

May 15, 2020

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Joel H. Peck, Clerk  
Document Control Center  
State Corporation Commission  
1300 East Main Street  
Tyler Building – 1st Floor  
Richmond, Virginia 23219

*Application of Virginia Electric and Power Company  
For approval and certification of electric facilities:  
Bristers-Chancellor Line #552 and Chancellor-Ladysmith Line #581 500 kV Transmission Line  
Rebuild and Related Projects  
**Case No. PUR-2020-00080***

Dear Mr. Peck:

Please find enclosed for electronic filing in the above-captioned proceeding the application for approval of electric facilities on behalf of Virginia Electric and Power Company (the “Company”). This filing contains the Application, Appendix, Direct Testimony, and DEQ Supplement, including attachments.

As indicated in Section II.A.12.b of the Appendix, three (3) color copies of the map of the Virginia Department of Transportation “General Highway Map” for Fauquier, Stafford, Spotsylvania, and Caroline Counties were mailed to the Commission’s Division of Energy Regulation on May 13, 2020. The Company also provided the Division of Energy Regulation electronic access, via e-room, to the digital geographic information system (“GIS”) map required by § 56-46.1 of the Code of Virginia, which is Attachment II.A.2 to the Appendix.

Please do not hesitate to call if you have any questions in regard to the enclosed.

Very truly yours,



Vishwa B. Link

Enclosures

cc: William H. Chambliss, Esq.  
David J. DePippo, Esq.



**Dominion  
Energy®**

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

**Before the State Corporation  
Commission of Virginia**

**Bristers-Chancellor Line #552  
and Chancellor-Ladysmith Line  
#581 500 kV Transmission Line  
Rebuild and Related Projects**

**Application No. 298**

**Case No. PUR-2020-00080**

**Filed: May 15, 2020**

**Volume 1 of 1**

COMMONWEALTH OF VIRGINIA  
BEFORE THE  
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION  
OF ELECTRIC FACILITIES

Bristers-Chancellor Line #552 and  
Chancellor-Ladysmith Line #581  
500 kV Transmission Line Rebuild and Related Projects

Application No. 298

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Filed: May 15, 2020

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

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|--------------------------------------------------------|---|-------------------------|
| APPLICATION OF                                         | ) |                         |
|                                                        | ) |                         |
| VIRGINIA ELECTRIC AND POWER COMPANY                    | ) | Case No. PUR-2020-00080 |
|                                                        | ) |                         |
| For approval and certification of electric             | ) |                         |
| transmission facilities: Bristers-Chancellor Line #552 | ) |                         |
| and Chancellor-Ladysmith Line #581                     | ) |                         |
| 500 kV Transmission Line Rebuild and Related Projects  | ) |                         |

**APPLICATION OF VIRGINIA ELECTRIC AND POWER COMPANY  
FOR APPROVAL AND CERTIFICATION OF  
ELECTRIC TRANSMISSION FACILITIES:  
BRISTERS-CHANCELLOR LINE #552 AND CHANCELLOR-LADYSMITH LINE #581  
500 kV TRANSMISSION LINE REBUILD AND RELATED PROJECTS**

Pursuant to § 56-46.1 of the Code of Virginia (“Va. Code”) and the Utility Facilities Act, Va. Code § 56-265.1 *et seq.*, Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”), by counsel, files with the State Corporation Commission of Virginia (the “Commission”) this application for approval and certification of electric facilities (the “Application”). In support of its Application, Dominion Energy Virginia respectfully shows as follows:

1. Dominion Energy Virginia is a public service corporation organized under the laws of the Commonwealth of Virginia furnishing electric service to the public within its Virginia service territory. The Company also furnishes electric service to the public in portions of North Carolina. Dominion Energy Virginia’s electric system—consisting of facilities for the generation, transmission, and distribution of electric energy—is interconnected with the electric systems of neighboring utilities and is a part of the interconnected network of electric systems serving the continental United States. By reason of its operation in two states and its interconnections with other utilities, the Company is engaged in interstate commerce.



2. In order to perform its legal duty to furnish adequate and reliable electric service, Dominion Energy Virginia must, from time to time, replace existing transmission facilities or construct new transmission facilities in its system.

3. In this Application, in order to maintain the structural integrity and reliability of its transmission system in compliance with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards, the Company proposes to rebuild existing 500 kV transmission Lines #552 and #581 located in the Counties of Fauquier, Stafford, Spotsylvania, and Caroline, Virginia, (collectively, the “Bristers-Ladysmith 500 kV Partial Rebuild Project” or “Rebuild Project”) since they are nearing their end of life.

4. Specifically, the Company proposes to:

- (i) Rebuild, entirely within existing right-of-way, approximately 21.5 miles of the existing 500 kV Bristers-Chancellor Line #552, which runs from the Company’s existing Bristers Switching Station located in Fauquier County, Virginia, to the Company’s existing Chancellor Substation located in Spotsylvania County, Virginia (the “Line #552 Segment”);
- (ii) Rebuild, entirely within existing right-of-way, approximately 15.2 miles of the existing 500 kV Chancellor-Ladysmith Line #581, which runs from the Company’s existing Chancellor Substation located in Spotsylvania County, Virginia, to the Company’s existing Ladysmith Switching Station located in Caroline County, Virginia, and which includes the rebuild of approximately 1.2 miles of 115 kV transmission Chancellor-Spotsylvania Line #198,<sup>1</sup> which is co-located with Line #581 on Structures #581/2 to #581/7 (the “Line #581 Segment”); and
- (iii) Perform minor substation work at the existing Bristers Switching Station, Chancellor Substation, and Ladysmith Switching Station.

5. The proposed Rebuild Project will replace aging infrastructure that is at the end of its service life in order to comply with the Company’s mandatory electric transmission planning

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<sup>1</sup> The Company considers the work associated with Line #198, which includes the rebuild of six structures supporting both Line #581 and Line #198, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity (“CPCN”) from the Commission. Should the Commission determine that a CPCN is required for the work associated with Line #198 as described in this Application, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding.

criteria (the “Planning Criteria”), thereby enabling the Company to maintain the overall long-term reliability of its transmission system.

6. As of April 2020, the Company owns approximately 6,690 miles of overhead transmission lines, approximately 2,853 miles of which were built prior to 1980. The Company has developed a proactive plan to rebuild transmission towers that are comprised of COR-TEN<sup>®2</sup> weathering steel. The 500 kV system accounts for approximately 1,312 miles of the Company’s total overhead transmission line system, of which 521 miles were installed prior to 1980.

7. The lines identified above for rebuild run a total length of approximately 36.7 miles in the Bristers-Ladysmith transmission corridor. The majority of those lines were constructed in 1966 primarily on COR-TEN steel lattice towers. These COR-TEN towers have been identified for rebuild based on the Company’s assessment in accordance with the Company’s mandatory Planning Criteria. The Company hired a third-party company, Quanta Technology (“Quanta”), to evaluate the condition of its COR-TEN towers. Quanta provided a report (the “2013 Quanta Report”) confirming the need to rebuild certain COR-TEN towers, including those on the lines identified above. The need for the Rebuild Project is described in detail in Section I of the Appendix attached to this Application.

8. The desired in-service target date for the Rebuild Project is December 31, 2023, with completion of the Line #552 Segment by December 31, 2022, and completion of the Line #581 Segment by December 31, 2023. The Company estimates that it will take approximately 34 months for detailed engineering, materials procurement, permitting, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and

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<sup>2</sup> Registered trademark of United States Steel Corporation.

construction plan, the Company respectfully requests a final order by March 1, 2021. Should the Commission issue a final order by March 1, 2021, the Company estimates that construction should begin by May 3, 2021, and be completed by December 31, 2023.

9. The estimated conceptual cost of the Rebuild Project is approximately \$107.8 million, which includes approximately \$98.6 for transmission-related work and approximately \$9.2 million for substation-related work (2020 dollars). The description of the proposed Rebuild Project is provided in detail in Sections I and II of the Appendix attached to this Application.

10. Given the availability of existing right-of-way and the statutory preference given to the use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition and construction of new right-of-way, the Company did not consider any alternate routes requiring new right-of-way for the Rebuild Project. The impact of the proposed Rebuild Project on scenic, environmental, and historical features is described in detail in Section III of the Appendix.

11. Based on consultations with the Virginia Department of Environmental Quality (“DEQ”), the Company has developed a supplement (“DEQ Supplement”) containing information designed to facilitate review and analysis of the proposed facilities by the DEQ and other relevant agencies. The DEQ Supplement is attached to this Application.

12. Based on the Company’s experience, the advice of consultants, and a review of published studies by experts in the field, the Company believes that there is no causal link to harmful health or safety effects from electric and magnetic fields generated by the Company’s existing or proposed facilities. Section IV of the Appendix provides further details on Dominion Energy Virginia’s consideration of the health aspects of electric and magnetic fields.

13. Section V of the Appendix provides a proposed route description for public notice

purposes and a list of federal, state, and local agencies and officials that the Company has or will notify about the Application.

14. In addition to the information provided in the Appendix and the DEQ Supplement, this Application is supported by the prefiled direct testimony of Company Witnesses Peter Nedwick, Robert J. Shevenock II, Mohammad M. Othman, and Greg R. Baka filed with this Application.

WHEREFORE, Dominion Energy Virginia respectfully requests that the Commission:

(a) direct that notice of this Application be given as required by § 56-46.1 of the Code of Virginia;

(b) approve pursuant to § 56-46.1 of the Code of Virginia the construction of the Rebuild Project; and,

(c) grant a certificate of public convenience and necessity for the Rebuild Project under the Utility Facilities Act, § 56-265.1 *et seq.* of the Code of Virginia.

**VIRGINIA ELECTRIC AND POWER COMPANY**

By: /s/ Vishwa B. Link  
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May 15, 2020

COMMONWEALTH OF VIRGINIA  
BEFORE THE  
STATE CORPORATION COMMISSION

APPLICATION OF

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Bristers-Chancellor Line #552 and  
Chancellor-Ladysmith Line #581  
500 kV Transmission Line Rebuild and Related Projects

Application No. 298

Appendix

Containing Information in Response to  
“Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia”

Case No. PUR-2020-00080

Filed: May 15, 2020

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## EXECUTIVE SUMMARY

In order to maintain the structural integrity and reliability of its transmission system in compliance with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards, Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”) proposes to rebuild existing 500 kV transmission Lines #552 and #581 located in the Counties of Fauquier, Stafford, Spotsylvania, and Caroline, Virginia, (collectively, the “Bristers-Ladysmith 500 kV Partial Rebuild Project” or “Rebuild Project”) since they are nearing their end of life. Specifically, the Company proposes to:

- (1) Rebuild, entirely within existing right-of-way, approximately 21.5 miles of the existing 500 kV Bristers-Chancellor Line #552, which runs from the Company’s existing Bristers Switching Station located in Fauquier County, Virginia, to the Company’s existing Chancellor Substation located in Spotsylvania County, Virginia (the “Line #552 Segment”);
- (2) Rebuild, entirely within existing right-of-way, approximately 15.2 miles of the existing 500 kV Chancellor-Ladysmith Line #581, which runs from the Company’s existing Chancellor Substation located in Spotsylvania County, Virginia, to the Company’s existing Ladysmith Switching Station located in Caroline County, Virginia, and which includes the rebuild of approximately 1.2 miles of 115 kV transmission Chancellor-Spotsylvania Line #198,<sup>1</sup> which is co-located with Line #581 on Structures #581/2 to #581/7 (the “Line #581 Segment”); and
- (3) Perform minor substation work at the existing Bristers Switching Station, Chancellor Substation, and Ladysmith Switching Station.

As of April 2020, the Company owns approximately 6,690 miles of overhead transmission lines, approximately 2,853 miles of which were built prior to 1980. The Company has developed a proactive plan to rebuild transmission towers that are comprised of COR-TEN<sup>®2</sup> weathering steel. The 500 kV system accounts for approximately 1,312 miles of the Company’s total overhead transmission line system, of which 521 miles were installed prior to 1980.

The proposed Rebuild Project will replace aging infrastructure that is at the end of its service life in order to comply with the Company’s mandatory transmission system planning criteria (the “Planning Criteria”), thereby enabling the Company to maintain the overall long-term reliability

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<sup>1</sup> The Company considers the work associated with Line #198, which includes the rebuild of six structures supporting both Line #581 and Line #198, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to § 56-265.2 A 1 of the Code of Virginia (“Va. Code”) and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity (“CPCN”) from the State Corporation Commission (“Commission”). Should the Commission determine that a CPCN is required for the work associated with Line #198 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding.

<sup>2</sup> Registered trademark of United States Steel Corporation.



of its transmission system. Specifically, 500 kV Lines #552 and #581 have been identified for rebuild in the approximately 36.7-mile Bristers-Ladysmith transmission corridor. These lines were constructed in 1966 primarily on COR-TEN steel lattice towers. These COR-TEN towers have been identified for rebuild based on the Company's assessment in accordance with the Company's mandatory Planning Criteria. The Company hired a third-party company, Quanta Technology, LLC ("Quanta"), to evaluate the condition of its COR-TEN towers. Quanta provided a report (the "2013 Quanta Report") confirming the need to rebuild certain COR-TEN towers, including those on the lines identified above.

The length of the existing right-of-way and Company-owned property to be used for the Rebuild Project is approximately 36.7 miles long. Because the existing right-of-way and Company-owned property is adequate to construct the proposed Rebuild Project, no new right-of-way is necessary. Given the availability of existing right-of-way and the statutory preference given to the use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition and construction on new right-of-way, the Company did not consider any alternate routes requiring new right-of-way for the Rebuild Project.

The estimated conceptual cost of the Rebuild Project is approximately \$107.8 million, which includes approximately \$98.6 million for transmission-related work and approximately \$9.2 million for substation-related work (2020 dollars).

The desired in-service target date for the Rebuild Project is December 31, 2023, with completion of the Line #552 Segment by December 31, 2022, and completion of the Line #581 Segment by December 31, 2023. The Company estimates that it will take approximately 34 months for detailed engineering, materials procurement, permitting, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by March 1, 2021. Should the Commission issue a final order by March 1, 2021, the Company estimates that construction should begin by May 3, 2021, and be completed by December 31, 2023.

## **I. NECESSITY FOR THE PROPOSED PROJECT**

- A. State the primary justification for the proposed project (for example, the most critical contingency violation including the first year and season in which the violation occurs). In addition, identify each transmission planning standard(s) (of the Applicant, regional transmission organization (“RTO”), or North American Electric Reliability Corporation) projected to be violated absent construction of the facility.**

Response: The proposed Rebuild Project is necessary to rebuild existing 500 kV Lines #552 and #581, since they are nearing their end of life. See [Attachment I.A.1](#) for a Rebuild Project overview map.

Dominion Energy Virginia’s transmission system is responsible for providing transmission service: (i) for redelivery to the Company’s retail customers; (ii) to Appalachian Power Company, Old Dominion Electric Cooperative, Northern Virginia Electric Cooperative (“NOVEC”), Central Virginia Electric Cooperative, and Virginia Municipal Electric Association for redelivery to their retail customers in Virginia; and, (iii) to North Carolina Electric Membership Corporation and North Carolina Eastern Municipal Power Agency for redelivery to their customers in North Carolina (collectively, the “Dominion Energy Zone” or the “Dom Zone”).

Dominion Energy Virginia is part of PJM Interconnection, LLC (“PJM”), the regional transmission organization that provides service to a large portion of the eastern United States. PJM currently is responsible for ensuring the reliability of, and coordinating the movement of, electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia. This service area has a population of approximately 65 million and on August 6, 2006, set a record high of 166,929 megawatts (“MW”) for summer peak demand, of which Dominion Energy Virginia’s load portion was approximately 19,256 MW serving 2.4 million customers. On July 22, 2011, the Company set a record high of 20,061 MW for summer peak demand. On February 20, 2015, the Company set a winter peak and all-time record demand of 21,651 MW. Based on the 2020 PJM load forecast, the Dominion Energy Zone is expected to be the fastest growing zone in PJM with average growth rates of 1.2% summer and 1.4% winter over the next 10 years compared to the PJM average of 0.6% and 0.6% over the same period for the summer and winter, respectively.

Dominion Energy Virginia is also part of the Eastern Interconnection transmission grid, meaning its transmission system is interconnected, directly or indirectly, with all of the other transmission systems in the United States and Canada between the Rocky Mountains and the Atlantic Coast, except for Quebec and most of Texas. All of the transmission systems in the Eastern Interconnection are dependent on each other for moving bulk power through the transmission system and for reliability support. Dominion Energy Virginia’s service to its customers is extremely reliant on a robust and reliable regional transmission system.

PJM's Regional Transmission Expansion Plan ("RTEP") is the culmination of an annual transmission planning process, approved by the Federal Energy Regulatory Commission ("FERC"), which includes extensive analysis of the electric transmission system to determine any needed improvements.<sup>3</sup> The PJM Board of Managers (the "PJM Board") approve projects prior to inclusion in the RTEP. PJM's annual RTEP is based on the effective criteria in place at the time of the analyses, including applicable standards and criteria of NERC, PJM, and local reliability planning criteria, among others.<sup>4</sup> PJM's generation deliverability test for reliability analysis ensures the transmission system is capable of delivering the aggregate system generating capacity at peak load with all firm transmission service modeled. Generation deliverability is a critical system condition test that is part of the PJM reliability standards and, thus, also is required to be satisfied by NERC Reliability Standards.

Mandatory NERC Reliability Standards constitute minimum criteria with which all public utilities must comply as components of the interstate electric transmission system. Moreover, the Energy Policy Act of 2005 mandates that electric utilities follow these NERC Reliability Standards and imposes fines for noncompliance of approximately \$1.3 million per day per violation.

NERC has been designated by FERC as the electric reliability organization for the United States. Accordingly, NERC requires that the planning authority and transmission planner develop planning criteria to ensure compliance with NERC Reliability Standards. Mandatory NERC Reliability Standards require that a transmission owner ("TO") develop facility interconnection requirements that identify load and generation interconnection minimum requirements for a TO's transmission system, as well as the TO's reliability criteria.<sup>5</sup>

As of April 2020, the Company owns approximately 6,690 miles of overhead transmission lines, approximately 2,853 miles of which were built prior to 1980. The Company has developed a proactive plan to rebuild transmission towers that are comprised of COR-TEN weathering steel. The 500 kV system accounts for approximately 1,312 miles of the Company's total overhead transmission line system, of which 521 miles were installed prior to 1980.

The proposed Rebuild Project will replace aging infrastructure that is at the end of its service life in order to comply with the Company's mandatory Planning Criteria,<sup>6</sup> thereby enabling the Company to maintain the overall long-term

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<sup>3</sup> PJM Manual 14B focuses on the RTEP process and can be found at <https://www.pjm.com/library/manuals.aspx>.

<sup>4</sup> See PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria.

<sup>5</sup> This NERC requirement, FAC-001-2 - Facility Interconnection Requirements, can be found at <http://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-001-2.pdf>.

<sup>6</sup> The Company's Transmission Planning Criteria can be found in Exhibit A of the Company's Facility Interconnection Requirements document, available online at <https://pjm.com/-/media/planning/plan-standards/private-dominion/facility-connection-requirements1.ashx?la=en>.

reliability of its transmission system. Specifically, 500 kV Bristers-Chancellor Line #552 and 500 kV Chancellor-Ladysmith Line #581 have been identified for rebuild in the approximately 36.7-mile Bristers-Ladysmith transmission corridor. These lines were constructed in 1966 primarily on COR-TEN steel lattice towers. These COR-TEN towers have been identified for rebuild based on the Company's assessment in accordance with the Company's mandatory Planning Criteria. The Company hired a third-party company, Quanta, to evaluate the condition of its COR-TEN towers. Quanta provided the 2013 Quanta Report confirming the need to rebuild certain COR-TEN towers, including those on the lines identified above.

Section C.2.9 of the Company's Planning Criteria addresses electric transmission infrastructure approaching its end of life:<sup>7</sup>

Electric transmission infrastructure reaches its end of life as a result of many factors. Some factors such as extreme weather and environmental conditions can shorten infrastructure life, while others such as maintenance activities can lengthen its life. Once end of life is recognized, in order to ensure continued reliability of the transmission grid, a decision must be made regarding the best way to address this end-of-life asset.

For this criterion, "end of life" is defined as the point at which infrastructure is at risk of failure, and continued maintenance and/or refurbishment of the infrastructure is no longer a valid option to extend the life of the facilities consistent with Good Utility Practice and Dominion Energy Transmission Planning Criteria. The infrastructure to be evaluated under this end-of-life criteria are all transmission lines at 69 kV and above.

The decision point of this criterion is based on satisfying two metrics:

- 1) Facility is nearing, or has already passed, its end of life, and*
- 2) Continued operation risks negatively impacting reliability of the transmission system.*

For facilities that satisfy both of these metrics, this criterion mandates either replacing these facilities with in-kind infrastructure that meets current Dominion Energy standards or employing an alternative solution to ensure the Dominion Energy transmission system satisfies all applicable reliability criteria.

The Company submitted the Rebuild Project proposal to the PJM RTEP process in June 2018 to address the end-of-life criteria. Attachment I.A.2 contains the relevant slides from the June 2018 PJM Transmission Expansion Advisory Committee

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<sup>7</sup> See n. 6.

(“TEAC”) meeting. The proposed Rebuild Project was approved by PJM at its July 2018 Board Meeting.

*1) Facility is nearing, or has already passed, its end of life*

In regards to the first metric of the Company’s Planning Criteria addressing end of life, the structures on Lines #552 and #581 are primarily single circuit 500 kV COR-TEN lattice towers that were erected in 1966. COR-TEN steel is now known to be problematic when used for lattice-type structures. Utility companies have been monitoring the material since the 1970s, and the problems are well documented. As noted in the 2013 Quanta Report, the Line #552 and #581 weathering steel lattice towers have design features that enable significant deterioration in the connections of these towers.

*2) Continued operation risks negatively impacting reliability of the transmission system*

With regard to the second metric of the end-of-life criteria, the Company relied on one of the reliability tests identified in the Company’s Planning Criteria. The relevant section of the Planning Criteria states in part:<sup>8</sup>

*2. Reliability and System Impact*

The reliability impact of continued operation of a facility will be determined based on a planning power flow assessment and operational performance considerations. The end-of-life determination for a facility to be tested for reliability impact will be assessed by evaluating the impact on short and long term reliability with and without the facility in service in the power flow model. The existing system with the facility removed will become the base case system for which all reliability tests will be performed.

The primary four (4) reliability tests to be considered are:

1. NERC Reliability Standards;
2. PJM Planning Criteria – As documented in PJM Manual 14B – PJM Region Transmission Planning Process;
3. Dominion Energy Transmission Planning Criteria contained in this document; and
4. Operational Performance – This test will be based on input from PJM and/or Dominion Energy System Operations as to the impact on reliably operating the system without the facility.

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<sup>8</sup> See n. 6.

Additional factors to be evaluated under system impact may include but not be limited to:

1. Market efficiency;
2. Stage 1A [Auction Revenue Rights] sufficiency;
3. Public policy; and
4. [SERC Reliability Corporation] reliability criteria.

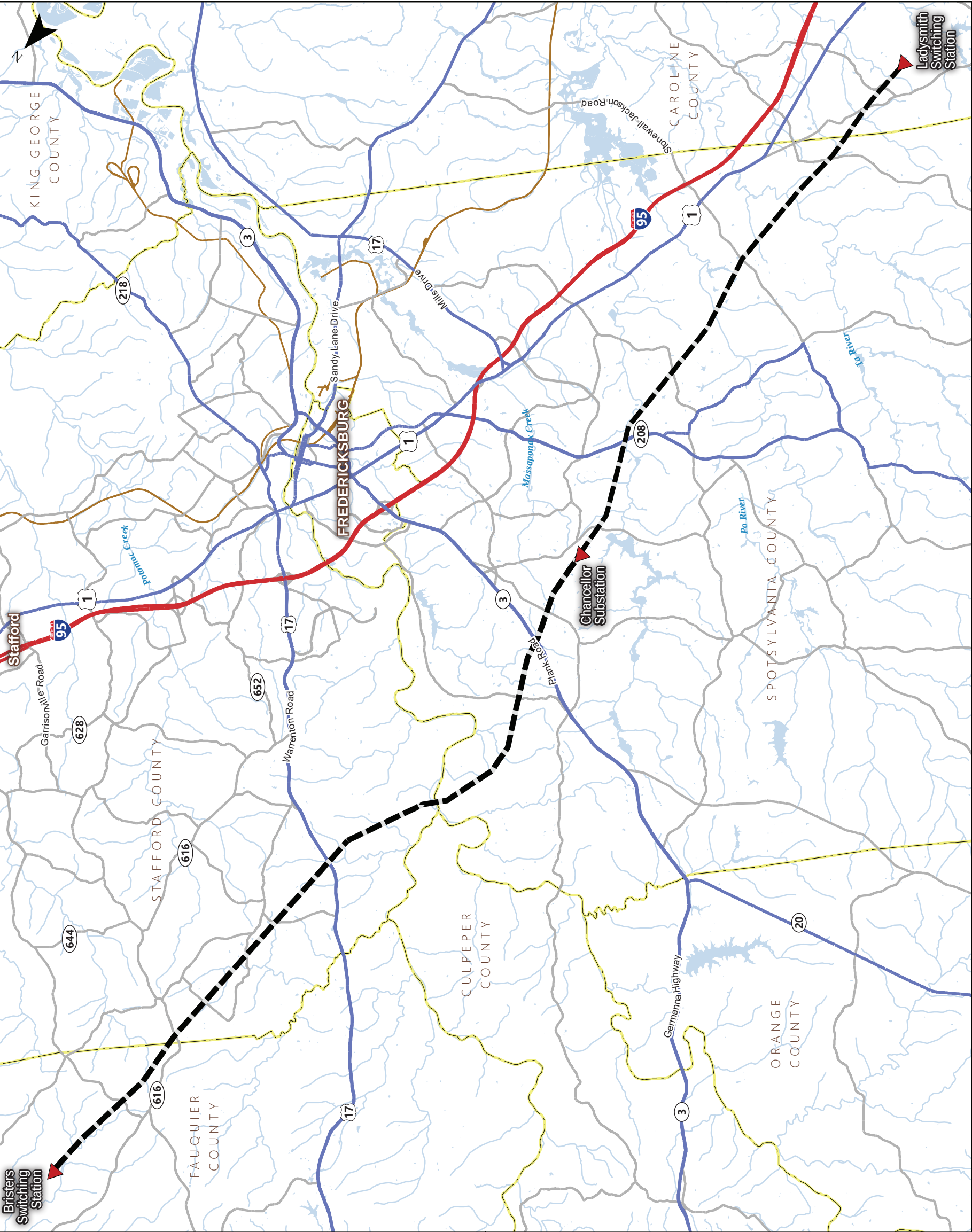
Failure of any of these reliability tests, along with the end-of-life assessment discussed herein, will indicate a violation of the End-of-Life Criteria and necessitate replacement as mandated earlier in this document.

PJM presented at its June 2018 TEAC Meeting that, if Lines #552 and #581 were removed from service and not replaced with rebuilt 500 kV lines, it would negatively impact the ability of multiple generation queue projects to be deliverable. Projects entering the PJM generation queue are studied with all existing and approved PJM RTEP Projects in-service. Multiple PJM generation queue projects are dependent on Line #552 and Line #581 being in-service and/or rebuilt to a higher capacity. Several of these projects have received a CPCN from the Commission.

In determining the reliability impacts associated with the Rebuild Project, the Company relied on an Operational Performance test. Existing Lines #552 and #581 are integrated components of the Company's 500 kV network. These two lines are located either at or near the Company's Ladysmith Switching Station. Located on the 230 kV network emanating from the Ladysmith Switching Station is the Company's Ladysmith Power Station and a third party-owned LS Power generating facility at the Company's Four Rivers 230 kV and 115 kV Substations. The configuration of the transmission system in this area with the large amount of generation located on the 230 kV system has resulted in system stability issues over the years. The ability of a generating unit to maintain synchronism with the transmission system and support the transmission system under fault conditions, while not damaging the generating units themselves, is very important in system operations. A recent generation addition at Four Rivers 230 kV Substation (AA1-145) was reduced in size (*i.e.*, MW output) to allow it to meet system stability criteria requirements. PJM baseline project b3027 (Ladysmith 2<sup>nd</sup> 500-230 kV Transformer and Line #2089 Uprate) was required because routine stability assessments indicated that the existing generating units in this area could no longer meet stability requirements due to changing system conditions. The close electrical proximity of Line #552 and Line #581 to this generation provides important reliability benefits to the Company's transmission network. Without the proposed Rebuild Project, reliable transmission service may be compromised.

In summary, the proposed Rebuild Project will replace aging infrastructure that is at the end of its service life in order to comply with the Company's mandatory

Planning Criteria, thereby enabling the Company to maintain the overall long-term reliability of its transmission system and to maintain the overall generating capabilities of the system.



Attachment I.A.1

**Project Overview Map**

Bristers to Ladysmith 500 kV Rebuild

Fauquier  
Counties, Virginia

Client:  
Dominion Energy Virginia

C2 Env Project: 0073/0074    Prepared By: MKB    Date: 04/22/20

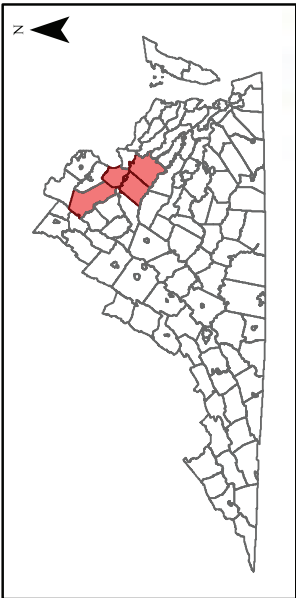


**SITE DATA**

- Existing Substations/Switching Stations
- Existing Centerline
- County Boundary
- Limited Access Highway
- US and VA Primary Highways
- Local and Main Roads
- NHD Flowline
- NHD Waterbody

Notes:

1. Basemap Source: USGS The National Map/Oceans Map
2. Virginia Department of Transportation Road Centerline Data

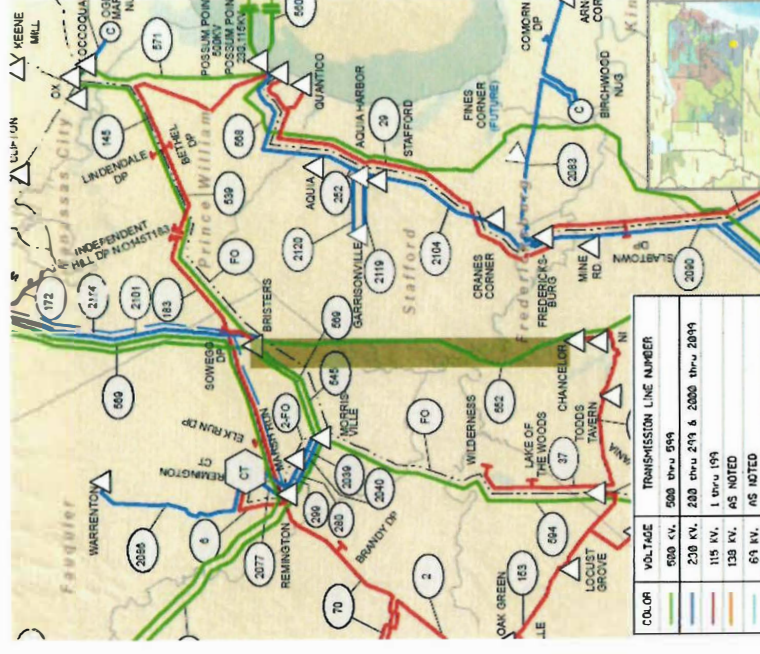






# Dominion End of Life Criteria

# Dominion Transmission Zone: Baseline Line #552 Bristers to Chancellor 500 kV line Rebuild



## Baseline Reliability: TO Criteria Violation

### Problem Statement: Dominion "End of Life Criteria" (Immediate Need)

- Reliability assessments continue to demonstrate that the removal of Line #552 from service adversely impacts system reliability
  - Generation Interconnection Studies have identified this facility as a reliability deficiency
  - Previous generation additions in this area have been reduced in size due to system stability issues. Removal of Bristers-Chancellor 500 kV Line would only increase damping issues for existing generation in this area

Continued on next slide...

# Dominion Transmission Zone: Baseline Line #552 Bristers to Chancellor 500 kV line Rebuild

Continued from previous slide...

## Recommended Solution:

- Rebuild the Bristers to Chancellor 500 kV line – 21.6 miles long (b3019)
- Conductor ampacity will increase from 3364 amps to 5000 amps
- Use standard single circuit 500 kV Tower Design

## Alternatives:

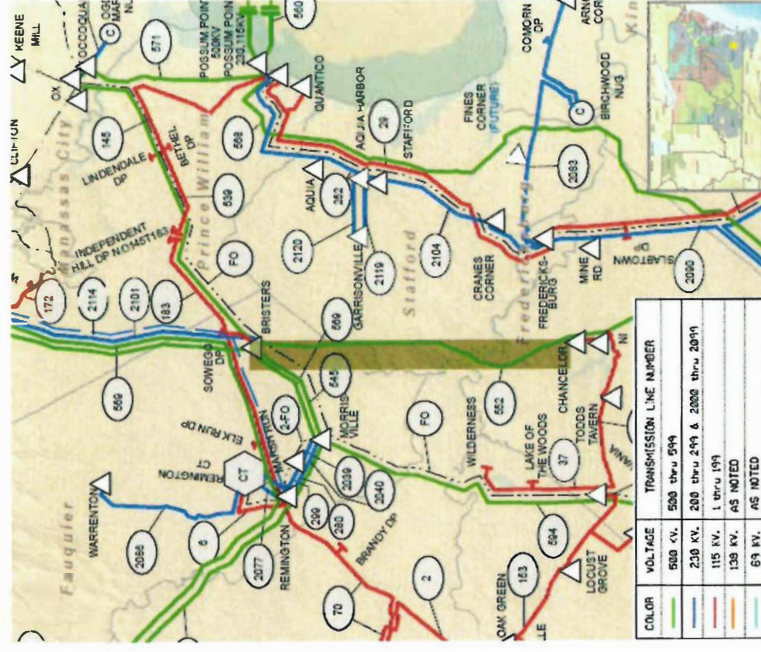
- No feasible alternatives

Estimated Project Cost: \$64.65 M

Required IS Date: Immediate

Projected IS Date: December 2023

Project Status: Conceptual







## Dominion Transmission Zone: Baseline

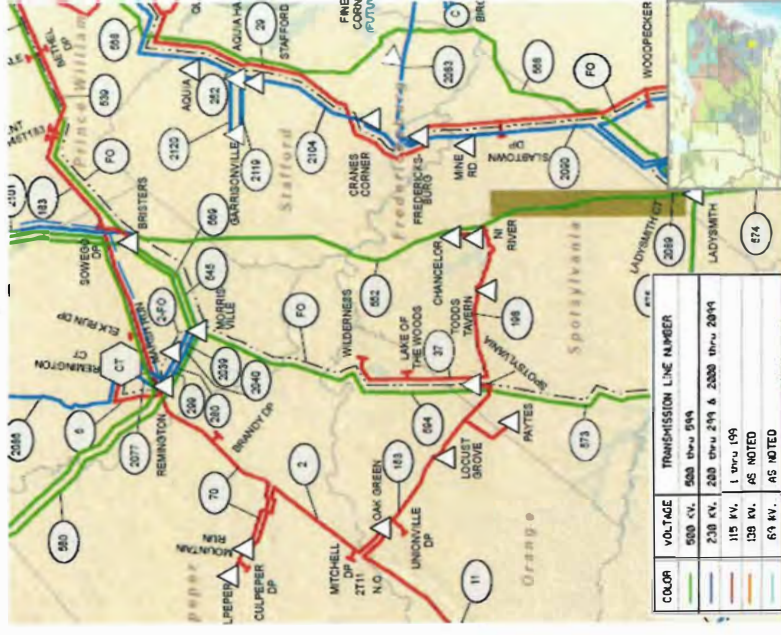
### Line #581 Ladysmith to Chancellor 500 kV line Rebuild

#### Baseline Reliability: TO Criteria Violation

##### Problem Statement: Dominion "End of Life Criteria" (Immediate Need)

- Reliability assessments continue to demonstrate that the removal of Line #581 from service adversely impacts system reliability
  - Generation Interconnection Studies have identified this facility as a reliability deficiency
  - Previous generation additions in this area have been reduced in size due to system stability issues. Removal of Ladysmith-Chancellor 500 kV Line would only increase damping issues for existing generation in this area

Continued on next slide...



# Dominion Transmission Zone: Baseline Line #581 Ladysmith to Chancellor 500 kV line Rebuild

Continued from previous slide...

