QTY.)	0.68 MI (9 STRUCTURES)
D: STRUCTURE MATERIAL :	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL :	TO MATCH THE STRUCTURE MATERIAL OF THE ADJACENT TRANSMISSION LINES IN THE VICINITY
E: FOUNDATION/FOUNDATION MATERIAL :	DRILLED PIER/CONCRETE
AVERAGE FOUNDATION REVEAL :	1.5 FEET, SEE NOTE 4
F: AVERAGE WIDTH AT CROSSARM :	26 FEET
G: AVERAGE WIDTH AT BASE :	7.5 FEET
H: MINIMUM STRUCTURE HEIGHT :	90 FEET
MAXIMUM STRUCTURE HEIGHT :	115 FEET
AVERAGE STRUCTURE HEIGHT :	102 FEET
I: AVERAGE SPAN LENGTH :	398 FEET
J: MINIMUM GROUND CLEARANCE AT MOT:	22.5 FEET

NOTES:
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. INDIVIDUAL POLE HEIGHTS ABOVE GROUND MAY VARY SUBJECT TO FINAL LOCATION AND TERRAIN
3. STRUCTURE HEIGHTS ARE MEASURED FROM CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

$DGNSPEC$

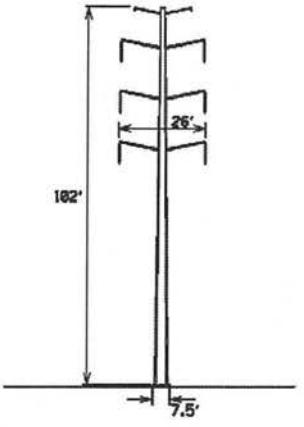
Figure 2-5: Proposed structure configuration for Route 1C. Source: Dominion Energy Virginia

Attachment II.B.3.d

PROPOSED STRUCTURES - ROUTE 2A

2xxx LINE 2188 LINE

PRELIMINARY



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD LOCKRIDGE

B: RATIONALE FOR STRUCTURE TYPE :	VERTICAL PROFILE MINIMIZES REQUIRED ROW, RESEMBLES THE STRUCTURE TYPES IN THAT VICINITY
C: LENGTH OF R/W (STRUCTURE QTY.)	0.66 MI (8 STRUCTURES)
D: STRUCTURE MATERIAL :	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL :	TO MATCH THE STRUCTURE MATERIAL OF THE ADJACENT TRANSMISSION LINES IN THE VICINITY
E: FOUNDATION/FOUNDATION MATERIAL :	DRILLED PIER/CONCRETE
AVERAGE FOUNDATION REVEAL :	1.5 FEET, SEE NOTE 4
F: AVERAGE WIDTH AT CROSSARM :	26 FEET
G: AVERAGE WIDTH AT BASE :	7.5 FEET
H: MINIMUM STRUCTURE HEIGHT :	95 FEET
MAXIMUM STRUCTURE HEIGHT :	110 FEET
AVERAGE STRUCTURE HEIGHT :	101 FEET
I: AVERAGE SPAN LENGTH :	435 FEET
J: MINIMUM GROUND CLEARANCE AT MOT:	22.5 FEET

NOTES:
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. INDIVIDUAL POLE HEIGHTS ABOVE GROUND MAY VARY SUBJECT TO FINAL LOCATION AND TERRAIN
3. STRUCTURE HEIGHTS ARE MEASURED FROM CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

$DGNSPEC$

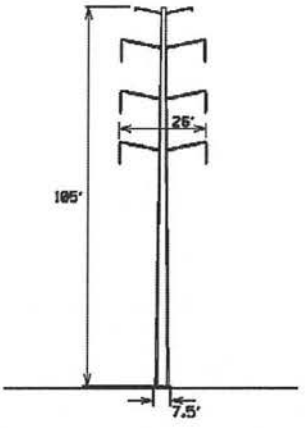
Figure 2-6: Proposed structure configuration for Route 2A. Source: Dominion Energy Virginia

Attachment II.B.3.e

PROPOSED STRUCTURES - ROUTE 2B

PRELIMINARY

2xxx LINE 2188 LINE



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD LOCKRIDGE

B: RATIONALE FOR STRUCTURE TYPE :	VERTICAL PROFILE MINIMIZES REQUIRED ROW, RESEMBLES THE STRUCTURE TYPES IN THAT VICINITY
C: LENGTH OF R/W (STRUCTURE QTY.)	Ø.65 MI (7 STRUCTURES)
D: STRUCTURE MATERIAL :	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL :	TO MATCH THE STRUCTURE MATERIAL OF THE ADJACENT TRANSMISSION LINES IN THE VICINITY
E: FOUNDATION/FOUNDATION MATERIAL :	DRILLED PIER/CONCRETE
AVERAGE FOUNDATION REVEAL :	1.5 FEET, SEE NOTE 4
F: AVERAGE WIDTH AT CROSSARM :	26 FEET
G: AVERAGE WIDTH AT BASE :	7.5 FEET
H: MINIMUM STRUCTURE HEIGHT :	95 FEET
MAXIMUM STRUCTURE HEIGHT :	115 FEET
AVERAGE STRUCTURE HEIGHT :	105 FEET
I: AVERAGE SPAN LENGTH :	490 FEET
J: MINIMUM GROUND CLEARANCE AT MOT:	22.5 FEET

NOTES:
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. INDIVIDUAL POLE HEIGHTS ABOVE GROUND MAY VARY SUBJECT TO FINAL LOCATION AND TERRAIN
3. STRUCTURE HEIGHTS ARE MEASURED FROM CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

$OGNSPEC$

Figure 2-7: Proposed structure configuration for Route 2B. Source: Dominion Energy Virginia

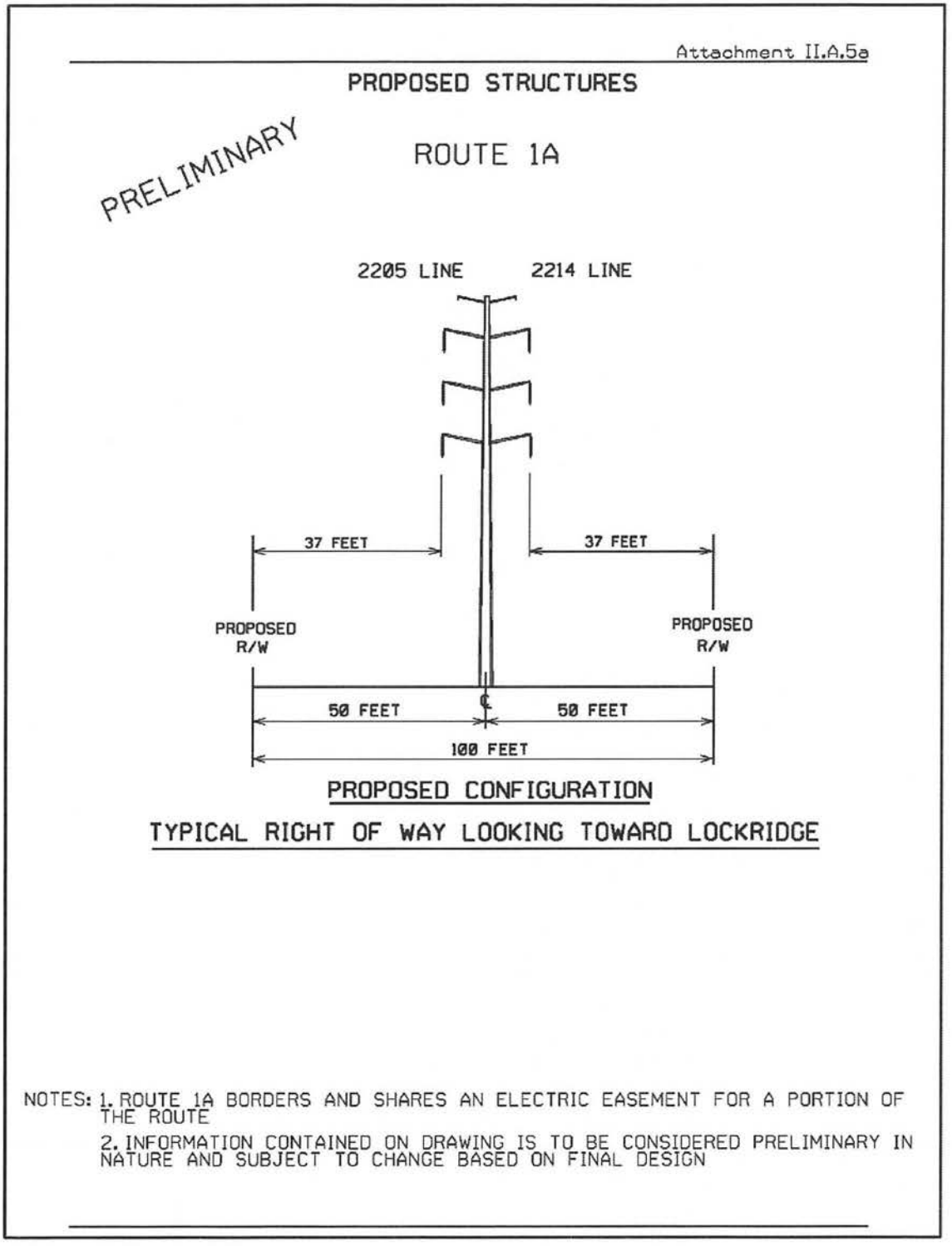


Figure 2-8: Proposed ROW configuration for Route 1A. Source: Dominion Energy Virginia

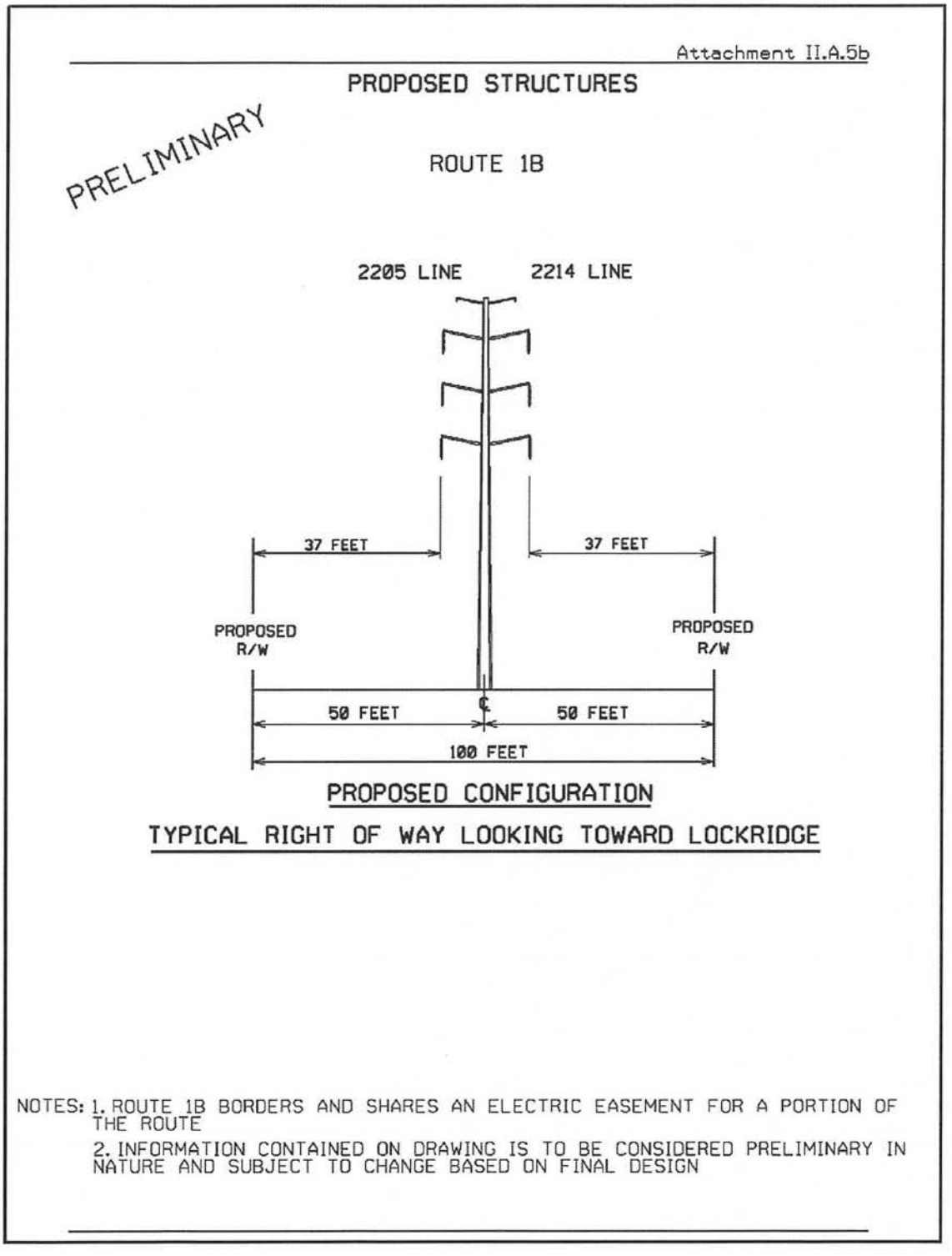


Figure 2-9: Proposed ROW configuration for Route 1B. Source: Dominion Energy Virginia

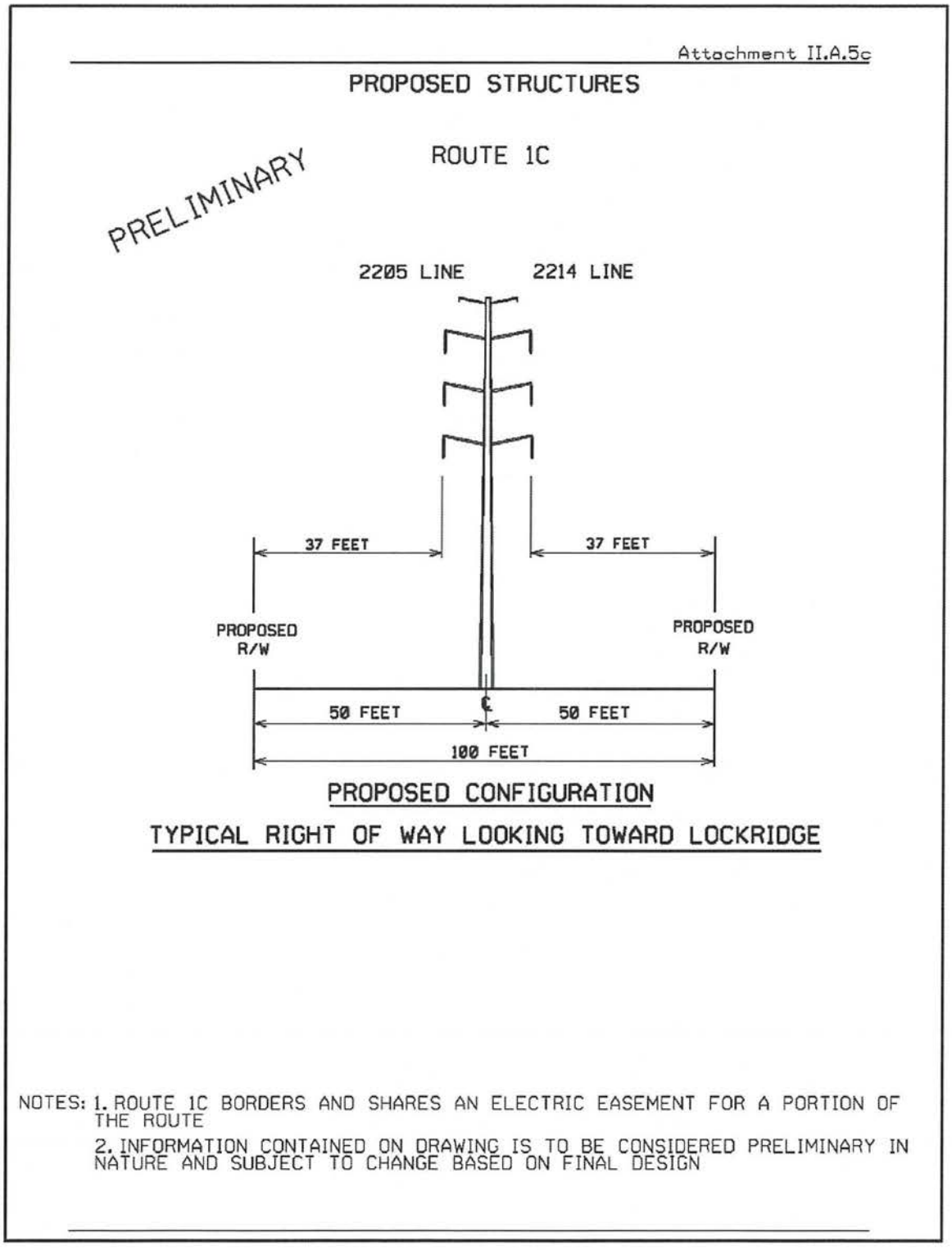


Figure 2-10: Proposed ROW configuration for Route 1C. Source: Dominion Energy Virginia