## Recommended Solution:

- Rebuild the Ladysmith to Chancellor 500 kV line – 15.2 miles long (b3021)
- Conductor ampacity will increase from 3364 amps to 5000 amps
- Use standard single circuit 500 kV Tower Design

## Alternatives:

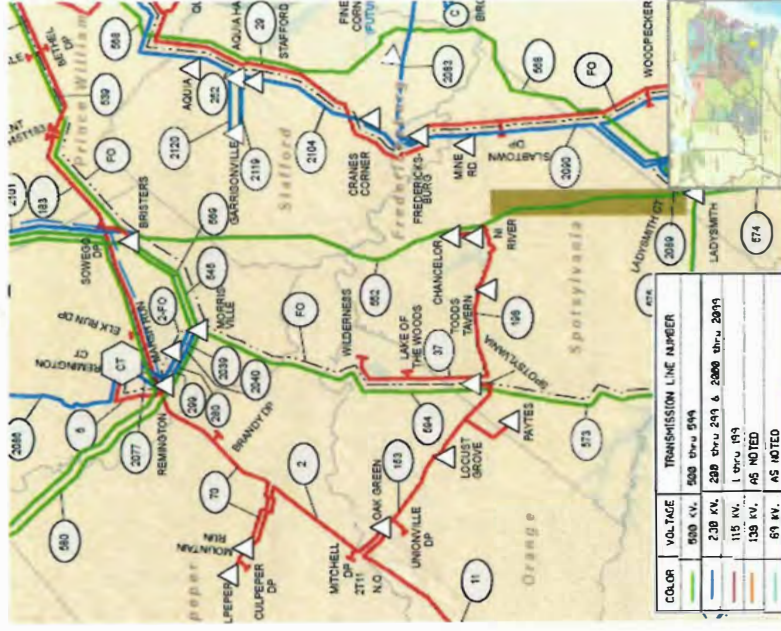
- No feasible alternatives

Estimated Project Cost: \$45.6 M

Required IS Date: Immediate

Projected IS Date: December 2023

Project Status: Conceptual



## **I. NECESSITY FOR THE PROPOSED PROJECT**

- B. [1] Detail the engineering justifications for the proposed project (for example, provide narrative to support whether the proposed project is necessary to upgrade or replace an existing facility, to significantly increase system reliability, to connect a new generating station to the Applicant's system, etc.). [2] Describe any known future project(s), including but not limited to generation, transmission, delivery point or retail customer projects, that require the proposed project to be constructed. [3] Verify that the planning studies used to justify the need for the proposed project considered all other generation and transmission facilities impacting the affected load area, including generation and transmission facilities that have not yet been placed into service. [4] Provide a list of those facilities that are not yet in service.**

Response: [1] For a detailed description of the engineering justification of the proposed Rebuild Project, see Section I.A.

[2] Based on PJM's RTEP process, the following known future generation projects require the proposed Rebuild Project to be constructed, including but not limited to:

AC1-107 Chickahominy 500 kV 1600 MW

AC1-158 Spotsylvania 500 kV 500 MW

AC1-161 Septa 500 kV 240 MW

AC1-164 Chickahominy 230 kV 320 MW

AC1-208 Halifax – South Branch 115 kV 80 MW

AC2-141 Septa 500 kV 240 MW

AD1-025 Colonial Trail 230 kV 120 MW

[3] Not applicable.

[4] Other generation and transmission facilities that were included in the planning studies but not yet placed into service include those identified in response to Section I.B[2] above.

## **I. NECESSITY FOR THE PROPOSED PROJECT**

- C. Describe the present system and detail how the proposed project will effectively satisfy present and projected future electrical load demand requirements. Provide pertinent load growth data (at least five years of historical summer and winter peak demands and ten years of projected summer and winter peak loads where applicable). Provide all assumptions inherent within the projected data and describe why the existing system cannot adequately serve the needs of the Applicant (if that is the case). Indicate the date by which the existing system is projected to be inadequate.**

Response: Attachment I.G.1 shows the portion of the Company's transmission system in the area of the proposed Rebuild Project. The existing Lines #552 and #581 are part of the Company's 500 kV system, which supports the transfer of bulk power from generating resources to major load centers.

As discussed in Section I.A, the existing Lines #552 and #581 are located near generating facilities owned by the Company and a third party. Specifically, the Company's Ladysmith Power Station is located in close electrical proximity to the Ladysmith Switching Station. In addition, LS Power's Four Rivers Station is located in close electrical proximity to the Ladysmith Switching Station. In total, over 1,500 MW of generation is located near or in close proximity to the proposed Rebuild Project.

The tables in Attachment I.C.1 provide 10 years of historical summer and winter loads for the Dominion Energy Virginia system and 10 years of projected summer and winter peak loads for the Dominion Energy Virginia system.

The existing Lines #552 and #581 cannot continue to adequately serve the needs of the Company and its customers because of the aging infrastructure, as discussed in Section I.A. The Company has created a plan to address its end-of-life facilities, setting target completion dates for end-of-life projects based on the condition of the facilities, the Company's resources, and the need to schedule outages. The desired in-service date for completion of both segments of the proposed Rebuild Project—December 31, 2023—reflects the need confirmed by the 2013 Quanta Report balanced against the timeline for permitting, construction, and obtaining necessary outages.

Completing the proposed Rebuild Project will support Dominion Energy Virginia's continued reliable electric service to retail and wholesale customers and will support the future overall growth and system generation capability in the area, as discussed in Section I.A.

## ATTACHMENT I.C.1

### Historical Loads (MW)

|                        | 2010      | 2011       | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      | 2018       | 2019       |
|------------------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| Dominion Zone - Summer | 19,140    | 20,061     | 19,249    | 18,763    | 18,692    | 18,980    | 19,538    | 18,902    | 18,924     | 19,607     |
| Growth (%)             | (5.53%)   | 4.81%      | (4.05)%   | (2.52%)   | (0.38%)   | 1.54%     | 2.94%     | (3.25%)   | 0.1%       | 3.6%       |
| Date                   | 7/24/2010 | 7/22/2011  | 6/29/2012 | 7/18/2013 | 7/02/2014 | 6/23/2015 | 7/25/2016 | 7/14/2017 | 08/29/2018 | 07/20/2019 |
| Dominion Zone - Winter | 17,612    | 17,689     | 16,881    | 17,623    | 19,785    | 21,651    | 18,948    | 19,661    | 21,232     | 19,930     |
| Growth (%)             | (1.63%)   | 0.4%       | (4.56%)   | 4.39%     | 12.27%    | 9.43%     | (12.48)%  | 3.76%     | 8.0%       | (6.1%)     |
| Date                   | 1/11/2010 | 12/15/2011 | 1/4/2012  | 1/23/2013 | 1/30/2014 | 2/20/2015 | 1/19/2016 | 1/9/2017  | 1/7/2018   | 1/31/2019  |

### Projected Loads (MW)\*

|                        | 2020   | 2021   | 2022   | 2023   | 2024   | 2025   | 2026   | 2027   | 2028   | 2029   |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Dominion Zone - Summer | 19,813 | 20,126 | 20,500 | 20,815 | 21,185 | 21,397 | 21,569 | 21,747 | 21,955 | 22,141 |
| Growth (%)             | --     | 1.6%   | 1.9%   | 1.5%   | 1.8%   | 1.0%   | 0.8%   | 0.8%   | 1.0%   | 0.8%   |
| Dominion Zone - Winter | 20,382 | 20,758 | 21,170 | 21,589 | 22,012 | 22,422 | 22,682 | 22,901 | 23,125 | 23,328 |
| Growth (%)             | --     | 1.8%   | 20.0%  | 2.0%   | 2.0%   | 1.9%   | 1.2%   | 1.0%   | 1.0%   | 0.9%   |

\* PJM 2020 Load Forecast (includes losses)



**I. NECESSITY FOR THE PROPOSED PROJECT**

- D. If power flow modeling indicates that the existing system is, or will at some future time be, inadequate under certain contingency situations, provide a list of all these contingencies and the associated violations. Describe the critical contingencies including the affected elements and the year and season when the violation(s) is first noted in the planning studies. Provide the applicable computer screenshots of single-line diagrams from power flow simulations depicting the circuits and substations experiencing thermal overloads and voltage violations during the critical contingencies described above.**

Response: Not applicable.

## I. NECESSITY FOR THE PROPOSED PROJECT

### E. Describe the feasible project alternatives, if any, considered for meeting the identified need including any associated studies conducted by the Applicant or analysis provided to the RTO. Explain why each alternative was rejected.

Response: No feasible alternatives have been submitted to PJM since the driver of the Rebuild Project is the need to replace aging infrastructure at the end of its service life in compliance with the Company's mandatory Planning Criteria. See Section I.A. Alternatives that would require acquisitions of new right-of-way or new lines to be built were not considered. PJM did not require the Company to consider alternatives that would require new right-of-way to be built. See Attachment I.A.2.

Pursuant to the Commission's November 26, 2013, Order entered in Case No. PUE-2012-00029, and its November 1, 2018, Final Order entered in Case No. PUR-2018-00075 ("2018 Final Order"), the Company is required to provide analysis of demand-side resources ("DSM") incorporated into the Company's planning studies. DSM is the broad term that includes both energy efficiency ("EE") and demand response ("DR"). In this case, PJM and the Company have identified a need for the proposed Rebuild Project based on aging infrastructure that is at the end of its service life to maintain the overall long-term reliability of its transmission system and to maintain the overall generating capabilities of the system.<sup>9</sup> Notwithstanding, when performing an analysis based on PJM's 50/50 load forecast, there is no adjustment in load for DR programs that are bid into the PJM reliability pricing model ("RPM") auction because PJM only dispatches DR when the system is under stress (*i.e.*, a system emergency). Accordingly, while existing DSM is considered to the extent the load forecast accounts for it, DR that has been bid into PJM's RPM market is not a factor in this particular Application because of the identified need for the Rebuild Project. Based on these considerations, the evaluation of the Rebuild Project demonstrated that despite accounting for DSM consistent with PJM's methods, the Rebuild Project is necessary. As noted in the 2018 Final Order, pursuant to the Grid Transformation and Modernization Act of 2018, the Company must propose \$870 million of EE programs by 2028. On May 2, 2019, in Case No. PUR-2018-00168, the Commission approved a package of 11 new EE and DR programs ("Phase VII") to run for a five-year period beginning July 1, 2019. On December 3, 2019, the Company proposed "Phase VIII" of its DSM programs, accounting for approximately \$186 million of proposed spending on energy efficiency programs. This case is currently pending before the Commission in Case No. PUR-2019-00201. In total, the Company has proposed approximately \$344 million for the design, implementation, and operation of energy efficiency programs since July 1, 2018. These programs have not been accounted for in PJM's load forecast,

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<sup>9</sup> While the PJM load forecast does not directly incorporate DR, its load forecast incorporates variables derived from Itron that reflect EE by modeling the stock of end-use equipment and its usages. Further, because PJM's load forecast considers the historical non-coincident peak ("NCP") for each load serving entity ("LSE") within PJM, it reflects the actual load reductions achieved by DSM programs to the extent an LSE has used DSM to reduce its NCPs.

and thus, were not part of the Company's planning studies.

## **I. NECESSITY FOR THE PROPOSED PROJECT**

### **F. Describe any lines or facilities that will be removed, replaced, or taken out of service upon completion of the proposed project, including the number of circuits and normal and emergency ratings of the facilities.**

Response: The proposed Rebuild Project includes the following:

#### Line #552 Segment

The proposed Line #552 Segment of the Rebuild Project includes the removal of 108 single circuit 500 kV weathering steel lattice towers supporting existing Line #552, which will be replaced with 108 single circuit 500 kV galvanized steel lattice towers. The proposed structures will be dulled.

The existing Line #552 3-phase twin-bundled 2500 ACAR and 2049.5 AAAC conductors will be replaced with 3-phase triple-bundled 1351.5 ACSR conductors. The existing Line #552 3-phase twin-bundled 2500 ACAR and 2049.5 AAAC conductor have a normal/emergency transfer capability of 3426 and 2913 MVA, respectively. The two 7#7 alumoweld shield wires will be replaced with two fiber optic shield wires. The proposed conductor and shield wire will be non-specular (de-glared).

#### Line #581 Segment

The proposed Line #581 Segment of the Rebuild Project includes the removal of 66 single circuit 500 kV weathering steel lattice towers supporting existing Line #581 and 6 double circuit 500/115 kV galvanized steel lattice towers (Structures #581/2 - #581/7) supporting existing Line #581 and #198, which will be replaced with 66 single circuit 500 kV galvanized steel lattice towers, 4 double circuit 500/115 kV galvanized steel lattice towers, and 2 double circuit 500/115 kV galvanized steel 3-pole structures. The proposed structures will be dulled.

The existing Line #581 3-phase twin-bundled 2049.5 AAAC conductor will be replaced with 3-phase triple-bundled 1351.5 ACSR conductor. The existing Line #198 3-phase single 795 ACSR conductor will be replaced with 3-phase single 795 ACSR conductor. The existing Line #581 3-phase twin-bundled 2049.5 AAAC and Line #198 3-phase single 795 ACSR conductor has a normal/emergency transfer capability of 2913 MVA and 306 MVA, respectively. The two 7#7 alumoweld shield wires will be replaced with two fiber optic shield wires. The proposed conductor and shield wire will be non-specular (de-glared).

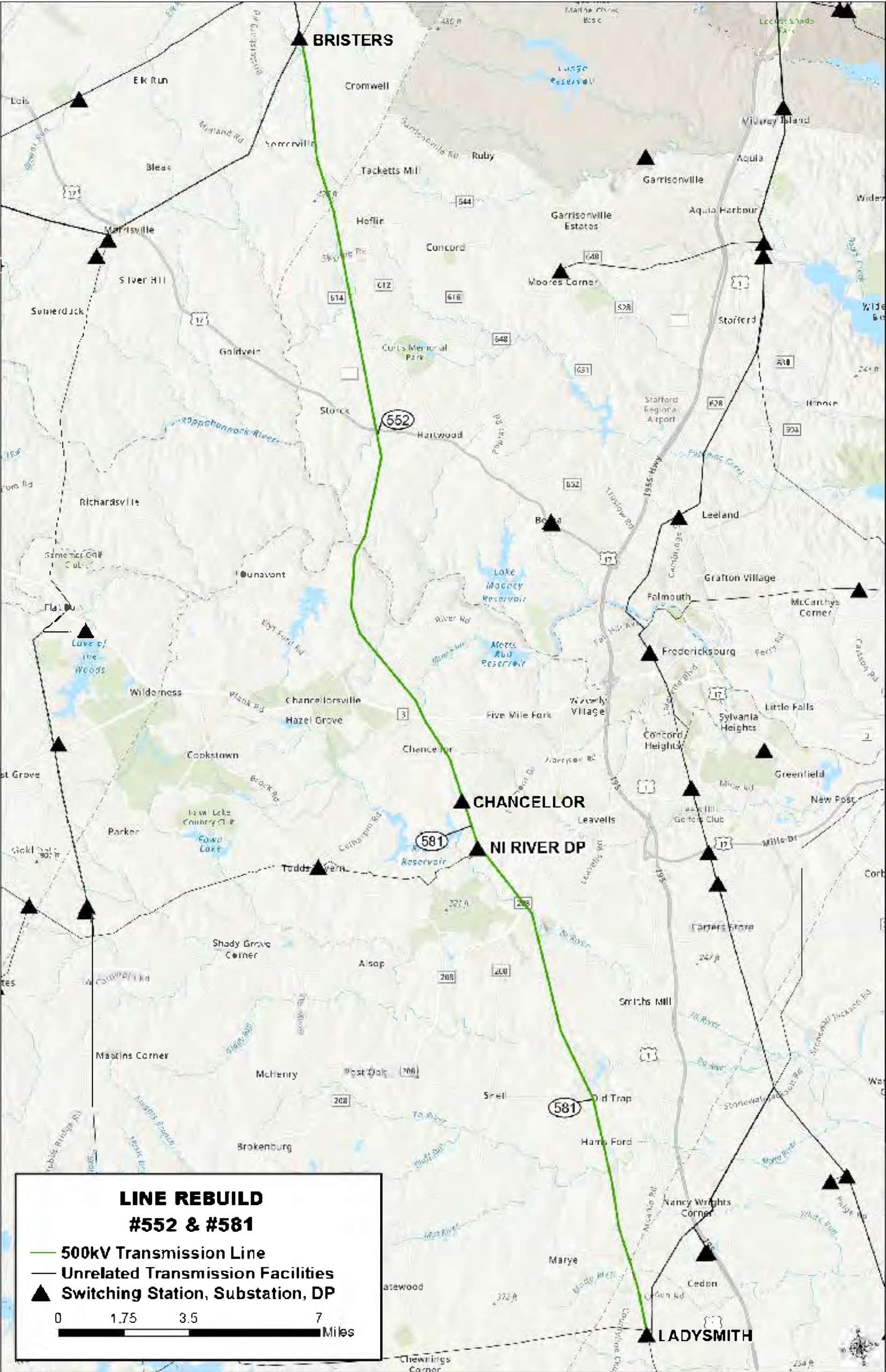
See Section III.K.

**I. NECESSITY FOR THE PROPOSED PROJECT**

- G. Provide a system map, in color and of suitable scale, showing the location and voltage of the Applicant's transmission lines, substations, generating facilities, etc., that would affect or be affected by the new transmission line and are relevant to the necessity for the proposed line. Clearly label on this map all points referenced in the necessity statement.**

Response: See Attachment I.G.1.





**I. NECESSITY FOR THE PROPOSED PROJECT**

**H. Provide the desired in-service date of the proposed project and the estimated construction time.**

Response: The desired in-service target date for the Rebuild Project is December 31, 2023, with completion of the Line #552 Segment by December 31, 2022, and completion of the Line #581 Segment by December 31, 2023. The Company estimates that it will take approximately 34 months for detailed engineering, materials procurement, permitting, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by March 1, 2021. Should the Commission issue a final order by March 1, 2021, the Company estimates that construction should begin by May 3, 2021, and be completed by December 31, 2023.

## **I. NECESSITY FOR THE PROPOSED PROJECT**

- I. Provide the estimated total cost of the project as well as total transmission-related costs and total substation-related costs. Provide the total estimated cost for each feasible alternative considered. Identify and describe the cost classification (e.g. “conceptual cost,” “detailed cost,” etc.) for each cost provided.**

Response: The estimated conceptual cost of the proposed Rebuild Project is approximately \$107.8 million, which includes approximately \$98.6 million for transmission-related work and approximately \$9.2 million for substation-related work (2020 dollars).

The transmission-related work includes the following approximate costs by segment:

Line #552 Segment – \$57.5 million

Line #581 Segment – \$41.1 million

The substation-related work includes the following approximate costs by segment:

Line #552 Segment – \$4.6 million

Line #581 Segment – \$4.6 million



**I. NECESSITY FOR THE PROPOSED PROJECT**

- J. If the proposed project has been approved by the RTO, provide the line number, regional transmission expansion plan number, cost responsibility assignments, and cost allocation methodology. State whether the proposed project is considered to be a baseline or supplemental project.**

Response: The proposed Rebuild Project was approved by the PJM Board at its July 2018 meeting as baseline projects #b3019 (Line #552 Segment) and #b3021 (Line #581 Segment).

The Rebuild Project is presently allocated 100% to the Dom Zone. On August 3, 2018, however, the U.S. Court of Appeals for the District of Columbia held that FERC's approval of PJM's cost allocation method as applied to two other 500 kV rebuild projects, which are similar to the proposed Rebuild Project, was arbitrary and capricious. Specifically, the decision set aside the two FERC orders that approved PJM's cost allocation method and remanded them to FERC for further proceedings. Since PJM's current cost allocation for the proposed Rebuild Project was based on this now set aside allocation method, the Company would expect that the cost allocation for the proposed Rebuild Project likely will change.

**I. NECESSITY FOR THE PROPOSED PROJECT**

- K. If the need for the proposed project is due in part to reliability issues and the proposed project is a rebuild of an existing transmission line(s), provide five years of outage history for the line(s), including for each outage the cause, duration and number of customers affected. Include a summary of the average annual number and duration of outages. Provide the average annual number and duration of outages on all Applicant circuits of the same voltage, as well as the total number of such circuits. In addition to outage history, provide five years of maintenance history on the line(s) to be rebuilt including a description of the work performed as well as the cost to complete the maintenance. Describe any system work already undertaken to address this outage history.**

Response: The need for the proposed Rebuild Project is not driven by outage history, but rather by the need to replace transmission infrastructure nearing its end of life. See Section I.A.

**I. NECESSITY FOR THE PROPOSED PROJECT**

- L. If the need for the proposed project is due in part to deterioration of structures and associated equipment, provide representative photographs and inspection records detailing their condition.**

Response: See Attachment I.L.1 for pictures of the deterioration of structures on Lines #552 and #581. The 2013 Quanta Report, discussed in Section I.A of this Appendix, details the condition of these deteriorating structures.



552/223





552/228











552/230



552/231











552/232











552/233









552/235





















581/22







581/31









581/42



**I. NECESSITY FOR THE PROPOSED PROJECT**

**M. In addition to the other information required by these guidelines, applications for approval to construct facilities and transmission lines interconnecting a Non-Utility Generator (“NUG”) and a utility shall include the following information:**

- 1. The full name of the NUG as it appears in its contract with the utility and the dates of initial contract and any amendments;**
- 2. A description of the arrangements for financing the facilities, including information on the allocation of costs between the utility and the NUG;**
- 3. a. For Qualifying Facilities (“QFs”) certificated by Federal Energy Regulatory Commission (“FERC”) order, provide the QF or docket number, the dates of all certification or recertification orders, and the citation to FERC Reports, if available;**  
**b. For self-certificated QFs, provide a copy of the notice filed with FERC;**
- 4. Provide the project number and project name used by FERC in licensing hydroelectric projects; also provide the dates of all orders and citations to FERC Reports, if available; and**
- 5. If the name provided in 1 above differs from the name provided in 3 above, give a full explanation.**

Response: Not applicable.



**I. NECESSITY FOR THE PROPOSED PROJECT**

- N. Describe the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations and other ground facilities associated with the proposed project.**

Response: Not applicable.



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **A. Right-of-way (“ROW”)**

#### **1. Provide the length of the proposed corridor and viable alternatives.**

Response: The total length of the existing transmission corridor containing the Rebuild Project is approximately 36.7 miles from the Bristers Switching Station (Structure #552/132) to the Ladysmith Switching Station (Structure #581/74). The right-of-way is located within Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia.

- Line #552 Segment: approximately 21.5 miles from the Company’s existing Bristers Switching Station to its existing Chancellor Substation.
- Line #581 Segment: approximately 15.2 miles, which is inclusive of the 1.2-mile section of 115 kV Line #198 being rebuilt as part of this Segment, from the Company’s existing Chancellor Substation to its existing Ladysmith Switching Station.

The Rebuild Project will be constructed entirely within existing transmission line right-of-way or on Company-owned property, with no additional right-of-way required. Because alternatives to the Rebuild Project that would require acquisitions of new rights-of-way were not considered, no alternative routes are proposed. See Section II.A.9 for an explanation of the Company’s route selection.



## II. DESCRIPTION OF THE PROPOSED PROJECT

### A. Right-of-way (“ROW”)

2. **Provide color maps of suitable scale (including both general location mapping and more detailed GIS-based constraints mapping) showing the route of the proposed line and its relation to: the facilities of other public utilities that could influence the route selection, highways, streets, parks and recreational areas, scenic and historic areas, open space and conservation easements, schools, convalescent centers, churches, hospitals, burial grounds/cemeteries, airports and other notable structures close to the proposed project. Indicate the existing linear utility facilities that the line is proposed to parallel, such as electric transmission lines, natural gas transmission lines, pipelines, highways, and railroads. Indicate any existing transmission ROW sections that are to be quitclaimed or otherwise relinquished. Additionally, identify the manner in which the Applicant will make available to interested persons, including state and local governmental entities, the digital GIS shape file for the route of the proposed line.**

Response: See Attachment II.A.2. The existing transmission line right-of-way co-locates the Rebuild Project at various points along the corridor with parallel gas pipelines and electric transmission lines. No portion of the right-of-way is proposed to be quitclaimed or relinquished.

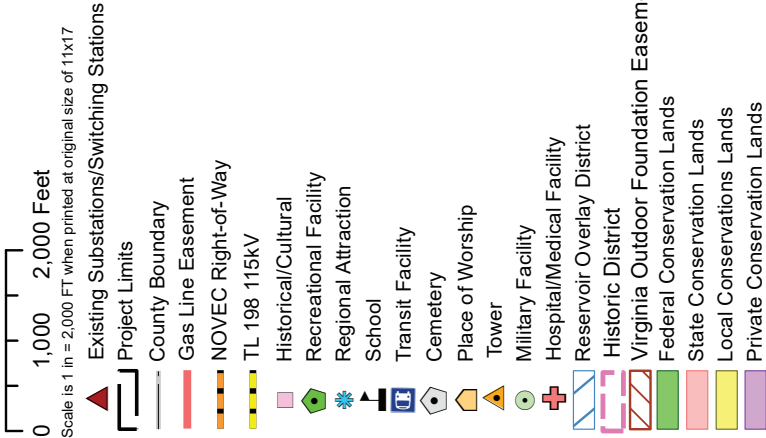
The Company will make the digital Geographic Information Systems (“GIS”) shape file available to interested persons upon request to counsel for the Company as listed in the Rebuild Project Application.



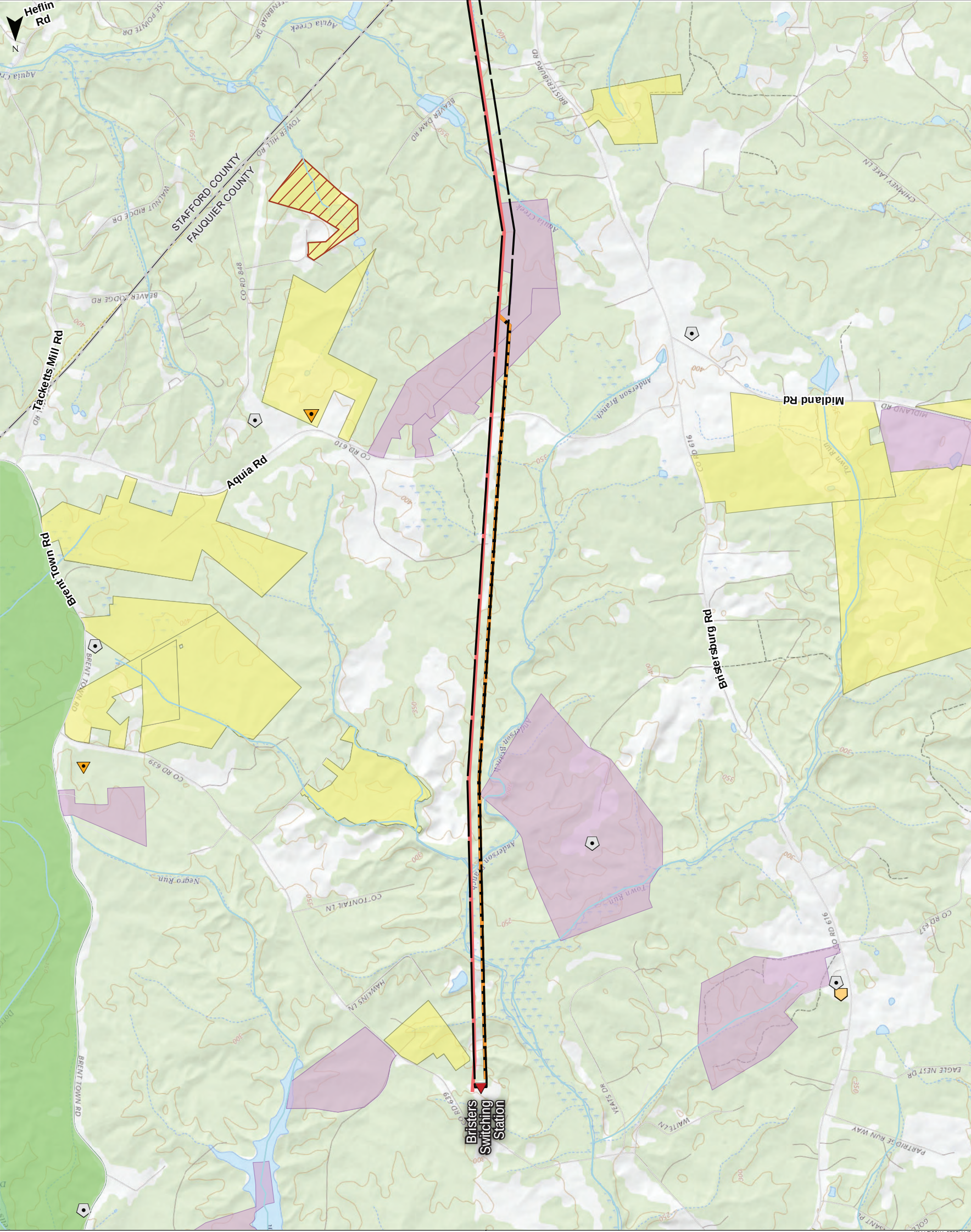
II.A.2. ENVIRONMENTAL CONSTRAINTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                                     |              |          |  |
|-------------------------------------|--------------|----------|--|
| Client:<br>Dominion Energy Virginia |              |          |  |
| C2 Env Project:                     | Prepared By: | Date:    |  |
| 0073                                | MKB          | 04/22/20 |  |



- Notes:
- 1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
  - 2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH (VCRIS) DCR
  - 3. Structure locations provided by Dominion Energy Virginia



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II.A.2. ENVIRONMENTAL CONSTRAINTS

Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

|                          |  |              |          |
|--------------------------|--|--------------|----------|
| Client:                  |  |              |          |
| Dominion Energy Virginia |  |              |          |
| C2 Env Project:          |  |              |          |
| 0073                     |  | Prepared By: | Date:    |
|                          |  | MKB          | 04/22/20 |



Existing Substations/Switching Stations

Project Limits

County Boundary

Gas Line Easement

NOVEC Right-of-Way

TL 198 115kV

Historical/Cultural

Recreational Facility

Regional Attraction

School

Transit Facility

Cemetery

Place of Worship

Tower

Military Facility

Hospital/Medical Facility

Reservoir Overlay District

Historic District

Virginia Outdoor Foundation Easement

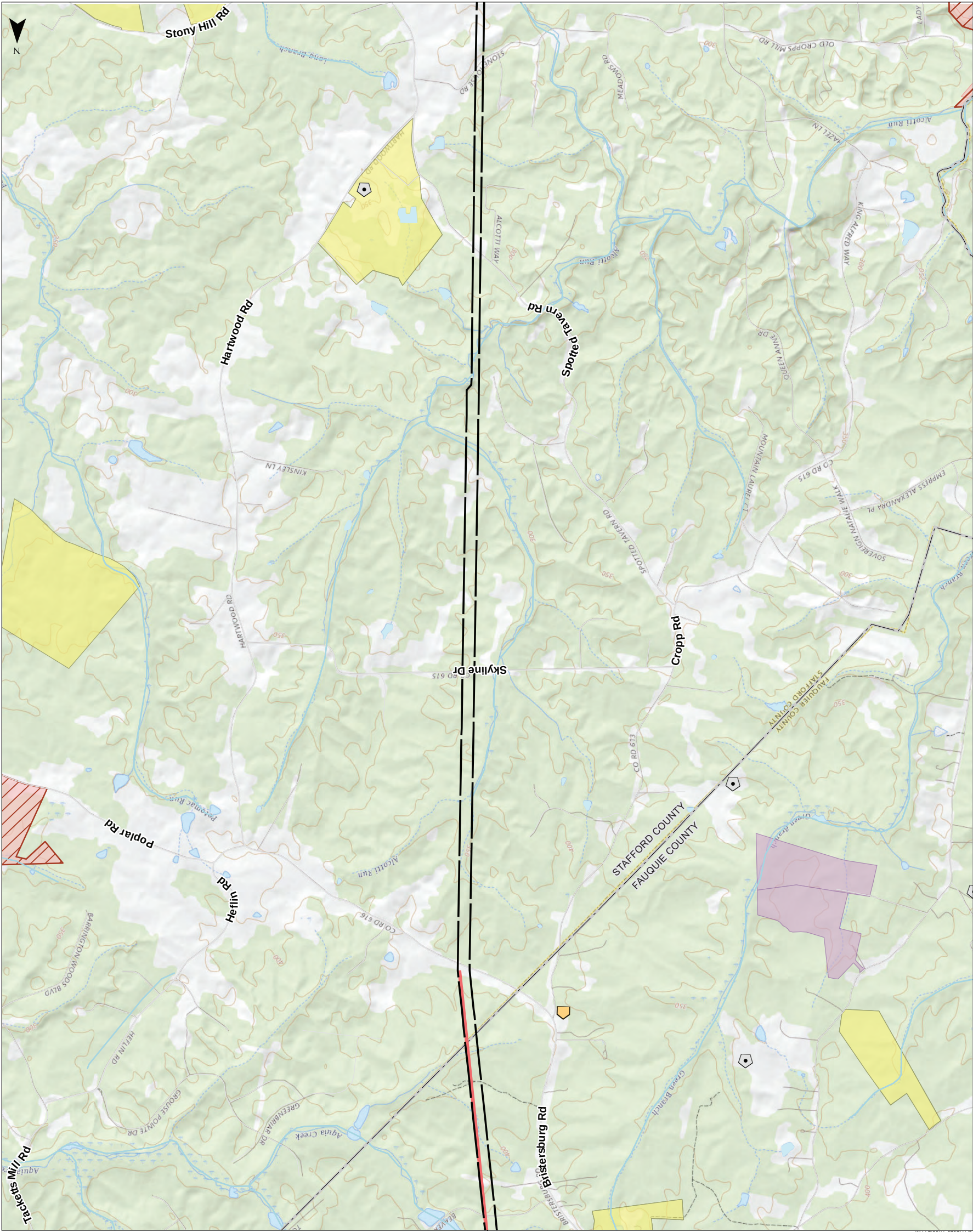
Federal Conservation Lands

State Conservation Lands

Local Conservation Lands

Private Conservation Lands

- Notes:
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
  2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDHR (VCRIS) DCR
  3. Structure locations provided by Dominion Energy Virginia



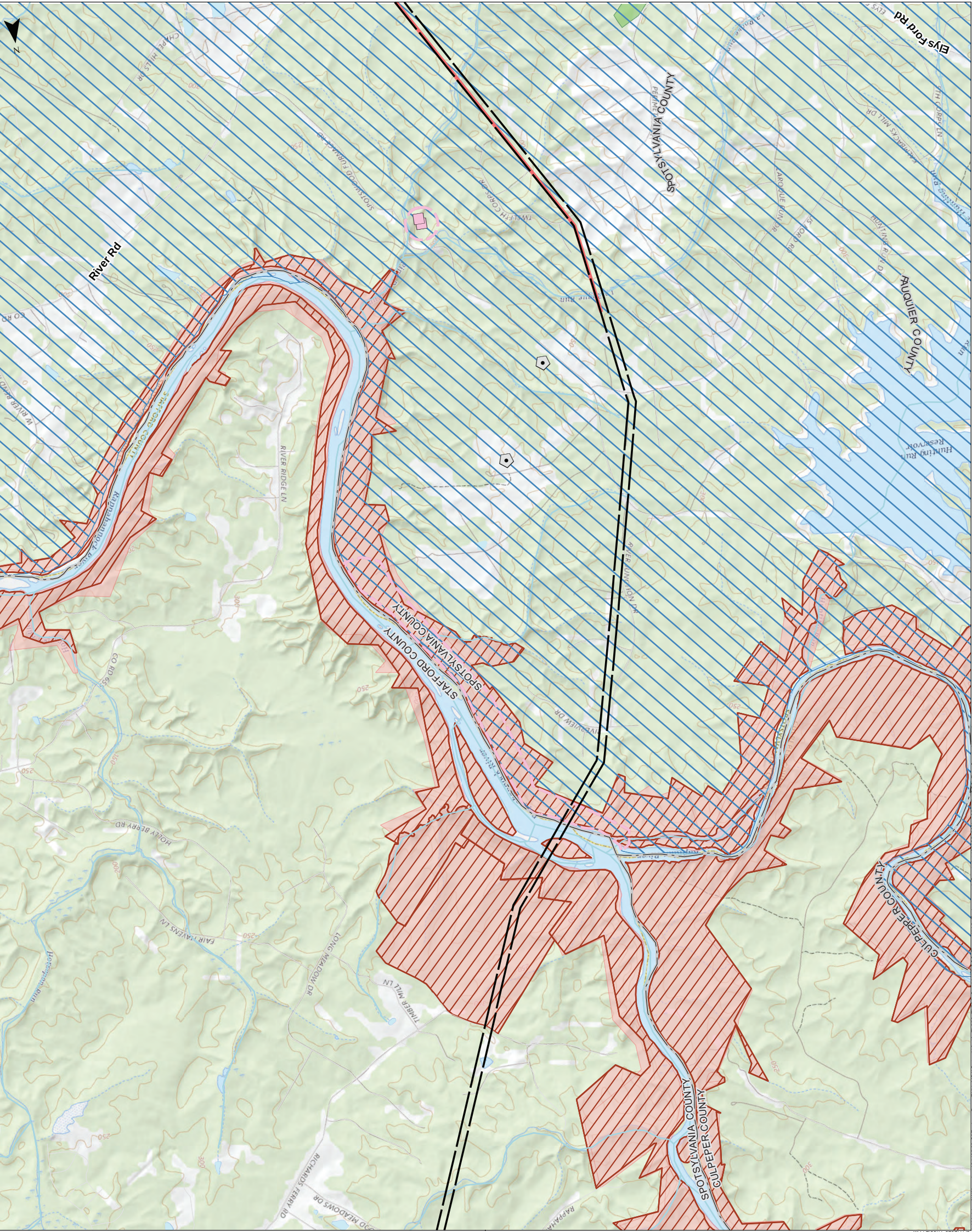
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II.A.2. ENVIRONMENTAL CONSTRAINTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                                     |              |          |  |
|-------------------------------------|--------------|----------|--|
| Client:<br>Dominion Energy Virginia |              |          |  |
| C2 Env Project:                     | Prepared By: | Date:    |  |
| 0073                                | MKB          | 04/22/20 |  |



Existing Substations/Switching Stations

Project Limits

County Boundary

Gas Line Easement

NOVEC Right-of-Way

TL 198 115kV

Historical/Cultural

Recreational Facility

Regional Attraction

School

Transit Facility

Cemetery

Place of Worship

Tower

Military Facility

Hospital/Medical Facility

Reservoir Overlay District

Historic District

Virginia Outdoor Foundation Easement

Federal Conservation Lands

State Conservation Lands

Local Conservation Lands

Private Conservation Lands

- Notes:
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
  2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH (VCRIS) DCR
  3. Structure locations provided by Dominion Energy Virginia

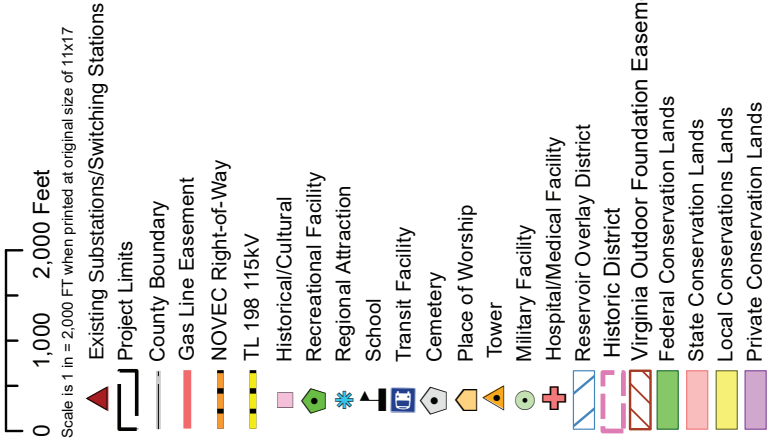




I.I.A.2. ENVIRONMENTAL CONSTRAINTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                                     |              |          |  |
|-------------------------------------|--------------|----------|--|
| Client:<br>Dominion Energy Virginia |              |          |  |
| C2 Env Project:                     | Prepared By: | Date:    |  |
| 0073                                | MKB          | 04/22/20 |  |

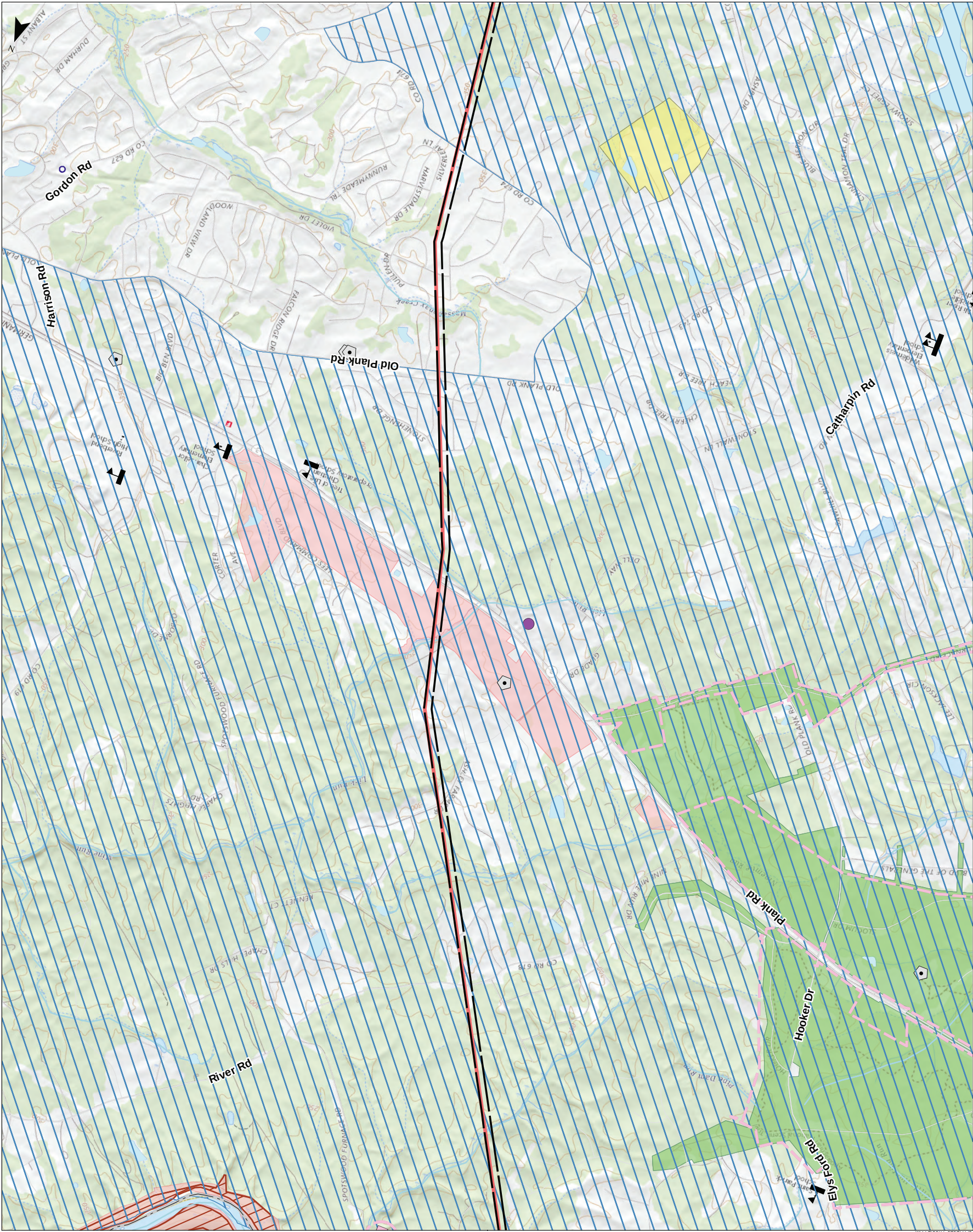


Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH (VCRIS) DCR

3. Structure locations provided by Dominion Energy Virginia



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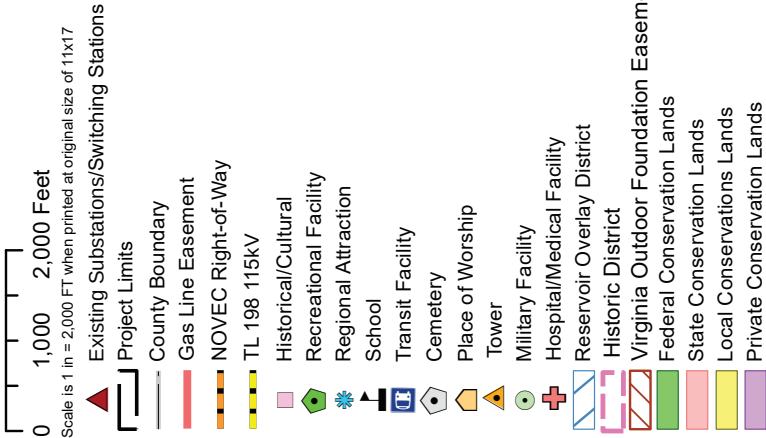
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II.A.2. ENVIRONMENTAL CONSTRAINTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                                     |              |          |  |
|-------------------------------------|--------------|----------|--|
| Client:<br>Dominion Energy Virginia |              |          |  |
| C2 Env Project:                     | Prepared By: | Date:    |  |
| 0073                                | MKB          | 04/22/20 |  |

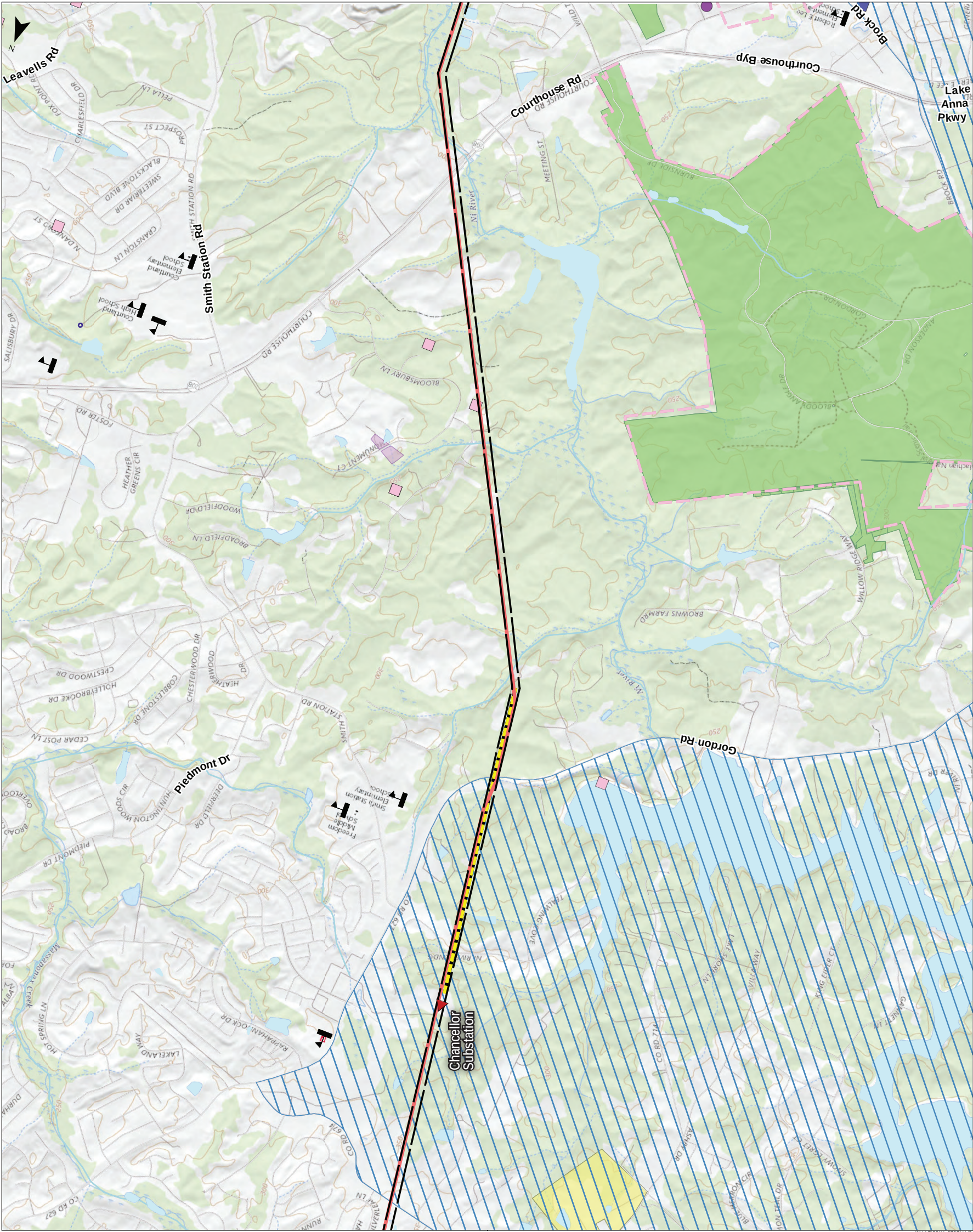


Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH (VCRIS) DCR

3. Structure locations provided by Dominion Energy Virginia



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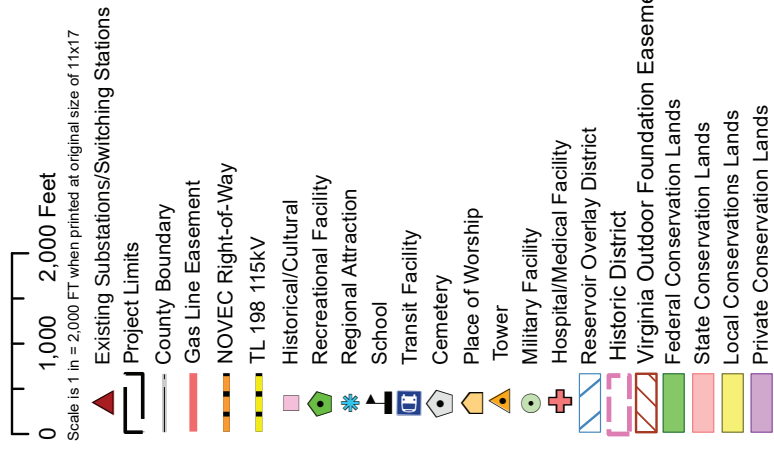


## II.A.2. ENVIRONMENTAL CONSTRAINTS

## Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

|                                  |                                    |
|----------------------------------|------------------------------------|
| Client: Dominion Energy Virginia |                                    |
| C2 Env Project: 0073             | Prepared By: MKB<br>Date: 04/22/20 |

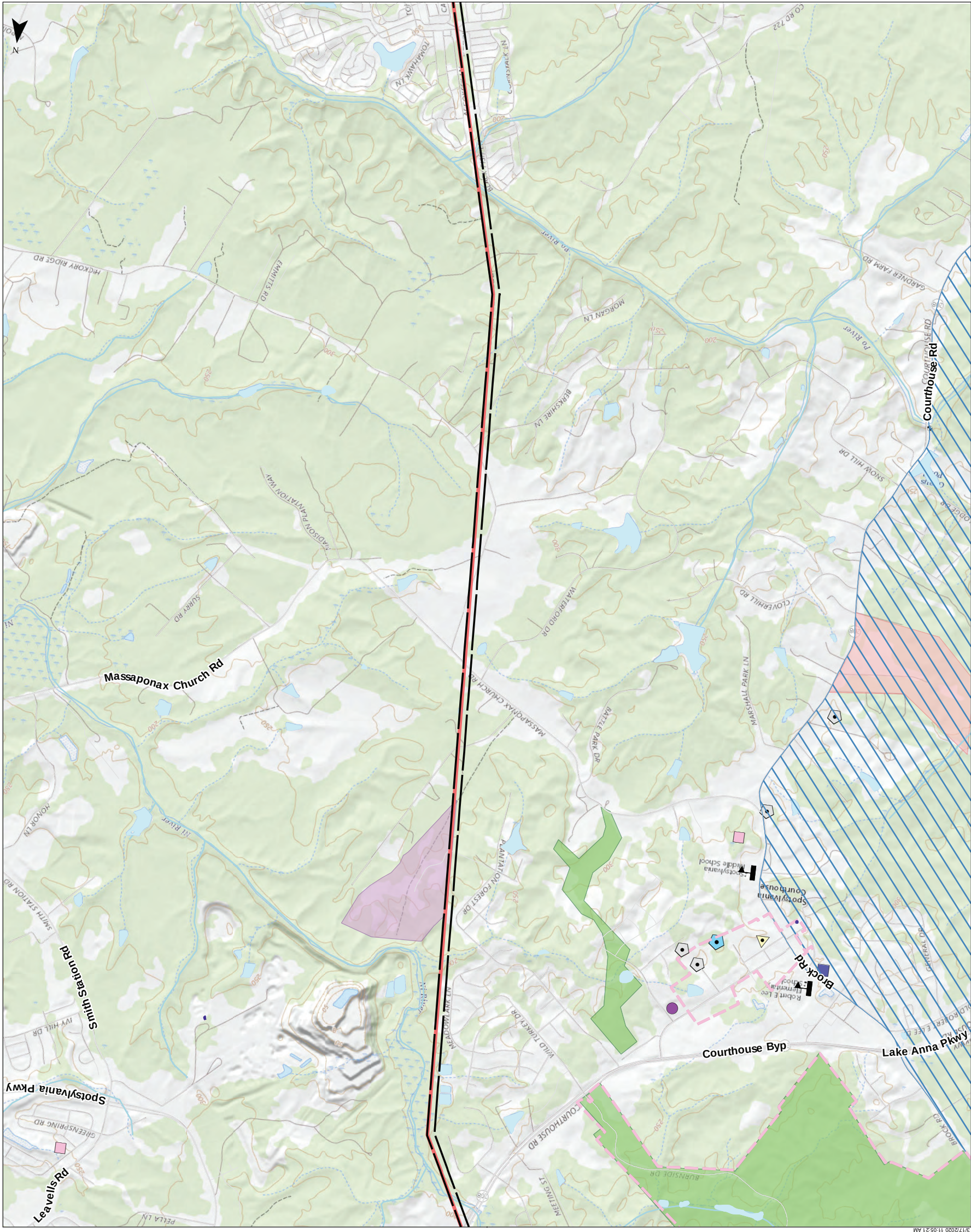


**Notes:**

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDIR (VCRIS), DCR
3. Structure locations provided by Dominion Energy Virginia



SHEET 7 OF 9





II.A.2. ENVIRONMENTAL CONSTRAINTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                                     |              |          |  |
|-------------------------------------|--------------|----------|--|
| Client:<br>Dominion Energy Virginia |              |          |  |
| C2 Env Project:                     | Prepared By: | Date:    |  |
| 0073                                | MKB          | 04/22/20 |  |

0

1,000

2,000 Feet

Scale is 1 in = 2,000 FT when printed at original size of 11x17

▲

Existing Substations/Switching Stations

▬

Project Limits

▬

County Boundary

▬

Gas Line Easement

▬

NOVEC Right-of-Way

▬

TL 198 115kV

■

Historical/Cultural

■

Recreational Facility

■

Regional Attraction

■

School

■

Transit Facility

■

Cemetery

■

Place of Worship

■

Tower

■

Military Facility

■

Hospital/Medical Facility

■

Reservoir Overlay District

■

Historic District

■

Virginia Outdoor Foundation Easement

■

Federal Conservation Lands

■

State Conservation Lands

■

Local Conservation Lands

■

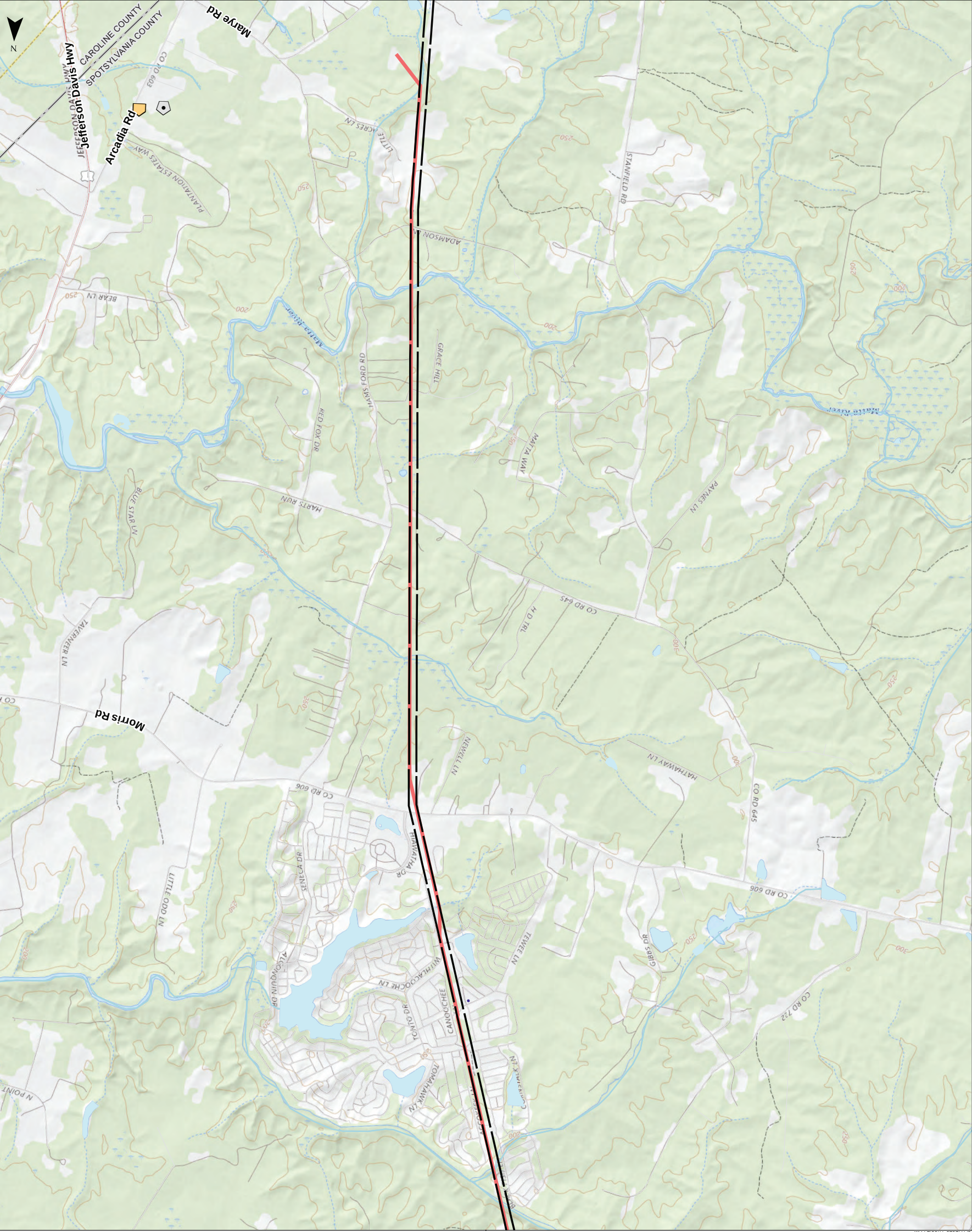
Private Conservation Lands

Notes:

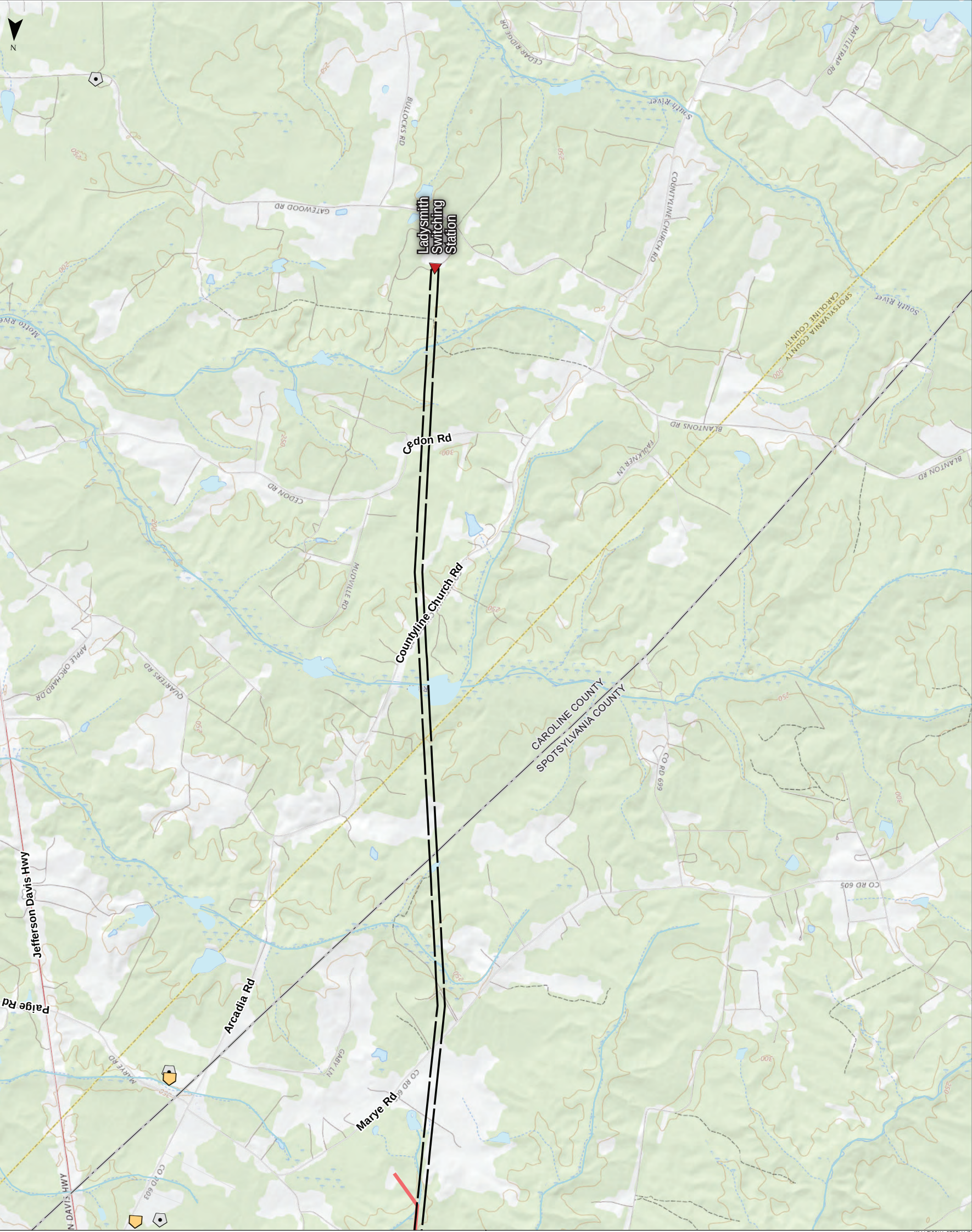
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH (VCRIS) DCR

3. Structure locations provided by Dominion Energy Virginia







I.I.A.2. ENVIRONMENTAL CONSTRAINTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                                     |              |          |  |
|-------------------------------------|--------------|----------|--|
| Client:<br>Dominion Energy Virginia |              |          |  |
| C2 Env Project:                     | Prepared By: | Date:    |  |
| 0073                                | MKB          | 04/22/20 |  |



- Existing Substations/Switching Stations
- Project Limits
- County Boundary
- Gas Line Easement
- NOVEC Right-of-Way
- TL 198 115kV
- Historical/Cultural
- Recreational Facility
- Regional Attraction
- School
- Transit Facility
- Cemetery
- Place of Worship
- Tower
- Military Facility
- Hospital/Medical Facility
- Reservoir Overlay District
- Historic District
- Virginia Outdoor Foundation Easement
- Federal Conservation Lands
- State Conservation Lands
- Local Conservation Lands
- Private Conservation Lands

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus  
DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH  
(VCRIS) DCR  
3. Structure locations provided by Dominion Energy Virginia





## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **A. Right-of-way (“ROW”)**

- 3. Provide a separate color map of a suitable scale showing all the Applicant's transmission line ROWs, either existing or proposed, in the vicinity of the proposed project.**

Response: See Attachment I.G.1.



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **A. Right-of-way (“ROW”)**

- 4. To the extent the proposed route is not entirely within existing ROW, explain why existing ROW cannot adequately service the needs of the Applicant.**

Response: Not applicable.



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **A. Right-of-way (“ROW”)**

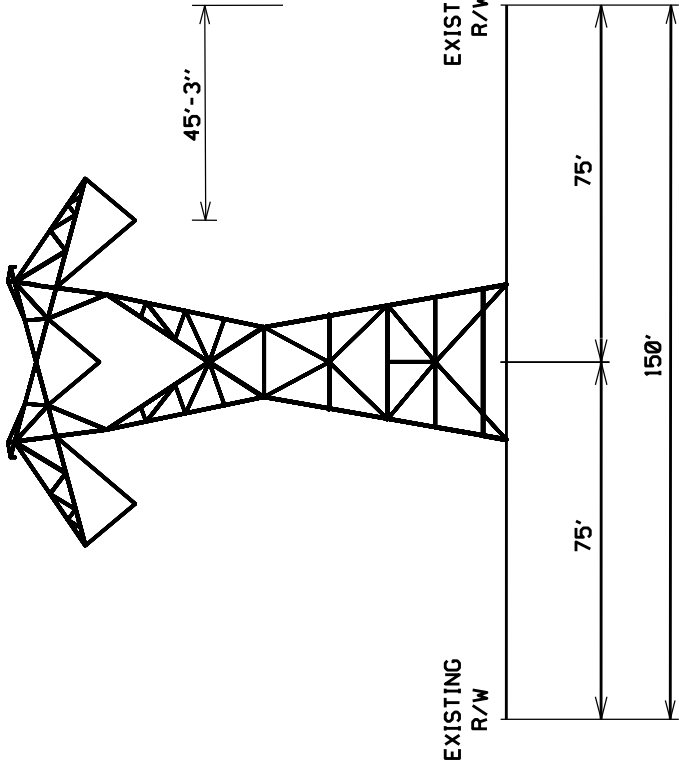
- 5. Provide drawings of the ROW cross section showing typical transmission line structure placements referenced to the edge of the ROW. These drawings should include:**
  - a. ROW width for each cross section drawing;**
  - b. Lateral distance between the conductors and edge of ROW;**
  - c. Existing utility facilities on the ROW; and**
  - d. For lines being rebuilt in existing ROW, provide all of the above (i) as it currently exists, and (ii) as it will exist at the conclusion of the proposed project.**

Response: See Attachments II.A.5.a through h.



LADYSMITH - STRUCTURE #581/8

EXISTING  
500KV CIRCUIT  
(LINE #581)



EXISTING CONFIGURATION

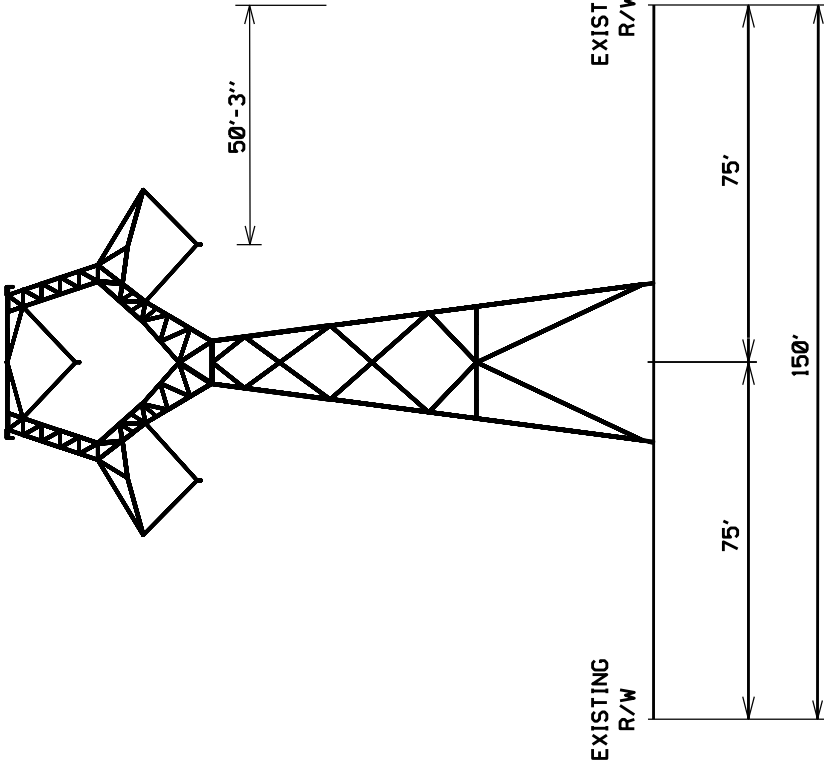
TYPICAL RIGHT OF WAY LOOKING TOWARD CHANCELLOR

NOTE:

1. Existing structure shown with approximate average height of 105' and does not include foundation reveal.
2. Approximate average height is measured from groundline at structure centerline.

LADYSMITH - STRUCTURE #581/8

PROPOSED  
500KV CIRCUIT  
(LINE #581)



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD CHANCELLOR

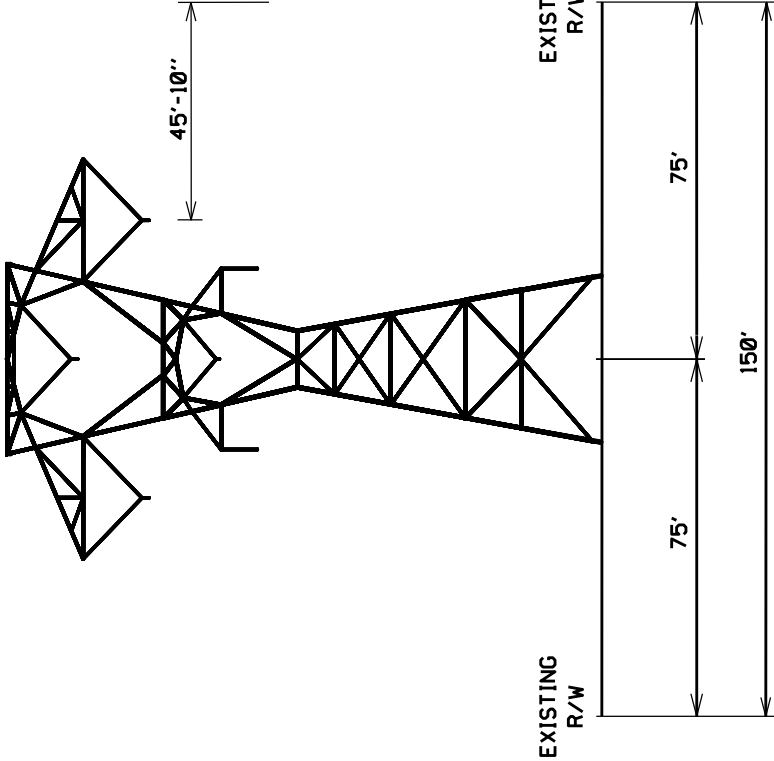
NOTE:

1. Proposed structure shown with approximate average height of 135' and does not include foundation reveal.
2. Approximate average height is measured from groundline at structure centerline.
3. Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.



STRUCTURE #581/7 - CHANCELLOR

EXISTING  
500KV CIRCUIT  
(LINE #581)  
(LINE #198)

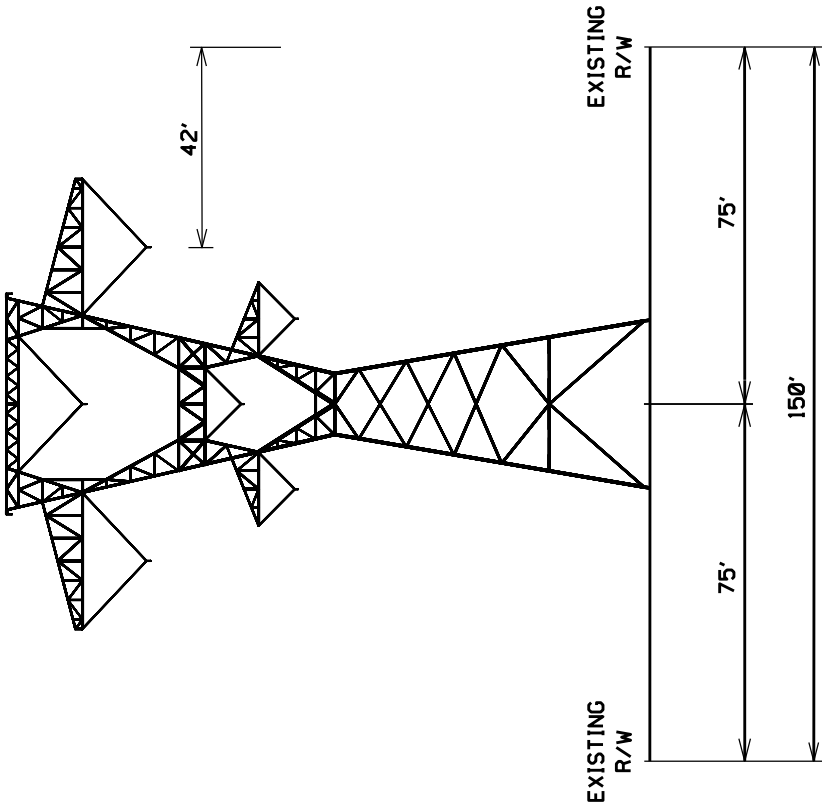


EXISTING CONFIGURATION  
TYPICAL RIGHT OF WAY LOOKING TOWARD CHANCELLOR

- NOTE:
- 1. Existing structure shown with approximate average height of 125' and does not include foundation reveal.
  - 2. Approximate average height is measured from groundline at structure centerline.