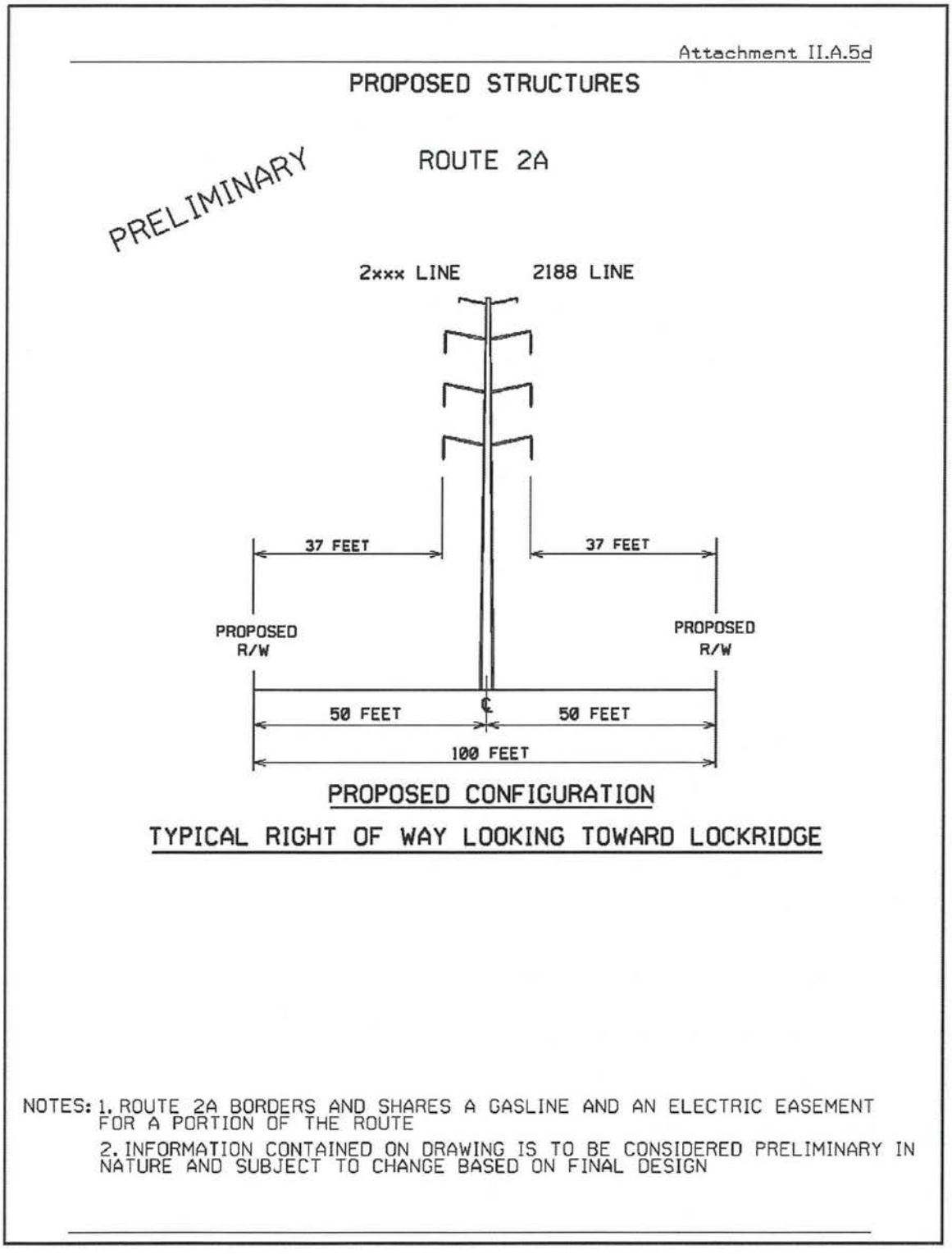


Figure 2-11: Proposed ROW configuration for Route 2A. Source: Dominion Energy Virginia

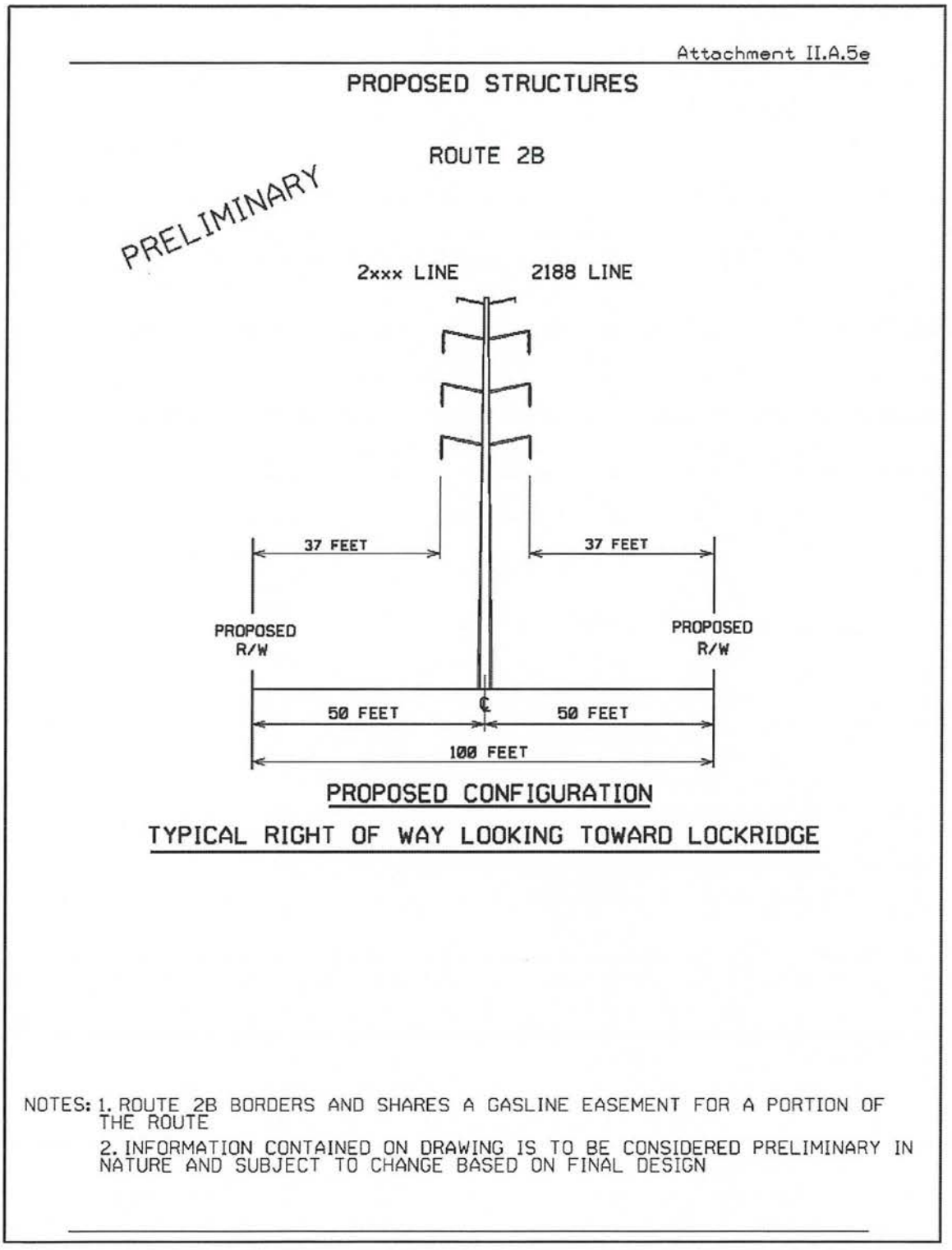


Figure 2-12: Proposed ROW configuration for Route 2B. Source: Dominion Energy Virginia

OPTIONS AND ALTERNATIVES

Option 1: Option 1 represents an alternative electrical solution for the project that would entail tapping the Lockridge Loop into future 230 kV Buttermilk-Roundtable Line #2214 between the proposed Lockridge Substation and a proposed junction located east of the Roundtable Substation. The Company identified three routes for Option 1 (Routes 1A, 1B, and 1C).

Route 1A - *Preferred*

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Line #2214, located 0.29 mile east of the Roundtable Substation.

The length of the corridor for Route 1A is approximately 0.62 mile. Beginning at the proposed Lockridge Substation, Route 1A heads west from the substation for 0.05 mile before turning north for 0.27 mile along the east side of Lockridge Road. This portion of the route is parallel to and overlaps an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way, as well as the road verge along the eastern edge of Lockridge Road, and abuts the paved parking lot that services the Dulles Post Office that is owned by the USPS. After crossing the existing Prentice Drive, the route continues north within the Dominion Energy Virginia right-of-way for about 0.09 mile, following the western boundary of an undeveloped parcel owned by Boston Properties Limited Partnership ("Boston Properties"). The route then continues across the southwest corner of the Life Time Athletic parking lot. The route then veers slightly northwest for 0.14 mile, away from the Life Time Athletic parking lot, and onto an undeveloped parcel owned by SDC Ashburn I, LLC. The Proposed Route then continues west for 0.07 mile crossing DC Water's Potomac Interceptor easement and Loudoun Water's Broad Run Interceptor easement (referred to collectively as the sanitary sewer easement) until reaching the tap point location at future Line #2214.

Route 1B

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Line #2214 located 0.31 mile east of the Roundtable Substation.

The length of the corridor for Alternative Route 1B is approximately 0.64 mile. Beginning at the proposed Lockridge Substation, Alternative Route 1B heads west from the substation for 0.05 mile before heading north for 0.27 mile along the east side of Lockridge Road. This portion of the route is parallel to and overlaps an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way, as well as the road verge along the eastern edge of Lockridge Road, and abuts a paved parking lot that services the Dulles Post Office that is owned by the USPS. After crossing the existing Prentice Drive, the route continues north for about 0.09 mile, following the western boundary of an undeveloped parcel owned by Digital Loudoun IV, LLC. The

route then continues across the southwest corner of the Life Time Athletic parking lot. Alternative Route 1B then veers slightly northwest for 0.06 mile, away from the Life Time Athletic parking lot, and onto an undeveloped parcel owned by SDC Ashburn I, LLC. The route then continues north then west for 0.17 mile, crossing a sanitary sewer easement, until reaching the tap point location at future Line #2214.

Route 1C:

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Line #2214 located 0.21 mile east of the Roundtable Substation.

The length of the corridor for Alternative Route 1C is approximately 0.68 mile. Beginning at the proposed Lockridge Substation, Alternative Route 1C heads west from the substation for 0.05 mile before heading north for 0.27 mile along the east side of Lockridge Road. This portion of the route is parallel to and overlaps an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way, as well as the road verge along the eastern side of Lockridge Road, and abuts a paved parking lot that services the Dulles Post Office that is owned by the USPS. After crossing the existing Prentice Drive, the route then continues north for about 0.09 mile, following the western boundary of an undeveloped parcel owned by Digital Loudoun IV, LLC and crosses the southwest corner of the Life Time Athletic parking lot. The route then veers slightly northwest for 0.06 mile away from the Life Time Athletic. The route then heads west for 0.17 mile, running parallel to and north of the planned Prentice Drive Extension, and crossing a sanitary sewer easement before heading north for 0.04 mile to a tap point location at future Line #2214.

Option 2: Option 2 represents an alternative electrical solution for the project that would entail tapping the Lockridge Loop into the existing 230 kV Roundtable-Shellhorn Line #2188. The Company only was able to identify two routes for Option 2 (Routes 2A and 2B) due to presence of a number of constraints in the area between Broad Run and Line #2188.

Route 2A:

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along Line #2188, 0.41 mile east of the Shellhorn Substation.

The length of the corridor for Alternative Route 2A is approximately 0.66 mile. Beginning at the proposed Lockridge Substation, Alternative Route 2A heads west from the substation for 0.05 mile before heading north for 0.1 mile along the east side of Lockridge Road, parallel and overlapping an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way. After crossing a Columbia Gas natural gas pipeline right-of-way, the route heads west for 0.35 mile along an undeveloped parcel owned by SDC Ashburn I, LLC. Along this section, Alternative Route 2A crosses Lockridge Road and runs

parallel with and overlaps the pipeline right-of-way, then crosses Broad Run, a tributary to Broad Run and a sanitary sewer easement. Route 2A then veers north and northwest for 0.16 mile, crossing a tributary to Broad Run and continuing along a parcel owned by Vizsla Ventures, LLC to a tap point location at Line #2188.

Route 2B:

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along Line #2188, 0.41 mile east of the Shellhorn Substation.

Alternative Route 2B contains a variation to Alternative Route 2A that avoids crossing an undeveloped parcel owned by the USPS. The variation was developed so that in the event that the Company was unable to secure an easement to cross property managed by the USPS, this route could still be constructed.

The length of the corridor for Alternative Route 2B is approximately 0.65 mile. The portion of Alternative Route 2B that is different from Alternative Route 2A is a 0.17-mile-long section that begins at the point where Alternative Route 2A heads north of the proposed Lockridge Substation. From this location, Alternative Route 2B turns west for about 0.06 mile, crossing Lockridge Road and onto an undeveloped parcel owned by SDC Ashburn I, LLC. Alternative Route 2B then continues north for about 0.11 mile where it crosses the planned Shellhorn Road Extension. After crossing a Columbia Gas natural gas pipeline right-of-way, the route heads west for 0.27 mile along an undeveloped parcel owned by SDC Ashburn I, LLC. The route runs parallel with and overlaps the pipeline right-of-way, then crosses Broad Run, a tributary to Broad Run and a sanitary sewer easement. Route 2B then veers north and northwest for 0.16 mile, crossing a tributary to Broad Run and continuing along a parcel owned by Vizsla Ventures, LLC to a tap point location at Line #2188.

3. RESEARCH DESIGN

The intent of this effort was to identify all known historic properties within the vicinity of the proposed project area in order to assess significant properties for potential impacts brought about by the project. Historic properties include architectural and archaeological (terrestrial and underwater) resources, historic and cultural landscapes, battlefields, and historic districts. Significant properties are those designated National Historic Landmarks, listed in the NRHP, or determined-eligible for listing in the NRHP by the VDHR. For each significant historic property, an examination of property documentation, current aerial photography, field reconnaissance, and photo simulation was undertaken to assess each property's integrity of feeling, setting, and association, and to provide documentation and assessment of the property including views toward the proposed project. The D+A personnel who directed and conducted this survey meet the professional qualification standards of the Department of the Interior (48 FR 44738-9).

ARCHIVAL RESEARCH

In October 2019, D+A conducted archival research with the goal of identifying all previously recorded historic properties and any additional historic property locations referred to in historic documents and other archives, as well as consultation with local informants and other professionals with intimate knowledge of the project area as appropriate. Background research was conducted at the VDHR and on the internet and included the following sources:

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

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

FIELD RECONNAISSANCE

Field reconnaissance included visual inspection of those previously recorded historic properties listed in the NRHP located within 1-mile of the project area, and all properties considered eligible for listing in the NRHP within 0.5-mile of the project area. Visual inspection included digital photo documentation of each property's existing conditions including its setting and views toward the proposed project. Photographs were taken of primary resource elevations, general setting, and existing viewsheds. All photographs were taken from public right-of-way or where property access was granted. No subsurface archaeological testing was conducted as part of this effort.

ASSESSMENT OF POTENTIAL IMPACTS

Following identification and field inspection of historic properties, D+A assessed each NRHP-listed or eligible resource for potential impacts brought about by the proposed project. Assessment included pedestrian inspection from historic properties towards the project area, ground-based photography, and photo simulation as appropriate. When assessing impacts, D+A considered those qualities and characteristics that qualify the property for listing and whether the project had the potential to alter or diminish the integrity of the property and its associated significance. Specific attention was given to determining whether or not the proposed project would introduce new visual elements into a property's viewshed, which would either directly or indirectly alter those qualities or characteristics that qualify the historic property for listing in the NRHP. Identified impacts were characterized as severe (fully visible and incompatible with character-defining viewshed or setting), moderate (partially visible and incompatible with character-defining viewshed or setting), or minimal (not visible and/or not out of character with existing viewscape).

REPORT PREPARATION

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

4. ARCHIVAL RESEARCH

This section includes a summary of efforts to identify previously known and recorded cultural resources within the tiered project buffers. It includes lists, maps, and descriptive data on all previously conducted cultural resource surveys, and previously recorded architectural resources and archaeological sites according to the VDHR archives and VCRIS database. Because the alternatives for the Lockridge 230kV Line Loop and Substation are all within close proximity of one another within a relatively small defined space, a single project study area that encompasses all components and alternatives was used for this analysis.

PREVIOUSLY SURVEYED AREAS

VDHR and VCRIS records indicate that there have been twenty-six (26) prior Phase I cultural resource surveys within 1-mile of the project study area, including seven that overlap portions of the project area or individual alternatives. These surveys are at a minimum archaeological in nature, although some include architectural resources as well. The seven surveys include transportation-related and private development tracts. As a result of these prior surveys, the proposed substation location and much of, but not all, the individual alignments have been subject to Phase I archaeological identification. The previously conducted cultural resource surveys are listed in Table 4-1 and illustrated in Figure 4-1.

Table 4-1: Previously conducted cultural resource surveys that include portions of the Project Area Source: VDHR.