STRUCTURE #581/7 - CHANCELLOR

PRELIMINARY  
PROPOSED  
500KV CIRCUIT  
(LINE #581)  
(LINE #198)



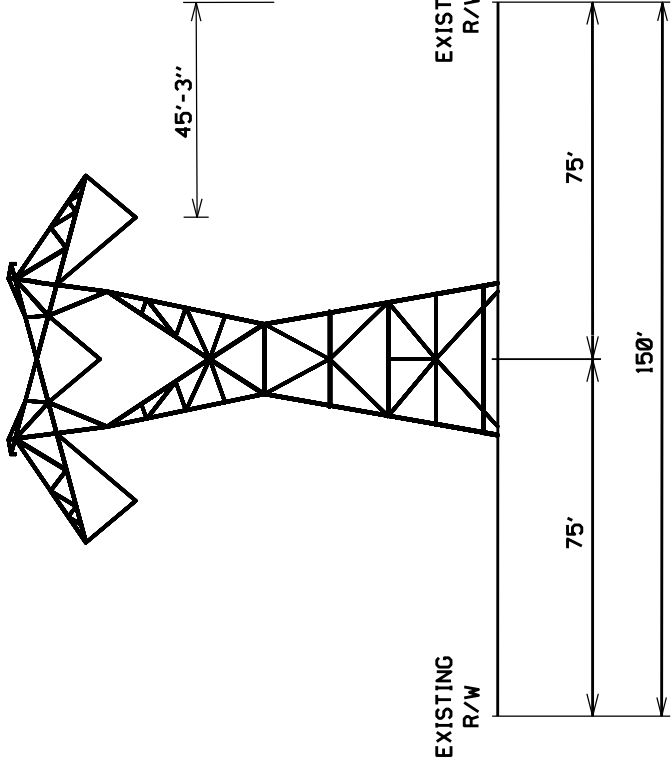
PROPOSED CONFIGURATION  
TYPICAL RIGHT OF WAY LOOKING TOWARD CHANCELLOR

- NOTE:
- 1. Proposed structure shown with approximate average height of 135' and does not include foundation reveal.
  - 2. Approximate average height is measured from groundline at structure centerline.
  - 3. Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.



CHANCELLOR - STRUCTURE #552/169

EXISTING  
500KV CIRCUIT  
(LINE #552)



EXISTING CONFIGURATION  
TYPICAL RIGHT OF WAY LOOKING TOWARD BRISTERS

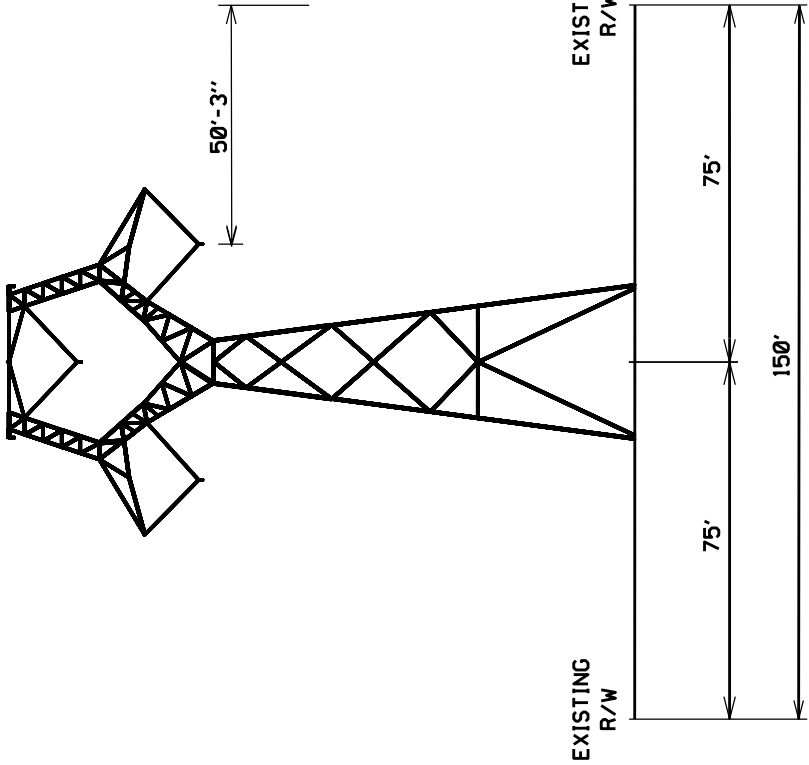
NOTE:

- 1. Existing structure shown with approximate average height of 103' and does not include foundation reveal.
- 2. Approximate average height is measured from groundline at structure centerline.

CHANCELLOR - STRUCTURE #552/169

PRELIMINARY

PROPOSED  
500KV CIRCUIT  
(LINE #552)



PROPOSED CONFIGURATION  
TYPICAL RIGHT OF WAY LOOKING TOWARD BRISTERS

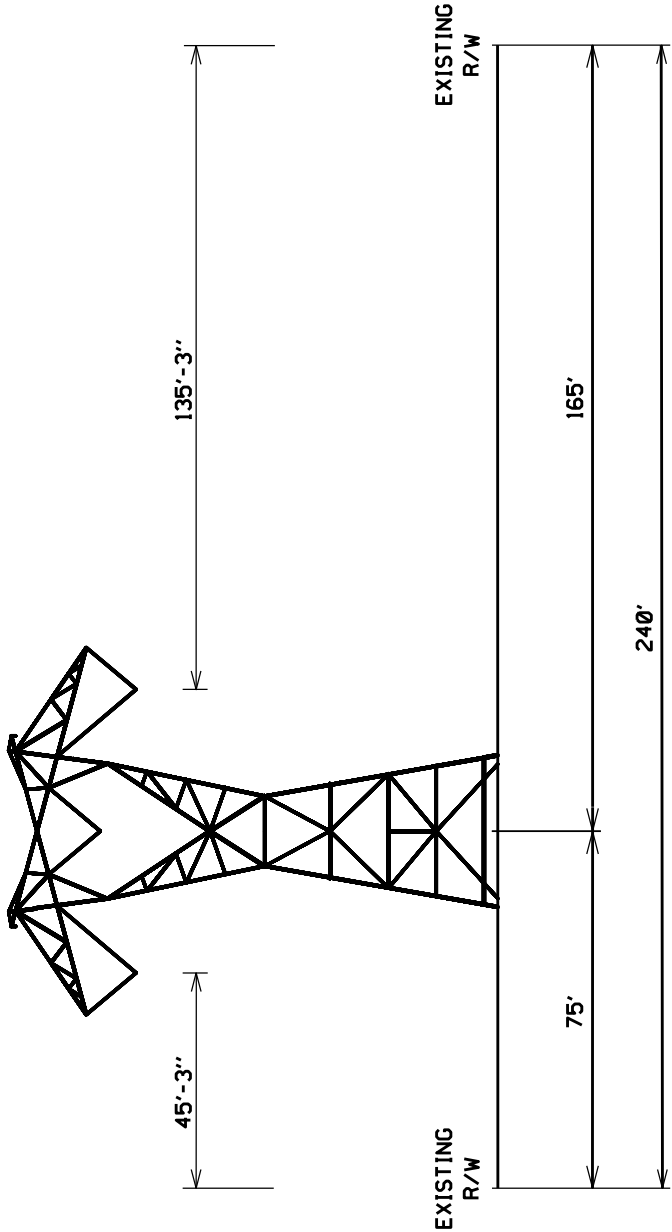
NOTE:

- 1. Proposed structure shown with approximate average height of 131' and does not include foundation reveal.
- 2. Approximate average height is measured from groundline at structure centerline.
- 3. Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.



STRUCTURE #552/168 - BRISTERS

EXISTING  
500KV CIRCUIT  
(LINE #552)



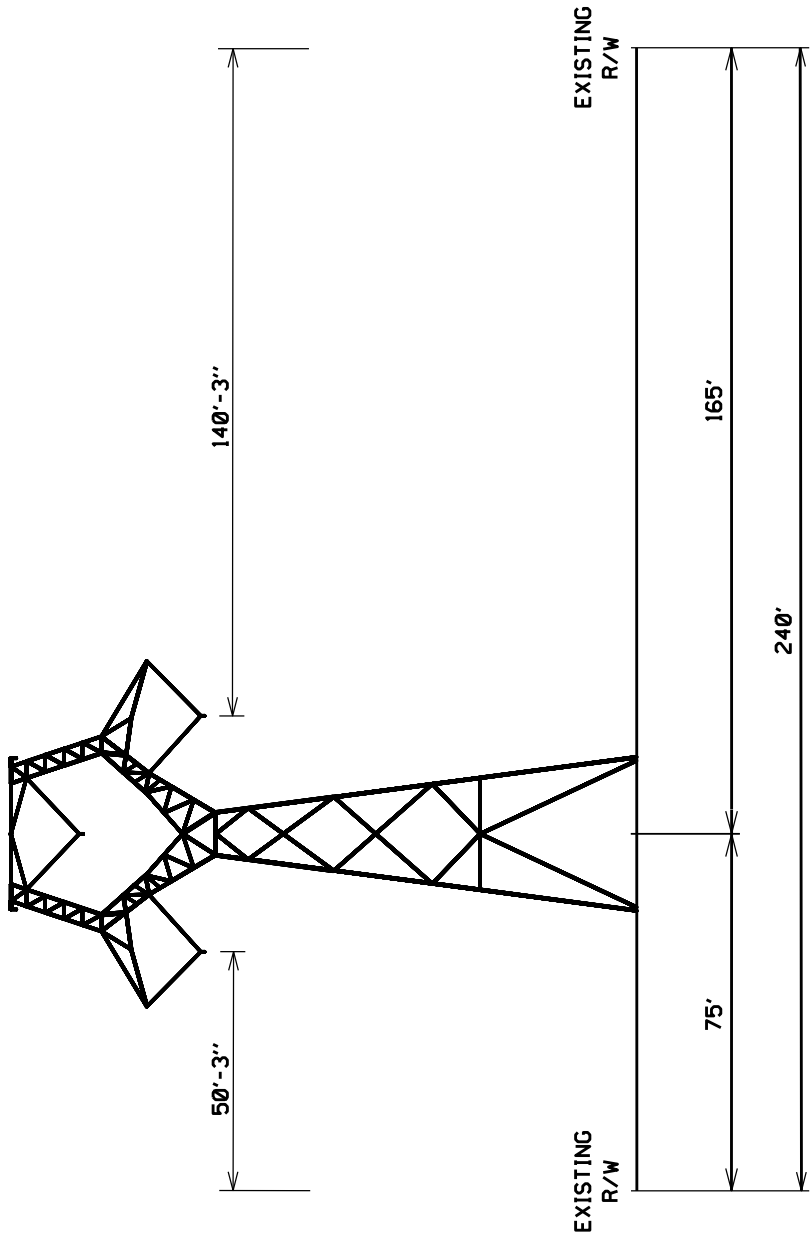
EXISTING CONFIGURATION  
TYPICAL RIGHT OF WAY LOOKING TOWARD BRISTERS

- NOTE:
- 1. Existing structure shown with approximate average height of 103' and does not include foundation reveal.
  - 2. Approximate average height is measured from groundline at structure centerline.

STRUCTURE #552/168 - BRISTERS

PROPOSED  
500KV CIRCUIT  
(LINE #552)

PRELIMINARY



PROPOSED CONFIGURATION  
TYPICAL RIGHT OF WAY LOOKING TOWARD BRISTERS

- NOTE:
- 1. Proposed structure shown with approximate average height of 131' and does not include foundation reveal.
  - 2. Approximate average height is measured from groundline at structure centerline.
  - 3. Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **A. Right-of-way (“ROW”)**

#### **6. Detail what portions of the ROW are subject to existing easements and over what portions new easements will be needed.**

Response: The Company obtained all of its easements along the existing right-of-way of the Bristers-Ladysmith transmission corridor in the mid-1960s, with the exception of one easement that was obtained by the Company in the early 1970s. The Company does not anticipate that new easements will be required, as the Rebuild Project is within existing rights-of-way or on Company-owned property.

The Company would like to note that there is a Virginia Outdoors Foundation (“VOF”) easement that was recorded in 2014, which appears to include a powerline easement. Therefore, no additional easement will be required to cross this VOF parcel.



## II. DESCRIPTION OF THE PROPOSED PROJECT

### A. Right-of-way (“ROW”)

#### 7. Detail the proposed ROW clearing methods to be used and the ROW restoration and maintenance practices planned for the proposed project.

Response: The entire width of the existing transmission corridor right-of-way, which ranges from 150 feet to 240 feet as shown in Attachments II.A.5 a through h, currently is maintained for operation of the existing transmission facilities. Trimming of tree limbs along the edge of the right-of-way may be conducted to support construction activities for the Rebuild Project. For any such minimal clearing, trees will be cut to no more than three inches above ground level. Trees located outside of the right-of-way that are tall enough to potentially impact the transmission facilities, commonly referred to as “danger trees,” may also need to be cut. Danger trees will be cut at or above ground level, limbed, and will remain where felled. No grubbing of roots or stumps will occur. Debris that is adjacent to homes will be disposed of by chipping or removal. In other areas, debris may be mulched or chipped as practicable. Danger tree removal will be accomplished by hand or from equipment placed on mats in wetland areas and within 100 feet of streams, if applicable. Care will be taken not to leave debris in streams or wetland areas that may cause an impediment to the flow of water. No mulching will occur in wetlands. Erosion control devices will be used on an ongoing basis, as appropriate, during all clearing and construction activities.

Erosion control will be maintained and temporary stabilization for all soil disturbing activities will be used until the right-of-way has been restored. Upon completion of the Rebuild Project, the Company will restore the right-of-way utilizing site rehabilitation procedures outlined in the Company’s *Standards & Specifications for Erosion & Sediment Control and Stormwater Management for Construction and Maintenance of Linear Electric Transmission Facilities* that was approved by the Virginia Department of Environmental Quality (“DEQ”). Time of year and weather conditions may affect when permanent stabilization takes place.

This right-of-way is generally cleared and maintained. However, from the Bristers Switching Station to Structure #552/168, there is an approximately 65-foot wide forested corridor separating the transmission line from a 30-foot gas line easement co-located within the eastern portion of the overall 240-foot right-of-way. This forested corridor is not proposed to be cleared in conjunction with this Rebuild Project. Limited clearing or limbing may be required to accommodate construction access. Any clearing will be done in accordance with the Company’s Integrated Vegetation Management Plan (“IVMP”) practice with no grubbing of roots or stump materials. The remainder of the existing right-of-way is currently cleared and maintained. The right-of-way will continue to be maintained in its current state on a regular cycle to prevent interruptions to electric service and provide ready access to the right-of-way in order to patrol and make emergency repairs. Periodic



maintenance to control woody growth will consist of hand cutting, machine mowing, and herbicide application.



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **A. Right-of-way (“ROW”)**

#### **8. Indicate the permitted uses of the proposed ROW by the easement landowner and the Applicant.**

Response: Any non-transmission use will be permitted that:

- Is in accordance with the terms of the easement agreement for the right-of-way;
- Is consistent with the safe maintenance and operation of the transmission lines;
- Will not restrict future line design flexibility; and,
- Will not permanently interfere with future construction.

Subject to the terms of the easement, examples of typical permitted uses include but are not limited to:

- Agriculture;
- Hiking Trails;
- Fences;
- Perpendicular Road Crossings;
- Perpendicular Utility Crossings;
- Residential Driveways; and
- Wildlife / Pollinator Habitat.



## II. DESCRIPTION OF THE PROPOSED PROJECT

### A. Right-of-way (“ROW”)

9. **Describe the Applicant’s route selection procedures. Detail the feasible alternative routes considered. For each such route, provide the estimated cost and identify and describe the cost classification (e.g. “conceptual cost,” “detailed cost,” etc.). Describe the Applicant’s efforts in considering these feasible alternatives. Detail why the proposed route was selected and other feasible alternatives were rejected. In the event that the proposed route crosses, or one of the feasible routes was rejected in part due to the need to cross, land managed by federal, state, or local agencies or conservation easements or open space easements qualifying under §§ 10.1-1009 – 1016 or §§ 10.1-1700 – 1705 of the Code (or a comparable prior or subsequent provision of the Code), describe the Applicant’s efforts to secure the necessary ROW.**

Response: The Company’s route selection for transmission line rebuild projects begins with a review of the existing right-of-way. This approach generally minimizes impacts on the natural and human environments. This approach is also consistent with Attachment 1 of these Guidelines, which provides a tool routinely used by the Company in routing its transmission line projects. Specifically, this approach is consistent with Guideline #1, which states that existing rights-of-way should be given priority when adding new transmission facilities, and with §§ 56-46.1 and 56-259 of the Code of Virginia, which promote the use of existing rights-of-way for new transmission facilities. For the proposed Rebuild Project, the existing transmission corridor right-of-way that currently contains Lines #552 and #581 is adequate.

Because the existing right-of-way and Company-owned property is adequate to construct the proposed Rebuild Project, no new right-of-way is necessary. Given the availability of existing right-of-way and the statutory preference given to the use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternate routes requiring new right-of-way for these Rebuild Project.

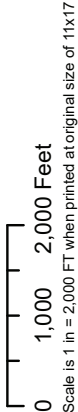
The Rebuild Project crosses several existing easements as shown on Attachment II.A.9. See also Appendix Section II.A.6.



II.A.9 CONSERVATION EASEMENTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

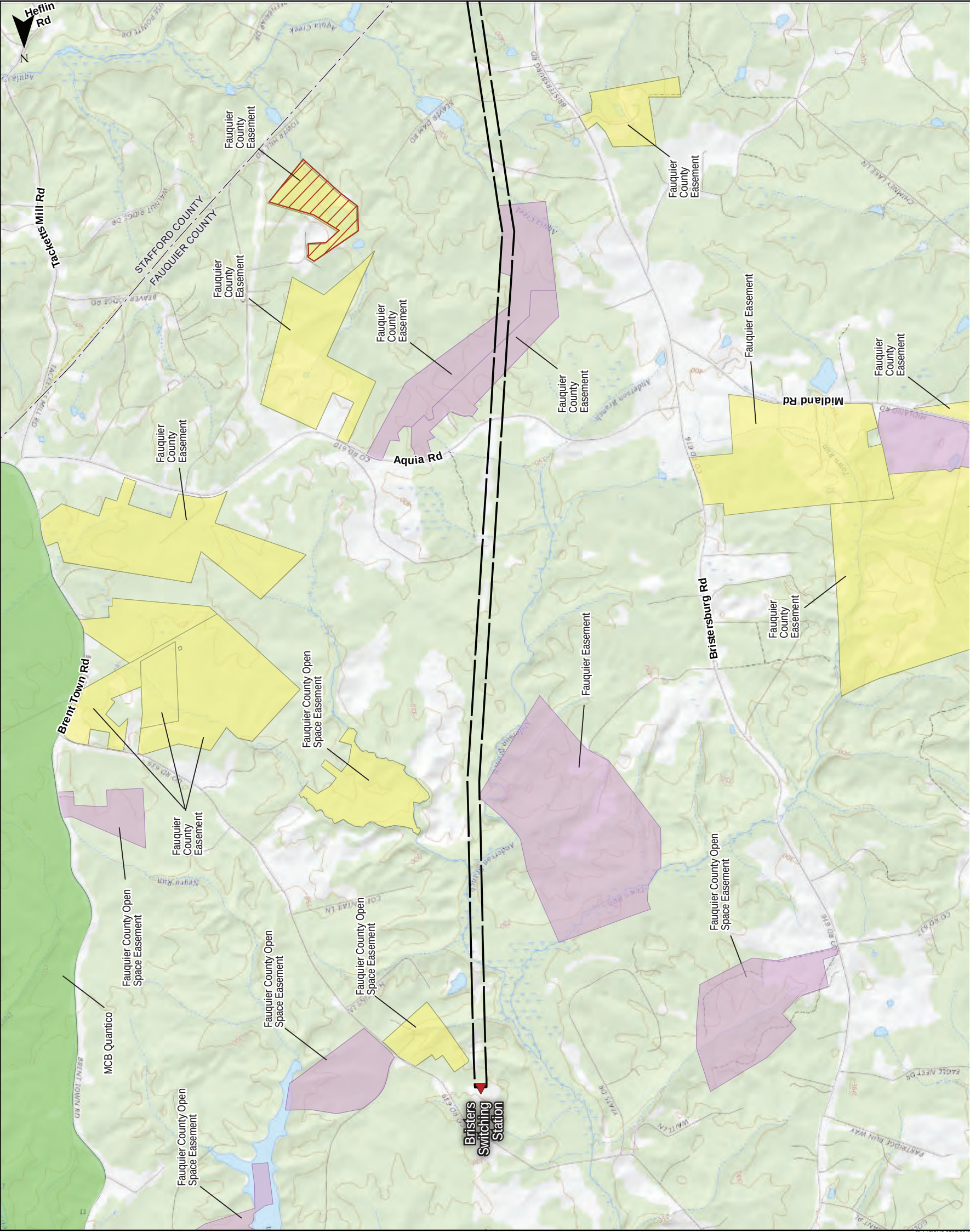
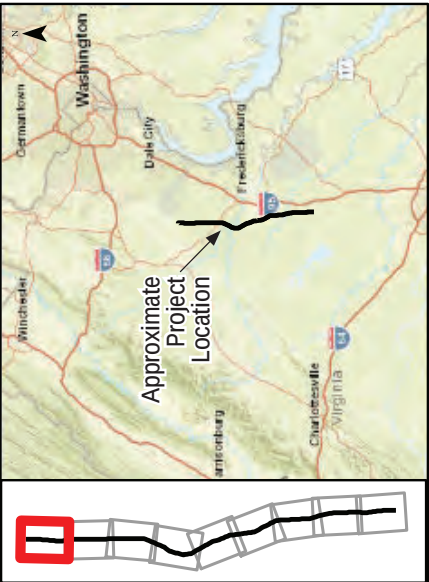
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| Client:         | Dominion Energy Virginia |
| C2 Env Project: | 0073/0074                |
| Prepared By:    | MKB                      |
| Date:           | 04/22/20                 |



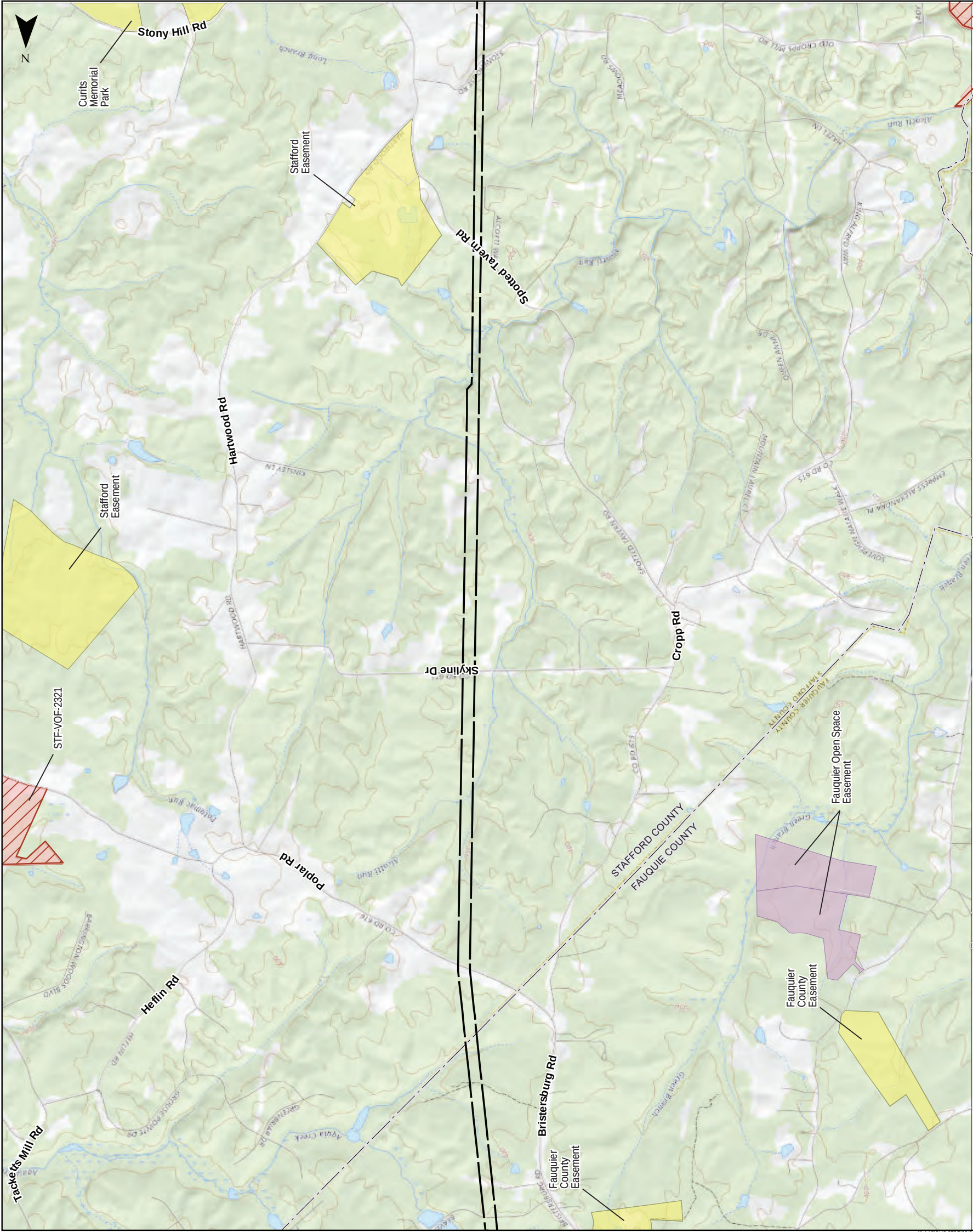
SITE DATA

- Existing Substations/Switching Stations
- Project Limits
- County Boundary
- Virginia Outdoor Foundation Easement
- Federal Conservation Lands
- Local Conservation Lands
- Private Conservation Lands
- State Conservation Lands

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus  
DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH  
(VCRIS), DCR  
3. Structure locations provided by Dominion Energy Virginia







II.A.9 CONSERVATION EASEMENTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

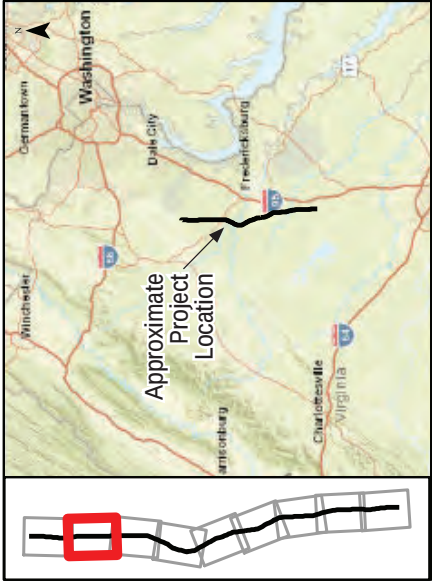
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| Dominion Energy Virginia  |     |                |
| C2 Env Project: 0073/0074 |     |                |
| Prepared By:              | MKB | Date: 04/22/20 |



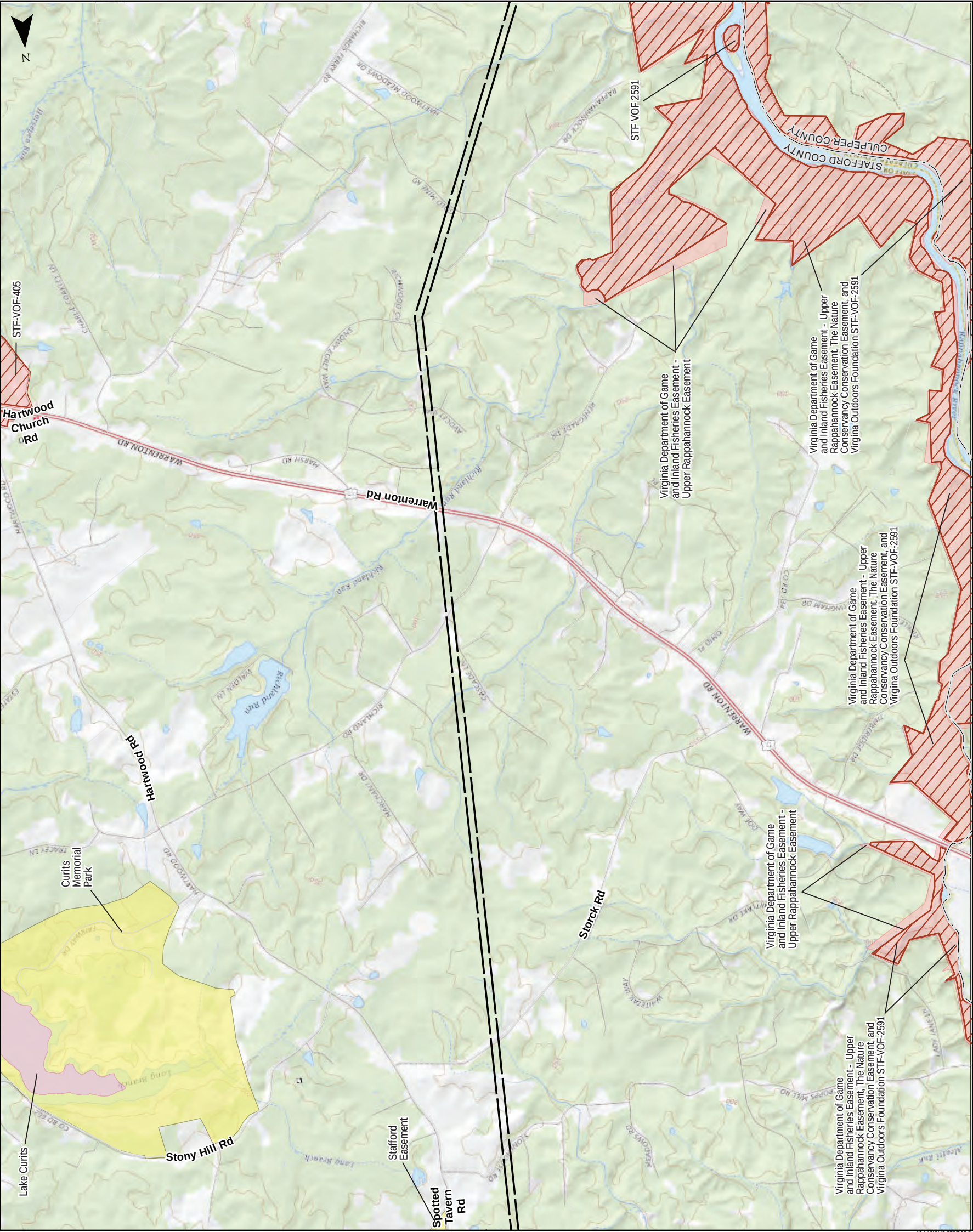
SITE DATA

- ▲ Existing Substations/Switching Stations
- ▭ Project Limits
- County Boundary
- ▨ Virginia Outdoor Foundation Easement
- ▨ Federal Conservation Lands
- ▨ Local Conservation Lands
- ▨ Private Conservation Lands
- ▨ State Conservation Lands

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus  
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2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH  
(VCRIS), DCR  
3. Structure locations provided by Dominion Energy Virginia







II.A.9 CONSERVATION EASEMENTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

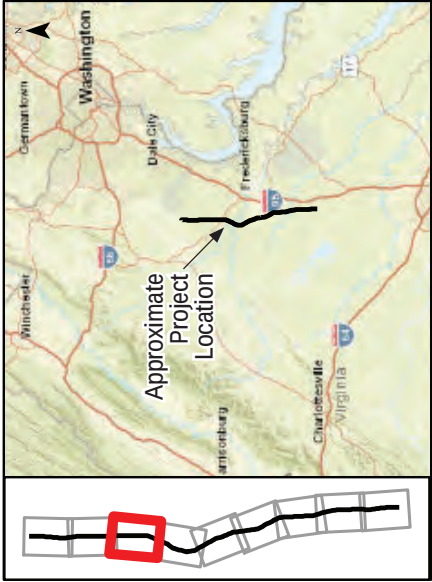
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| Client:                   |  |                |  |
| Dominion Energy Virginia  |  |                |  |
| C2 Env Project: 0073/0074 |  |                |  |
| Prepared By: MKB          |  | Date: 04/22/20 |  |



SITE DATA

- ▲ Existing Substations/Switching Stations
- ▭ Project Limits
- County Boundary
- ▨ Virginia Outdoor Foundation Easement
- ▨ Federal Conservation Lands
- ▨ Local Conservation Lands
- ▨ Private Conservation Lands
- ▨ State Conservation Lands

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus  
DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH  
(VCRIS), DCR  
3. Structure locations provided by Dominion Energy Virginia





## II.A.9 CONSERVATION EASEMENTS

# Bristers to Ladysmith 500 kV Rebuild

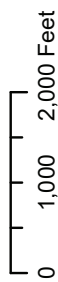
Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

Client:

Dominion Energy Virginia

C2 Env Project:
Prepared By:
Date:

|           |     |          |
|-----------|-----|----------|
| 0073/0074 | MKB | 04/22/20 |
|-----------|-----|----------|



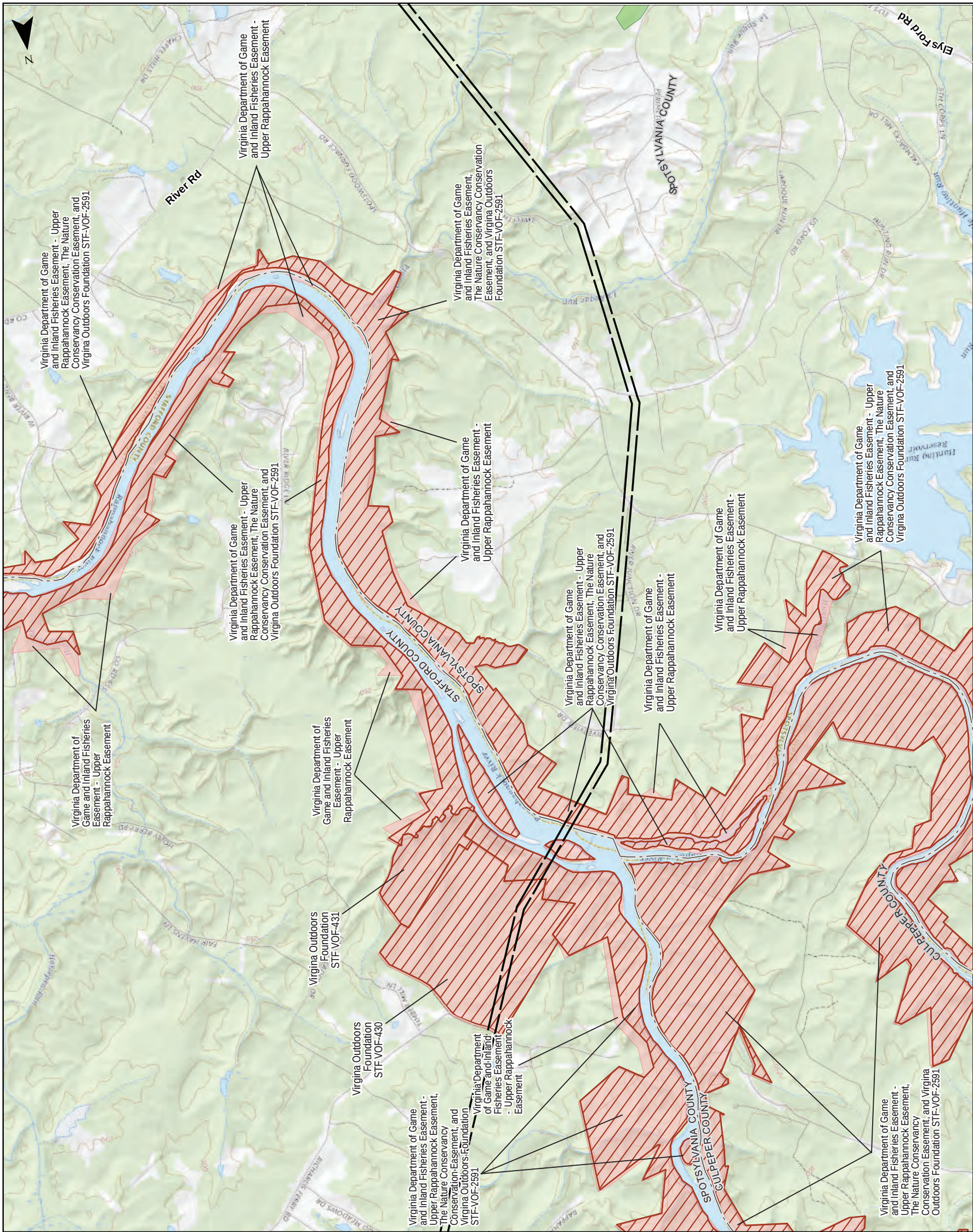
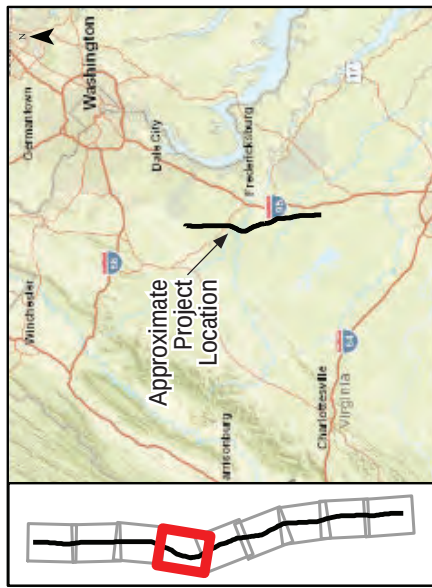
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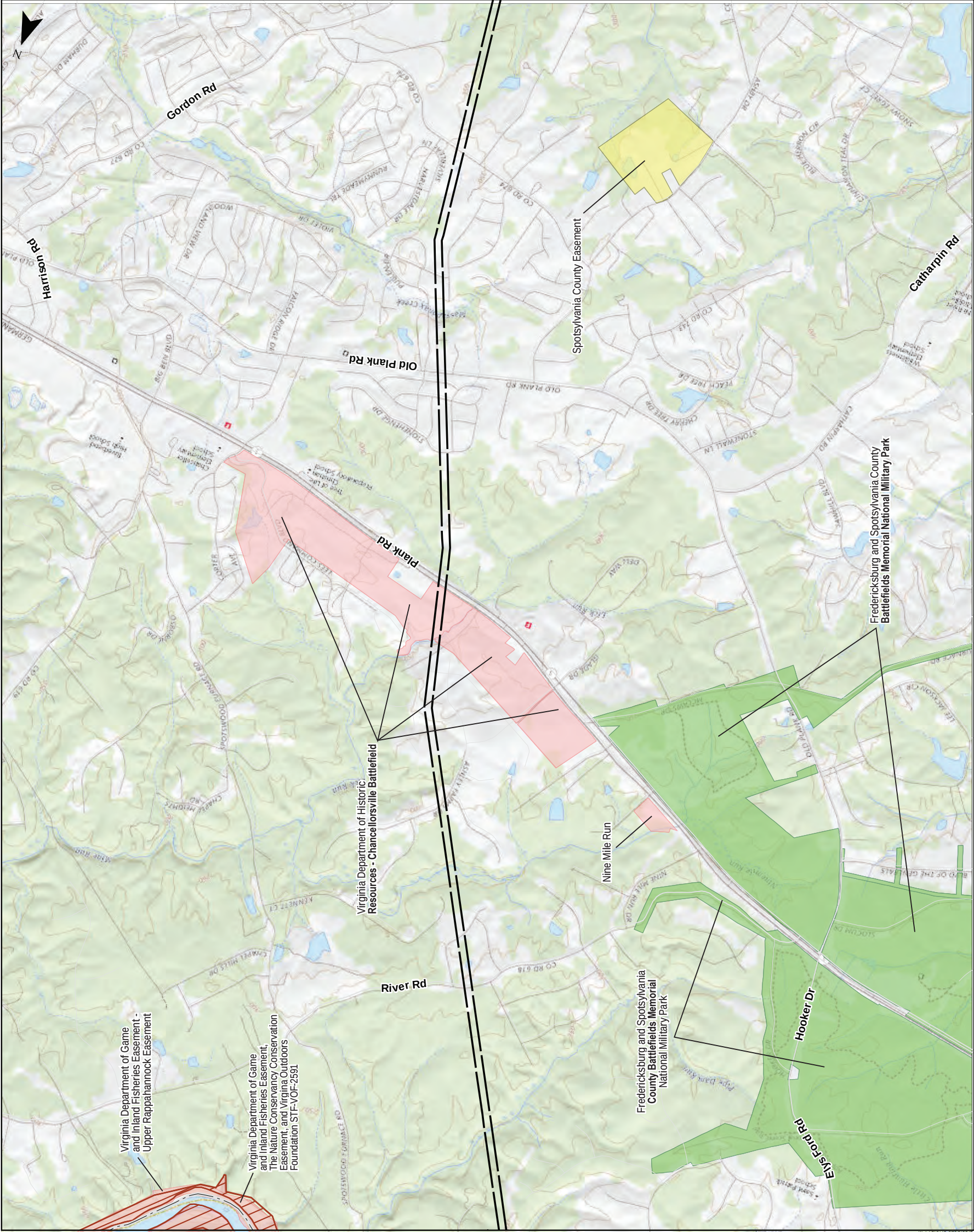
-  Existing Substations/Switching Stations  
 Project Limits  
 County Boundary  
 Virginia Outdoor Foundation Easement  
 Federal Conservation Lands  
 Local Conservation Lands  
 Private Conservation Lands  
 State Conservation Lands

Notes:

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2. Data Source: PADIUS, VOF, Natural Heritage, Google Earth, USGS, VDHR (VCRIS), DCR
3. Structure locations provided by Dominion Energy Virginia







## II.A.9 CONSERVATION EASEMENTS

Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

|                          |                  |                |
|--------------------------|------------------|----------------|
| Client:                  |                  |                |
| Dominion Energy Virginia |                  |                |
| C2 Env Project           |                  |                |
| 0073/0074                | Prepared By: MKB | Date: 04/22/20 |

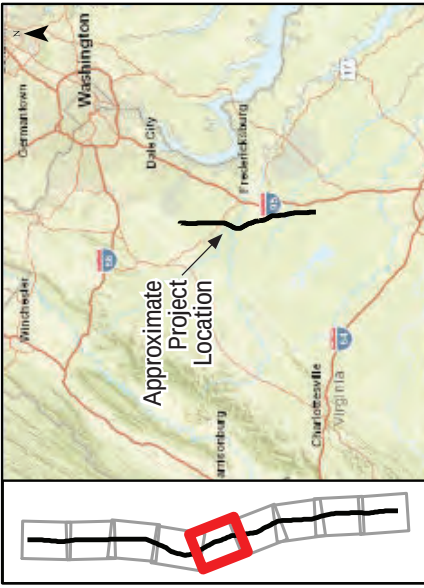


### SITE DATA

- ▲ Existing Substations/Switching Stations
- ▭ Project Limits
- County Boundary
- ▨ Virginia Outdoor Foundation Easement
- ▨ Federal Conservation Lands
- ▨ Local Conservation Lands
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Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDHR (VCRIS), DCR
3. Structure locations provided by Dominion Energy Virginia





II.A.9 CONSERVATION EASEMENTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

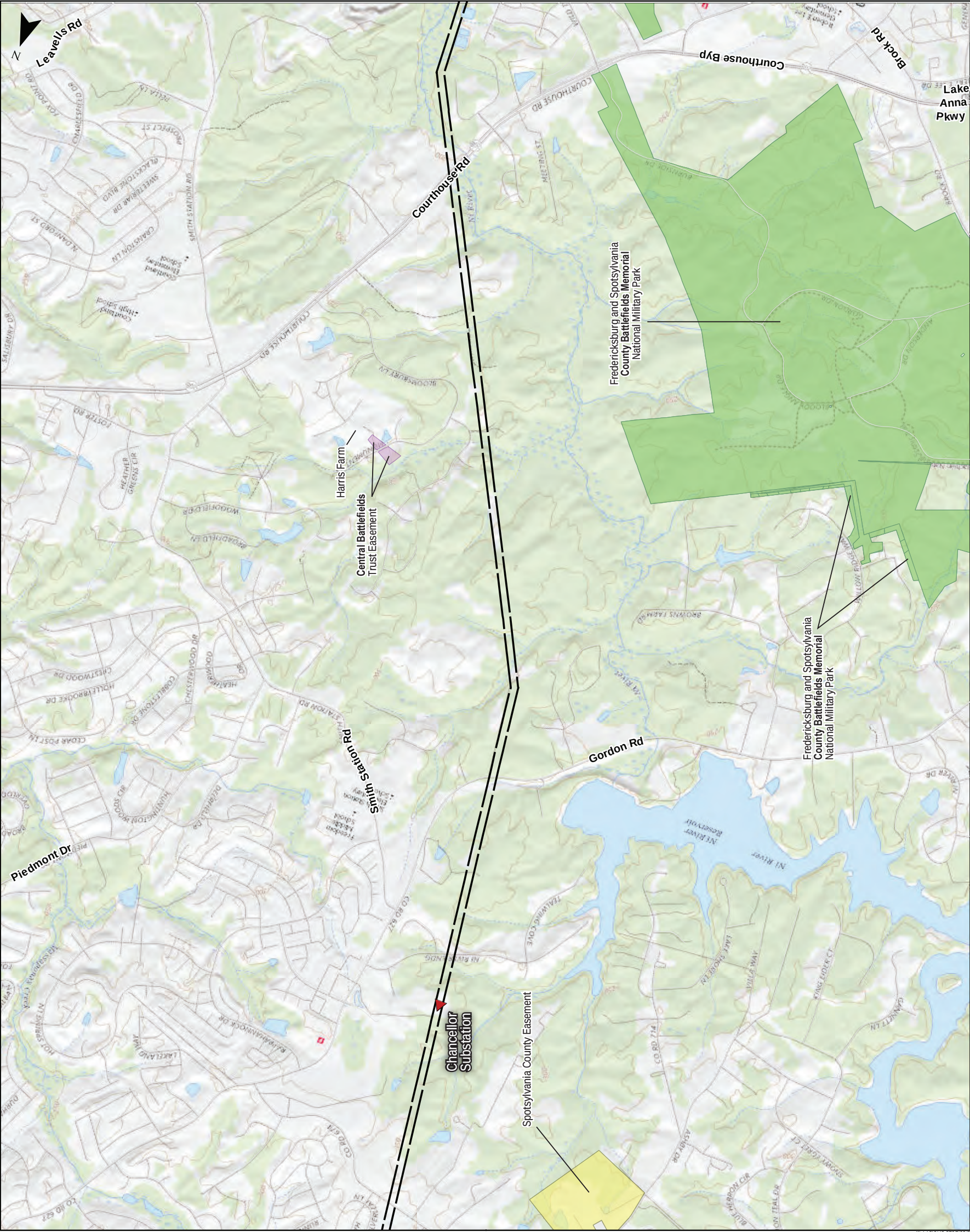
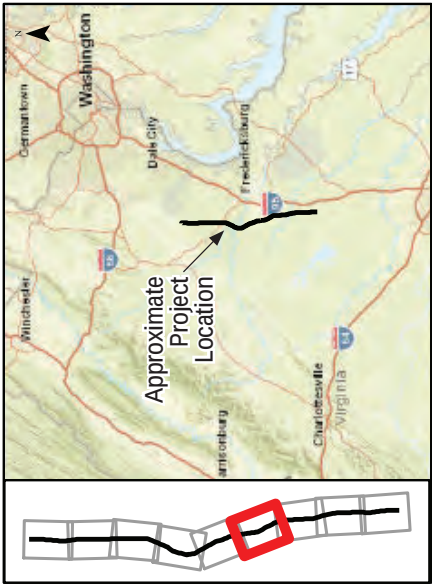
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| Client:         | Dominion Energy Virginia |
| C2 Env Project: | 0073/0074                |
| Prepared By:    | MKB                      |
| Date:           | 04/22/20                 |



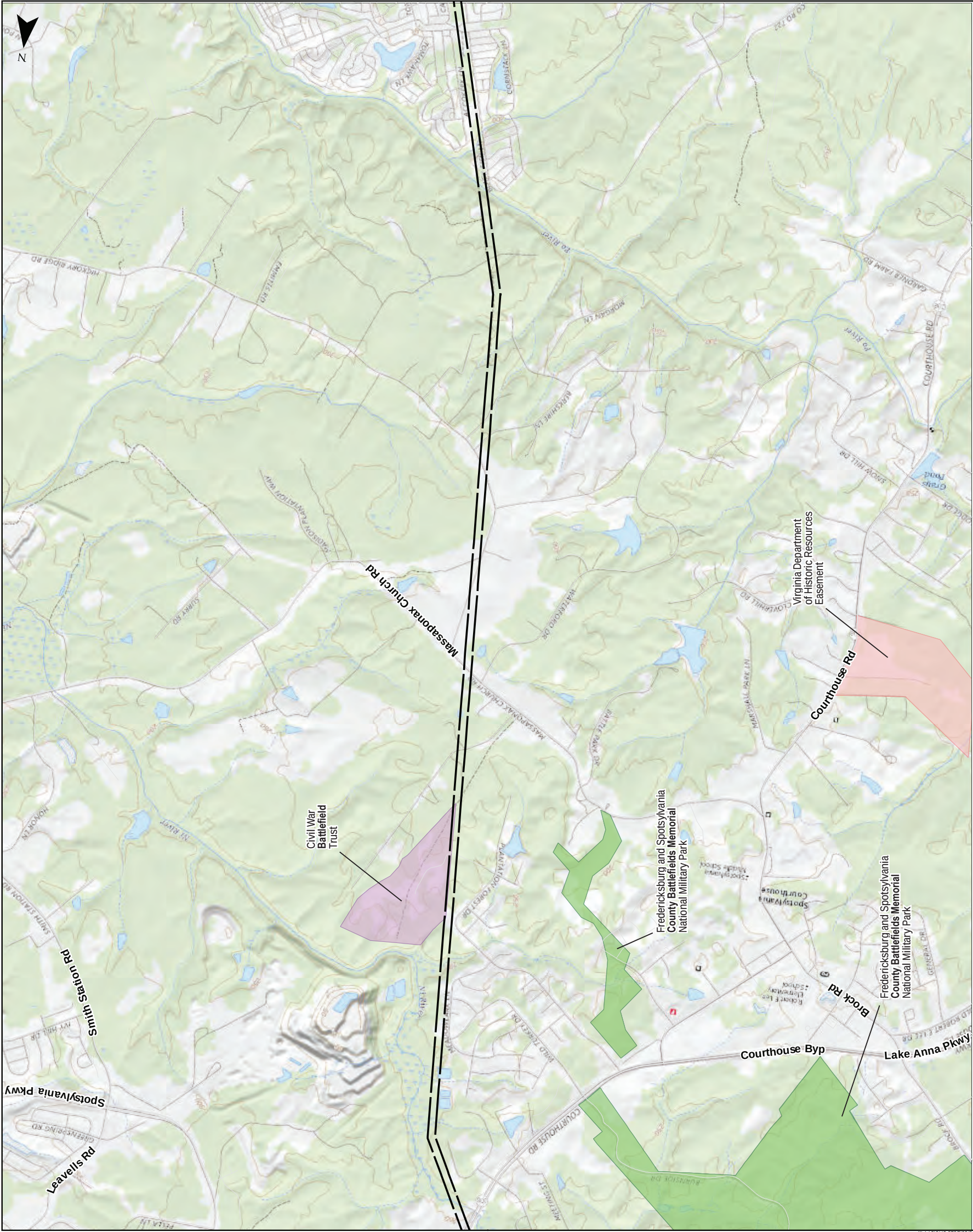
SITE DATA

- ▲ Existing Substations/Switching Stations
- ▭ Project Limits
- County Boundary
- ▨ Virginia Outdoor Foundation Easement
- Federal Conservation Lands
- Local Conservation Lands
- Private Conservation Lands
- State Conservation Lands

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus  
DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH  
(VCRIS), DCR  
3. Structure locations provided by Dominion Energy Virginia







**II.A.9 CONSERVATION EASEMENTS**

**Bristers to Ladysmith 500 kV Rebuild**  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

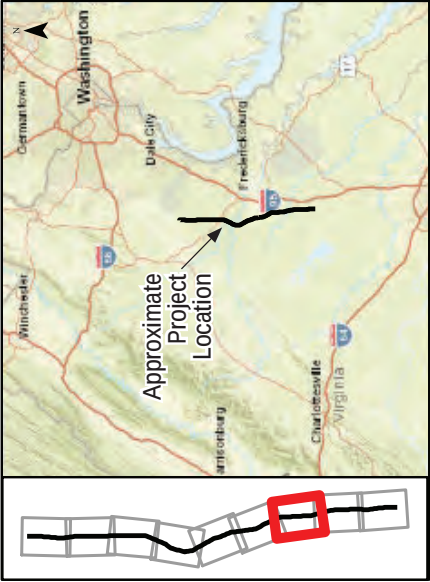
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|--------------------------|--------------|
| Client:                  |              |
| Dominion Energy Virginia |              |
| C2 Env Project:          | Prepared By: |
| 0073/0074                | MKB          |
| Date:                    |              |
| 04/22/20                 |              |



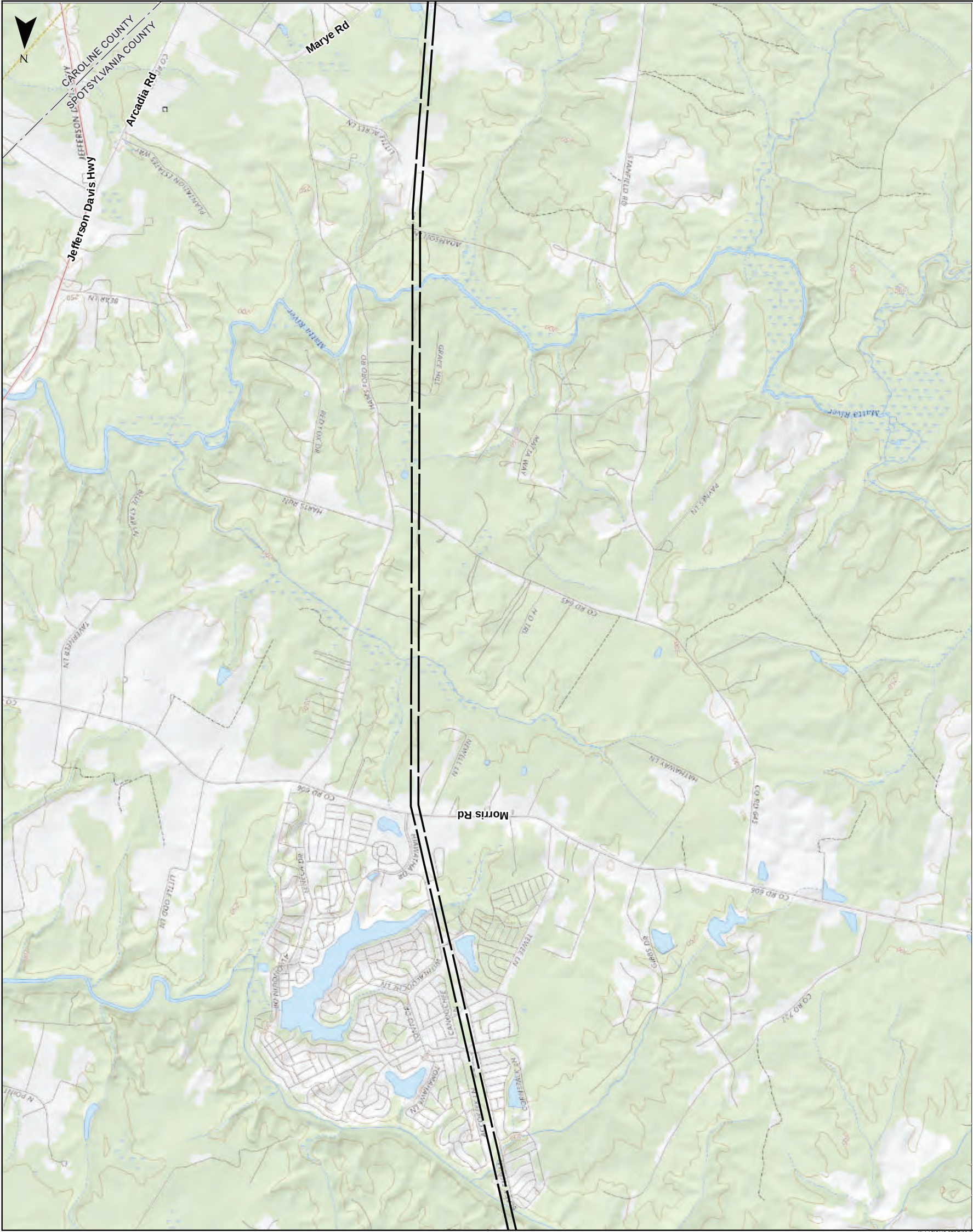
**SITE DATA**

- ▲ Existing Substations/Switching Stations
- ▭ Project Limits
- County Boundary
- ▨ Virginia Outdoor Foundation Easement
- Federal Conservation Lands
- Local Conservation Lands
- Private Conservation Lands
- State Conservation Lands

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus  
DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDH  
(VCRIS), DCR  
3. Structure locations provided by Dominion Energy Virginia







II.A.9 CONSERVATION EASEMENTS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

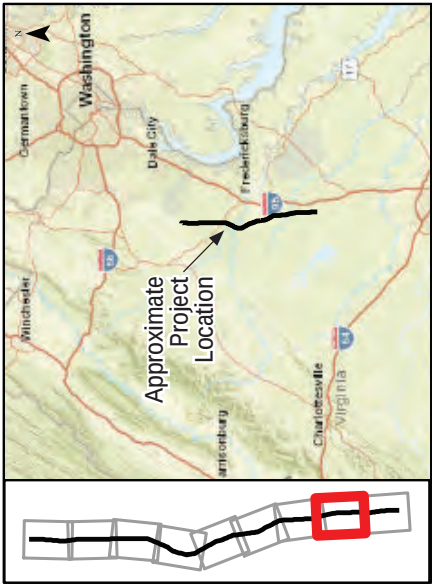
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|---------------------------|-----|----------------|
| Client:                   |     |                |
| Dominion Energy Virginia  |     |                |
| C2 Env Project: 0073/0074 |     |                |
| Prepared By:              | MKB | Date: 04/22/20 |



SITE DATA

- ▲ Existing Substations/Switching Stations
- ▮ Project Limits
- County Boundary
- ▨ Virginia Outdoor Foundation Easement
- Federal Conservation Lands
- Local Conservation Lands
- Private Conservation Lands
- State Conservation Lands

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus  
DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDHR  
(VCRIS), DCR  
3. Structure locations provided by Dominion Energy Virginia





II.A.9 CONSERVATION EASEMENTS

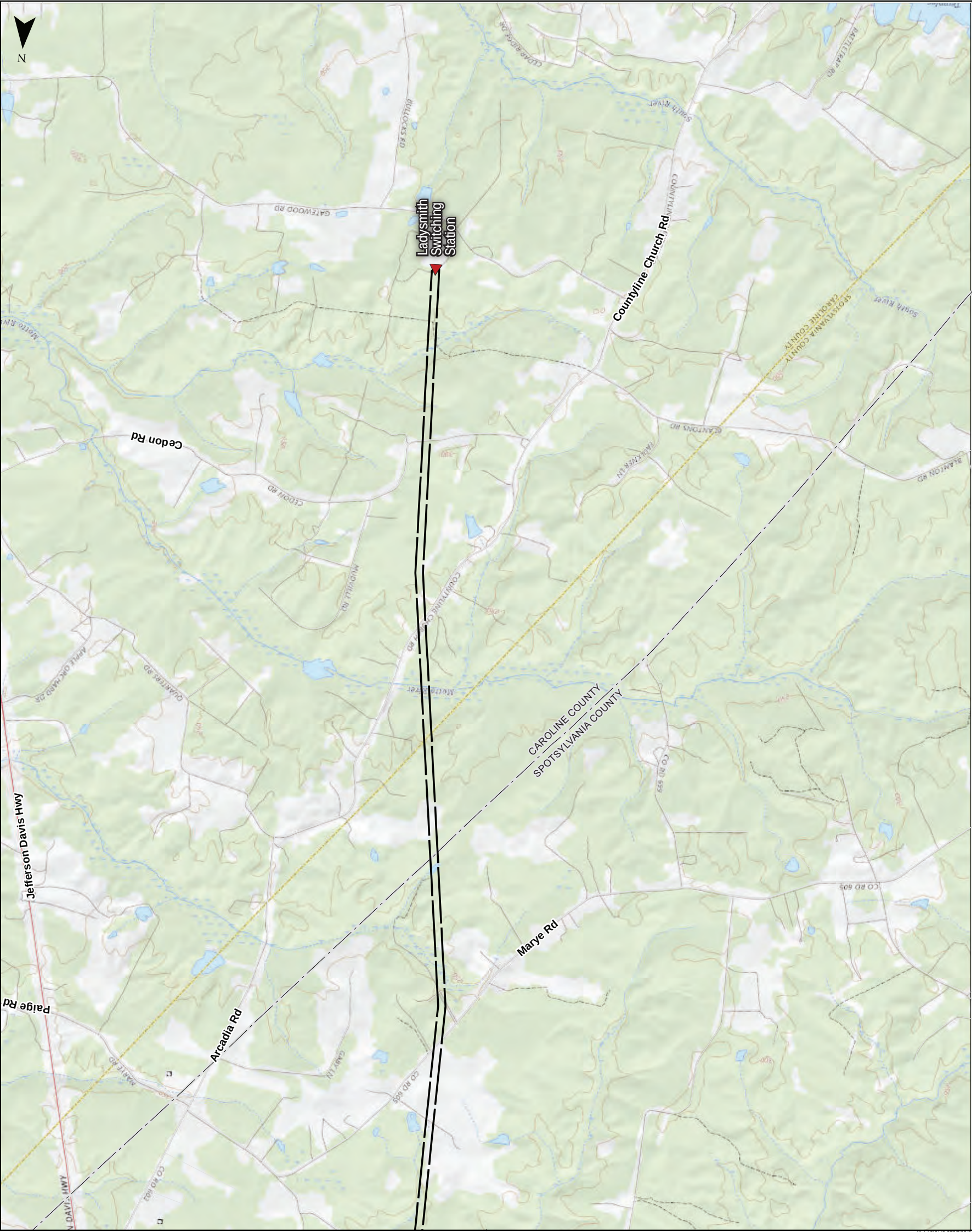
Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                          |  |              |          |
|--------------------------|--|--------------|----------|
| Client:                  |  |              |          |
| Dominion Energy Virginia |  |              |          |
| C2 Env Project:          |  | Prepared By: | Date:    |
| 0073/0074                |  | MKB          | 04/22/20 |

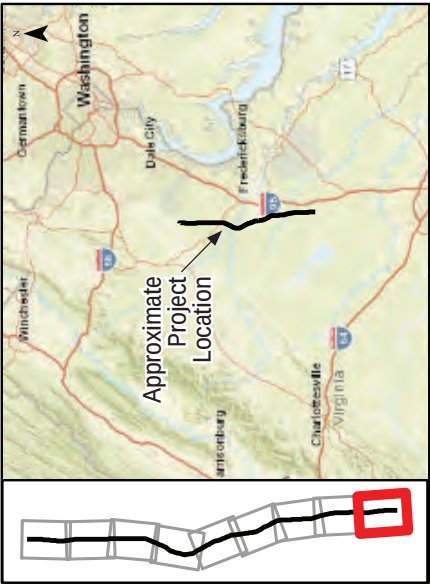


SITE DATA

- ▲ Existing Substations/Switching Stations
- ▮ Project Limits
- ▬ County Boundary
- ▨ Virginia Outdoor Foundation Easement
- Federal Conservation Lands
- Local Conservation Lands
- Private Conservation Lands
- State Conservation Lands



- Notes:
- 1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
  - 2. Data Source: PADUS, VOF, Natural Heritage, Google Earth, USGS, VDHR (VCRIS), DCR
  - 3. Structure locations provided by Dominion Energy Virginia





## II. DESCRIPTION OF THE PROPOSED PROJECT

### A. Right-of-way (“ROW”)

10. **Describe the Applicant’s construction plans for the project, including how the Applicant will minimize service disruption to the affected load area. Include requested and approved line outage schedules for affected lines as appropriate.**

Response: To limit service disruption to the affected load area, the Company plans to take segments of Lines #552 and #581 out of service in several separate sequential outages. The outages are sequenced to allow the adjacent infrastructure to adequately provide service to connected customers while certain lines and equipment are out of service. The work will be done during non-peak load times. This strategy will allow the grid to be in normal and optimal configuration during peak load times and available to respond to contingency issues should they arise. Assuming a final order by March 1, 2021, as requested in Section I.H, the current plan is to start construction by May 3, 2021, and to complete construction of the Rebuild Project by December 31, 2023.

The Company has requested three outages from PJM for Line #552 during the Fall of 2021, Spring of 2022, and Fall of 2022, and ending in December of 2022. The eDart Numbers for those outages include: 819773, 587805, and 494757. The Company has also requested two outages from PJM for Line #581 during the Spring and Fall of 2023, and ending in December of 2023. The eDart Numbers for those outages include: 587805 and 819845. It is customary for PJM to not grant approval of the outages until shortly before the outages are expected to occur and, therefore, they may be subject to change.



## II. DESCRIPTION OF THE PROPOSED PROJECT

### A. Right-of-way (“ROW”)

#### 11. Indicate how the construction of this transmission line follows the provisions discussed in Attachment 1 of these Guidelines.

Response: As noted in Section II.A.9, Attachment 1 of these Guidelines provides a tool routinely used by the Company in routing its transmission line projects.

The Company utilized Guideline #1 (existing rights-of-way should be given priority when adding additional facilities) by siting the proposed Rebuild Project within the existing transmission corridor.

By utilizing the existing transmission corridor, the proposed Rebuild Project will minimize impact to any site listed on the National Register of Historic Places (“NRHP”). Thus, the proposed Rebuild Project is consistent with Guideline #2 (where practical, rights-of-way should avoid sites listed on the NRHP). In any event, the Company will coordinate with the Virginia Department of Historic Resources (“VDHR”) regarding its plans prior to engineering and construction of the Rebuild Project to avoid or minimize impacts. The NRHP-listed and NRHP-eligible properties that are within or adjacent to the Rebuild Project are presented in the table below. A Stage I Pre-Application Analysis prepared by Dutton & Associates (“Dutton”) was submitted to the VDHR on April 27, 2020, as further discussed in Section III.A of this Appendix. In addition, the Virginia Cultural Resource Information System (“VCRIS”) inventory was rechecked in March 2020, which confirmed the accuracy of the data submitted in the Stage I Pre-Application Analysis. See Attachment 2.H.1 of the DEQ Supplement. The Company will coordinate with VDHR through review of the Stage I Pre-Application Analysis regarding these initial findings.

#### Architectural Resources Within or Adjacent to the Rebuild Project Right-of-Way

| Resource ID# | Resource Name                                                                                                       | National Register Status | Impact         |
|--------------|---------------------------------------------------------------------------------------------------------------------|--------------------------|----------------|
| 030-5588     | Elk Run Rural Historic District (Historic), Elk Run-Germantown-Cedar Run Rural Historic District (Historic/Current) | Eligible                 | Minimal Impact |
| 030-5607     | Hedgeman-Rappahannock Rural Historic District (Historic)                                                            | Eligible                 | Minimal Impact |
| 088-0015     | Berkwood (Current), Goodloe Plantation (Historic), House, Route 605 (Function/Location), Oak Hill (Historic)        | Eligible                 | Minimal Impact |
| 088-0059     | Gayle House (Historic), Rose Mount (Historic), Rosemont (Historic)                                                  | Eligible                 | Minimal Impact |



|          |                                                                                                                                                                                                                                                                                |                       |                 |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|
| 088-0070 | Whig Hill (Historic/Current)                                                                                                                                                                                                                                                   | Eligible              | No Impact       |
| 088-0074 | Tubal Furnace (Historic), Tubal Furnace Archaeological Site (Current)                                                                                                                                                                                                          | Listed                | No Impact       |
| 088-0137 | Rapidan Dam Canal of the Rappahannock Navigation (Current)                                                                                                                                                                                                                     | Listed                | Minimal Impact  |
| 088-0142 | Spotsylvania Court House Historic District (NRHP Listing)                                                                                                                                                                                                                      | Listed                | No Impact       |
| 088-0220 | Ashley Farm (Historic), First Day at Chancellorsville Property (Descriptive), John Mullins Farm (Current)                                                                                                                                                                      | Preservation Easement | Moderate Impact |
| 088-0334 | Lick Run Battlefield Historic District (Historic/Current)                                                                                                                                                                                                                      | Not Evaluated         | Minimal Impact  |
| 088-5129 | Rowe House, 9400 Courthouse Rd (Historic/Location)                                                                                                                                                                                                                             | Eligible              | No Impact       |
| 088-5180 | Chancellorsville Battlefield (Current)                                                                                                                                                                                                                                         | Eligible              | Moderate Impact |
| 088-5182 | Spotsylvania Court House Battlefield (Current), Spotsylvania Court House Battlefield (Historic)                                                                                                                                                                                | Eligible              | Minimal Impact  |
| 088-5188 | Battle of Harris Farm Battlefield (Historic)                                                                                                                                                                                                                                   | Not Evaluated         | Minimal Impact  |
| 088-5364 | Fredericksburg and Gordonsville Railroad (Historic), Fredericksburg, Orange, and Charlottesville Railroad (Historic), Potomac, Fredericksburg, and Piedmont Railroad (Historic), Unfinished Railroad (Historic), Virginia Central Railway Historic District (Historic/Current) | Eligible              | Minimal Impact  |
| 111-0134 | Rappahannock Navigation System (Canal) (Historic/Current)                                                                                                                                                                                                                      | Eligible              | Minimal Impact  |
| 111-0147 | Fredericksburg and Spotsylvania Battlefields National Military Park (Historic/Current), Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park and Cemetery (NRHP Listing)                                                                        | Listed                | No Impact       |
| 111-5001 | Rappahannock River Rural Historic District                                                                                                                                                                                                                                     | Not Eligible          | No Impact       |



**Archeological resources within or adjacent to the Rebuild Project Right-of Way**

| <b>Resource ID#</b> | <b>Resource Name</b> | <b>National Register Status</b> | <b>Distance to ROW</b> | <b>*Impact</b> |
|---------------------|----------------------|---------------------------------|------------------------|----------------|
| 44FQ0108            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44FQ0109            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0079            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0080            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0111            | Archaeological Site  | Not Evaluated                   | Adjacent to ROW        | TBD            |
| 44SP0165            | Archaeological Site  | Not Evaluated                   | Adjacent to ROW        | TBD            |
| 44SP0166            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0167            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0168            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0170            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0171            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0172            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0174            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0333            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44SP0340            | Archaeological Site  | Not Evaluated                   | Adjacent to ROW        | TBD            |
| 44SP0682            | Archaeological Site  | Not Eligible                    | Within ROW             | TBD            |
| 44ST0142            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |
| 44ST0143            | Archaeological Site  | Not Evaluated                   | Within ROW             | TBD            |

\*No archaeological field work was conducted as part of this effort, and previously recorded sites within or adjacent to the Rebuild Project were not assessed at this time. No impacts to any archaeological resources are anticipated at this time. Resources will be assessed for existing conditions and to confirm avoidance of impacts as project planning progresses.



The Company has communicated with local, state, and federal agencies prior to filing this Application, consistent with Guideline #4 (where government land is involved the applicant should contact the agencies early in the planning process). See Sections III.B and III.J of this Appendix and the DEQ Supplement.

The Company follows construction methods in the Guidelines on a site-specific basis for typical construction projects (Guideline #8, #10, #11, #15, #16, #18, and #22).

The Company also utilizes the Guidelines in clearing right-of-way, constructing facilities, and maintaining rights-of-way after construction. Moreover, secondary uses of right-of-way that are consistent with the safe maintenance and operation of facilities are permitted, as noted in Section II.A.8.



## II. DESCRIPTION OF THE PROPOSED PROJECT

### A. Right-of-way (“ROW”)

12. a. **Detail counties and localities through which the line will pass. If any portion of the line will be located outside of the Applicant’s certificated service area: (1) identify each electric utility affected; (2) state whether any affected electric utility objects to such construction; and (3) identify the length of line(s) proposed to be located in the service area of an electric utility other than the Applicant; and**
- b. **Provide three (3) color copies of the Virginia Department of Transportation “General Highway Map” for each county and city through which the line will pass. On the maps show the proposed line and all previously approved and certificated facilities of the Applicant. Also, where the line will be located outside of the Applicant's certificated service area, show the boundaries between the Applicant and each affected electric utility. On each map where the proposed line would be outside of the Applicant’s certificated service area, the map must include a signature of an appropriate representative of the affected electric utility indicating that the affected utility is not opposed to the proposed construction within its service area.**

Response:

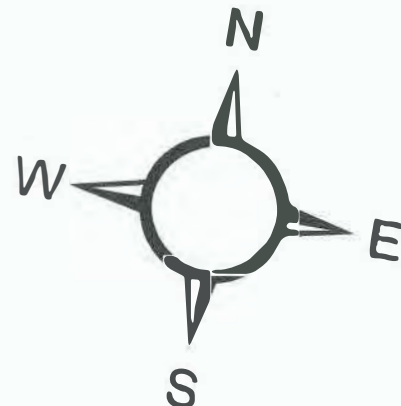
- a. The proposed Rebuild Project traverses Fauquier County for a total of approximately 4.5 miles, Stafford County for a total of approximately 9.4 miles, Spotsylvania County for approximately 20.9 miles, and Caroline County for approximately 1.9 miles. The Rebuild Project is located within Dominion Energy Virginia, NOVEC, and Rappahannock Electric Cooperative service territories.
- b. Three copies of the Virginia Department of Transportation (“VDOT”) “General Highway Map” for Fauquier, Stafford, Spotsylvania, and Caroline Counties are marked as required, and filed with the Application. Reduced copies of the maps are provided as Attachments II.A.12.b.1-4.





This digital map depicts the Virginia Electric and Power Company ("Company") transmission facilities in this county as approved by the Virginia State Corporation Commission ("SCC"), and any proposed transmission facilities in this county, as of 3/14/20. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.