VDHR Survey #	Title	Author	Date
FX-108	Cultural Resource Inventory and Phase I Archaeological Survey of Route 28 (Sully Rd.) from 1-66 to Route 7, Fairfax and Loudoun Counties, Virginia	Presnell Associates, Inc.	1987
LD-047	Report on Phase I Cultural Resources Survey for the U.S. Postal Service Dulles Facility, Loudoun County, VA	WAPORA, Inc.	1989
LD-053	Historic and Archaeological Survey Report Washington Dulles International Airport, Loudoun and Fairfax Counties, VA.	Parsons Engineering Science (Parsons/Parson Management Consultants)	1989
LD-171	Phase I Archaeological Survey of the Proposed Broad Run Technology Park Development (SPEX 2004-0027), Sterling, Loudoun County, Virginia	Ottery Group	2005
LD-177	Phase I Archeological Investigations of the Ca. 29 Acre Cockerill Farm Property, Loudoun County, Virginia	Thunderbird Archaeological Associates (Thunderbird Research Corp.)	2004
LD-332	Phase I Cultural Resources Survey of the Approximately 350-Acre DuPont-Fabros Development Tract, Loudoun County, Virginia	Circa-Cultural Resource Management, LLC	2011
LD-498	Report on the Cultural Resources Survey: Dulles Toll Road Extension Alignment P	WAPORA	1988

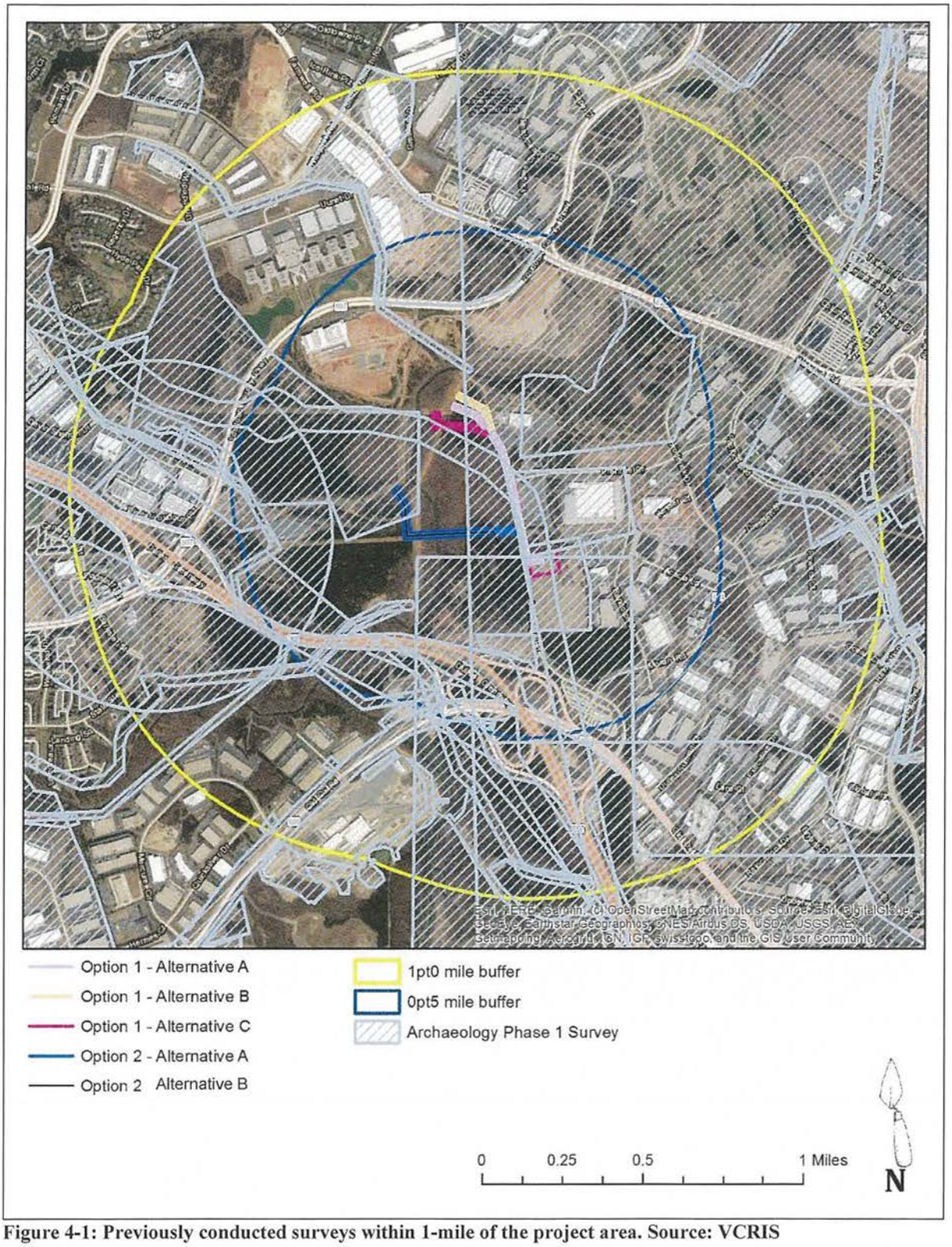


Figure 4-1: Previously conducted surveys within 1-mile of the project area. Source: VCRIS

ARCHITECTURAL RESOURCES

Review of the VDHR VCRIS inventory records revealed a total of 30 previously recorded architectural resources are located 1.5-miles of the project study area. Of these, there are no NHLs located within 1.5-miles of the study area, no NRHP-listed properties, battlefields, or historic landscapes located within 1-mile of the study area, and one property that is considered eligible for listing in the NRHP within 0.5-miles of the study area. One additional previously recorded architectural resource is located directly within the footprint of the proposed substation, although this resource was determined not eligible for listing in the NRHP by the VDHR in 2016.

Table 4-2 provides a list of all previously recorded architectural resources within 1.5-miles of the project area and Table 4-3 lists NRHP-listed and eligible resources within their respective buffered tiers. A map of all previously recorded architectural resources within 1.5-miles of the project is depicted in Figure 4-2 and the location of NRHP-listed and eligible resources is illustrated in Figure 4-3.

Table 4-2: Previously recorded architectural resources within 1.5-miles of the project area (bold listings denote sites determined listed in- or eligible for the NRHP; Orange Highlight denotes resource is directly within project area).

VDHR #	Resource Name/ Address	NRHP Status
053-0021	House, Route 643 (Function/Location), Lyons Farmstead (Historic/Current)	Not Evaluated
053-0022	House, Route 643 (Function/Location)	Not Evaluated
053-0023	House, 22017 Shellhorn Road (Function/Location), John F. Shryock Home Farm (Historic)	Not Evaluated
053-0026	House, Route 643 (Function/Location)	Not Evaluated
053-0276	**Alexandria, Loudoun and Hampshire Railroad (Historic), Washington & Old Dominion Railroad Historic District (Historic/Current), Washington & Old Dominion Railroad Regional Park (Current)**	**DHR Staff: Eligible**
053-0969	**Sterling Community Center (Current), Sterling School (Historic)**	**DHR Staff: Eligible**
053-1096	House, Lockridge Road (Route 789) (Function/Location)	Demolished
053-1100	Cockerill Farm (Historic/Location), House, 22426 Lockridge Road (Function/Location)	DHR Staff: Not Eligible
053-5258	Building 16, National Weather Service Sterling Facility (Descriptive)	DHR Staff: Not Eligible
053-5261	Interservice Radio Propagation Laboratory (IRPL) Complex (Descriptive)	Not Evaluated
053-6074	Lyon's Cemetery (Historic)	DHR Staff: Not Eligible
053-6225	Church, Shaw Road (Function/Location), Terra Landscaping and Design (Current)	DHR Staff: Not Eligible
053-6226	Outbuilding, Ruritan Road (Function/Location)	Not Evaluated
053-6227	Single Dwelling, 185 Ruritan Road (Function/Location)	Not Evaluated
053-6228	Single Dwelling, Ruritan Road (Function/Location)	Not Evaluated
053-6229	Single Dwelling, 114 Ruritan Road (Function/Location)	Not Evaluated
053-6230	Single Dwelling, Ruritan Road (Function/Location)	Not Evaluated

VDHR #	Resource Name/ Address	NRHP Status
053-6236	Commercial Building, 100 Ruritan Road (Function/Location), Five Star Septic (Current)	Not Evaluated
053-6237	Guilford Historic District (Descriptive)	DHR Staff: Not Eligible
053-6295	Barn, end of Shellhorn Rd (Route 643) (Function/Location)	Not Evaluated
053-6308	House, 22363 Cedar Green Road (Function/Location)	DHR Staff: Not Eligible
053-6346	House, 45216 Waxpool Rd (Route 625) (Function/Location)	DHR Staff: Not Eligible
053-6364	House, 21916 Shaw Road (Function/Location)	Not Evaluated
053-6365	Wat Yarnna Rangsee Buddhist Monastery (Current Name)	Not Evaluated
053-6366	Commercial Building, 22054 Shaw Road (Function/Location)	Not Evaluated
053-6367	House, 22182 Shaw Road (Function/Location)	Not Evaluated
053-6368	House, 22195 Cedar Green Road (Function/Location)	Not Evaluated
053-6369	House, 22217 Cedar Green Road (Function/Location)	Not Evaluated
053-6406	Tippet's Hill Cemetery (Current Name)	Not Evaluated
053-6416	**Broad Run Ford (Descriptive), Ox Road (Historic)**	**DHR Staff: Potentially Eligible**

Table 4-3: Previously recorded architectural resources within their respective tiered buffer zones for the study area as specified in the VDHR Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia

Buffer(miles)	Considered Resources	VDHR #	Description
1.5	National Historic Landmarks	None	N/A
1.0	National Register Properties (Listed)	None	N/A
	Battlefields	None	N/A
	Historic Landscapes	None	N/A
0.5	National Register- Eligible	053-6416	Broad Run Ford
0.0	Previously Recorded	053-1100	Cockerill Farm (DHR: Not Eligible)

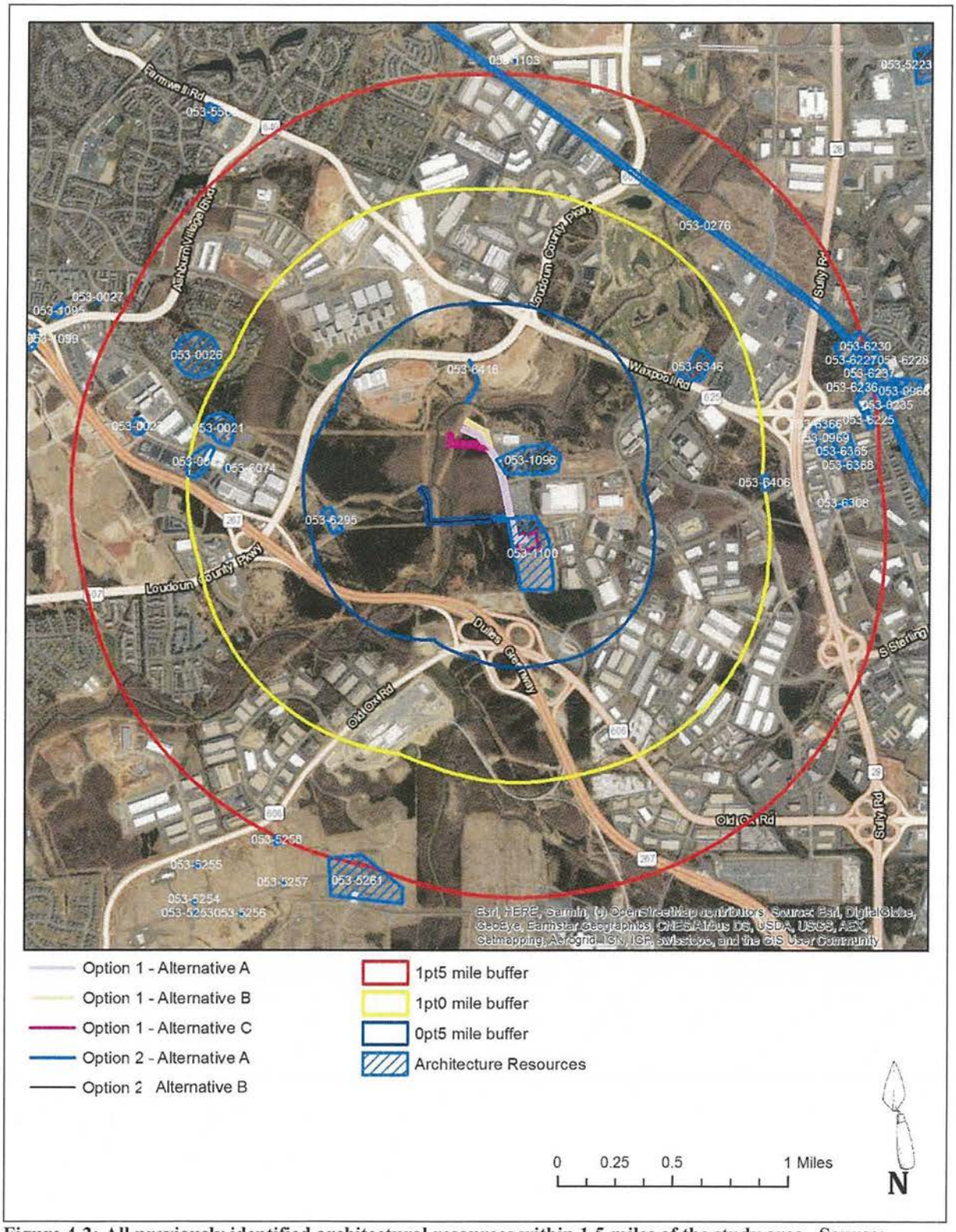


Figure 4-2: All previously identified architectural resources within 1.5-miles of the study area. Source: VCRIS

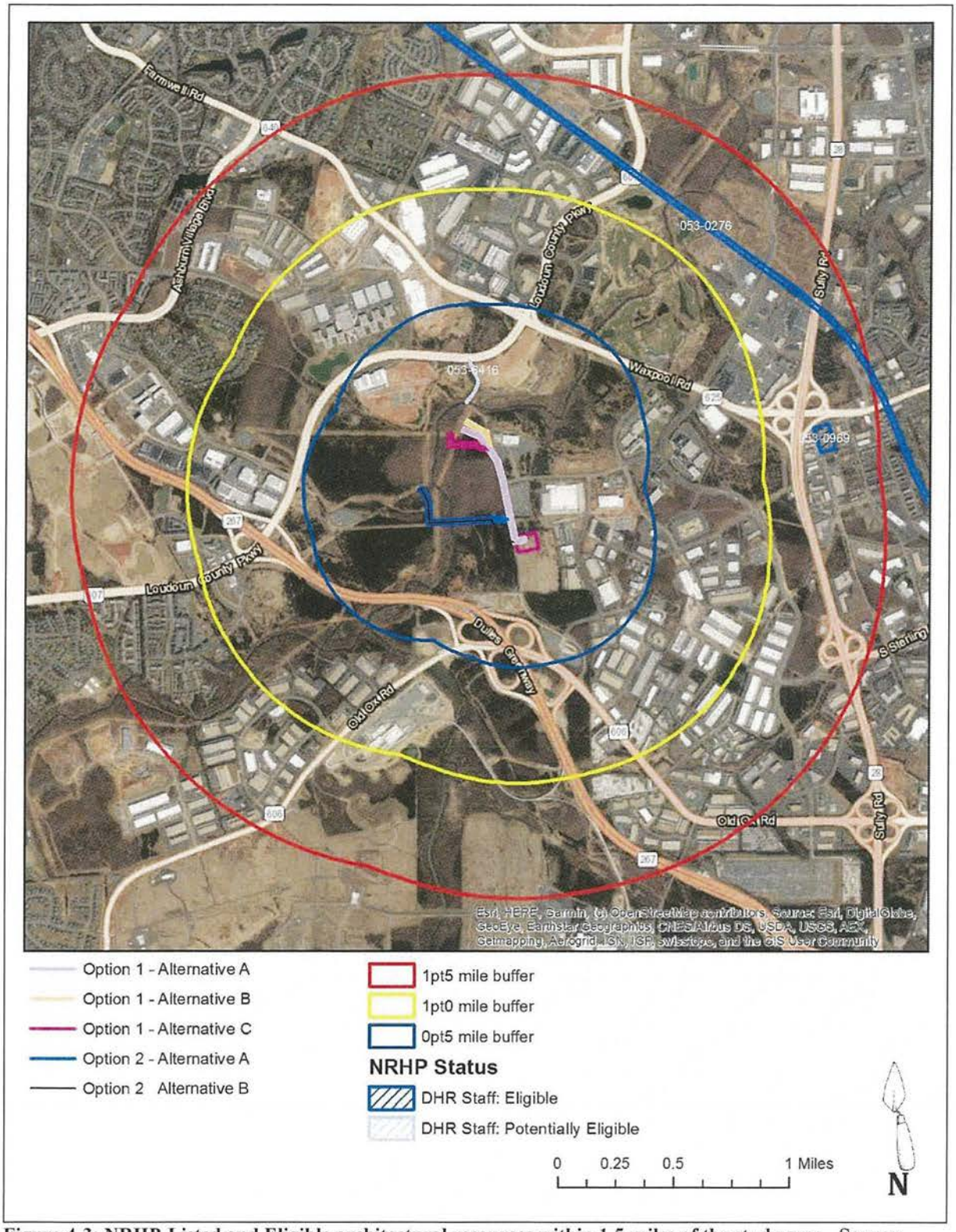


Figure 4-3: NRHP-Listed and Eligible architectural resources within 1.5-miles of the study area. Source: VCRIS

NPS AMERICAN BATTLEFIELD PROTECTION PROGRAM (ABPP)

A review of the National Park Service (NPS) ABPP records reveals that the project study area is not located within one mile of any portions of any defined battlefields.

ARCHAEOLOGICAL SITES

Review of the VDHR VCRIS records reveals there are forty-seven (47) previously recorded archaeological sites within one mile of the project study area. These include prehistoric lithic scatters and camps; as well as historic domestic sites, farmsteads, trash scatters, a cemetery, and road trace. Of these, just one, an early archaic campsite has been determined potentially eligible for listing in the NRHP. Nine sites have been determined not eligible for listing, and the remaining sites have not been formally evaluated. None of these sites are located directly within or adjacent to the project area.

Table 4-4 lists the previously recorded archaeological resources within one-mile of the study area and Figure 4-4 illustrates the locations of the previously recorded sites in relation to the study area.

Table 4-4: Previously recorded archaeological resources within one mile of the study area (bold listings denote sites listed in- or determined eligible for the NRHP).