# Fauquier County Road Map



Culpeper County

Rappahannock County

Warren County

Clarke County

Loudoun County

The Plains

Stafford County

Prince William County

VIRGINIA ELECTRIC AND POWER COMPANY  
PLANS TO BUILD TRANSMISSION LINES AND  
SUBSTATIONS AS SHOWN IN BLACK DASHES  
ON THIS MAP.

NORTHERN VIRGINIA ELECTRIC COOPERATIVE  
IS NOT OPPOSED TO SUCH CONSTRUCTION IN  
ITS SERVICE TERRITORY.

SIGNATURE *Robert E. Burin* TITLE *VICE PRESIDENT*  
DATE *4/24/20*

**Legend**

Number of Lines of Structures/Number of Circuits

Existing Substations

115kV Transmission Line

230kV Transmission Line

Proposed 500kV Transmission Line Rebuild

500kV Transmission Line

Sky Meadows State Park

**Provider Service Territory**

NOVEC

Rappahannock Electric Cooperative

VEPCO

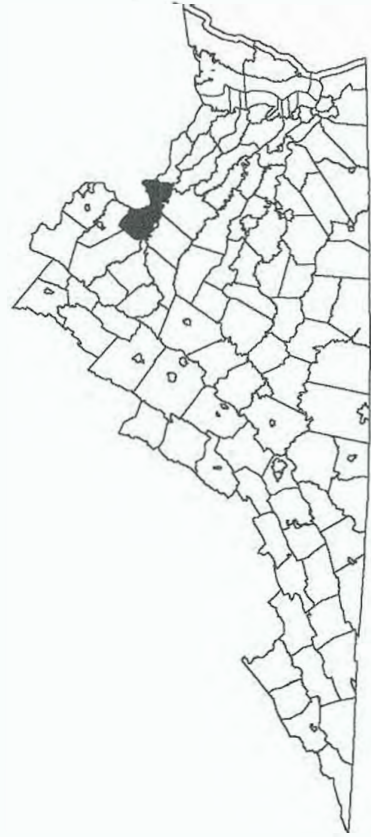
\*VDOT and other road data  
obtained from Navteq and  
County data, current as of  
September 2011.



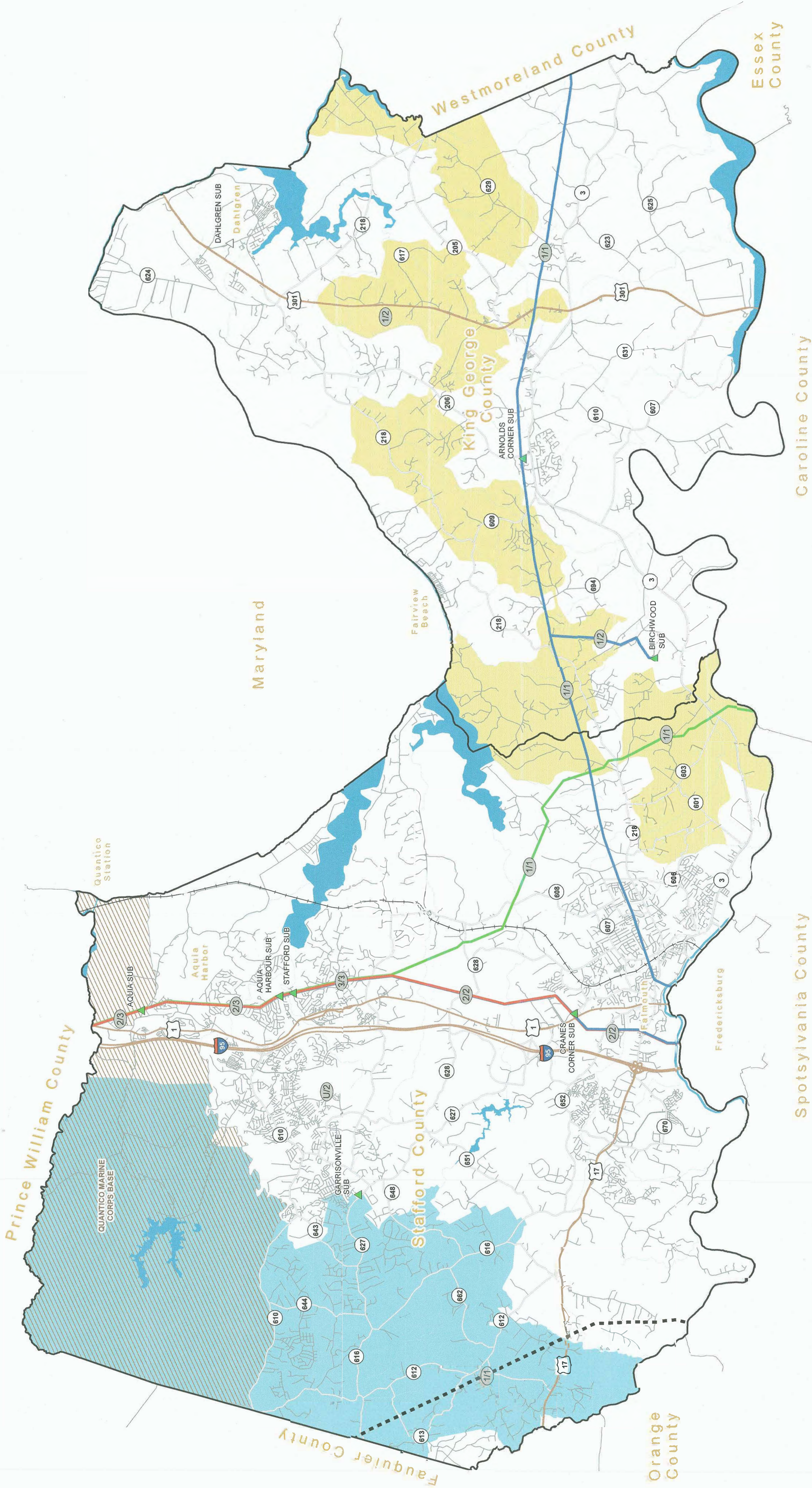




# King George & Stafford County Road Map



This digital map depicts the Virginia Electric and Power Company ("Company") transmission facilities in this county as approved by the Virginia State Corporation Commission ("SCC"), and any proposed transmission facilities in this county, as of 3/11/2022. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.



VIRGINIA ELECTRIC AND POWER COMPANY  
PLANS TO BUILD TRANSMISSION LINES AND  
SUBSTATIONS AS SHOWN IN BLACK DASHES  
ON THIS MAP.

NORTHERN VIRGINIA ELECTRIC COOPERATIVE  
IS NOT OPPOSED TO SUCH CONSTRUCTION IN  
ITS SERVICE TERRITORY.

SIGNATURE *Robert E. Bui*  
DATE 4/24/20 TITLE VICE PRESIDENT

**Legend**

---

Proposed 500 kV Transmission Line Rebuild

Number of Lines of Structures/Number of Circuits

△

Proposed Substation

Existing Substation

115 kV

230 kV

500 kV

**Provider Service Territory**

NNEC

NOVEC

VEPCO

\*VDOT and other road data  
obtained from Navteq and  
County data current as of  
August 2011.

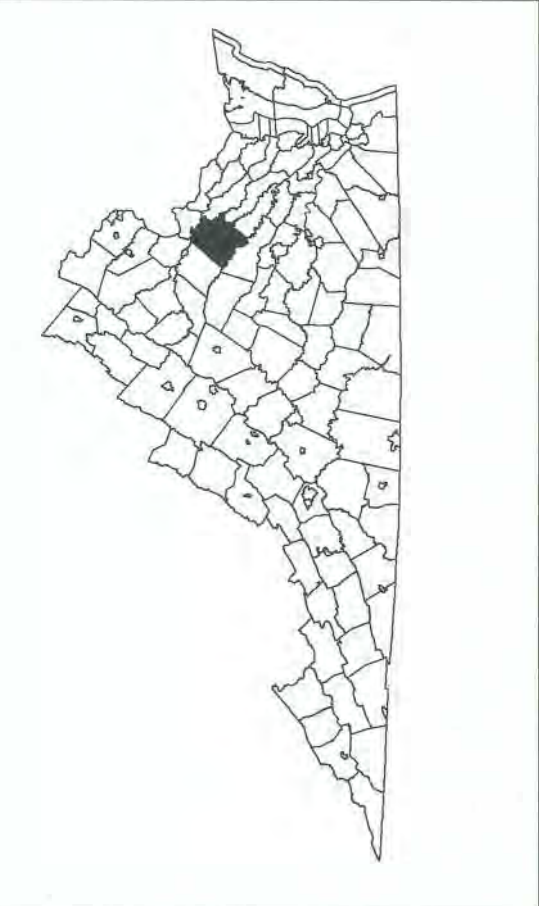




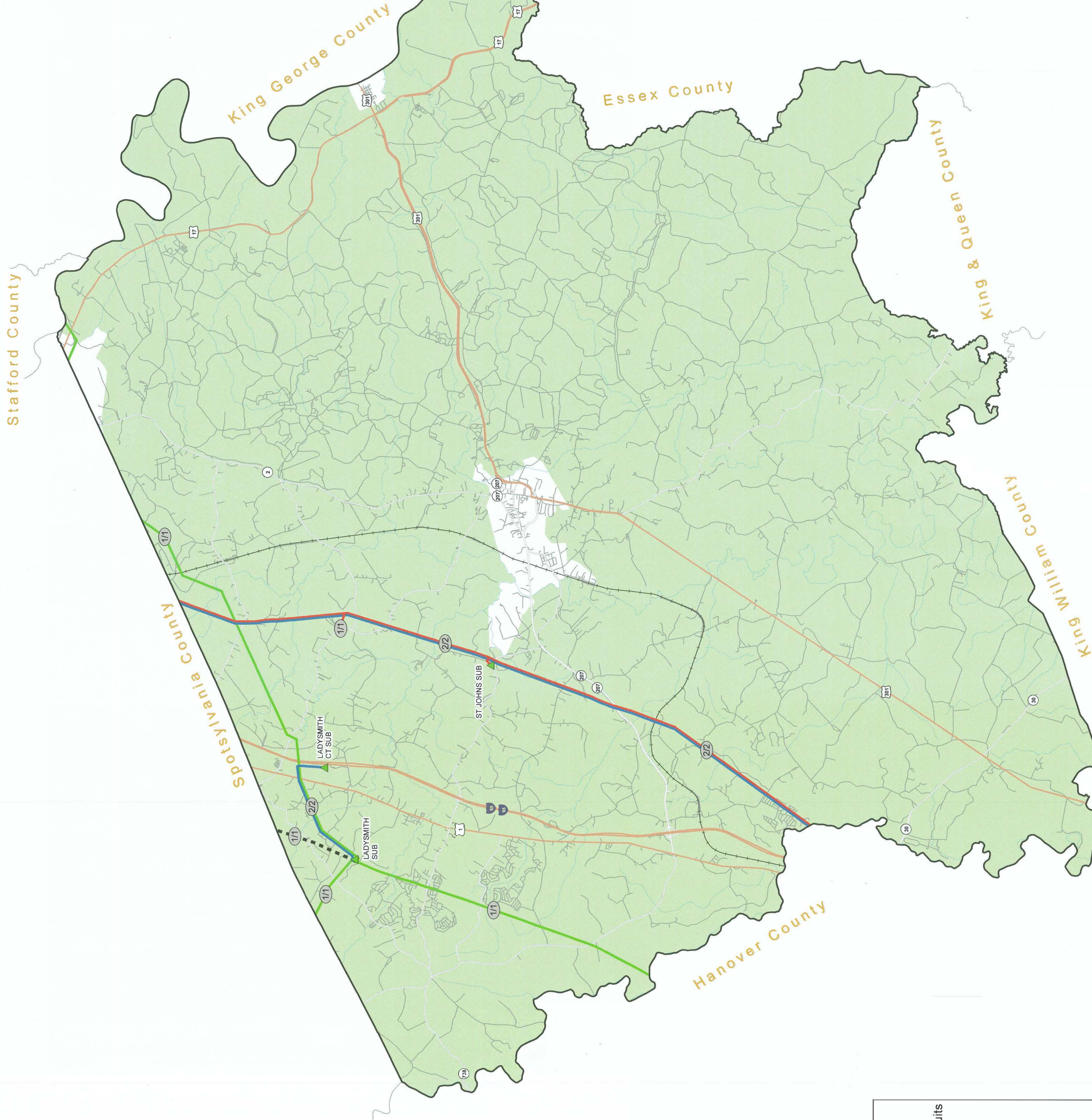
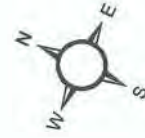




# Caroline County Road Map



This digital map depicts the Virginia Electric and Power Company ("VEPCO") transmission facilities in this county as approved by the Virginia State Corporation Commission ("SCC"), and any proposed transmission facilities in this county, as of 3/14/20. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.



VIRGINIA ELECTRIC AND POWER COMPANY  
PLANS TO BUILD TRANSMISSION LINES AND  
SUBSTATIONS AS SHOWN IN BLACK DASHES  
ON THIS MAP.  
RAPPAHANNOCK ELECTRIC COOPERATIVE  
IS NOT OPPOSED TO SUCH CONSTRUCTION IN  
ITS SERVICE TERRITORY.

SIGNATURE *Ronald W. Harris*  
DATE 3/20/20 TITLE Sr. V.P. of Eng. & Ops.

## Legend

- Proposed 500kV Transmission Line Rebuild
- Ⓢ Number of Lines of Structures/Number of Circuits
- △ Proposed Substation
- ▲ Existing Substation
- 115 kV
- 230 kV
- 500 kV
- Provider Service Territory
- REC
- VEPCO

\*VDOT and other road data  
obtained from Navteq and  
County data, current as of  
November 2012.





## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **B. Line Design and Operational Features**

- 1. Detail the number of circuits and their design voltage, initial operational voltage, any anticipated voltage upgrade, and transfer capabilities.**

Response: Single circuit 500 kV Lines #552 and #581 will be designed and operated at 500 kV with no anticipated voltage upgrade. The 3-phase triple-bundled 1351.5 ACSR conductors will have a transfer capability of 4330 MVA. The single circuit Line #198 underbuild will be designed and operated at 115 kV with no anticipated voltage upgrade. The 3-phase 795 ACSR conductor will have a transfer capability of 306 MVA.



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **B. Line Design and Operational Features**

- 2. Detail the number, size(s), type(s), coating and typical configurations of conductors. Provide the rationale for the type(s) of conductor(s) to be used.**

Response: The single circuit 500 kV Lines #552 and #581 will have 3-phase triple-bundled 1351.5 ACSR conductors arranged as shown in Attachments II.B.3.i-xv with two fiber optic shield wires. The triple-bundled 1351.5 ACSR conductors are the Company's standard conductors for new 500 kV construction. The single circuit 115 kV Line #198 will have 3-phase 795 ACSR conductors arranged, as shown in Attachments II.B.3.vi-vii, and will replace the existing 795 ACSR conductors. The proposed conductor and shield wire will be non-specular (de-glared).



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

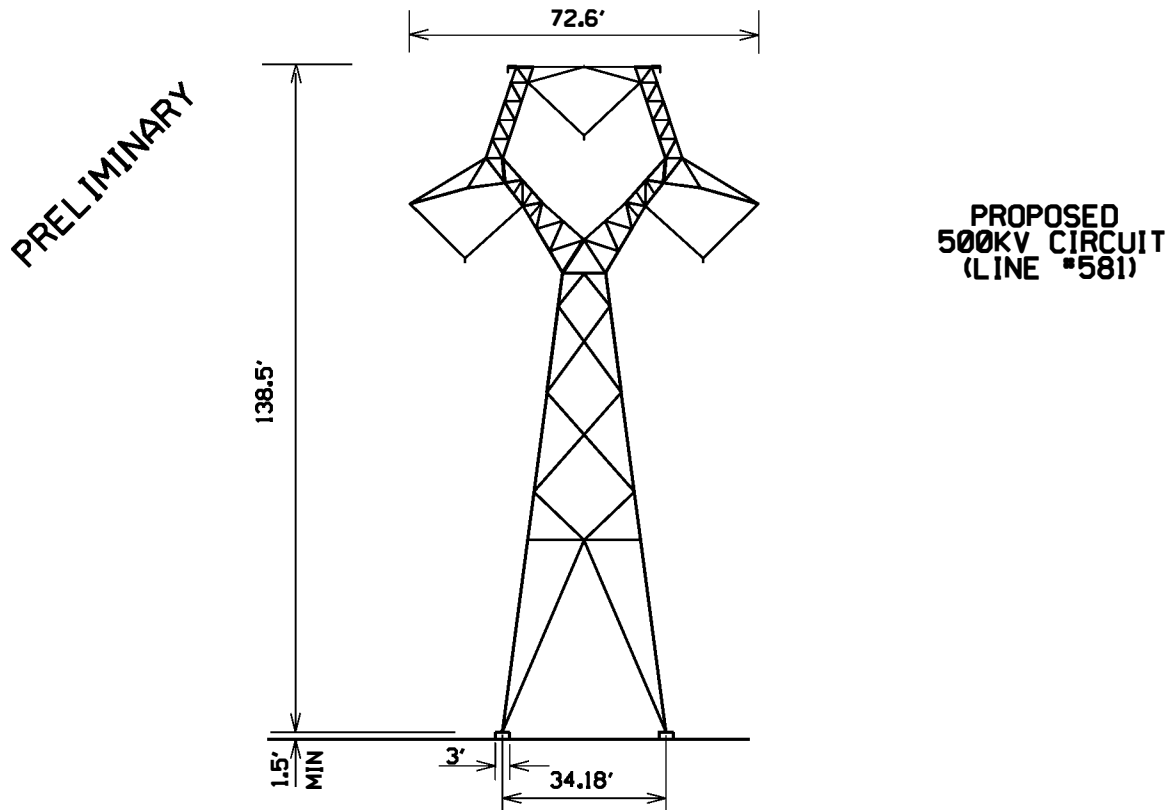
### **B. Line Design and Operational Features**

- 3. With regard to the proposed supporting structures over each portion of the ROW for the preferred route, provide diagrams (including foundation reveal) and descriptions of all the structure types, to include:**
  - a. mapping that identifies each portion of the preferred route;**
  - b. the rationale for the selection of the structure type;**
  - c. the number of each type of structure and the length of each portion of the ROW;**
  - d. the structure material and rationale for the selection of such material;**
  - e. the foundation material;**
  - f. the average width at cross arms;**
  - g. the average width at the base;**
  - h. the maximum, minimum and average structure heights;**
  - i. the average span length; and**
  - j. the minimum conductor-to-ground clearances under maximum operating conditions.**

Response: See Attachments II.B.3.i through xv.



## LADYSMITH - STRUCTURE #581/8



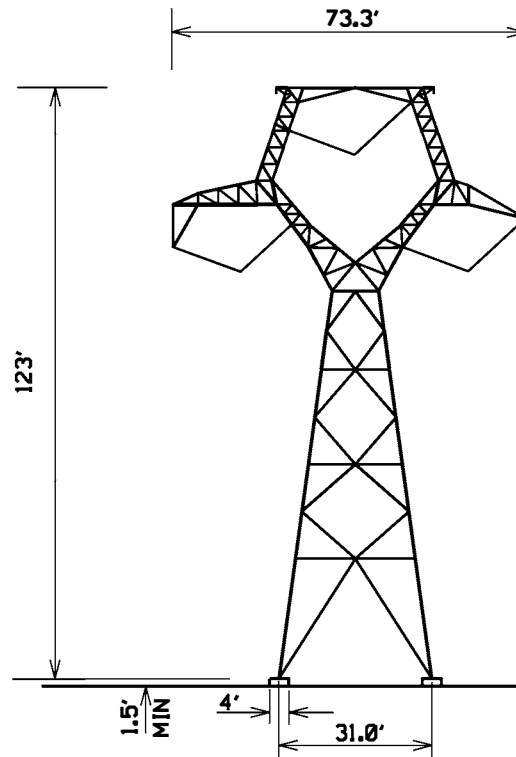
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
59 AND 13.97 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 72.6 FEET
- g. AVERAGE WIDTH AT BASE: 34.18 FEET (RANGE 28.91 - 39.46 FEET)
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 159 FEET, 119 FEET, AND 137 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1101 FEET (RANGE 590 - 1631 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## LADYSMITH - STRUCTURE #581/8

PRELIMINARY



PROPOSED  
500KV CIRCUIT  
(LINE #581)

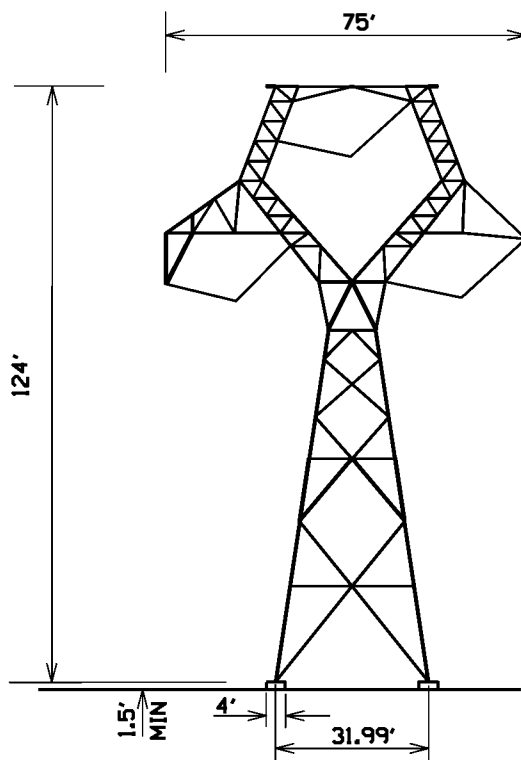
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
  - b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
  - c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
4 AND 13.97 MILES
  - d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
  - e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
  - f. AVERAGE WIDTH AT CROSSARM: 73.3 FEET
  - g. AVERAGE WIDTH AT BASE: 31.0 FEET (RANGE 29.17 - 33.26 FEET)
  - h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 128 FEET, 113 FEET, AND 121 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
  - i. AVERAGE SPAN LENGTH: 1101 FEET (RANGE 590 - 1631 FEET)
  - j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE
- NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.

\$DGN\$SPEC\$



## LADYSMITH - STRUCTURE #581/8

PRELIMINARY

PROPOSED  
500KV CIRCUIT  
(LINE #581)

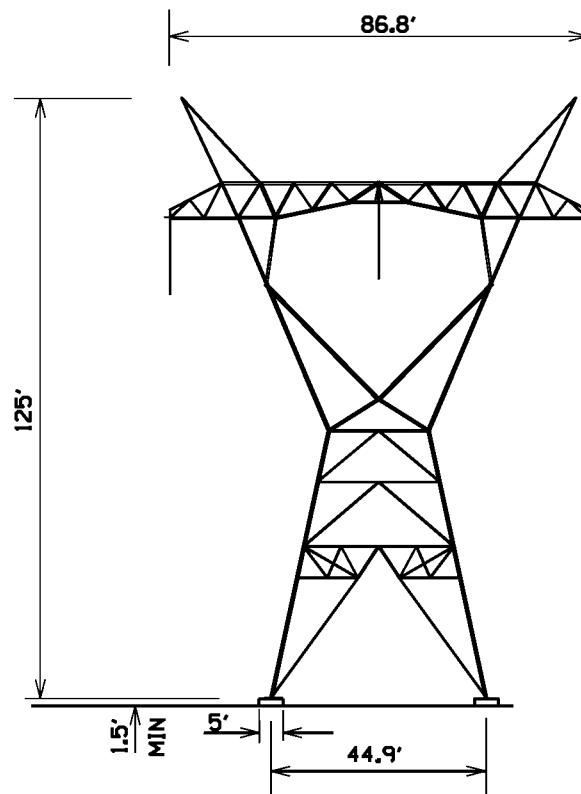
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
1 AND 13.97 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 75.0 FEET
- g. AVERAGE WIDTH AT BASE: 31.99 FEET
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 124 FEET, 124 FEET, AND 124 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1101 FEET (RANGE 590 - 1631 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## LADYSMITH - STRUCTURE #581/8

PRELIMINARY

PROPOSED  
500KV CIRCUIT  
(LINE #581)

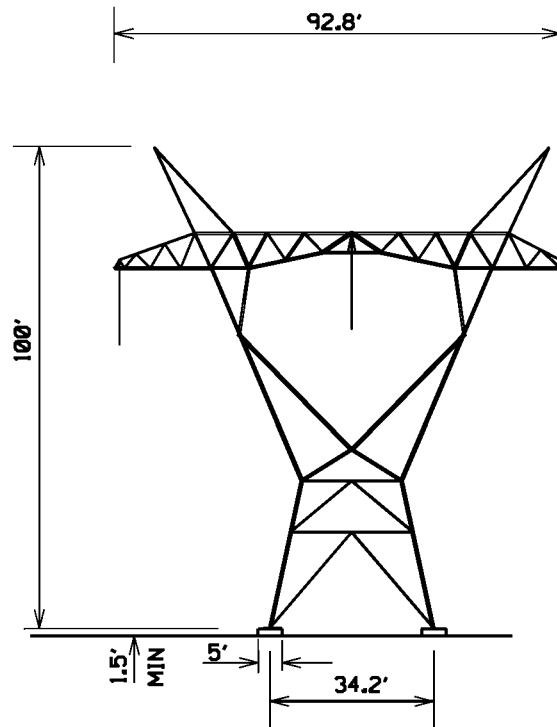
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
1 AND 13.97 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 86.8 FEET
- g. AVERAGE WIDTH AT BASE: 44.9 FEET
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 125 FEET, 125 FEET, AND 125 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1101 FEET (RANGE 590 - 1631 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## LADYSMITH - STRUCTURE #581/8

PRELIMINARY

PROPOSED  
500KV CIRCUIT  
(LINE #581)

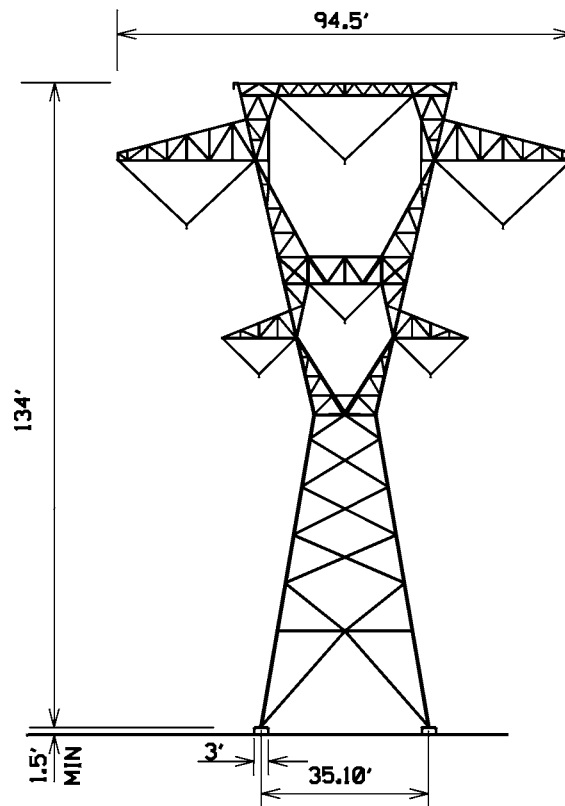
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
1 AND 13.97 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 92.8 FEET
- g. AVERAGE WIDTH AT BASE: 34.2 FEET
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 100 FEET, 100 FEET, AND 100 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1101 FEET (RANGE 590 - 1631 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## STRUCTURE #581/7 - CHANCELLOR

PRELIMINARY

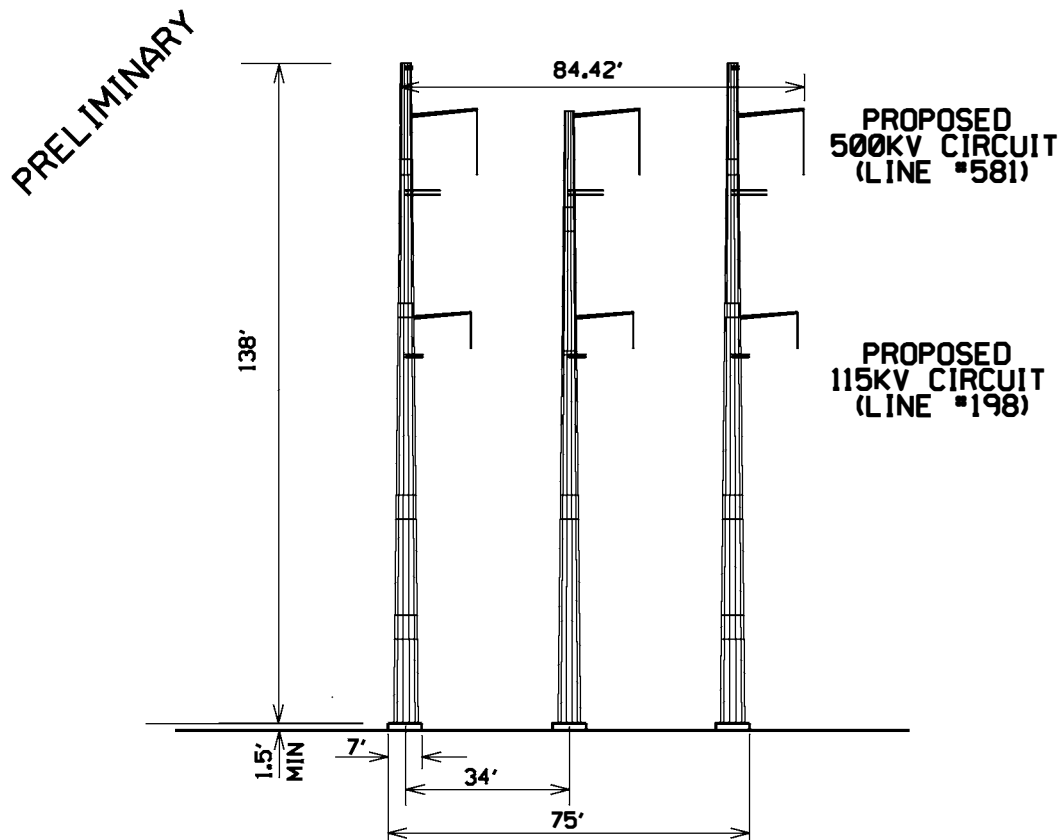
PROPOSED  
500KV CIRCUIT  
(LINE #581)PROPOSED  
115KV CIRCUIT  
(LINE #198)

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
MAINTAINS THE CIRCUITS IN THE EXISTING ARRANGEMENT
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
4 AND 1.23 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 94.5 FEET
- g. AVERAGE WIDTH AT BASE: 35.10 FEET (RANGE 31.7 - 40.2 FEET)
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 149 FEET, 124 FEET, AND 134 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1082 FEET (RANGE 791 - 1433 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 20.1'

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## STRUCTURE #581/7 - CHANCELLOR



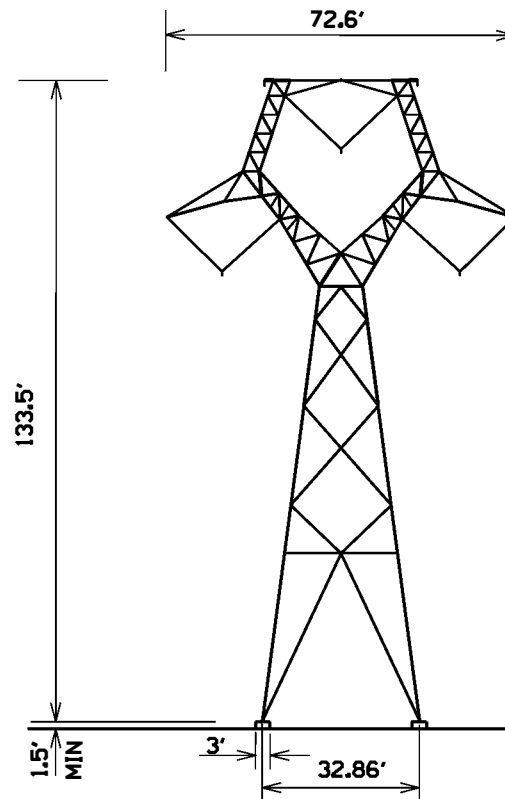
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
MAINTAINS THE CIRCUITS IN THE EXISTING ARRANGEMENT
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
2 AND 1.23 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL TO MATCH THE LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 84.42 FEET
- g. AVERAGE WIDTH AT BASE: 75 FEET
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 150 FEET, 125 FEET, AND 138 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1082 FEET (RANGE 791 - 1433 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 20.1'

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## CHANCELLOR - STRUCTURE #552/169

PRELIMINARY

PROPOSED  
500KV CIRCUIT  
(LINE #552)

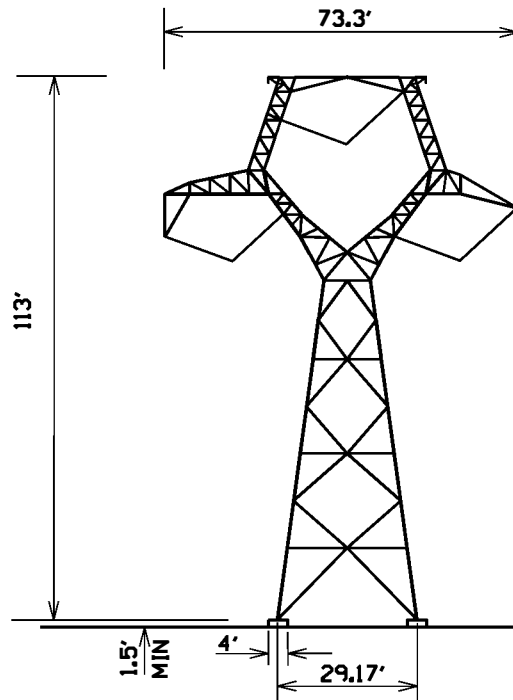
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
64 AND 14.67 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 72.6 FEET
- g. AVERAGE WIDTH AT BASE: 32.86 FEET (RANGE 24.95 - 39.46 FEET)
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 159 FEET, 104 FEET, AND 133 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1033 FEET (RANGE 470 - 1552 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## CHANCELLOR - STRUCTURE #552/169

PRELIMINARY

PROPOSED  
500KV CIRCUIT  
(LINE #552)

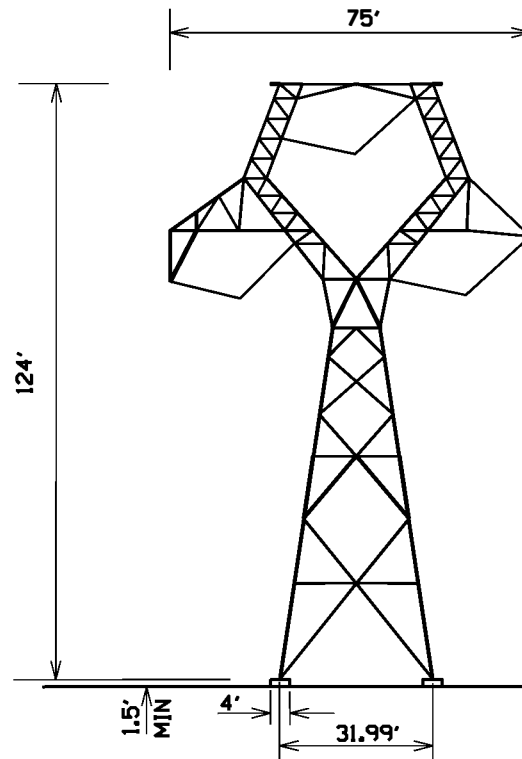
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
2 AND 14.67 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 73.3 FEET
- g. AVERAGE WIDTH AT BASE: 29.17 FEET (RANGE 26.45 - 30.54')
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 118 FEET, 103 FEET, AND 111 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1033 FEET (RANGE 470 - 1552 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## CHANCELLOR - STRUCTURE #552/169

PRELIMINARY

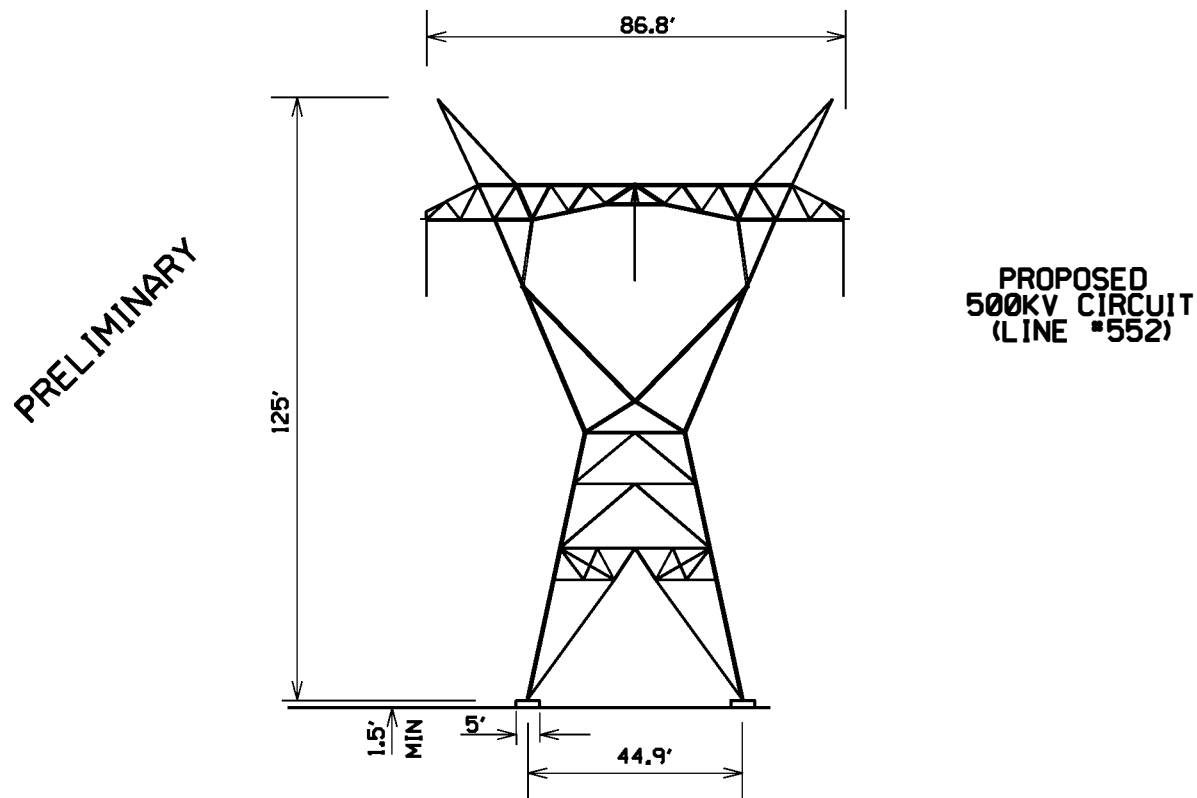
PROPOSED  
500KV CIRCUIT  
(LINE #552)

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
4 AND 14.67 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 75 FEET
- g. AVERAGE WIDTH AT BASE: 31.99 FEET (RANGE 28.99 - 33.49')
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 129 FEET, 114 FEET, AND 124 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1033 FEET (RANGE 470 - 1552 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## CHANCELLOR - STRUCTURE #552/169

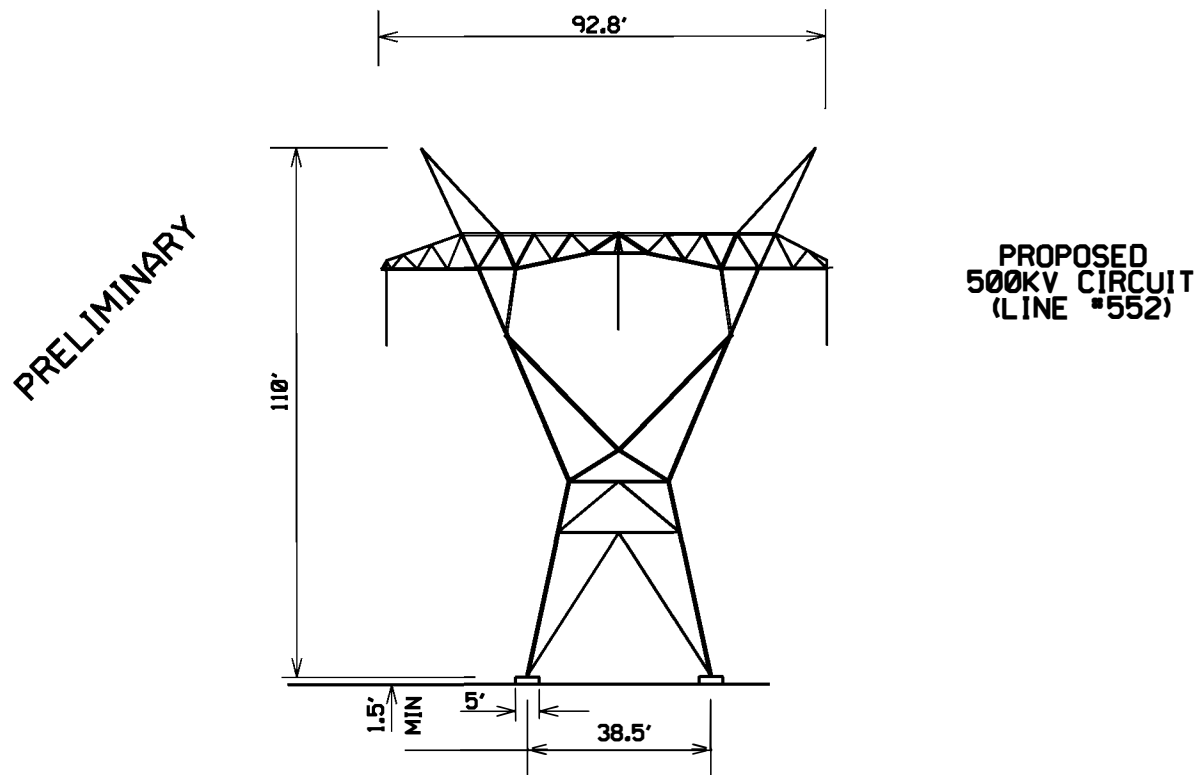


- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
2 AND 14.67 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 86.8 FEET
- g. AVERAGE WIDTH AT BASE: 44.9 FEET (RANGE 42.77 - 47.07)
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 130 FEET, 120 FEET, AND 125 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1033 FEET (RANGE 470 - 1552 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## CHANCELLOR - STRUCTURE #552/169



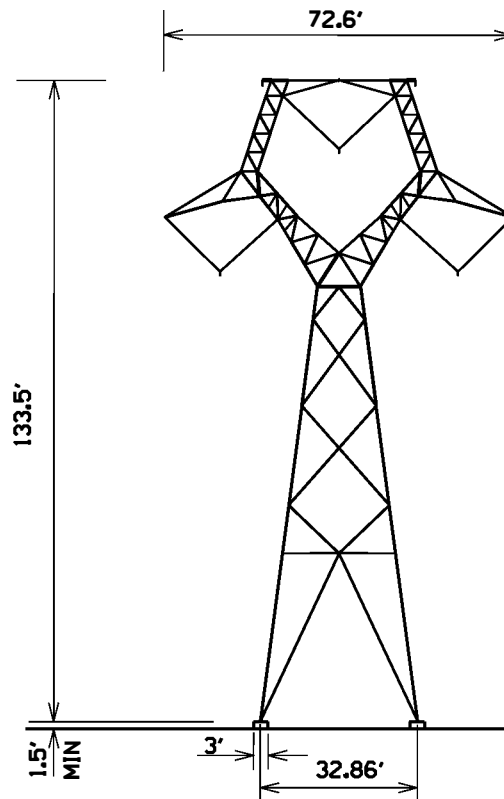
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
2 AND 14.67 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 92.8 FEET
- g. AVERAGE WIDTH AT BASE: 38.5 FEET (RANGE 36.3 - 40.6)
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 115 FEET, 105 FEET, AND 110 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1033 FEET (RANGE 470 - 1552 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## STRUCTURE #552/168 - BRISTERS

PRELIMINARY

PROPOSED  
500KV CIRCUIT  
(LINE #552)

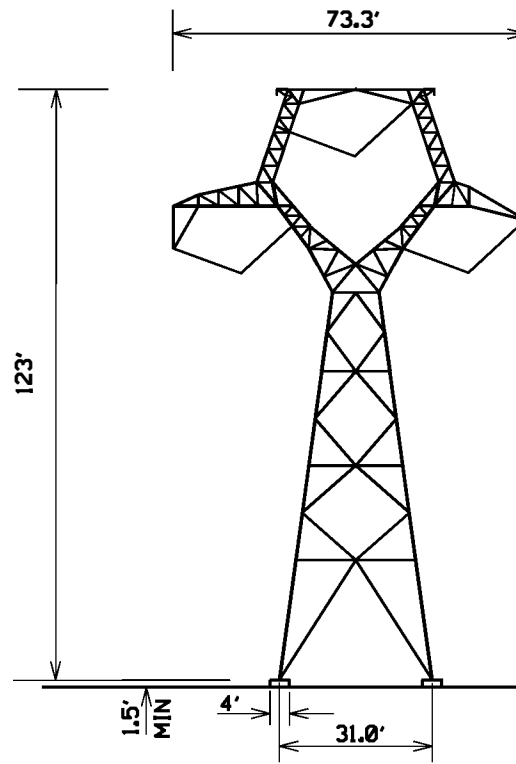
- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
30 AND 6.87 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 72.6 FEET
- g. AVERAGE WIDTH AT BASE: 32.86 FEET (RANGE 27.59 - 38.14 FEET)
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 154 FEET, 114 FEET, AND 133 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1037 FEET (RANGE 246 - 1359 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## STRUCTURE #552/168 - BRISTERS

PRELIMINARY

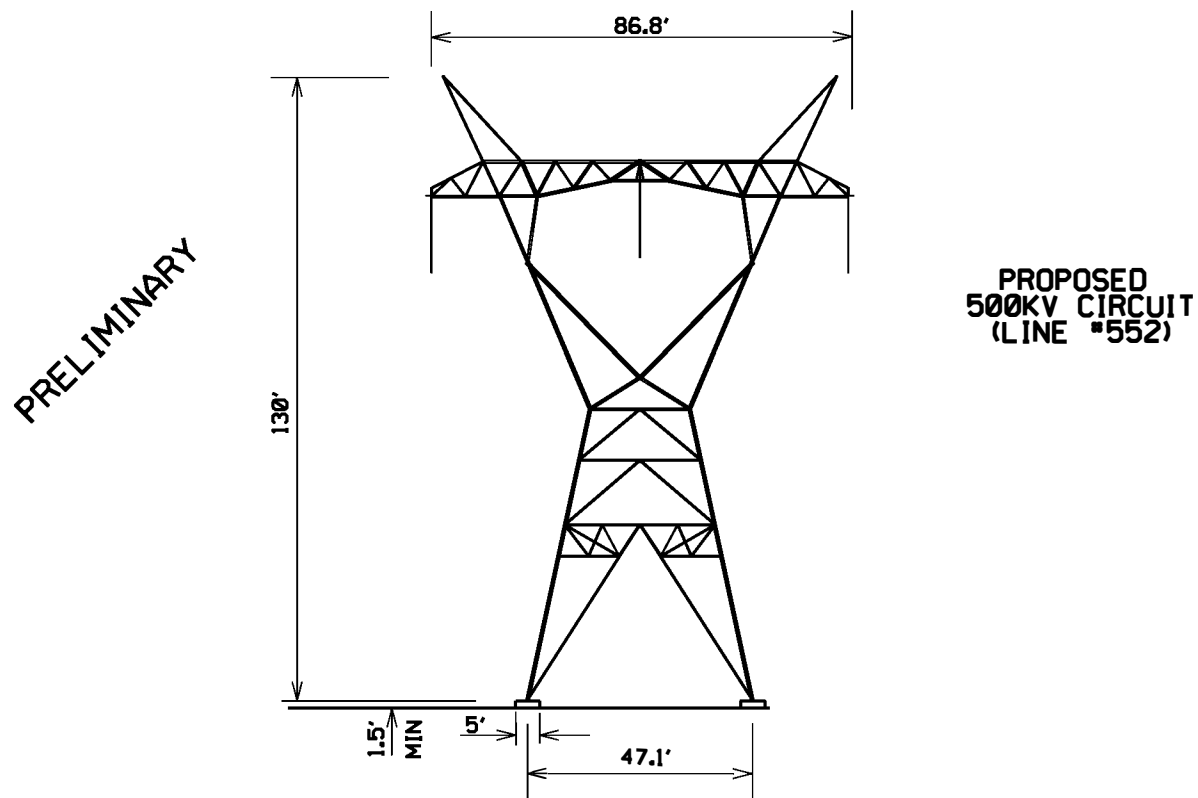
PROPOSED  
500KV CIRCUIT  
(LINE #552)

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
3 AND 6.87 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 73.3 FEET
- g. AVERAGE WIDTH AT BASE: 31.0 FEET (RANGE 29.17 - 31.94')
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 123 FEET, 113 FEET, AND 120 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1037 FEET (RANGE 246 - 1359 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9' AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.



## STRUCTURE #552/168 - BRISTERS



- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:  
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:  
ALLOWS STRUCTURE FOR STRUCTURE REPLACEMENT IN EXISTING RIGHT-OF-WAY
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:  
1 AND 6.87 MILES
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:  
GALVANIZED STEEL IS THE COMPANY'S STANDARD FOR LATTICE STRUCTURES
- e. FOUNDATION MATERIAL: CONCRETE (REVEAL WILL VARY BASED ON TERRAIN)
- f. AVERAGE WIDTH AT CROSSARM: 86.8 FEET
- g. AVERAGE WIDTH AT BASE: 47.1 FEET
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 130 FEET, 130 FEET, AND 130 FEET  
MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE AND DOES NOT INCLUDE  
FOUNDATION REVEAL
- i. AVERAGE SPAN LENGTH: 1037 FEET (RANGE 246 - 1359 FEET)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 27.9'  
AND 46' AT 120°F PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTE: Information contained on drawing is to be considered preliminary  
in nature and subject to change based on final design.



## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **B. Line Design and Operational Features**

- 4. With regard to the proposed supporting structures for all feasible alternate routes, provide the maximum, minimum and average structure heights with respect to the whole route.**

Response: Not applicable.



## II. DESCRIPTION OF THE PROPOSED PROJECT

### B. Line Design and Operational Features

5. For lines being rebuilt, provide mapping showing existing and proposed structure heights for each individual structure within the ROW, as proposed in the application.

Response: See [Attachment II.B.5](#) for existing structure locations.

The proposed approximate structure heights are from the conceptual design created to estimate the cost of the proposed Rebuild Project and are subject to change based on final engineering design. The approximate structure heights do not include foundation reveal and assume equal leg lengths based on the centerline ground elevation. Note that, to the extent structures are not being rebuilt as part of the Rebuild Project (*i.e.*, Structures #581/1, #581/74, #552/132, and #552/133), they are not identified on the chart below.

| Structure Number | Existing Structure Height (ft) | Proposed Structure Height (ft) | Attachment II.B.3 Structure Type |
|------------------|--------------------------------|--------------------------------|----------------------------------|
| 552/134          | 135                            | 130                            | xv                               |
| 552/135          | 95                             | 119                            | xiii                             |
| 552/136          | 95                             | 119                            | xiii                             |
| 552/137          | 95                             | 124                            | xiii                             |
| 552/138          | 95                             | 129                            | xiii                             |
| 552/139          | 92                             | 123                            | xiv                              |
| 552/140          | 125                            | 154                            | xiii                             |
| 552/141          | 120                            | 154                            | xiii                             |
| 552/142          | 90                             | 134                            | xiii                             |
| 552/143          | 110                            | 139                            | xiii                             |
| 552/144          | 90                             | 129                            | xiii                             |
| 552/145          | 120                            | 129                            | xiii                             |
| 552/146          | 90                             | 124                            | xiii                             |
| 552/147          | 95                             | 129                            | xiii                             |
| 552/148          | 90                             | 124                            | xiii                             |
| 552/149          | 92                             | 123                            | xiv                              |
| 552/150          | 75                             | 114                            | xiii                             |
| 552/151          | 125                            | 139                            | xiii                             |
| 552/152          | 120                            | 144                            | xiii                             |
| 552/153          | 105                            | 144                            | xiii                             |
| 552/154          | 110                            | 139                            | xiii                             |
| 552/155          | 105                            | 134                            | xiii                             |
| 552/156          | 92                             | 113                            | xiv                              |



| Structure Number | Existing<br>Structure Height<br>(ft) | Proposed<br>Structure Height<br>(ft) | Attachment<br>II.B.3<br>Structure Type |
|------------------|--------------------------------------|--------------------------------------|----------------------------------------|
| 552/158          | 90                                   | 129                                  | xiii                                   |
| 552/159          | 90                                   | 129                                  | xiii                                   |
| 552/160          | 125                                  | 149                                  | xiii                                   |
| 552/161          | 120                                  | 149                                  | xiii                                   |
| 552/162          | 95                                   | 134                                  | xiii                                   |
| 552/163          | 100                                  | 134                                  | xiii                                   |
| 552/164          | 105                                  | 134                                  | xiii                                   |
| 552/165          | 90                                   | 124                                  | xiii                                   |
| 552/166          | 90                                   | 119                                  | xiii                                   |
| 552/167          | 125                                  | 129                                  | xiii                                   |
| 552/168          | 125                                  | 139                                  | xiii                                   |
| 552/169          | 125                                  | 130                                  | xi                                     |
| 552/170          | 105                                  | 139                                  | viii                                   |
| 552/171          | 105                                  | 134                                  | viii                                   |
| 552/172          | 100                                  | 134                                  | viii                                   |
| 552/173          | 95                                   | 129                                  | viii                                   |
| 552/174          | 110                                  | 144                                  | viii                                   |
| 552/175          | 125                                  | 159                                  | viii                                   |
| 552/176          | 120                                  | 154                                  | viii                                   |
| 552/177          | 125                                  | 144                                  | viii                                   |
| 552/178          | 100                                  | 139                                  | viii                                   |
| 552/179          | 110                                  | 134                                  | viii                                   |
| 552/180          | 120                                  | 144                                  | viii                                   |
| 552/181          | 100                                  | 139                                  | viii                                   |
| 552/182          | 115                                  | 149                                  | viii                                   |
| 552/183          | 120                                  | 139                                  | viii                                   |
| 552/184          | 115                                  | 144                                  | viii                                   |
| 552/185          | 110                                  | 139                                  | viii                                   |
| 552/186          | 100                                  | 124                                  | viii                                   |
| 552/187          | 90                                   | 124                                  | viii                                   |
| 552/188          | 75                                   | 104                                  | viii                                   |
| 552/189          | 80                                   | 119                                  | viii                                   |
| 552/190          | 94                                   | 115                                  | xii                                    |
| 552/191          | 100                                  | 139                                  | viii                                   |
| 552/192          | 100                                  | 134                                  | viii                                   |
| 552/193          | 100                                  | 129                                  | viii                                   |
| 552/194          | 100                                  | 134                                  | viii                                   |
| 552/195          | 100                                  | 129                                  | viii                                   |
| 552/196          | 75                                   | 109                                  | viii                                   |
| 552/197          | 85                                   | 119                                  | viii                                   |



| Structure Number | Existing<br>Structure Height<br>(ft) | Proposed<br>Structure Height<br>(ft) | Attachment<br>II.B.3<br>Structure Type |
|------------------|--------------------------------------|--------------------------------------|----------------------------------------|
| 552/198          | 100                                  | 124                                  | viii                                   |
| 552/199          | 115                                  | 144                                  | viii                                   |
| 552/200          | 110                                  | 144                                  | viii                                   |
| 552/201          | 82                                   | 124                                  | x                                      |
| 552/202          | 150                                  | 124                                  | viii                                   |
| 552/203          | 150                                  | 124                                  | viii                                   |
| 552/204          | 92                                   | 105                                  | xii                                    |
| 552/205          | 80                                   | 104                                  | viii                                   |
| 552/206          | 85                                   | 119                                  | viii                                   |
| 552/207          | 80                                   | 114                                  | viii                                   |
| 552/208          | 80                                   | 119                                  | viii                                   |
| 552/209          | 110                                  | 129                                  | viii                                   |
| 552/210          | 100                                  | 129                                  | viii                                   |
| 552/211          | 110                                  | 144                                  | viii                                   |
| 552/212          | 87                                   | 129                                  | x                                      |
| 552/213          | 75                                   | 119                                  | viii                                   |
| 552/214          | 125                                  | 134                                  | viii                                   |
| 552/215          | 125                                  | 124                                  | viii                                   |
| 552/216          | 72                                   | 114                                  | x                                      |
| 552/217          | 75                                   | 109                                  | viii                                   |
| 552/218          | 100                                  | 129                                  | viii                                   |
| 552/219          | 135                                  | 149                                  | viii                                   |
| 552/220          | 135                                  | 159                                  | viii                                   |
| 552/221          | 115                                  | 149                                  | viii                                   |
| 552/222          | 90                                   | 109                                  | viii                                   |
| 552/223          | 100                                  | 134                                  | viii                                   |
| 552/224          | 100                                  | 134                                  | viii                                   |
| 552/225          | 85                                   | 114                                  | viii                                   |
| 552/226          | 95                                   | 119                                  | viii                                   |
| 552/227          | 100                                  | 134                                  | viii                                   |
| 552/228          | 92                                   | 118                                  | ix                                     |
| 552/229          | 105                                  | 144                                  | viii                                   |
| 552/230          | 110                                  | 139                                  | viii                                   |
| 552/231          | 72                                   | 103                                  | ix                                     |
| 552/232          | 75                                   | 109                                  | viii                                   |
| 552/233          | 110                                  | 139                                  | viii                                   |
| 552/234          | 115                                  | 149                                  | viii                                   |
| 552/235          | 120                                  | 154                                  | viii                                   |
| 552/236          | 125                                  | 154                                  | viii                                   |
| 552/237          | 82                                   | 129                                  | x                                      |



| Structure Number | Existing<br>Structure Height<br>(ft) | Proposed<br>Structure Height<br>(ft) | Attachment<br>II.B.3<br>Structure Type |
|------------------|--------------------------------------|--------------------------------------|----------------------------------------|
| 552/238          | 120                                  | 149                                  | viii                                   |
| 552/239          | 105                                  | 134                                  | viii                                   |
| 552/240          | 105                                  | 139                                  | viii                                   |
| 552/241          | 115                                  | 139                                  | viii                                   |
| 552/242          | 95                                   | 120                                  | xi                                     |
| <b>Min</b>       | <b>72</b>                            | <b>103</b>                           |                                        |
| <b>Max</b>       | <b>150</b>                           | <b>159</b>                           |                                        |
| <b>Average</b>   | <b>103</b>                           | <b>131</b>                           |                                        |
|                  |                                      |                                      |                                        |
| 581/2            | 138                                  | 150                                  | vii                                    |
| 581/3            | 118                                  | 129                                  | vi                                     |
| 581/4            | 138                                  | 149                                  | vi                                     |
| 581/5            | 123                                  | 134                                  | vi                                     |
| 581/6            | 113                                  | 124                                  | vi                                     |
| 581/7            | 119                                  | 125                                  | vii                                    |
| 581/8            | 135                                  | 149                                  | i                                      |
| 581/9            | 125                                  | 159                                  | i                                      |
| 581/10           | 150                                  | 149                                  | i                                      |
| 581/11           | 75                                   | 139                                  | i                                      |
| 581/12           | 110                                  | 139                                  | i                                      |
| 581/13           | 100                                  | 134                                  | i                                      |
| 581/14           | 80                                   | 119                                  | i                                      |
| 581/15           | 105                                  | 124                                  | i                                      |
| 581/16           | 110                                  | 139                                  | i                                      |
| 581/17           | 85                                   | 119                                  | i                                      |
| 581/18           | 92                                   | 124                                  | iii                                    |
| 581/19           | 90                                   | 129                                  | i                                      |
| 581/20           | 120                                  | 139                                  | i                                      |
| 581/21           | 110                                  | 144                                  | i                                      |
| 581/22           | 115                                  | 149                                  | i                                      |
| 581/23           | 125                                  | 154                                  | i                                      |
| 581/24           | 105                                  | 134                                  | i                                      |
| 581/25           | 115                                  | 139                                  | i                                      |
| 581/26           | 80                                   | 119                                  | i                                      |
| 581/27           | 110                                  | 134                                  | i                                      |
| 581/28           | 110                                  | 149                                  | i                                      |
| 581/29           | 120                                  | 144                                  | i                                      |
| 581/30           | 110                                  | 144                                  | i                                      |
| 581/31           | 100                                  | 124                                  | i                                      |
| 581/32           | 75                                   | 124                                  | i                                      |



| Structure Number | Existing<br>Structure Height<br>(ft) | Proposed<br>Structure Height<br>(ft) | Attachment<br>II.B.3<br>Structure Type |
|------------------|--------------------------------------|--------------------------------------|----------------------------------------|
| 581/33           | 85                                   | 119                                  | i                                      |
| 581/34           | 82                                   | 100                                  | v                                      |
| 581/35           | 80                                   | 119                                  | i                                      |
| 581/36           | 115                                  | 139                                  | i                                      |
| 581/37           | 140                                  | 159                                  | i                                      |
| 581/38           | 140                                  | 159                                  | i                                      |
| 581/39           | 115                                  | 144                                  | i                                      |
| 581/40           | 120                                  | 149                                  | i                                      |
| 581/41           | 145                                  | 149                                  | i                                      |
| 581/42           | 87                                   | 123                                  | ii                                     |
| 581/43           | 120                                  | 144                                  | i                                      |
| 581/44           | 125                                  | 149                                  | i                                      |
| 581/45           | 80                                   | 119                                  | i                                      |
| 581/46           | 95                                   | 124                                  | i                                      |
| 581/47           | 110                                  | 149                                  | i                                      |
| 581/48           | 120                                  | 139                                  | i                                      |
| 581/49           | 85                                   | 129                                  | i                                      |
| 581/50           | 95                                   | 119                                  | i                                      |
| 581/51           | 95                                   | 119                                  | i                                      |
| 581/52           | 80                                   | 119                                  | i                                      |
| 581/53           | 87                                   | 118                                  | ii                                     |
| 581/54           | 115                                  | 144                                  | i                                      |
| 581/55           | 125                                  | 149                                  | i                                      |
| 581/56           | 115                                  | 134                                  | i                                      |
| 581/57           | 100                                  | 139                                  | i                                      |
| 581/58           | 105                                  | 129                                  | i                                      |
| 581/59           | 77                                   | 113                                  | ii                                     |
| 581/60           | 80                                   | 119                                  | i                                      |
| 581/61           | 100                                  | 129                                  | i                                      |
| 581/62           | 100                                  | 139                                  | i                                      |
| 581/63           | 115                                  | 139                                  | i                                      |
| 581/64           | 110                                  | 139                                  | i                                      |
| 581/65           | 100                                  | 139                                  | i                                      |
| 581/66           | 100                                  | 134                                  | i                                      |
| 581/67           | 85                                   | 124                                  | i                                      |
| 581/68           | 90                                   | 128                                  | ii                                     |
| 581/69           | 125                                  | 149                                  | i                                      |
| 581/70           | 105                                  | 149                                  | i                                      |
| 581/71           | 115                                  | 149                                  | i                                      |
| 581/72           | 110                                  | 129                                  | i                                      |



| Structure Number | Existing<br>Structure Height<br>(ft) | Proposed<br>Structure Height<br>(ft) | Attachment<br>II.B.3<br>Structure Type |
|------------------|--------------------------------------|--------------------------------------|----------------------------------------|
| 581/73           | 110                                  | 125                                  | iv                                     |
| <b>Min</b>       | <b>75</b>                            | <b>100</b>                           |                                        |
| <b>Max</b>       | <b>150</b>                           | <b>159</b>                           |                                        |
| <b>Average</b>   | <b>107</b>                           | <b>135</b>                           |                                        |



II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

Client:

Dominion Energy Virginia

C2 Env Project:

0073

Prepared By:

MKB

Date:

04/22/20



SITE DATA

Project Limits

Existing Structures to Remain

Existing Structures to be Replaced

County Boundary

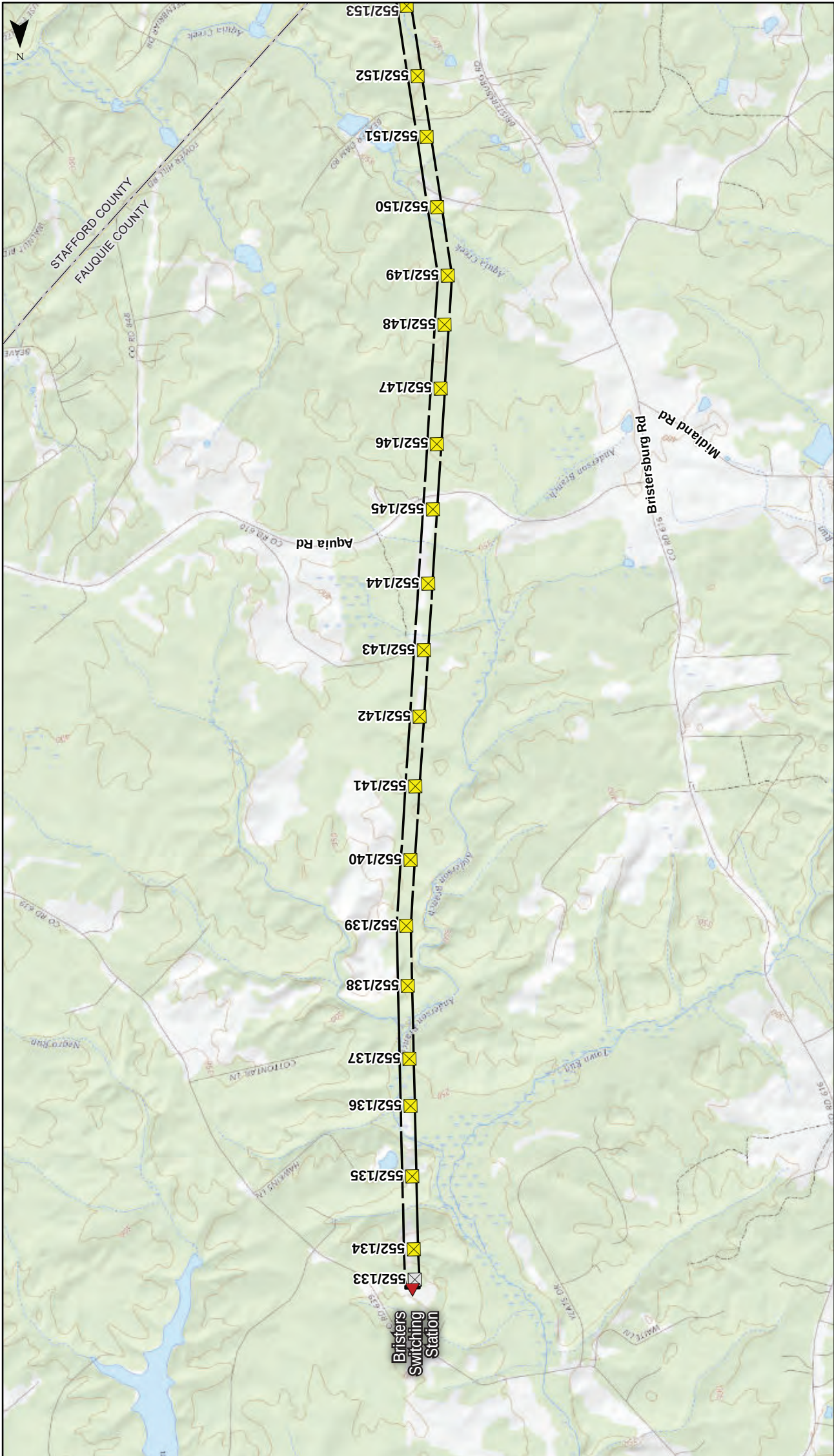


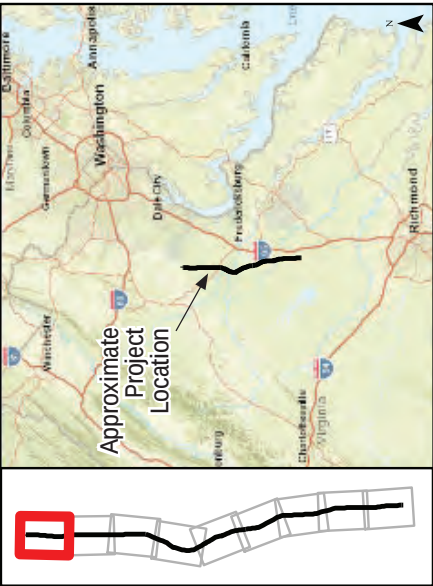
Table II.B.5

| Structure Number                 | 552/134 | 552/135 | 552/136 | 552/137 | 552/138 | 552/139 | 552/140 | 552/141 | 552/142 | 552/143 | 552/144 | 552/145 | 552/146 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 135     | 95      | 95      | 95      | 95      | 92      | 125     | 120     | 90      | 110     | 90      | 120     | 90      |
| Proposed Structure Height (Feet) | 130     | 119     | 119     | 124     | 129     | 123     | 154     | 154     | 134     | 139     | 129     | 129     | 124     |

| Structure Number                 | 552/147 | 552/148 | 552/149 | 552/150 | 552/151 | 552/152 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 95      | 90      | 92      | 75      | 125     | 120     |
| Proposed Structure Height (Feet) | 129     | 124     | 123     | 114     | 139     | 144     |

Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; USGS The National Map.
2. Structure locations and heights provided by Dominion Energy Virginia and information contained herein is preliminary in not include foundation reveal.



vhb

Dominion Energy

ENVIRONMENTAL



II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                          |  |              |          |
|--------------------------|--|--------------|----------|
| Client:                  |  |              |          |
| Dominion Energy Virginia |  |              |          |
| C2 Env Project:          |  | Prepared By: | Date:    |
| 0073                     |  | MKB          | 04/22/20 |



SITE DATA

- Project Limits
- Existing Structures to Remain
- Existing Structures to be Replaced
- County Boundary

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; USGS The National Map.  
2. Structure locations and heights provided by Dominion Energy Virginia and information contained herein is preliminary in not include foundation reveal.

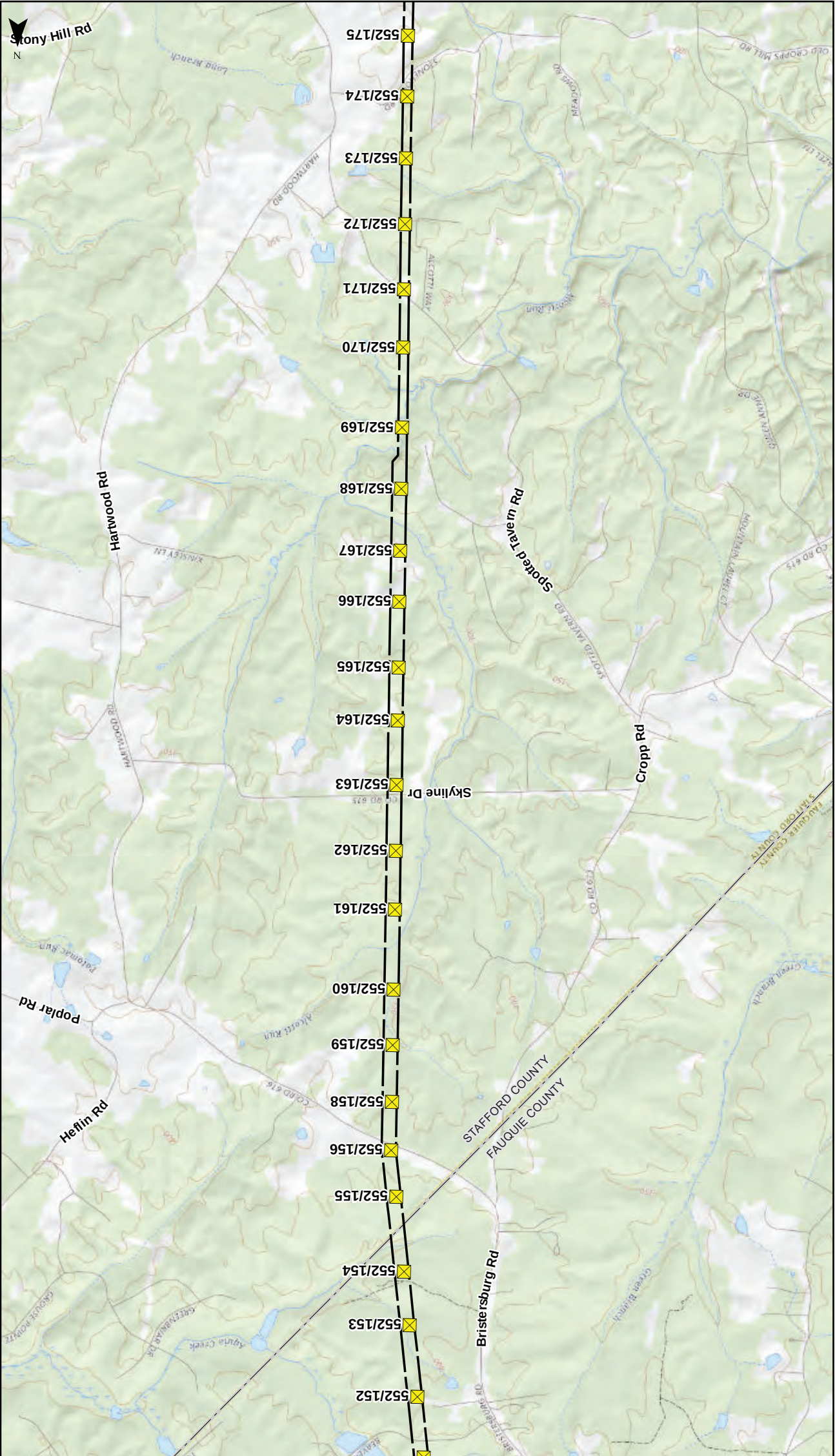
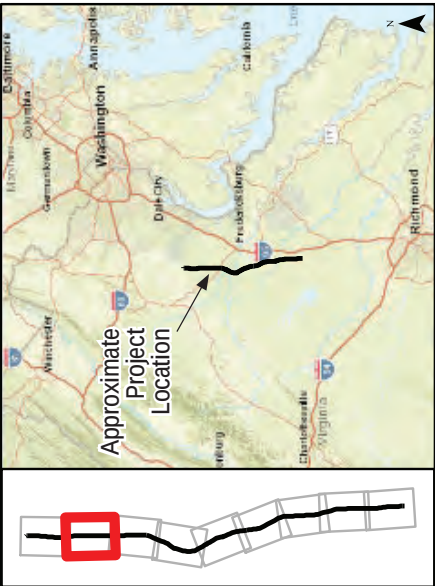


Table II.B.5

| Structure Number                 | 552/152 | 552/153 | 552/154 | 552/155 | 552/156 | 552/158 | 552/159 | 552/160 | 552/161 | 552/162 | 552/163 | 552/164 | 552/165 | 552/166 | 552/167 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 120     | 105     | 110     | 105     | 92      | 90      | 90      | 125     | 120     | 95      | 100     | 105     | 90      | 90      | 125     |
| Proposed Structure Height (Feet) | 144     | 144     | 139     | 134     | 113     | 129     | 129     | 149     | 149     | 134     | 134     | 134     | 124     | 119     | 129     |

| Structure Number                 | 552/168 | 552/169 | 552/170 | 552/171 | 552/172 | 552/173 | 552/174 | 552/175 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 125     | 125     | 105     | 105     | 100     | 95      | 110     | 125     |
| Proposed Structure Height (Feet) | 139     | 130     | 139     | 134     | 134     | 129     | 144     | 159     |





II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline  
Counties, Virginia

|                          |  |              |          |
|--------------------------|--|--------------|----------|
| Client:                  |  |              |          |
| Dominion Energy Virginia |  |              |          |
| C2 Env Project:          |  | Prepared By: | Date:    |
| 0073                     |  | MKB          | 04/22/20 |



SITE DATA

- Project Limits
- Existing Structures to Remain
- Existing Structures to be Replaced
- County Boundary

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar  
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID,  
IGN, and the GIS User Community; USGS The National Map.  
2. Structure locations and heights provided by Dominion Energy  
Virginia and information contained herein is preliminary in  
not include foundation reveal.