VDHR ID #	Type	Temporal Association	NRHP Status
44LD0027	Camp	Middle Archaic Period (6500 - 3001 B.C.), Early Woodland (1200 B.C. - 299 A.D.), Middle Woodland (300 - 999 A.D.), Late Woodland (1000 - 1606)	Not Evaluated
44LD0111	Camp, temporary	Early Archaic Period (8500 - 6501 B.C.E)	Not Evaluated
44LD0141	Camp, temporary	Woodland (1200 B.C. - 1606 A.D.)	Not Evaluated
44LD0143	Camp, temporary	Late Woodland (1000 - 1606)	Not Evaluated
44LD0144	Camp, temporary	Pre-Contact	Not Evaluated
44LD0147	Camp, temporary	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0149	Camp, temporary	Pre-Contact	Not Evaluated
44LD0150	Camp, temporary	Pre-Contact	Not Evaluated
44LD0154	Camp, temporary	<Null>	Not Evaluated
44LD0380	<Null>	Prehistoric/Unknown (15000 B.C. - 1606 A.D.), 20th Century: 1st quarter (1900 - 1924)	Not Evaluated
44LD0381	<Null>	Middle Archaic (6500 - 3001 B.C.)	Not Evaluated
44LD0382	<Null>	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0383	<Null>	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0405	<Null>	Late Archaic (3000 - 1201 B.C.)	Not Evaluated
44LD0407	Dwelling, single	<Null>	Not Evaluated
44LD0408	<Null>	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0409	Camp, temporary	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0435	Camp	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0472	<Null>	Late Archaic (3000 - 1201 B.C.)	Not Evaluated
44LD0473	<Null>	19th Century: 4th quarter (1875 - 1899)	Not Evaluated
44LD0474	Other	Late Archaic (3000 - 1201 B.C.), Early Woodland (1200 B.C. - 299 A.D.), 19th Century: 4th quarter (1875 - 1899), 20th Century: 1st quarter (1900 - 1924)	Not Evaluated
44LD0537	Camp, temporary	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0644	Dwelling, single	<Null>	Not Evaluated
44LD0645	Trash scatter	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Evaluated
44LD0646	Farmstead	20th Century (1900 - 1999)	Not Evaluated
44LD1119	Trash scatter	20th Century: 1st half (1900 - 1949)	Not Evaluated

VDHR ID #	Type	Temporal Association	NRHP Status
44LD1120	Farmstead	20th Century (1900 - 1999)	Not Evaluated
44LD1240	Trash scatter	19th Century: 4th quarter (1875 - 1899), 20th Century (1900 - 1999)	DHR Staff: Not Eligible
44LD1242	Farmstead	Antebellum Period (1830 - 1860), Civil War (1861 - 1865), Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991), Post Cold War (1992 - Present)	DHR Staff: Not Eligible
44LD1244	Camp, temporary, Other, Trash scatter	Late Archaic (3000 - 1201 B.C.), 18th Century: 4th quarter (1775 - 1799), 19th Century: 1st half (1800 - 1849)	Not Evaluated
44LD1245	Farmstead	20th Century: 1st half (1900 - 1949)	Not Evaluated
44LD1246	Farmstead	20th Century: 1st half (1900 - 1949), 20th Century: 3rd quarter (1950 - 1974)	Not Evaluated
44LD1340	Lithic scatter	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	DHR Staff: Not Eligible
44LD1456	Lithic scatter	Paleo-Indian (15000 - 8501 B.C.E), Early Archaic Period (8500 - 6501 B.C.E), Middle Archaic Period (6500 - 3001 B.C.E), Late Archaic Period (3000 - 1201 B.C.E), Early Woodland (1200 B.C.E - 299 C.E), Middle Woodland (300 - 999 C.E), Late Woodland (1000 - 1606)	Not Evaluated
44LD1467	Farmstead	19th Century: 4th quarter (1875 - 1899), 20th Century (1900 - 1999)	Not Evaluated
44LD1596	**Camp**	**Early Archaic Period (8500 - 6501 B.C.), Middle Archaic Period (6500 - 3001 B.C.), Late Archaic Period (3000 - 1201 B.C.)**	**DHR Evaluation Committee: Eligible**
44LD1597	Camp	Late Archaic (3000 - 1201 B.C.)	DHR Staff: Not Eligible
44LD1601	Trash scatter	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)	Not Evaluated
44LD1602	Road	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)	Not Evaluated
44LD1603	Dwelling, single	20th Century: 1st half (1900 - 1949)	Not Evaluated
44LD1671	Artifact scatter, Lithic scatter	Pre-Contact, World War I to World War II (1917 - 1945), The New Dominion (1946 - 1988)	DHR Staff: Not Eligible
44LD1672	Lithic scatter	Pre-Contact	DHR Staff: Not Eligible
44LD1673	Artifact scatter, Lithic scatter	Pre-Contact, Colony to Nation (1751 - 1789)	DHR Staff: Not Eligible
44LD1722	Dwelling, single	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)	DHR Staff: Not Eligible
44LD1723	Farmstead	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991), Post Cold War (1992 - Present)	DHR Staff: Not Eligible
44LD1724	Cemetery	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991), Post Cold War (1992 - Present)	Not Evaluated
44LD8766	Lithic scatter	Pre-Contact	Not Evaluated

ARCHAEOLOGY SITE MAP
REDACTED FROM PUBLIC VERSION

Figure 4-4: Previously recorded archaeological resources located within 1- mile of study area. (Source: VCRIS) - REDACTED

5. RESULTS OF FIELD RECONNAISSANCE

In accordance with the VDHR guidelines for assessing impacts of proposed electric transmission lines on historic resources, each of the previously recorded historic properties either designated an NHL, listed in the NRHP, or determined NRHP-eligible located within 1.5 miles, 1 mile, or 0.5 mile of the project area were field verified for existing conditions and photo documented. An emphasis was given to views towards the project area in order to assess potential project impacts. The results of the field reconnaissance for each resource are summarized below.

Broad Run Ford and Ox Road (VDHR ID# 053-6416)

Ox Road was built in the 1720s, as an effort to commercially dominate Northern Virginia by competitors Thomas Lee and Robert "King" Carter. Lee endeavored to control waterways and did so by purchasing land on the Potomac River and Goose Creek. In an effort to control transportation, Carter purchased land in mountain passes. Along the Potomac, Lee had control of many of the tobacco warehouses and to avoid paying storage fees Carter instead began construction on a road that would connect his mine to his plantation. Construction began in 1728 by Carter's servants along ridges wide enough for an ox cart. The road was completed in the 1740s by Caters son and remained a valuable route to bring tobacco from plantations to Occoquan until 1820. At this time, the macadam Leesburg Turnpike became the primary route and Ox Road became secondary (Kimball and Covington 2014). Parts of the road were consistently used and received upgrades into major thoroughfares eliminating evidence of the old road. However, near Broad Run, the road remained largely unchanged and use of the Broad Run Ford continued into the third-quarter of the twentieth century. The Broad Run Ford and Ox Road north of Broad Run was evaluated as potentially eligible for listing in the NRHP by VDHR under Criterion A, B and C in 2016. The resource has not been surveyed or evaluated south of Broad Run.

The Broad Run Ford is located just north of the study area, roughly 415 feet from the nearest portion of Option 1 and 2,100 feet (0.4 miles) from the nearest portion of Option 2. It is approximately 573 feet from the nearest point of the preferred alternative Route 1A.

In order to assess the potential impact of the proposed project, visual inspection was conducted of the setting around Broad Run Ford and photo simulation was prepared with emphasis on views from the resource towards the study area and alternatives. Due to ongoing private development between Loudoun County Parkway and the north side of Broad Run, the north side of the ford and Ox Road trace were not accessible for direct assessment, and therefore analysis was conducted from the utility ROW on the south side of Broad Run as well as public ROW along Loudoun County Parkway roughly 875 feet to the north.

Visual inspection revealed that the current landscape surrounding the ford has been subject to extensive development and manipulation. The ford and road trace leading to it from the north are set within a small cluster of trees bordering the creek, however, the area beyond has been cleared, graded, and improved. An existing utility easement crosses Broad Run immediately to the east of the ford, and the shoreline has been heavily altered by filling and rip-rap. The trace of Ox Road to the north of the ford extends through a narrow wooded area that borders the cleared

utility easement before adjoining a graded gravel road that extends along the former Ox Road alignment. The south side of the Broad Run Ford is also next to the cleared utility easement with the filled rip-rap shoreline immediately adjacent to the former ford. Aerial photography indicates a trace of Ox Road may be present as a dirt path extending through the utility easement but then disappears into a wooded area before re-emerging as an improved dirt and gravel road that extends south to Lockridge Road. The landscape between the Broad Run Ford and the study area is currently characterized by a cleared existing transmission line corridor and adjacent utility easement lined by woodland on both sides. There has been extensive grading and alteration of the landscape as a result of access roads and utility work.

Figure 5-1 illustrates the location and direction of field photography which is included in Figures 5-2 through 5-8.

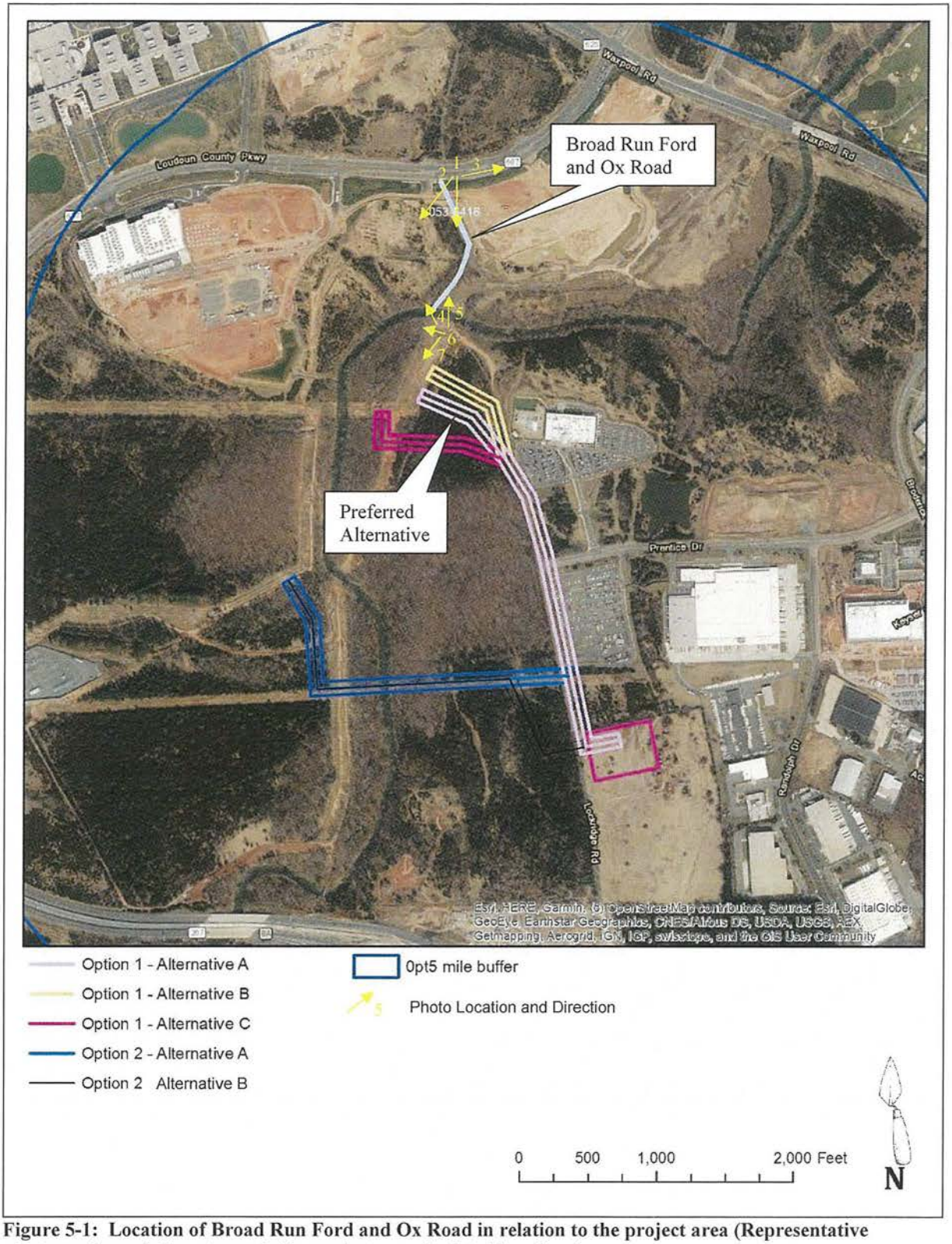


Figure 5-1: Location of Broad Run Ford and Ox Road in relation to the project area (Representative photographs and views towards the project area depicted in yellow).

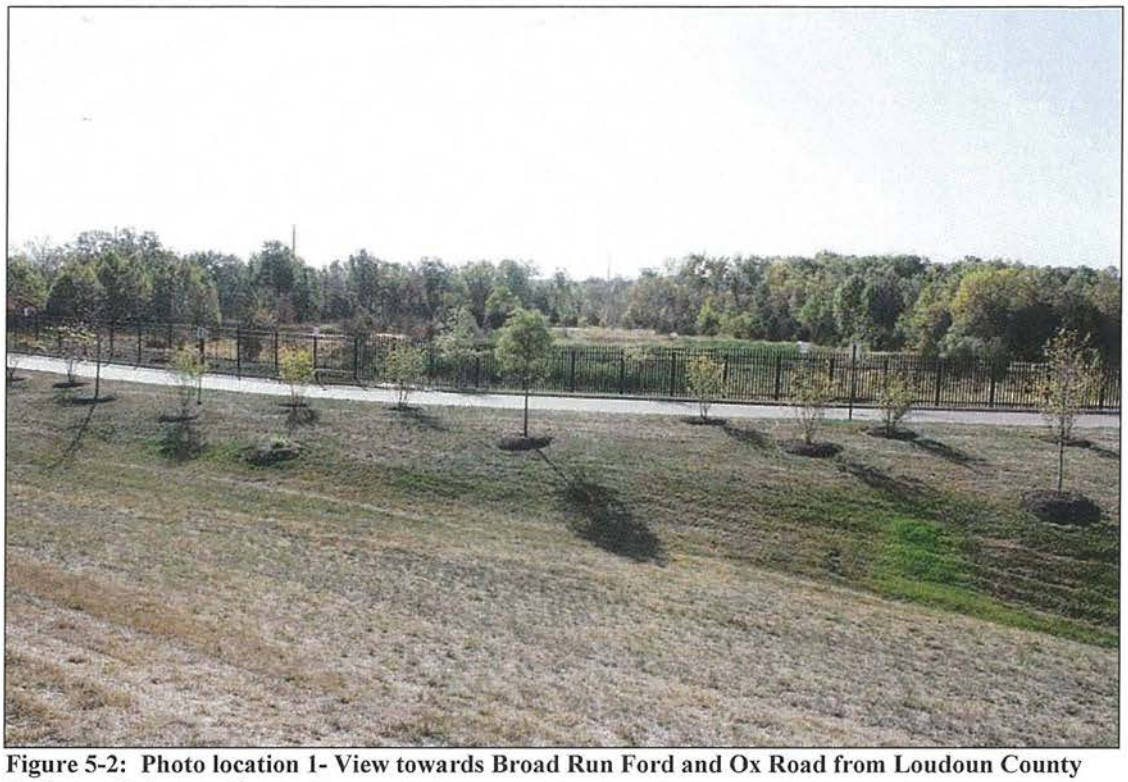


Figure 5-2: Photo location 1- View towards Broad Run Ford and Ox Road from Loudoun County Parkway, facing south.

Figure 5-3: Photo location 2- View towards existing Roundtable Substation from Broad Run Ford and Ox Road at Loudoun County Parkway, facing southwest.

Figure 5-4: Photo location 3- View of large-scale modern development flanking Broad Run Ford and Ox Road along south side of Loudoun County Parkway, facing east.

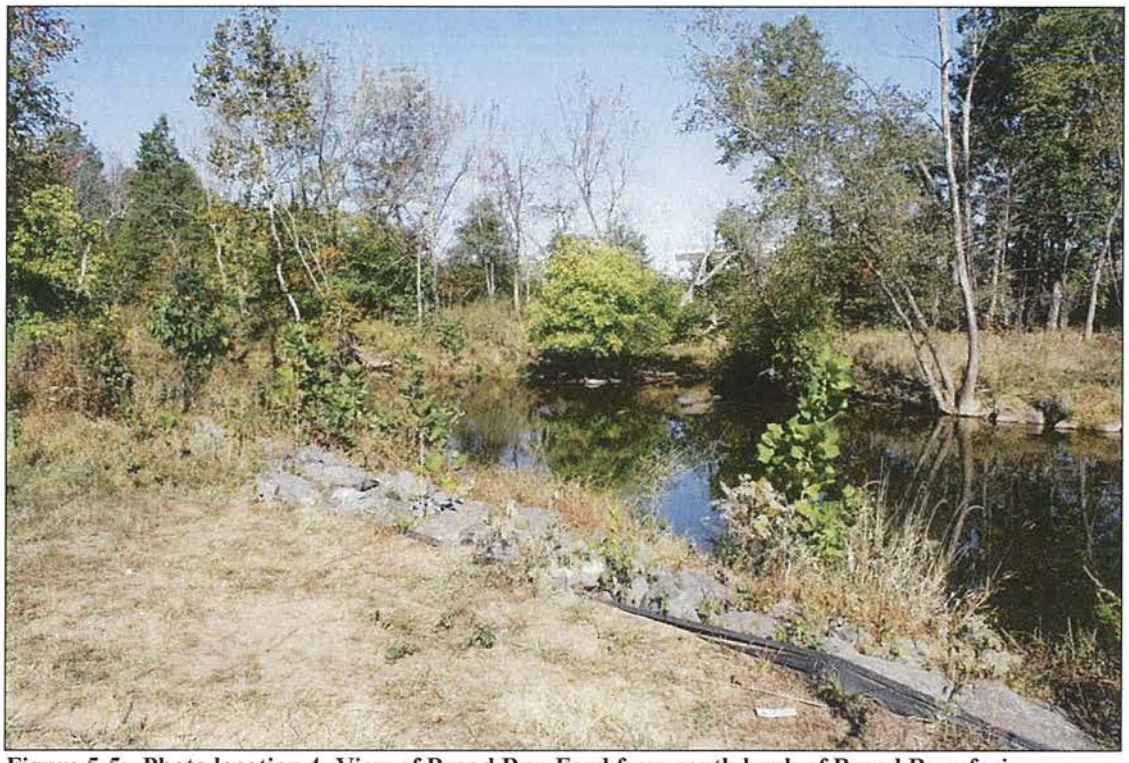


Figure 5-5: Photo location 4- View of Broad Run Ford from south bank of Broad Run, facing northwest.

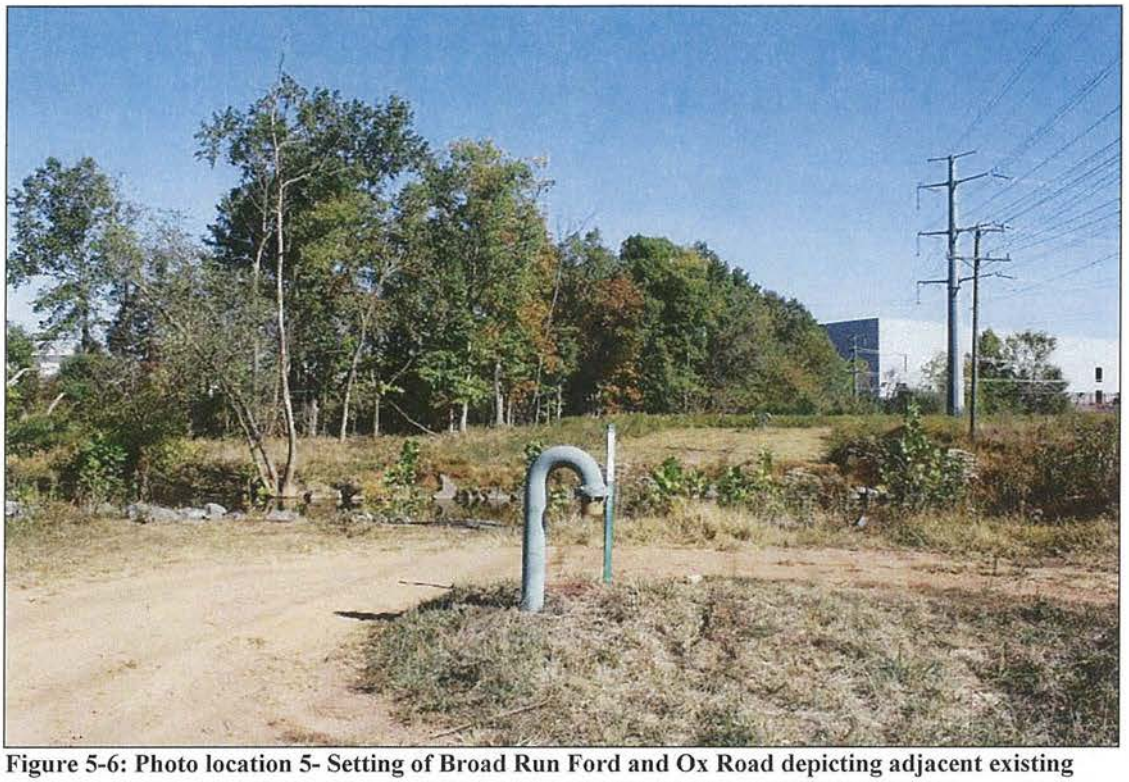


Figure 5-6: Photo location 5- Setting of Broad Run Ford and Ox Road depicting adjacent existing utility easement, transmission line, and large-scale private development, facing north.

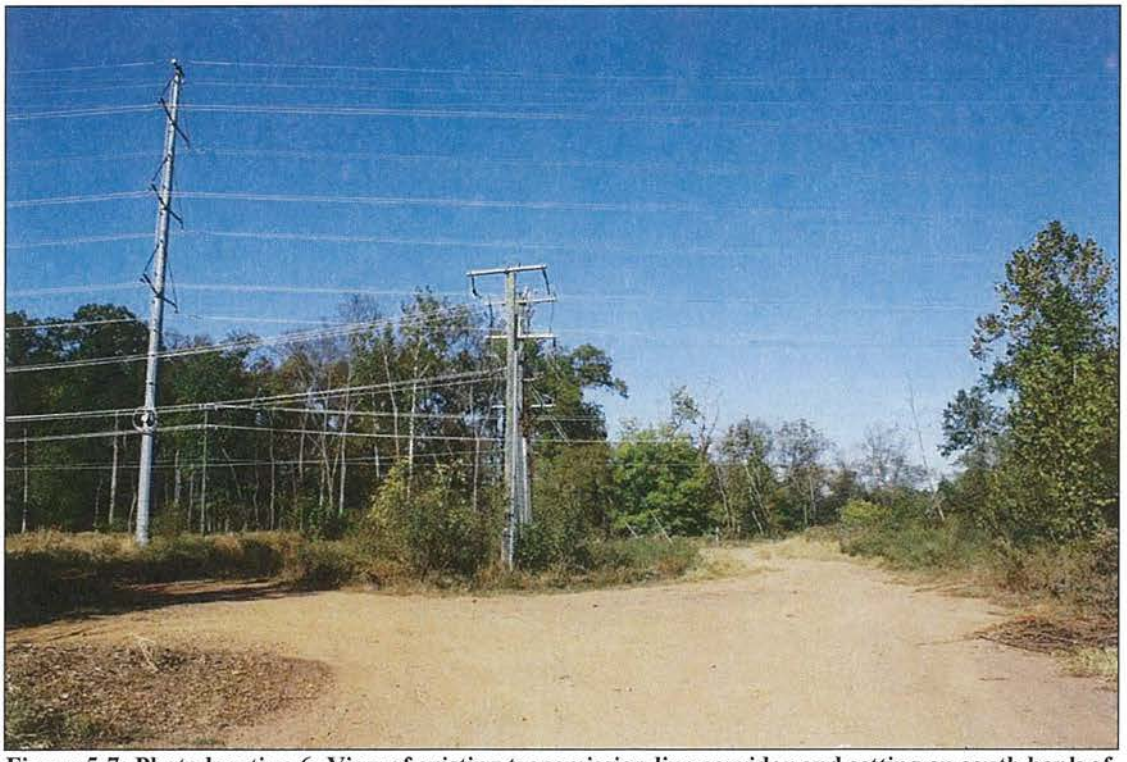


Figure 5-7: Photo location 6- View of existing transmission line corridor and setting on south bank of Broad Run, facing west.

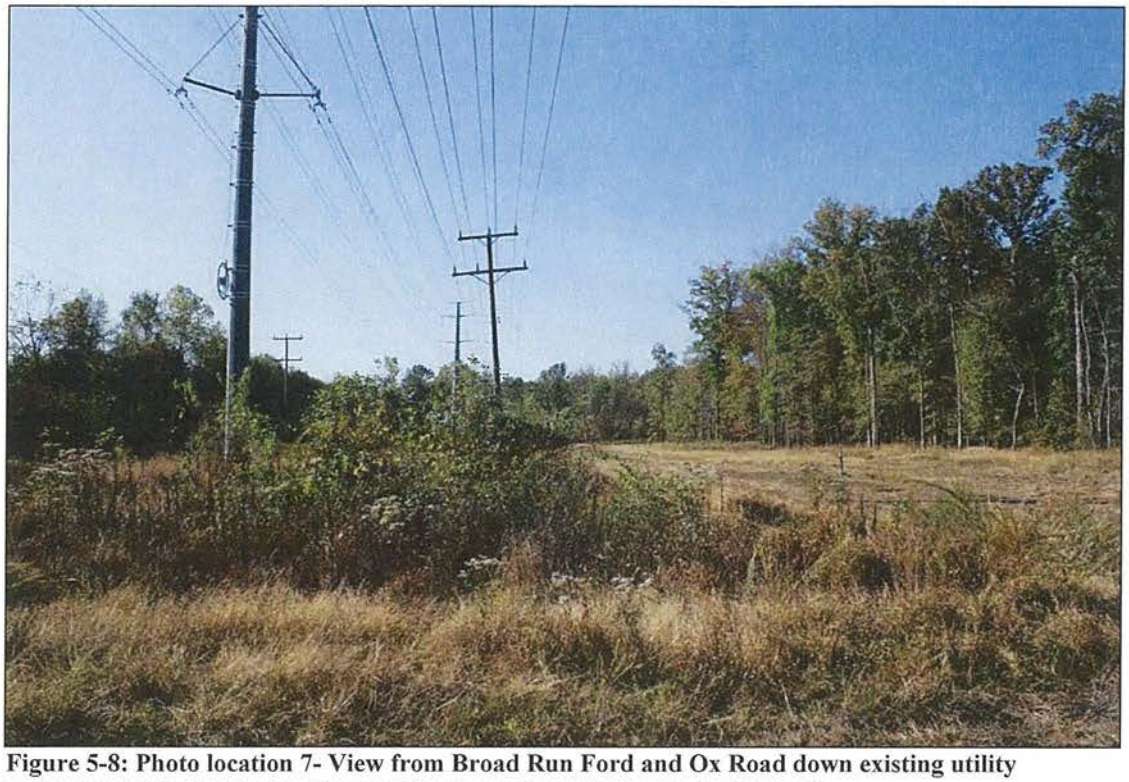


Figure 5-8: Photo location 7- View from Broad Run Ford and Ox Road down existing utility easement and transmission line corridor towards project area, facing south.

Photo simulation was also conducted from the south side of Broad Run to assess the visibility of proposed structures in each alternative. Figure 5-9 illustrates the location and direction of the photo simulations. Figure 5-10 depicts the existing view from the simulation location and Figures 5-11 through 5-20 show the structures modeled in each alternative and the proposed view for each.

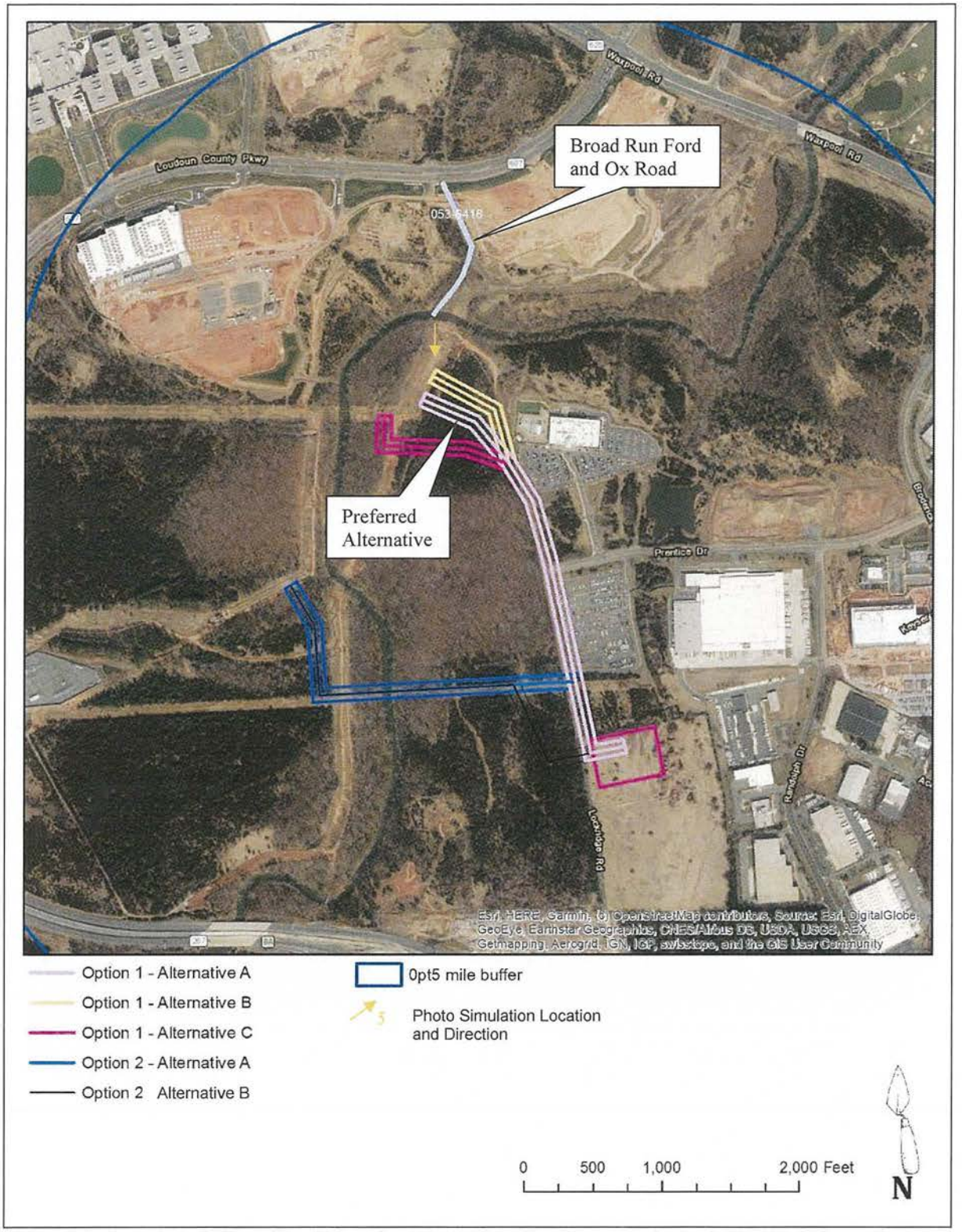


Figure 5-9: Location of Photo Simulations from Broad Run Ford towards the study area and alternatives.

Figure 5-10: Existing view from Broad Run Ford towards the study area and alternatives, facing south. Source: GTTE

Figure 5-11: Photo Simulation Location and Structures Modeled for Option 1 - Alternative A (Preferred). Source: GTTE

Dominion Energy: Lockridge 230 kV Line Loop Broad Run Ford Proposed View Option 1A

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

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-12: Proposed View for Option 1 - Alternative A (Preferred). Source: GTTE

Figure 5-13: Photo Simulation Location and Structures Modeled for Option 1 - Alternative B. Source: GTTE

Dominion Energy: Lockridge 230 kV Line Loop Broad Run Ford Proposed View Option 1B

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

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-14: Proposed View for Option 1 - Alternative B. Source: GTTE

Dominion Energy: Lockridge 230 kV Line Loop Broad Run Ford Proposed Line Loop: Option 1C

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

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design.

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-15: Photo Simulation Location and Structures Modeled for Option 1 - Alternative C. Source: GTTE

Dominion Energy: Lockridge 230 kV Line Loop Broad Run Ford Proposed View Option 1C

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

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design.

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-16: Proposed View for Option 1 - Alternative C. Source: GTTE

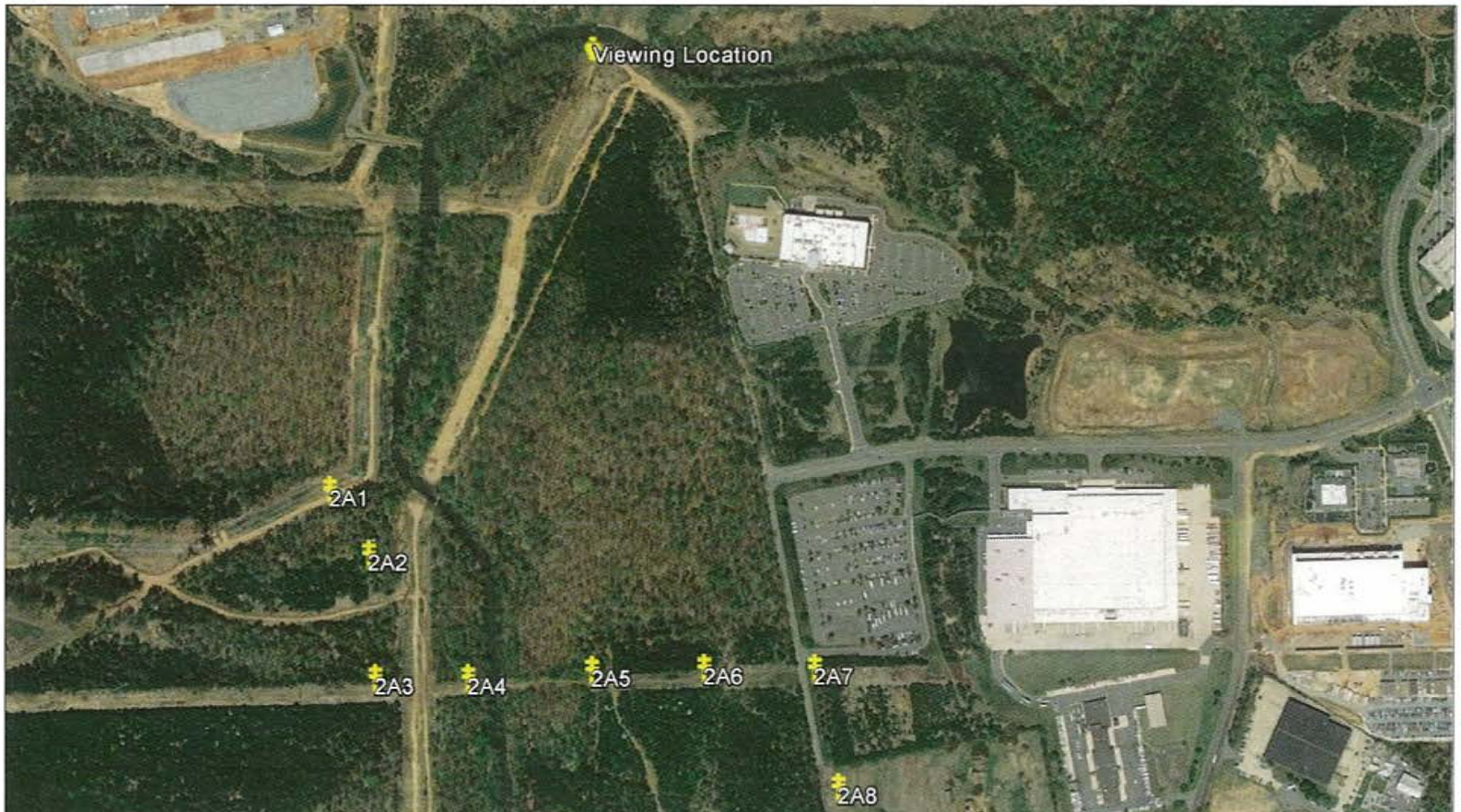


Figure 5-17: Photo Simulation Location and Structures Modeled for Option 2 - Alternative A. Source: GTTE

Dominion Energy: Lockridge 230 kV Line Loop Broad Run Ford Proposed View Option 2A

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

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design.

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-18: Proposed View for Option 2 - Alternative A. Source: GTTE

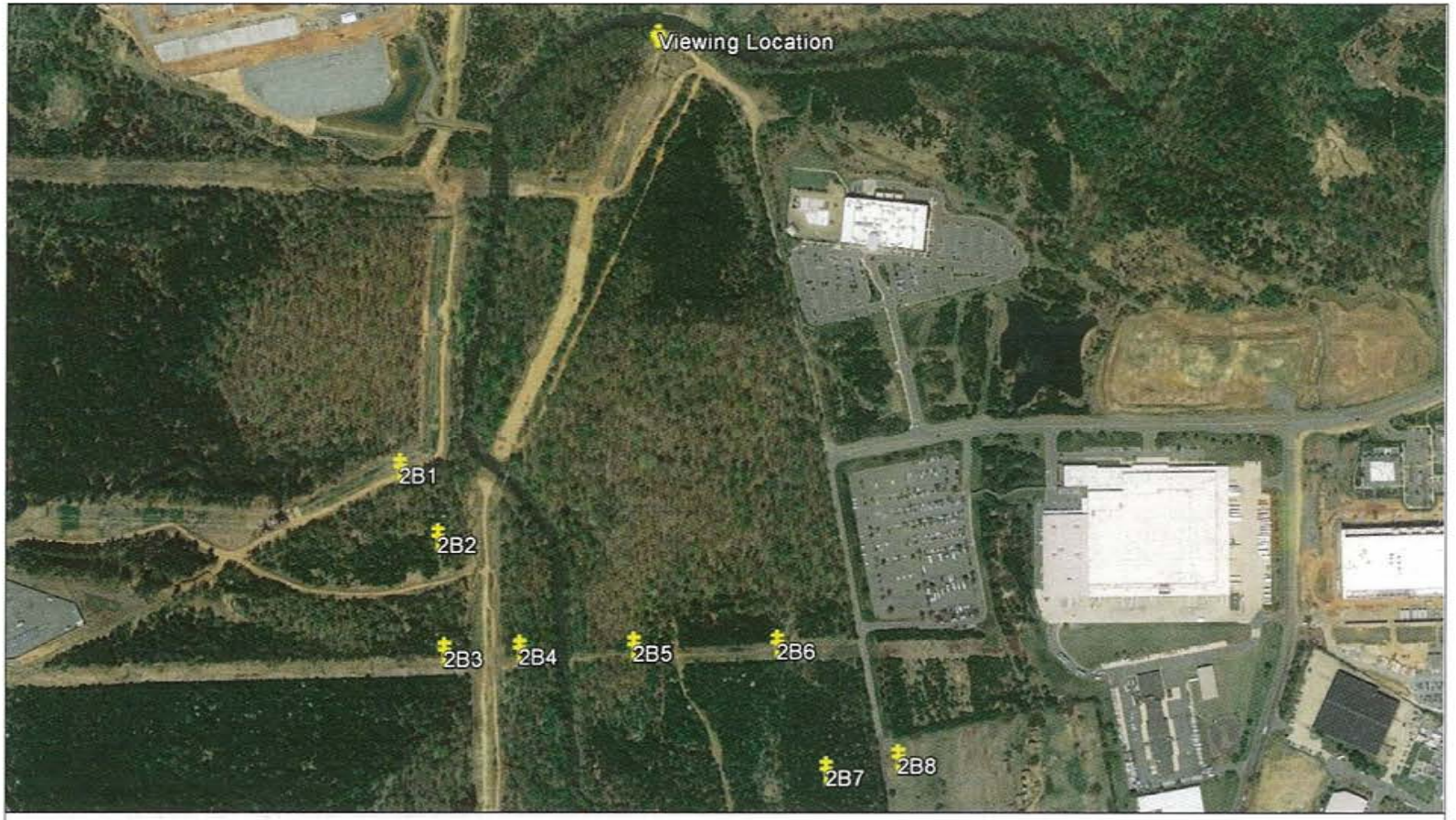


Figure 5-19: Photo Simulation Location and Structures Modeled for Option 2 - Alternative B. Source: GTTE

Dominion Energy: Lockridge 230 kV Line Loop Broad Run Ford Proposed View Option 2B

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

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Figure 5-20: Proposed View for Option 2 - Alternative B. Source: GTTE

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Both visual inspection and photo simulation show that not only is the surrounding setting of the ford compromised by nonhistoric development, but the ford itself is now immediately flanked by an existing utility easement that resulted in a substantial change in the character of the shoreline of Broad Run, including filling, grading, and rip-rap. The setting of the north side of the ford and road trace is further compromised by ongoing large-scale private development obscuring the original landscape and its relationship to the ford and former Ox Road. On the south side of the ford, between it and the study area, the landscape has also been heavily altered and the setting compromised by existing transportation and utility corridors. These existing intrusions dominate views from the ford and road to the south, and would largely obscure improvements made as part of the Lockridge 230kV Line Loop and Substation project beyond. Existing vegetation in the area will also provide screening of the vast majority of proposed structures within each alternative. For the Option 1 route alternatives that connect to the existing transmission line nearer to Broad Run, just the single new tap structure within the existing ROW would be visible while the subsequent structures would be set behind and beneath the surrounding treeline. For the Option 2 route alternatives that connect to the existing transmission line further to the south, all proposed structures would be screened by existing vegetation. The proposed substation to which all route alternatives tie in to would be over 0.6 mile away from the Broad Run Ford and likewise be completely screened by existing development and the intervening vegetation.

Visual impacts are defined as the introduction of visual elements that might diminish or alter the setting of any historic property listed on or eligible for listing on the NRHP. The Broad Run Ford is significant for its associations with Robert "King" Carter and Virginia's early transportation network as well as a rare representation of an 18th century road and ford. As such, setting as it relates to the relationship between the ford, the water feature it crosses, and the road traces on each side is a component of its significance; however, the wider surroundings are not inherently linked to its significance or interpretive capability. It is D+A's opinion that the significant historical setting is limited to the ford itself, and the immediately surrounding area.

As proposed project improvements related to the Lockridge 230kV Line Loop and Substation project will be set amongst and behind existing nonhistoric development and utility corridors with at most a single new structure visible and the rest screened by vegetation, it will not introduce any substantially new or different features into the views from the Broad Run Ford and Ox Road. Further, the extended setting is already considered compromised by existing utilities, large-scale modern development, and not integral to the significance of the resource. As such, it is D+A's opinion that the proposed project will have no more than a ***minimal impact*** on the Broad Run Ford and Ox Road.

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6. SUMMARY OF POTENTIAL IMPACTS

As part of this pre-application analysis of cultural resources for the Lockridge 230kV Line Loop and Substation project, potential impacts to previously recorded historic properties listed or considered eligible for listing in the NRHP within the VDHR-defined buffered tiers were assessed in accordance with the VDHR guidelines. For the purposes of this analysis, an impact is one that alters, either directly or indirectly, those qualities or characteristics that qualify a particular property for listing in the NRHP and does so in a manner that diminishes the integrity of a property's materials, workmanship, design, location, setting, feeling, and/or association. With respect to transmission lines, direct impacts typically are associated with ground disturbance resulting from ROW clearing and structure construction. Indirect impacts typically are associated with the introduction of new visual elements or changes to the physical features of a property's setting or viewshed. According to VDHR guidance, project impacts are characterized as such:

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

With regards to architectural resources, just one property that is either listed in or determined eligible for listing in the NRHP is located within the defined tiers for assessment. This is the NRHP-eligible Broad Run Ford and Ox Road. Field inspection and desktop analysis reveal that this resource has historical significance related to early transportation in the region and is considered significant for its representation of a colonial-era ford and road, however, its setting has been compromised by a variety of nonhistoric development in the vicinity. This includes large-scale private development and utility corridors, including an existing transmission line corridor between it and the project study area. As shown by ground-based photography, views from the resource are already interrupted by these features, and the proposed Lockridge 230kV Line Loop and Substation would be set beyond the compromised setting. This is confirmed by photo simulation that reveals most of the project improvements proposed for each alternative would be set beneath and completely screened by intervening vegetation. Just a single tap structure on Option 1, Alternative Routes 1A, 1B, and 1C would be visible amongst existing other structures, while all structures associated with Option 2, Alternative Routes 2A and 2B would be screened. Additionally, the proposed substation will be set over 0.6 mile away and be completely screened by intervening development and vegetation. As such, none of the route alternatives or the project as a whole will introduce any substantial new or uncharacteristic features into the already compromised setting, and

therefore, the proposed project will have no more than a ***minimal impact*** on the Broad Run Ford and Ox Road.

Table 6-1: Potential impacts summary for architectural resources.

VDHR ID #	Resource Name	NRHP Status	Impact
053-6416	Broad Run Ford and Ox Road	NRHP-Eligible	Minimal to None

With regards to archaeology, there are no known sites within or immediately adjacent to the study area and therefore the project will pose ***no impact*** to previously recorded archaeological sites.

7. REFERENCES

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

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

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

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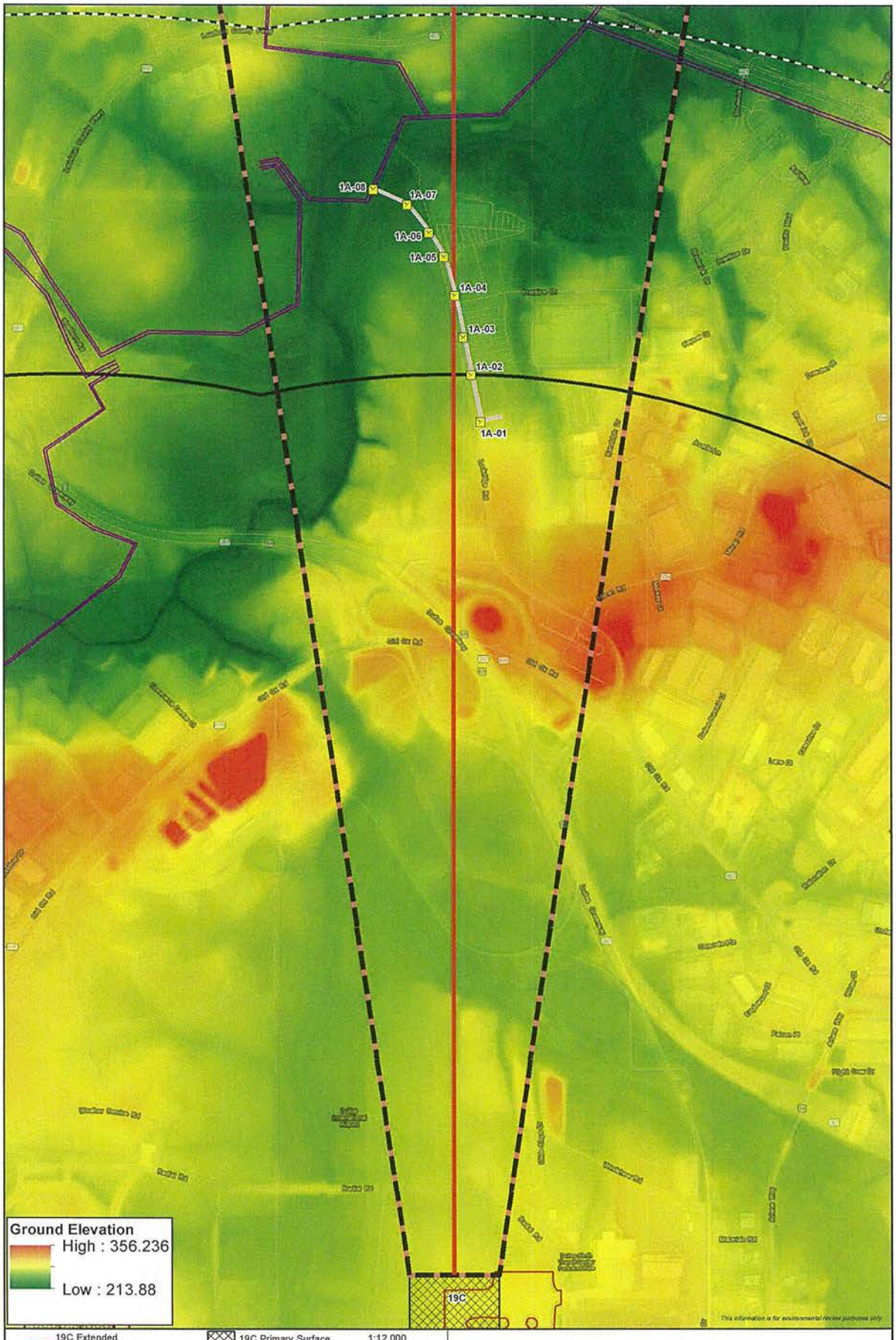
DOMINION ENERGY
LOCKRIDGE 230 kV LINE LOOP AND LOCKRIDGE SUBSTATION PROJECT

Environmental Routing Study

Appendix F
Airport Surface Figures



19C Extended Runway Centerline
Proposed Structure Location
Option 1, Alternative A (Route 1A)
Airport Runway
Existing Dominion Transmission Lines
19C Primary Surface
19C Approach Surface
Horizontal Surface (463 ASL)
Conical Surface
1:12,000
0 1,000 2,000 Feet
N

Appendix F, Figure 1A-1
Structure Map - Plan View - Route 1A
Lockridge 230 kV Line Loop
and Lockridge Substation
Loudoun County, Virginia

ERM

Dominion Energy

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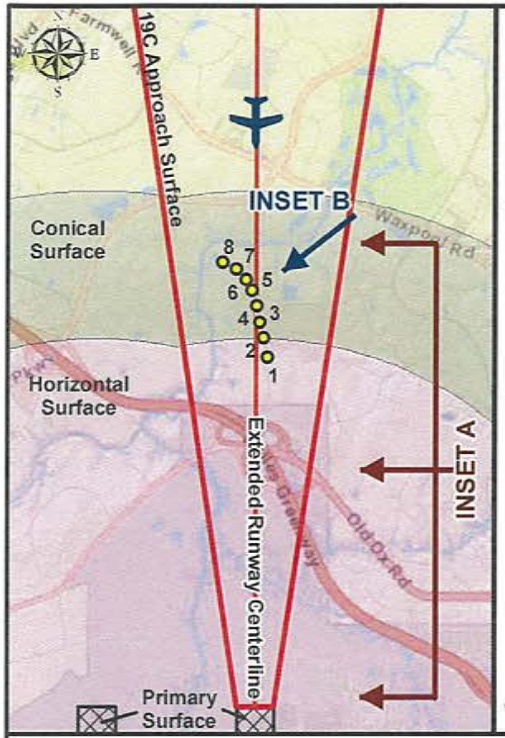

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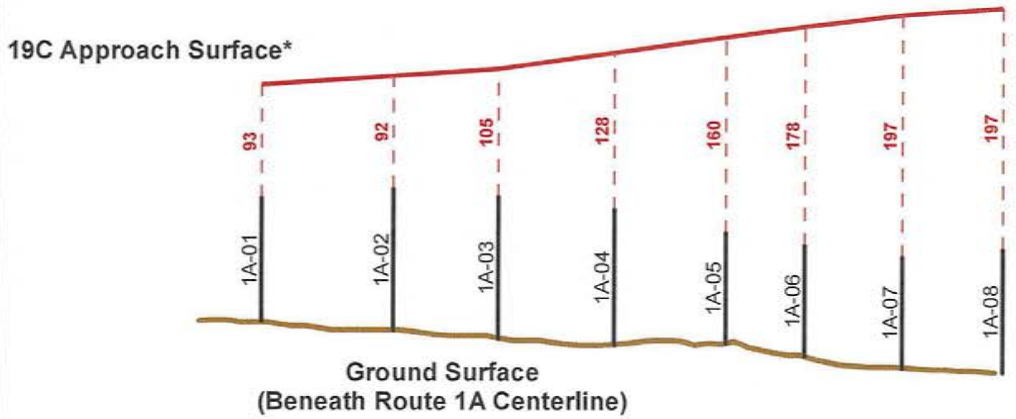

*Elevation of airport approach surface is dependent on distance of towers from runway.

Red numbers indicate clearance between structure and imaginary approach surface (Feet)

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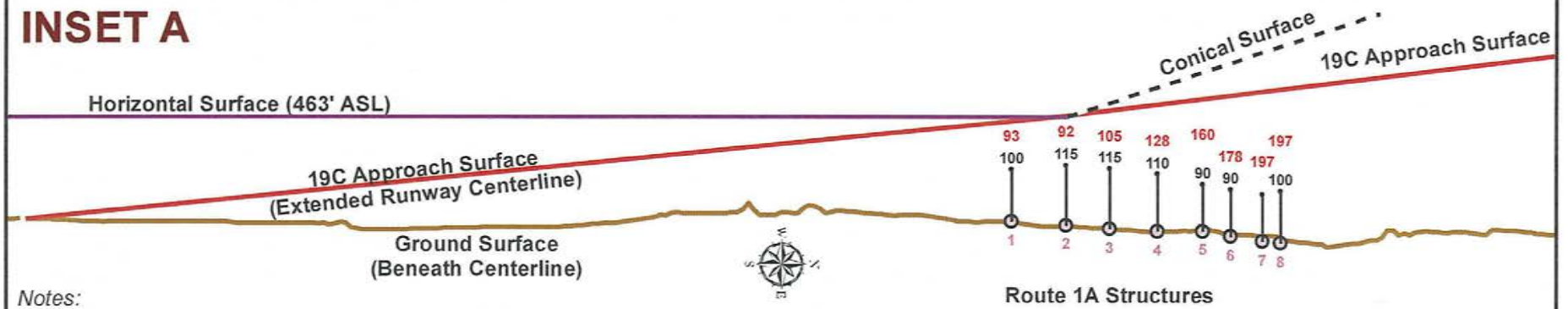

Notes:
Not to Scale
5x Vertical Exaggeration

This information is for environmental review purposes only.

- Proposed Structure Location (Tower Height in Feet)
- 1A Structure Number
- Ground Surface
- 19C Approach Surface (Extended Runway Centerline)
- Conical Surface
- Horizontal Surface (463' ASL)

Appendix F, Figure 1A-2
Structure Map - Profile View - Route 1A
Lockridge 230 kV Line Loop
and Lockridge Substation
Loudoun County, Virginia

ERM

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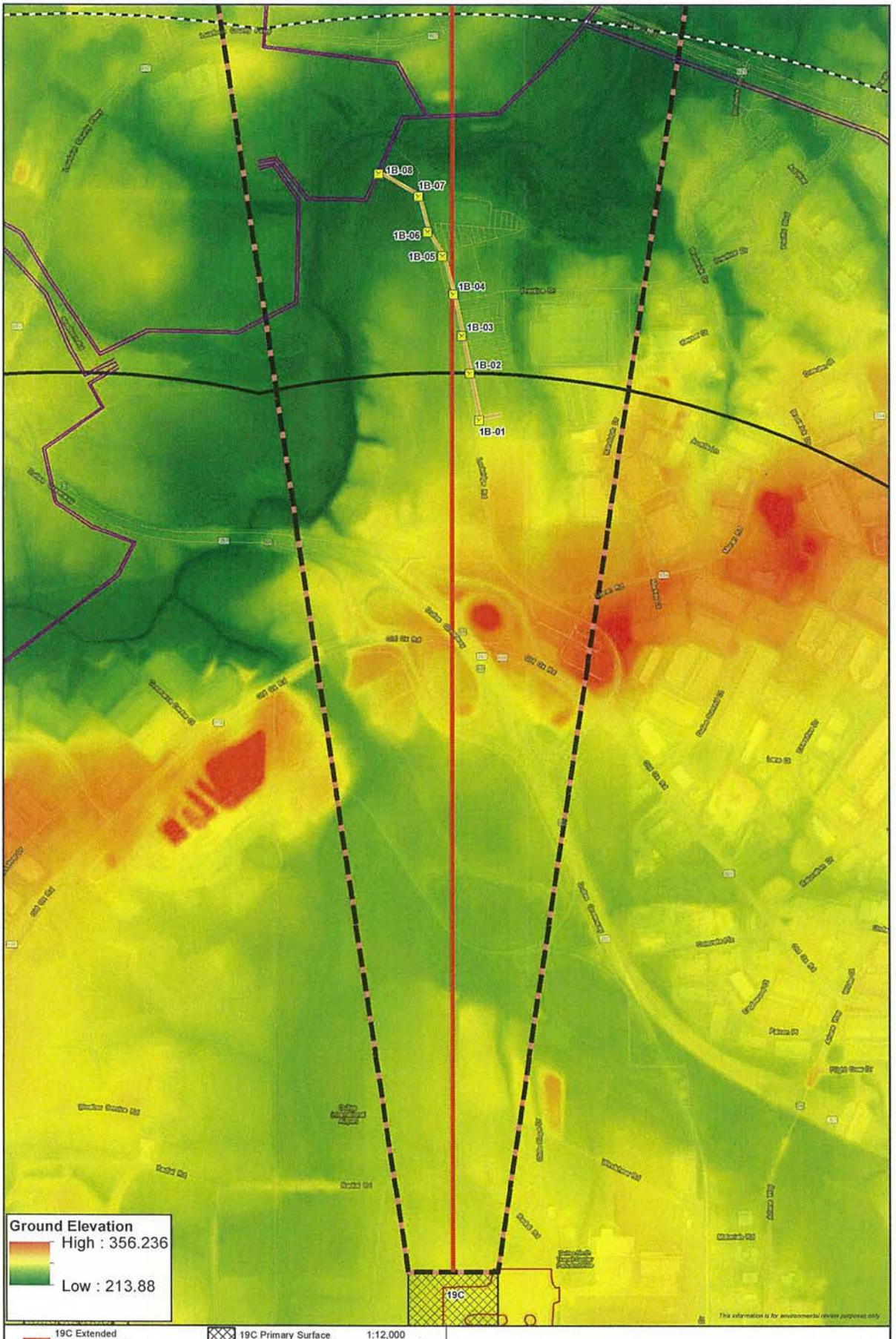

Appendix F, Figure 1B-1
Structure Map - Plan View - Route 1B
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

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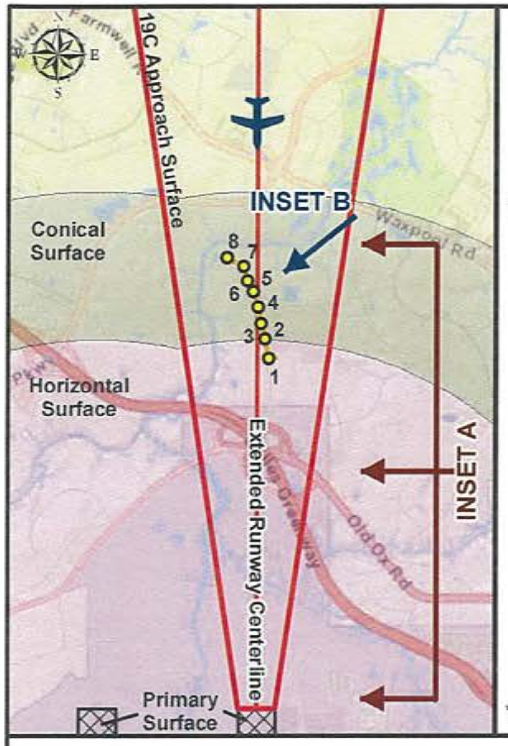

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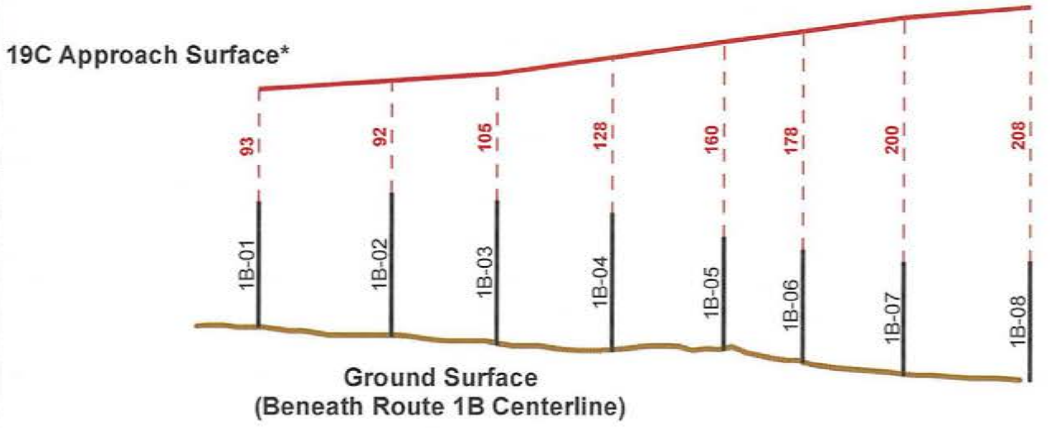

*Elevation of airport approach surface is dependent on distance of towers from runway.

Red numbers indicate clearance between structure and imaginary approach surface (Feet)

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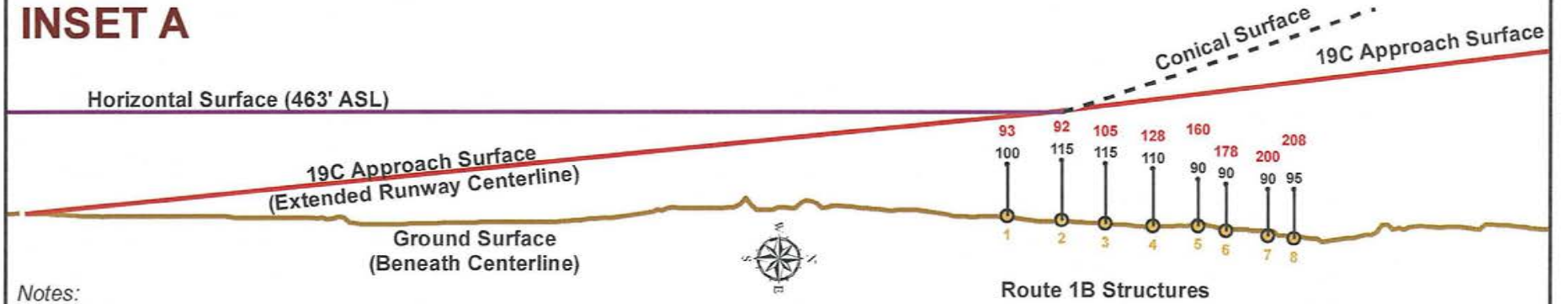

Notes:
Not to Scale
5x Vertical Exaggeration

This information is for environmental review purposes only.

Proposed Structure Location (Tower Height in Feet)
1B Structure Number
Ground Surface
19C Approach Surface (Extended Runway Centerline)
Conical Surface
Horizontal Surface (463' ASL)

Appendix F, Figure 1B-2
Structure Map - Profile View - Route 1B
Lockridge 230 kV Line Loop
and Lockridge Substation
Loudoun County, Virginia

ERM

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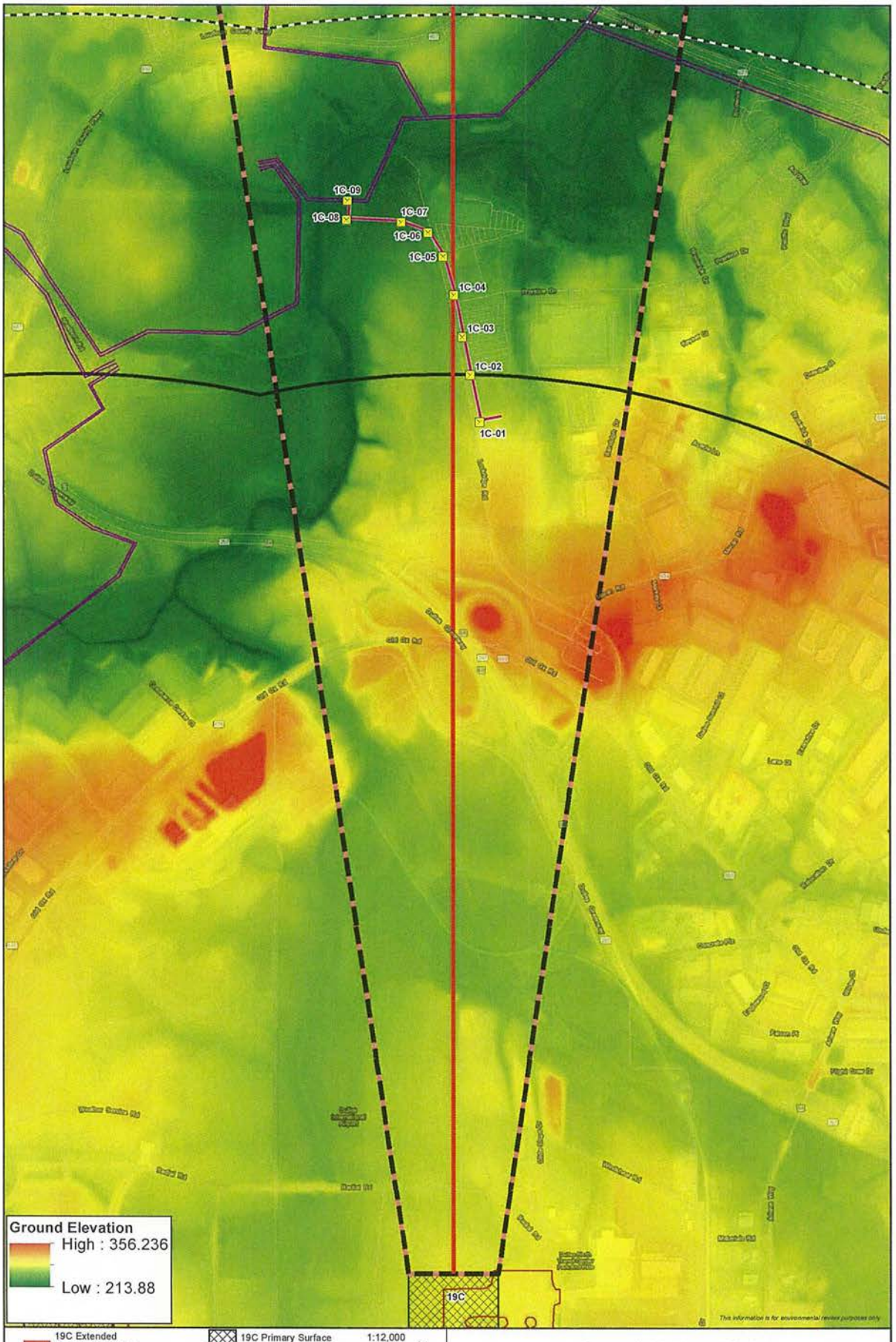
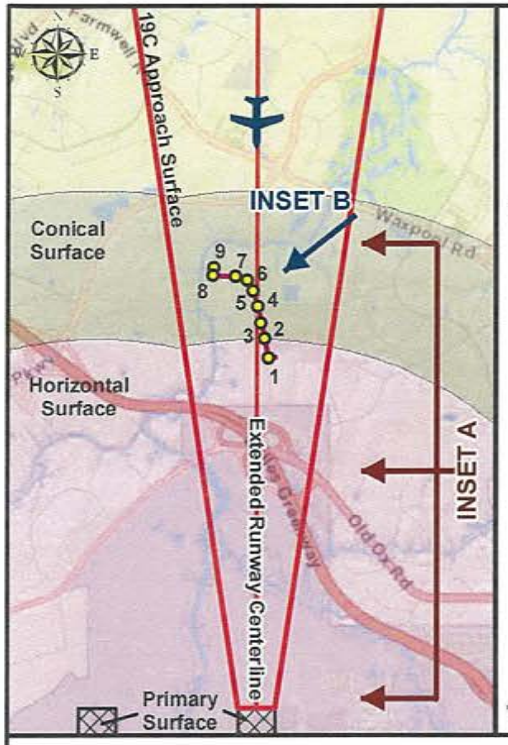


Appendix F, Figure 1C-1
Structure Map - Plan View - Route 1C
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia



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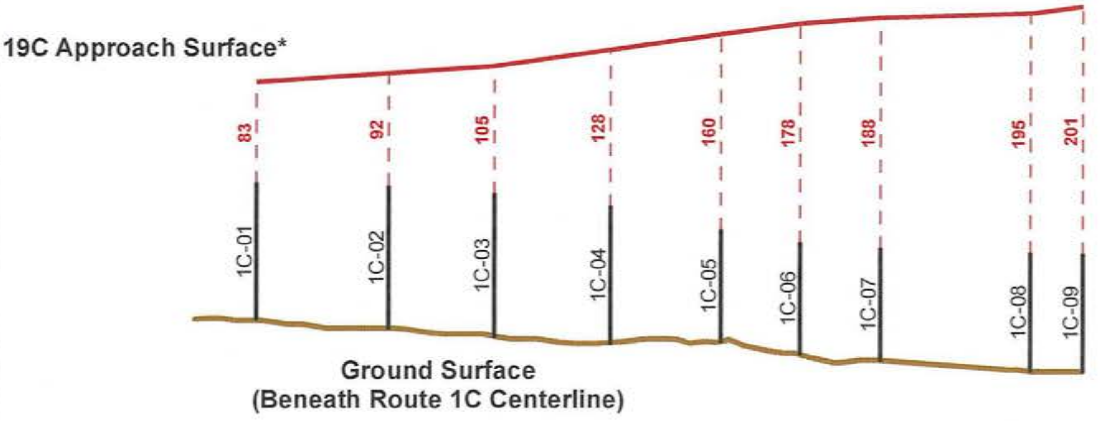

*Elevation of airport approach surface is dependent on distance of towers from runway.

Red numbers indicate clearance between structure and imaginary approach surface (Feet)

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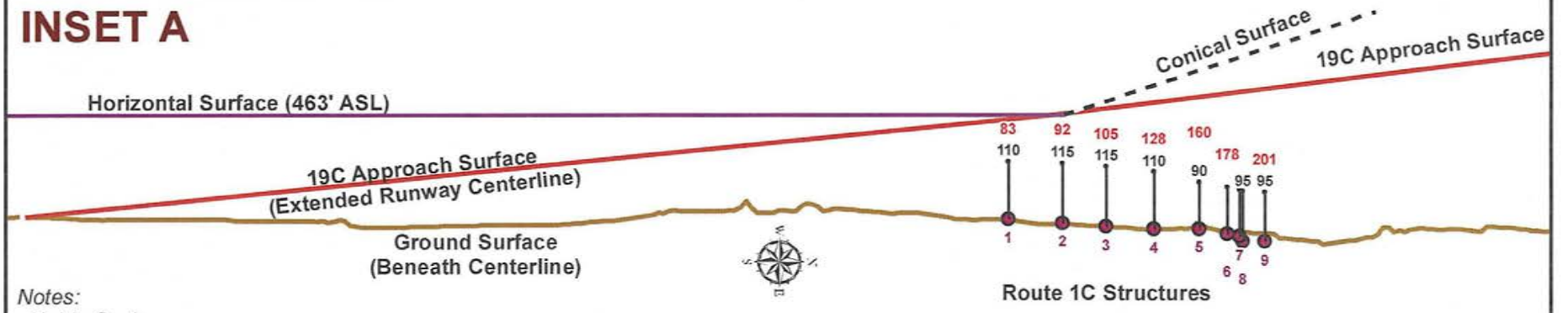

Notes:
Not to Scale
5x Vertical Exaggeration

This information is for environmental review purposes only.

Proposed Structure Location (Tower Height in Feet)
1C Structure Number
Ground Surface
19C Approach Surface (Extended Runway Centerline)
Conical Surface
Horizontal Surface (463' ASL)

Appendix F, Figure 1C-2
Structure Map - Profile View - Route 1C
Lockridge 230 kV Line Loop
and Lockridge Substation
Loudoun County, Virginia

ERM

Dominion Energy

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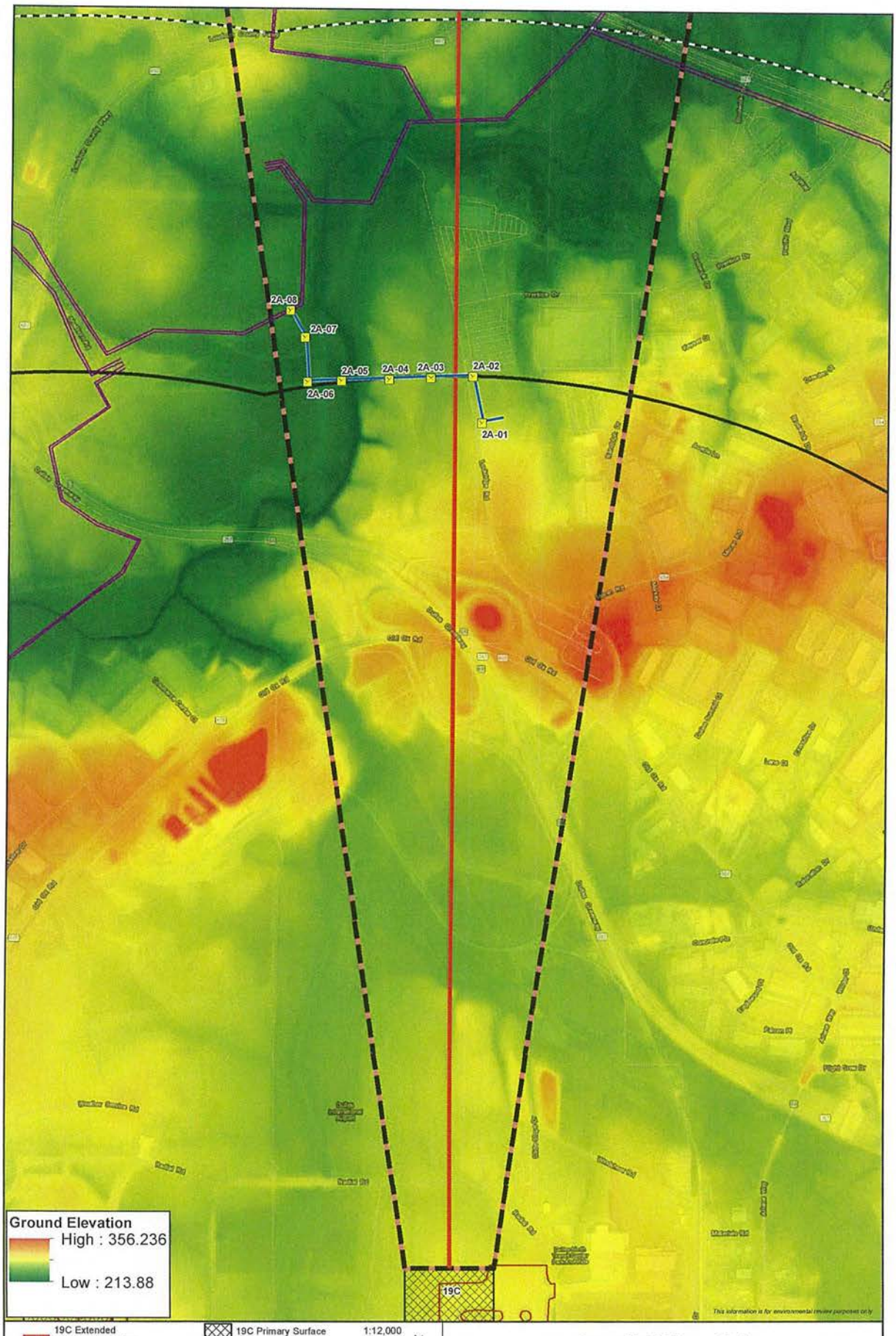
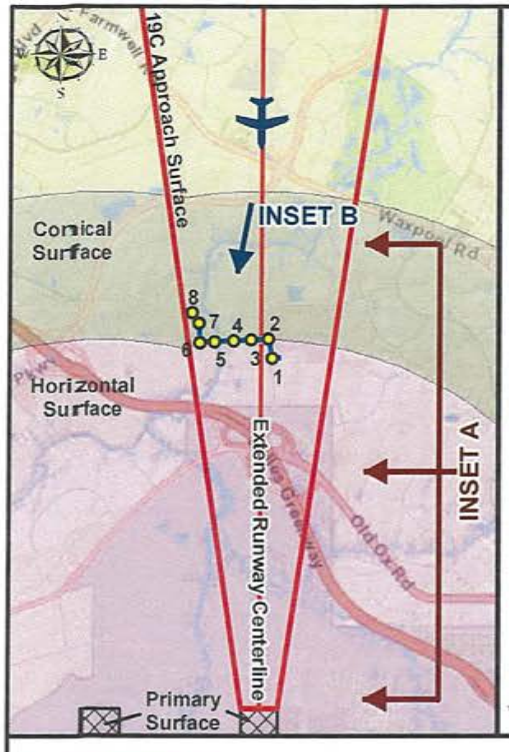


Appendix F, Figure 2A-1
Structure Map - Plan View - Route 2A
Lockridge 230 kV Line Loop
and Lockridge Substation
Loudoun County, Virginia



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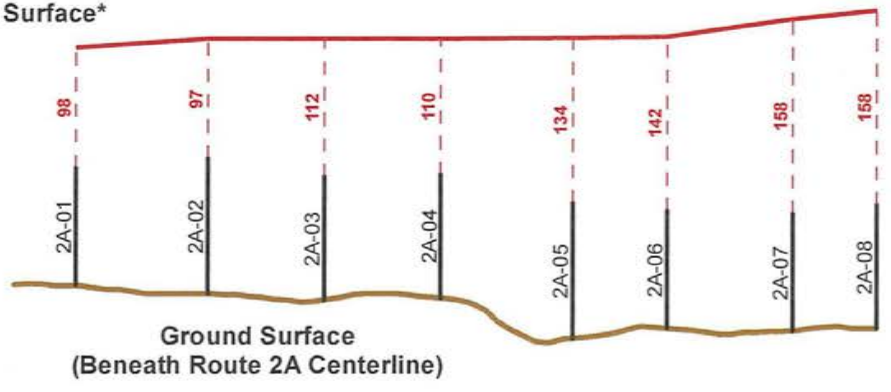

*Elevation of airport approach surface is dependent on distance of towers from runway.

Red numbers indicate clearance between structure and imaginary approach surface (Feet)

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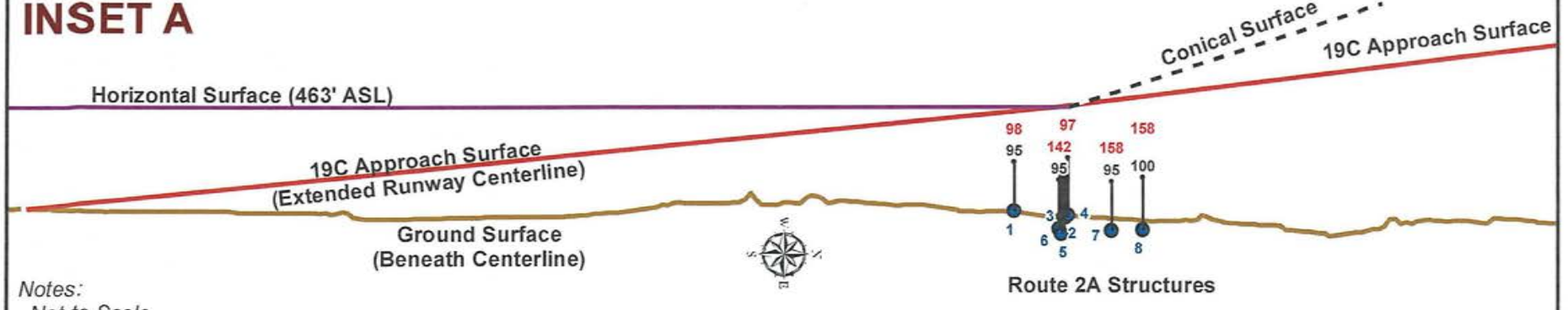

Notes:
Not to Scale
5x Vertical Exaggeration

This information is for environmental review purposes only.

Proposed Structure Location (Tower Height in Feet)
2A Structure Number
Ground Surface
19C Approach Surface (Extended Runway Centerline)
Conical Surface
Horizontal Surface (463' ASL)

Appendix F, Figure 2A-2
Structure Map - Profile View - Route 2A
Lockridge 230 kV Line Loop
and Lockridge Substation
Loudoun County, Virginia

ERM

Dominion Energy

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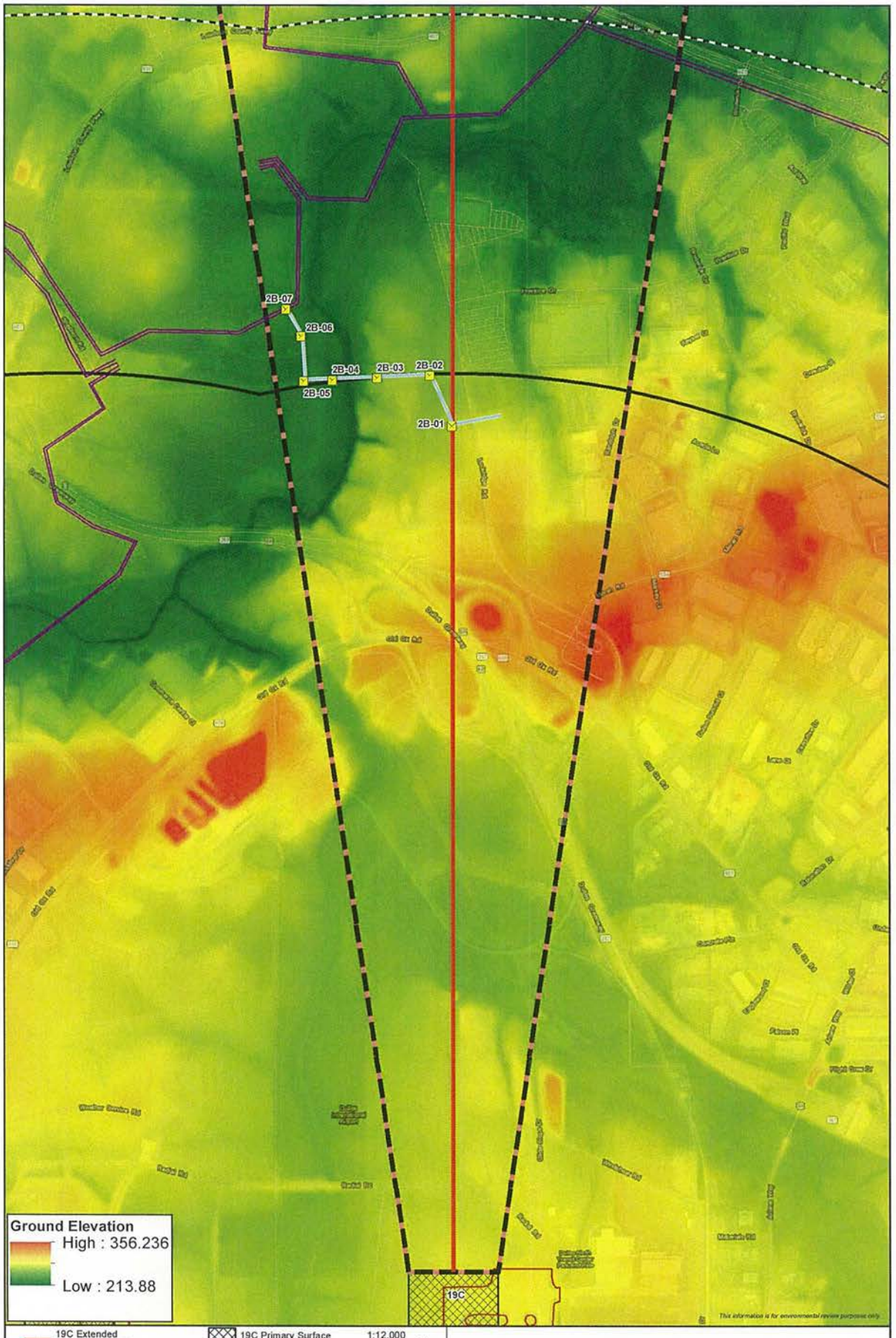

Appendix F, Figure 2B-1
Structure Map - Plan View - Route 2B
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

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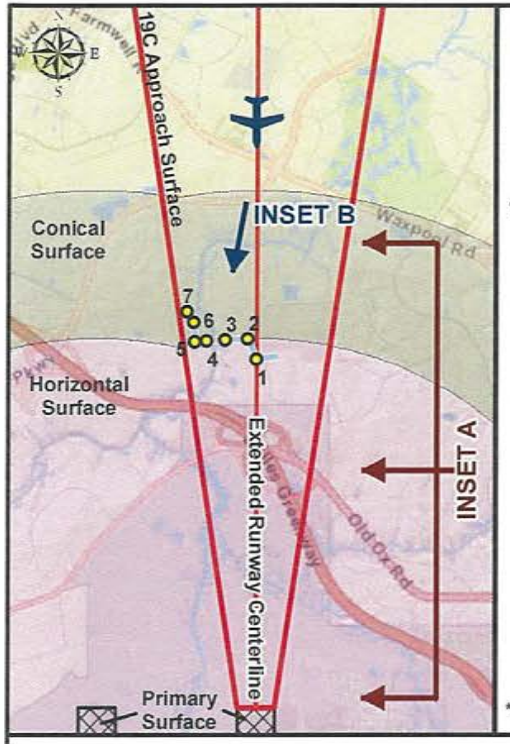

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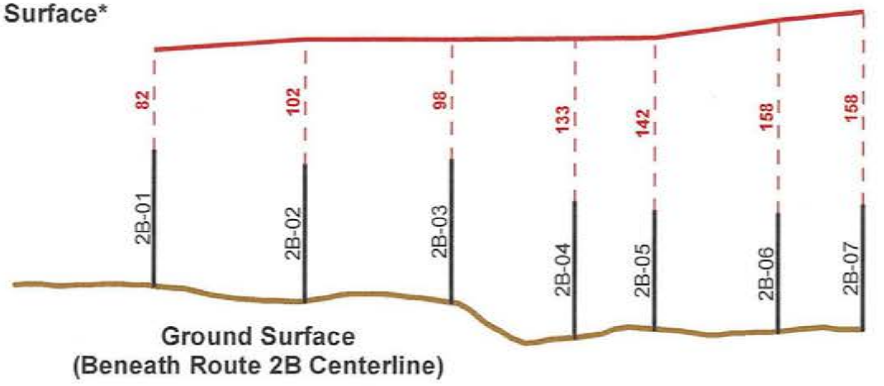
19C Approach Surface*



*Elevation of airport approach surface is dependent on distance of towers from runway.

Red numbers indicate clearance between structure and imaginary approach surface (Feet)

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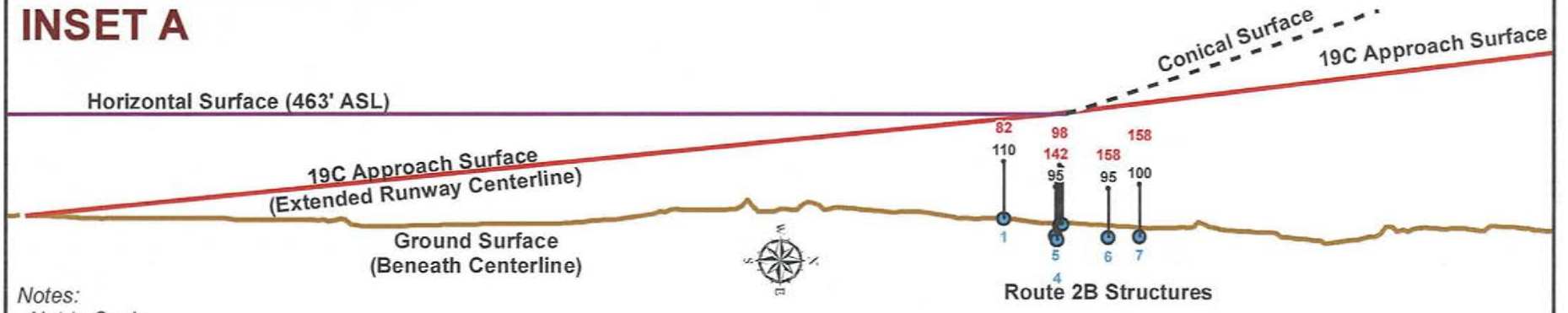

Notes:
Not to Scale
5x Vertical Exaggeration

This information is for environmental review purposes only.

- Proposed Structure Location (Tower Height in Feet)
- 2B Structure Number
- Ground Surface
- 19C Approach Surface (Extended Runway Centerline)
- Conical Surface
- Horizontal Surface (463' ASL)

Appendix F, Figure 2B-2
Structure Map - Profile View - Route 2B
Lockridge 230 kV Line Loop
and Lockridge Substation
Loudoun County, Virginia

ERM

Dominion Energy

MPLS M:\Clients\D-F\DOM\Lockridge_ArcGIS\2019\11\Airport_DOM_LOCK_Profile_Routes_MapSet_v2.mxd | REVISED: 11/20/2019

DRAWN BY: 0239

DOMINION ENERGY
LOCKRIDGE 230 kV LINE LOOP AND LOCKRIDGE SUBSTATION PROJECT

Environmental Routing Study

Appendix G
Visual Simulations


LOCKRIDGE
230 kV LINE LOOP AND LOCKRIDGE SUBSTATION
ROUNDTABLE SUBSTATION
1 PHOTO VIEWPOINT LOCATION
EXISTING TRANSMISSION LINE
OPTION 1 - ROUTE 1A
OPTION 1 - ROUTE 1B
OPTION 1 - ROUTE 1C
SUBSTATION
1
2
LIFE TIME ATHLETIC
PRENTICE DR
RANDOLPH DR
PROPOSED LOCKRIDGE SUBSTATION
LOCKRIDGE RD
N
Dominion Energy

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 1

FROM LIFE TIME ATHLETIC PROPERTY

DATE:
10/17/2019

TIME:
12:15 PM

DIRECTION:
SOUTHWEST

EXISTING CONDITIONS
EXISTING ROUTE

PROPOSED CONDITIONS
OPTION 1 - ROUTE 1A

Dominion Energy

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 1

FROM LIFE TIME ATHLETIC PROPERTY

DATE:
10/17/2019

TIME:
12:15 PM

DIRECTION:
SOUTHWEST

EXISTING CONDITIONS
EXISTING ROUTE

PROPOSED CONDITIONS
OPTION 1 - ROUTE 1B

Dominion Energy

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LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 1

FROM LIFE TOUCH ATHLETIC PROPERTY

DATE:
10/17/2019

TIME:
12:15 PM

DIRECTION:
SOUTHWEST

EXISTING CONDITIONS
EXISTING ROUTE

PROPOSED CONDITIONS
OPTION 1 - ROUTE 1C

Dominion Energy

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LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 2

FROM LIFE TIME ATHLETIC PARKING LOT

DATE: 10/17/2019

TIME: 12:27 PM

DIRECTION: WEST

EXISTING CONDITIONS
EXISTING ROUTE

PROPOSED CONDITIONS
OPTION 1 - ROUTE 1A

Dominion Energy

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 2

FROM LIFE TIME ATHLETIC PARKING LOT

DATE: 10/17/2019

TIME: 12:27 PM

DIRECTION: WEST

EXISTING CONDITIONS

EXISTING ROUTE

PROPOSED CONDITIONS

OPTION 1 - ROUTE 1B

Dominion Energy

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 2

FROM LIFE TIME ATHLETIC PARKING LOT

DATE:
10/17/2019

TIME:
12:27 PM

DIRECTION:
WEST

EXISTING CONDITIONS
EXISTING ROUTE

PROPOSED CONDITIONS
OPTION 1 - ROUTE 1C

Dominion Energy

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.