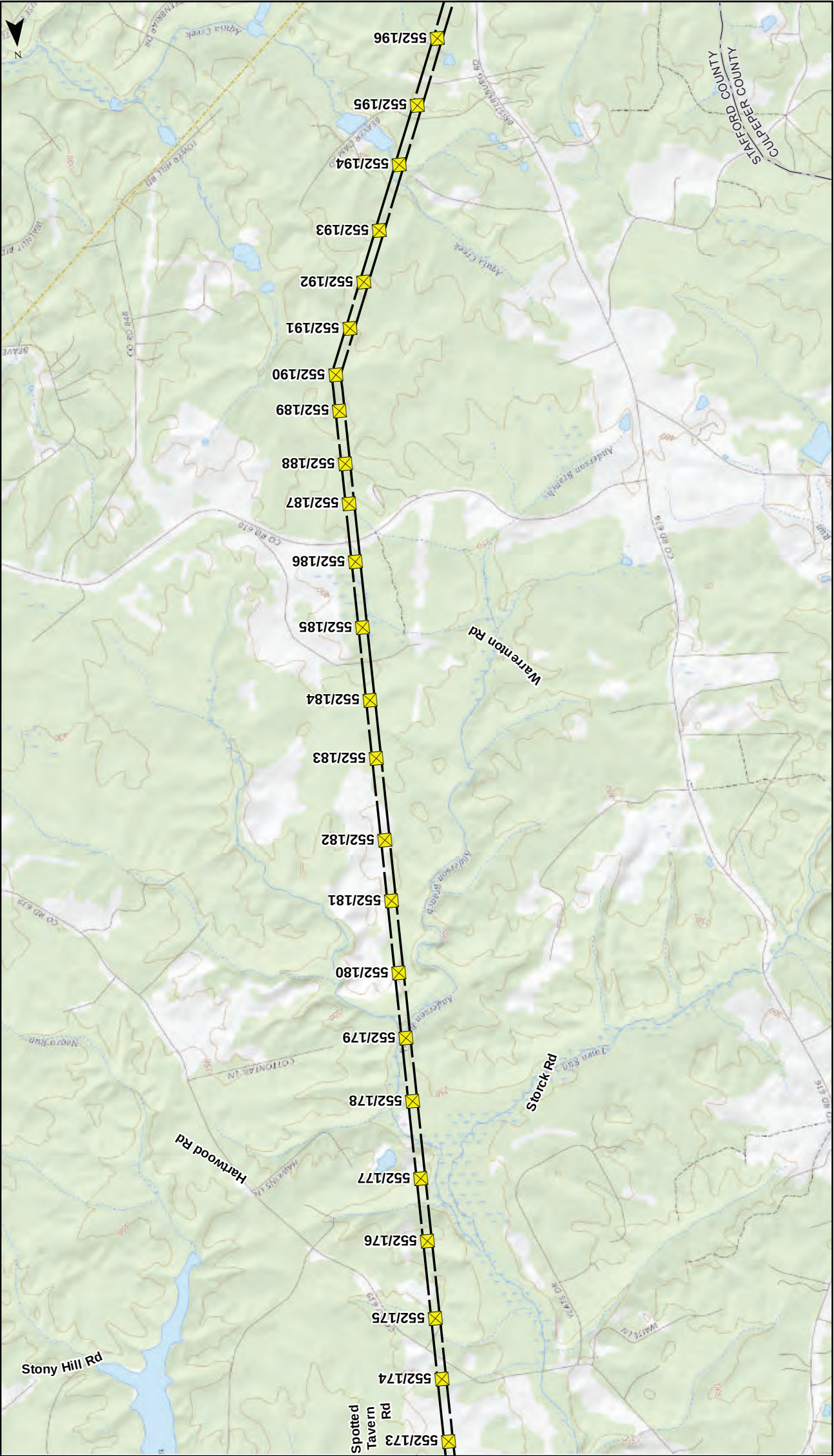
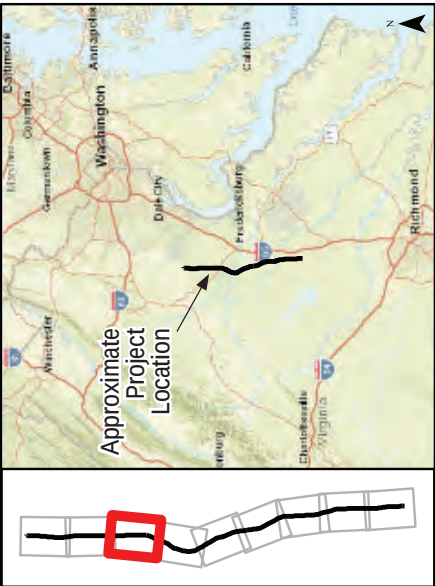
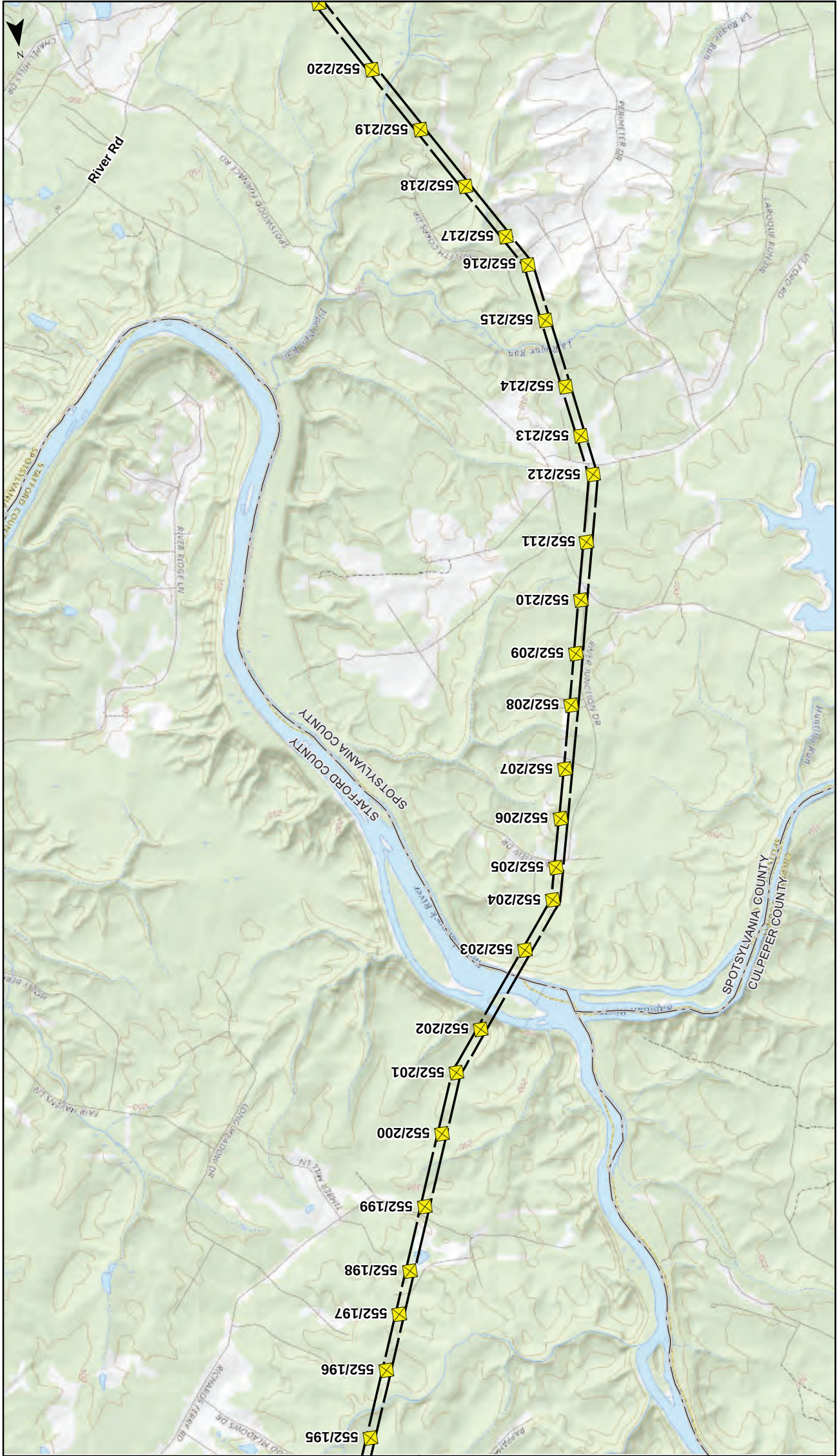


Table II.B.5

| Structure Number                 | 552/173 | 552/174 | 552/175 | 552/176 | 552/177 | 552/178 | 552/179 | 552/180 | 552/181 | 552/182 | 552/183 | 552/184 | 552/185 | 552/186 | 552/187 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 95      | 110     | 125     | 120     | 125     | 100     | 110     | 120     | 100     | 115     | 120     | 115     | 110     | 100     | 90      |
| Proposed Structure Height (Feet) | 129     | 144     | 159     | 154     | 144     | 139     | 134     | 144     | 139     | 149     | 139     | 144     | 139     | 124     | 124     |

| Structure Number                 | 552/188 | 552/189 | 552/190 | 552/191 | 552/192 | 552/193 | 552/194 | 552/195 | 552/196 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 75      | 80      | 94      | 100     | 100     | 100     | 100     | 100     | 75      |
| Proposed Structure Height (Feet) | 104     | 119     | 115     | 139     | 134     | 129     | 134     | 129     | 109     |





## II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

Client: Dominion Energy Virginia

C2 Env Project: 0073 Prepared By: MKB Date: 04/22/20



- SITE DATA**
- Project Limits
  - Existing Structures to Remain
  - Existing Structures to be Replaced
  - County Boundary

Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; USGS The National Map.
2. Structure locations and heights provided by Dominion Energy Virginia and information contained herein is preliminary in not include foundation reveal.

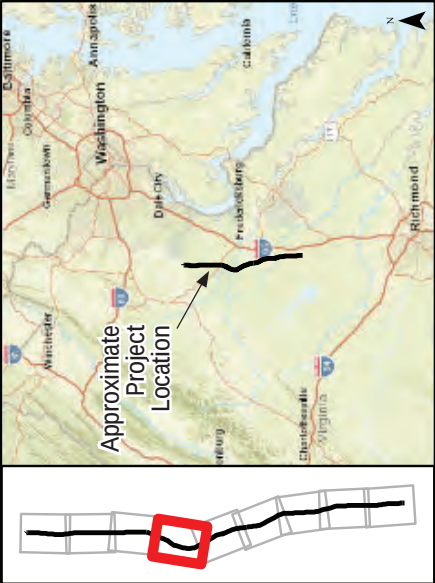


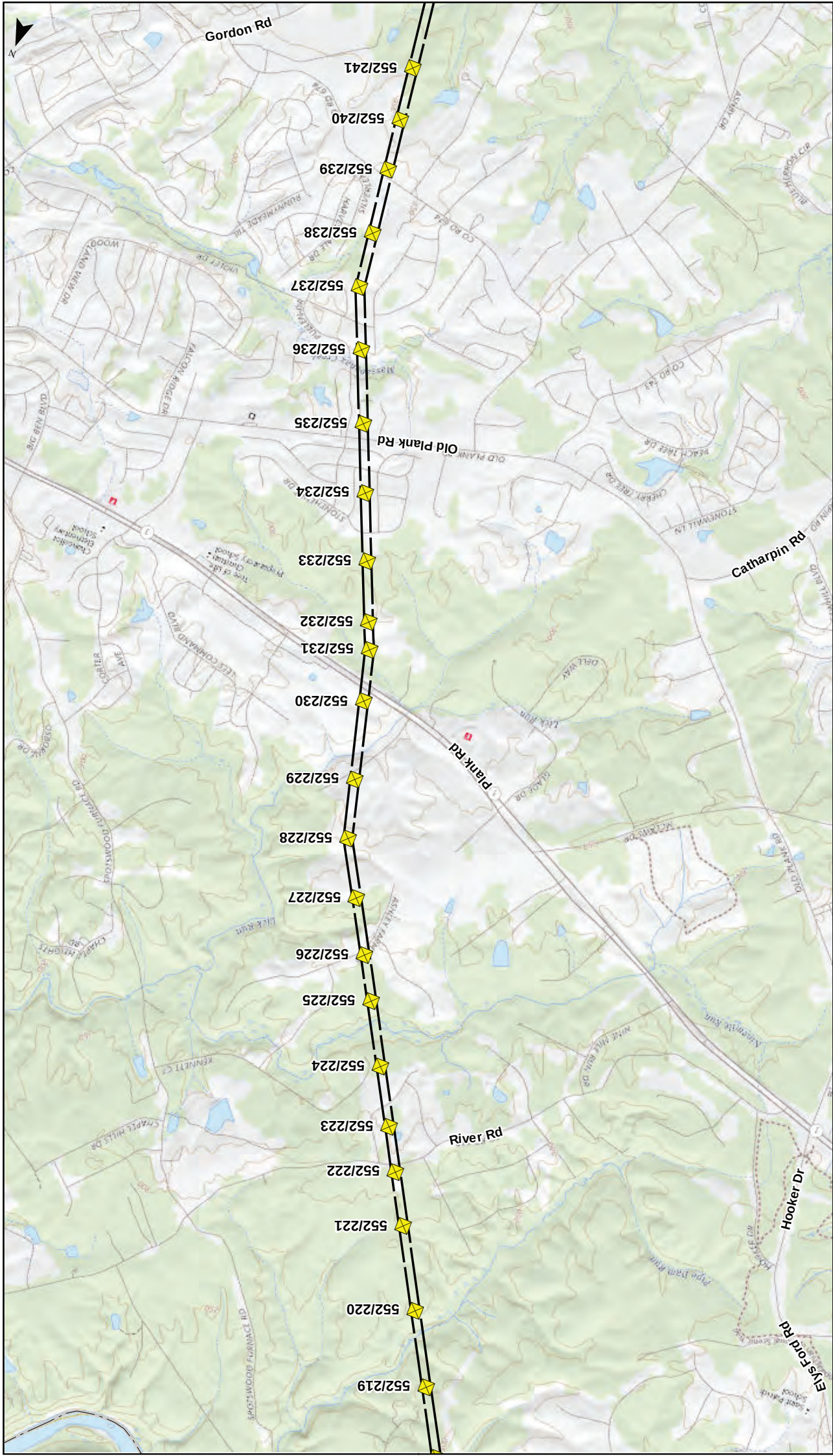
Table II.B.5

| Structure Number                 | 552/195 | 552/196 | 552/197 | 552/198 | 552/199 | 552/200 | 552/201 | 552/202 | 552/203 | 552/204 | 552/205 | 552/206 | 552/207 | 552/208 | 552/209 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 100     | 75      | 85      | 100     | 115     | 110     | 82      | 150     | 150     | 92      | 80      | 85      | 80      | 80      | 110     |
| Proposed Structure Height (Feet) | 129     | 109     | 119     | 124     | 144     | 144     | 124     | 124     | 124     | 105     | 104     | 119     | 114     | 119     | 129     |

| Structure Number                 | 552/210 | 552/211 | 552/212 | 552/213 | 552/214 | 552/215 | 552/216 | 552/217 | 552/218 | 552/219 | 552/220 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 100     | 110     | 87      | 75      | 125     | 125     | 72      | 75      | 100     | 135     | 135     |
| Proposed Structure Height (Feet) | 129     | 144     | 129     | 119     | 134     | 124     | 114     | 109     | 129     | 149     | 159     |







### II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

Client:

Dominion Energy Virginia

C2 Env Project:

0073

Prepared By:

MKB

Date:

04/22/20

0

1,000

2,000 Feet

Scale is 1 in = 2,000 FT when printed at original size of 11x17

#### SITE DATA

Project Limits

Existing Structures to Remain

Existing Structures to be Replaced

County Boundary

Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; USGS The National Map.
2. Structure locations and heights provided by Dominion Energy Virginia and information contained herein is preliminary in not include foundation reveal.

SHEET 5 OF 9

Table II.B.5

| Structure Number                 | 552/219 | 552/220 | 552/221 | 552/222 | 552/223 | 552/224 | 552/225 | 552/226 | 552/227 | 552/228 | 552/229 | 552/230 | 552/231 | 552/232 | 552/233 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 135     | 135     | 115     | 90      | 100     | 100     | 85      | 95      | 100     | 92      | 105     | 110     | 72      | 75      | 110     |
| Proposed Structure Height (Feet) | 149     | 159     | 149     | 109     | 134     | 134     | 114     | 119     | 134     | 118     | 144     | 139     | 103     | 109     | 139     |

| Structure Number                 | 552/234 | 552/235 | 552/236 | 552/237 | 552/238 | 552/239 | 552/240 | 552/241 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Existing Structure Height (Feet) | 115     | 120     | 125     | 82      | 120     | 105     | 105     | 115     |
| Proposed Structure Height (Feet) | 149     | 154     | 154     | 129     | 149     | 134     | 139     | 139     |

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II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

|                          |  |              |          |
|--------------------------|--|--------------|----------|
| Client:                  |  |              |          |
| Dominion Energy Virginia |  |              |          |
| C2 Env Project:          |  | Prepared By: | Date:    |
| 0073                     |  | MKB          | 04/22/20 |

0

1,000

2,000 Feet

Scale is 1 in = 2,000 FT when printed at original size of 11x17

SITE DATA

Project Limits

Existing Structures to Remain

Existing Structures to be Replaced

County Boundary

Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; USGS The National Map.

2. Structure locations and heights provided by Dominion Energy Virginia and information contained herein is preliminary in not include foundation reveal.

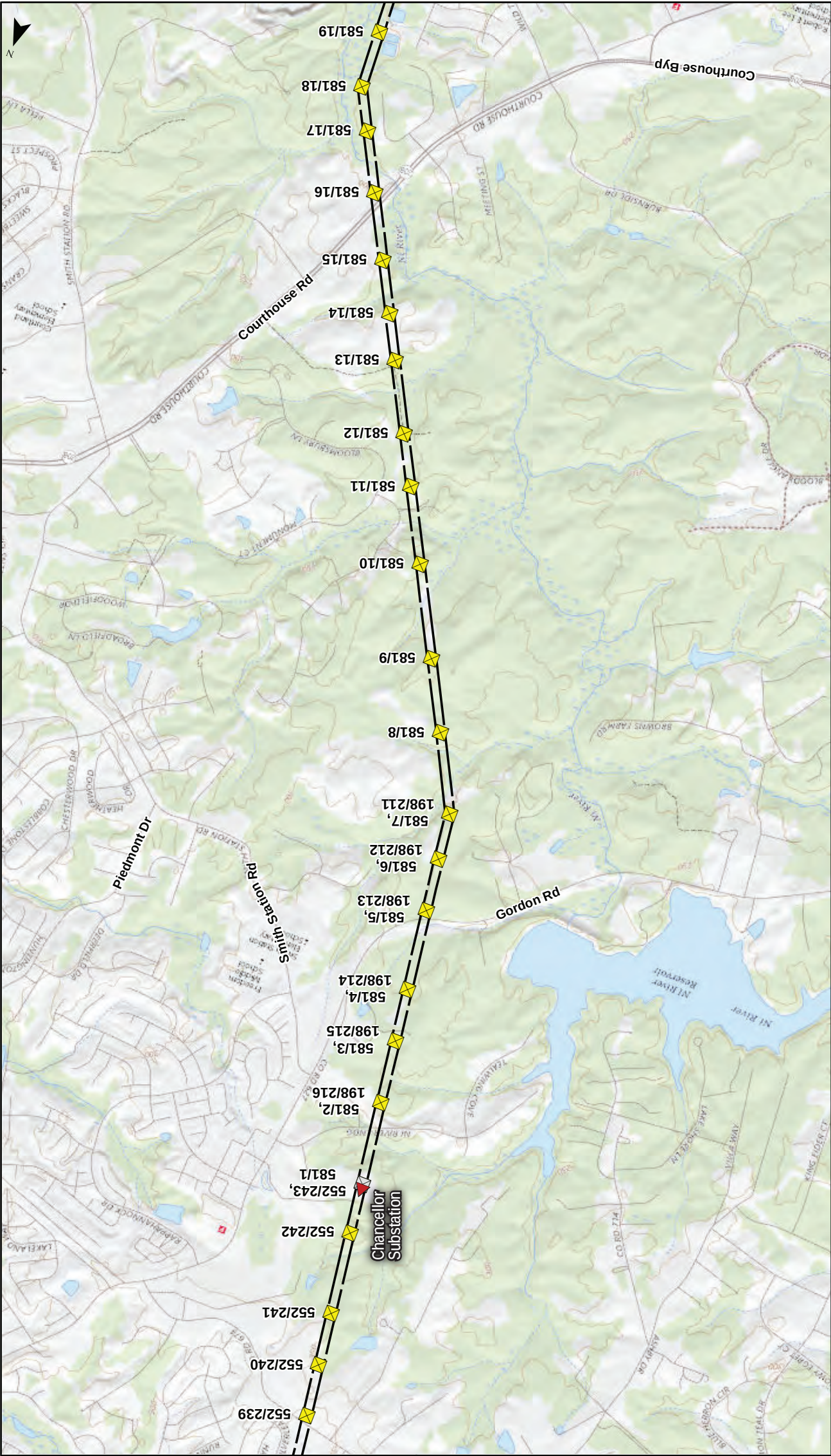
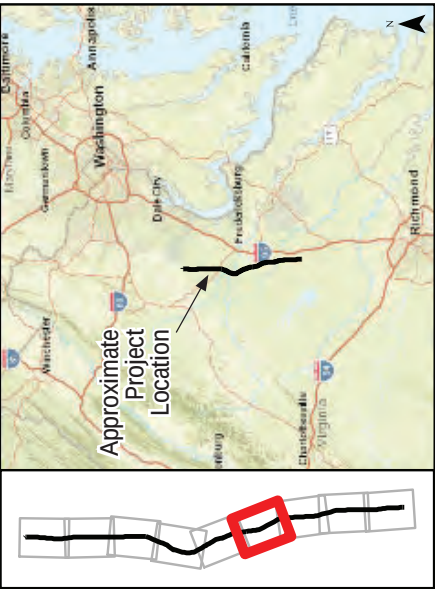


Table II.B.5

| Structure Number                 | 552/239 | 552/240 | 552/241 | 552/242 | 581/2,<br>198/216 | 581/3,<br>198/215 | 581/4,<br>198/214 | 581/5,<br>198/213 | 581/6,<br>198/212 | 581/7,<br>198/211 | 581/8 | 581/9 | 581/10 | 581/11 |
|----------------------------------|---------|---------|---------|---------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------|-------|--------|--------|
| Existing Structure Height (Feet) | 105     | 105     | 115     | 95      | 138               | 118               | 138               | 123               | 113               | 119               | 135   | 125   | 150    | 75     |
| Proposed Structure Height (Feet) | 134     | 139     | 139     | 120     | 150               | 129               | 149               | 134               | 124               | 125               | 149   | 159   | 149    | 139    |

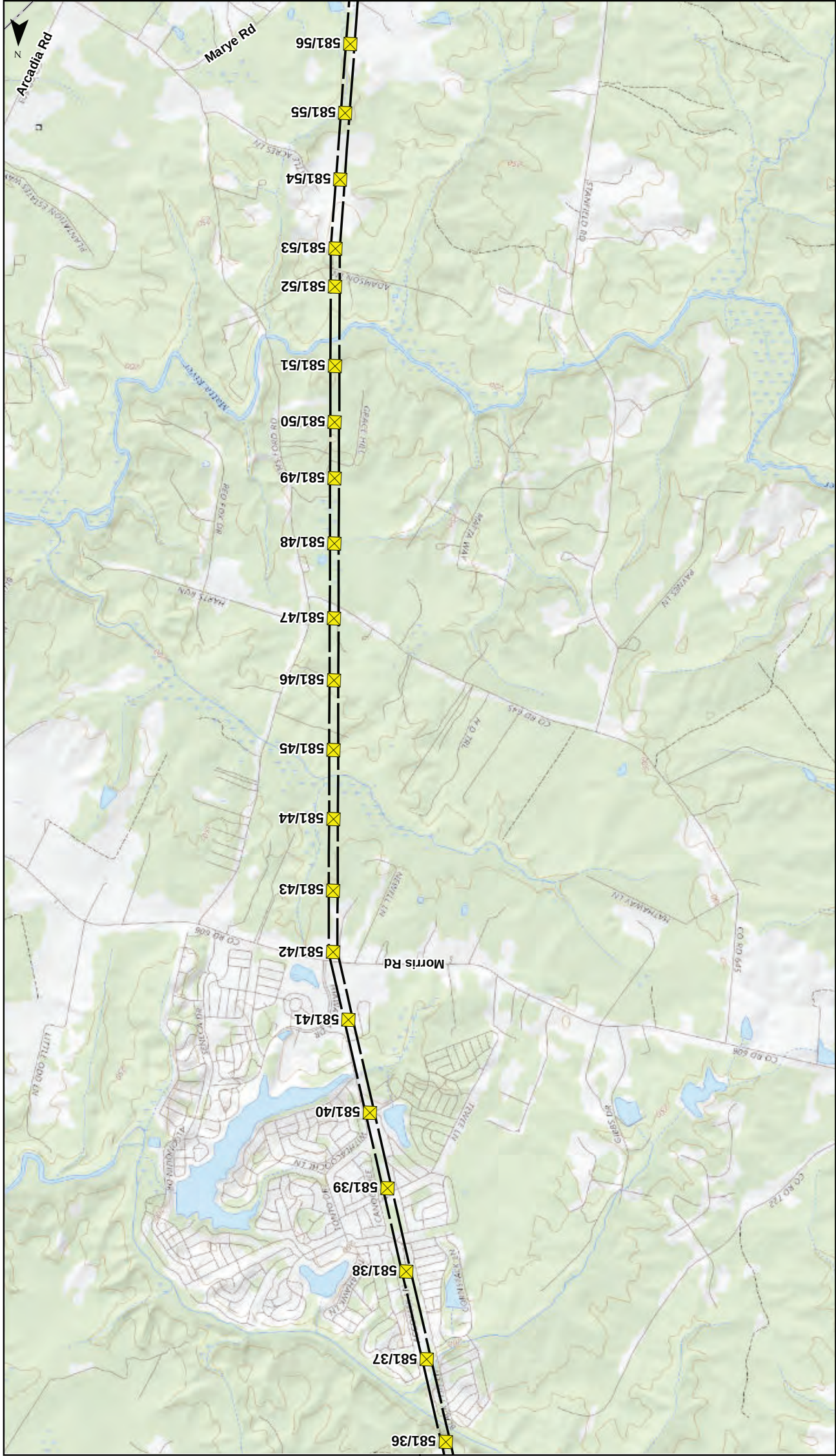
| Structure Number                 | 581/12 | 581/13 | 581/14 | 581/15 | 581/16 | 581/17 | 581/18 | 581/19 |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Existing Structure Height (Feet) | 110    | 100    | 80     | 105    | 110    | 85     | 92     | 90     |
| Proposed Structure Height (Feet) | 139    | 134    | 119    | 124    | 139    | 119    | 124    | 129    |











II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild

Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

Client: Dominion Energy Virginia

C2 Env Project: Prepared By: Date: 0073 MKB 04/22/20

01,0002,000Feet

Scale is 1 in = 2,000 FT when printed at original size of 11x17

SITE DATA

Project Limits

Existing Structures to Remain

Existing Structures to be Replaced

County Boundary

Notes:

1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; USGS The National Map.

2. Structure locations and heights provided by Dominion Energy Virginia and information contained herein is preliminary in not include foundation reveal.

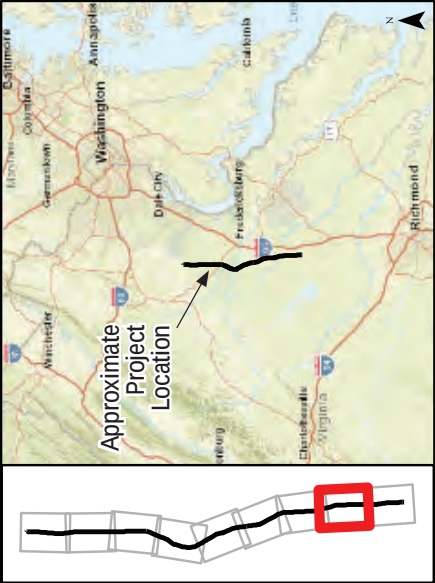


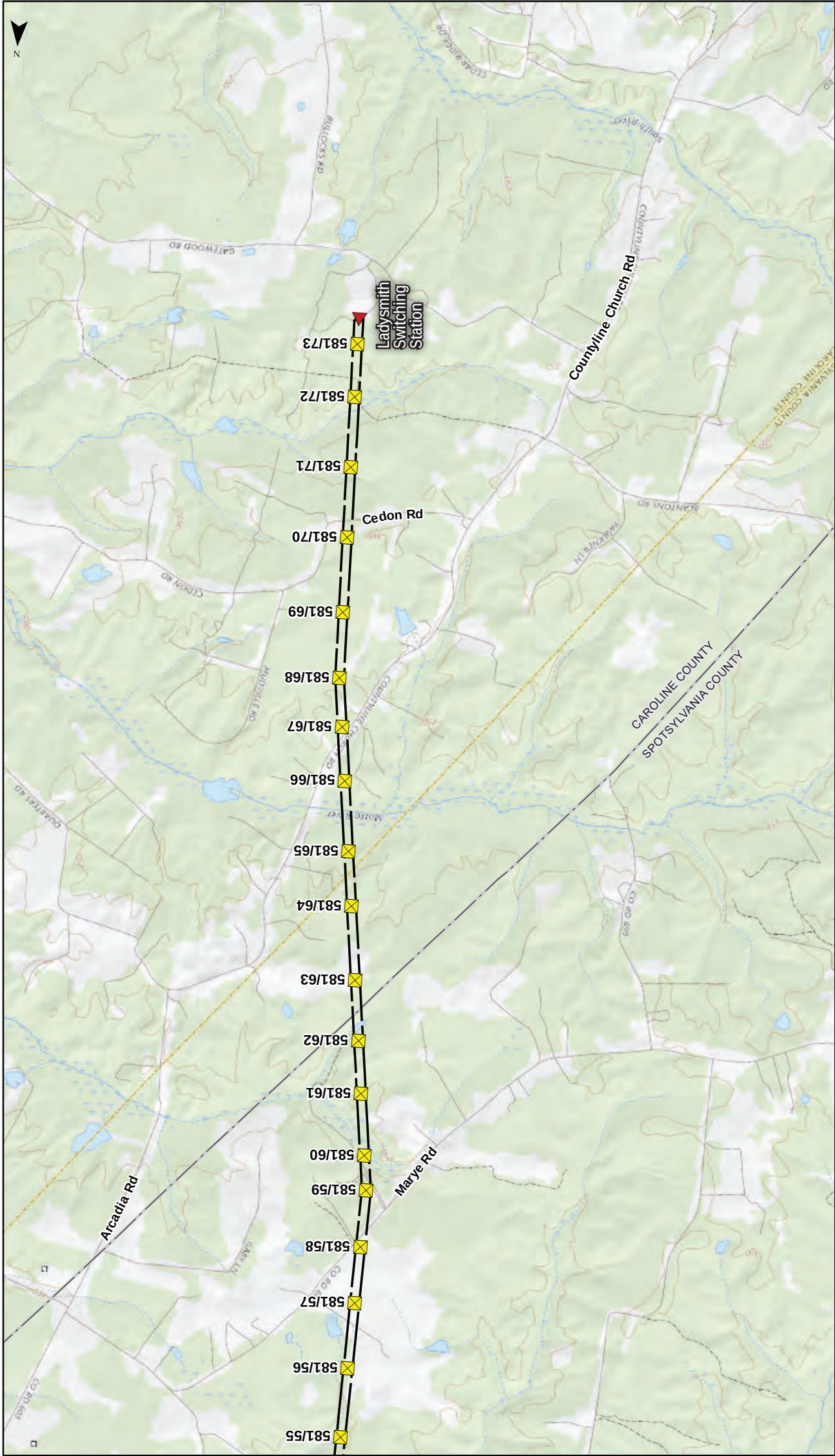
Table II.B.5

| Structure Number                 | 581/36 | 581/37 | 581/38 | 581/39 | 581/40 | 581/41 | 581/42 | 581/43 | 581/44 | 581/45 | 581/46 | 581/47 | 581/48 | 581/49 | 581/50 |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Existing Structure Height (Feet) | 115    | 140    | 140    | 115    | 120    | 145    | 87     | 120    | 125    | 80     | 95     | 110    | 120    | 85     | 95     |
| Proposed Structure Height (Feet) | 139    | 159    | 159    | 144    | 149    | 149    | 123    | 144    | 149    | 119    | 124    | 149    | 139    | 129    | 119    |

| Structure Number                 | 581/51 | 581/52 | 581/53 | 581/54 | 581/55 | 581/56 |
|----------------------------------|--------|--------|--------|--------|--------|--------|
| Existing Structure Height (Feet) | 95     | 80     | 87     | 115    | 125    | 115    |
| Proposed Structure Height (Feet) | 119    | 119    | 118    | 144    | 149    | 134    |







| Structure Number                 | 581/55 | 581/56 | 581/57 | 581/58 | 581/59 | 581/60 | 581/61 | 581/62 | 581/63 | 581/64 | 581/65 | 581/66 | 581/67 | 581/68 | 581/69 |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Existing Structure Height (Feet) | 125    | 115    | 100    | 105    | 77     | 80     | 100    | 100    | 115    | 110    | 100    | 100    | 85     | 90     | 125    |
| Proposed Structure Height (Feet) | 149    | 134    | 139    | 129    | 113    | 119    | 129    | 139    | 139    | 139    | 139    | 134    | 124    | 128    | 149    |

| Structure Number                 | 581/70 | 581/71 | 581/72 | 581/73 |
|----------------------------------|--------|--------|--------|--------|
| Existing Structure Height (Feet) | 105    | 115    | 110    | 110    |
| Proposed Structure Height (Feet) | 149    | 149    | 129    | 125    |

Table II.B.5

II.B.5. STRUCTURE LOCATIONS

Bristers to Ladysmith 500 kV Rebuild  
Fauquier, Stafford, Spotsylvania, and Caroline Counties, Virginia

|                 |                          |
|-----------------|--------------------------|
| Client:         | Dominion Energy Virginia |
| C2 Env Project: | Prepared By: MKB         |
| 0073            | Date: 04/22/20           |



SITE DATA

- Project Limits
- Existing Structures to Remain
- Existing Structures to be Replaced
- County Boundary

Notes:  
1. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; USGS The National Map.  
2. Structure locations and heights provided by Dominion Energy Virginia and information contained herein is preliminary in not include foundation reveal.

