

**COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION**

**Application of NextEra Energy)
Transmission Virginia, Inc.)
For approval and certification of electric) Case No. PUR-2026-00018
transmission facilities under Va. Code)
§ 56-46.1 and the Utility Facilities Act,)
Va. Code §§ 56-265.1 *et. seq.*)**

**APPLICATION OF NEXTERA ENERGY TRANSMISSION VIRGINIA, INC. FOR
APPROVAL AND CERTIFICATION OF ELECTRIC FACILITIES FOR THE
CONSTRUCTION OF A 500 KV TRANSMISSION LINE AND
THE WOODSIDE SUBSTATION**

DEQ Supplement

Volume 2 of 3

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ACRONYMS

Acronym	Definition
bgs	below ground surface
BMP	best management practice
CFR	Code of Federal Regulations
DEQ	Virginia Department of Environmental Quality
ERM	Environmental Resources Management, Inc.
ESC	Erosion and Sediment Control
FAA	Federal Aviation Administration
FirstEnergy	FirstEnergy Corp.
FUDS	formerly used defense sites
IPaC	Information for Planning and Consultation System
kV	kilovolt
MARL	MidAtlantic Resiliency Link
MBTA	Migratory Bird Treaty Act
MOT	Maintenance of Traffic
MP	milepost
MRDS	Mineral Resources Data System
NEET MA	NextEra Energy Transmission MidAtlantic, Inc.
NEET VA	NextEra Energy Transmission Virginia, Inc.
NHD	National Hydrography Dataset
NHL	National Historic Landmark
NHP	Natural Heritage Program
NHR	National Heritage Resource
nm	nautical mile
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PEM	Palustrine Emergent
PFO	Palustrine Forested
PJM	PJM Interconnection LLC
PReP	Pollution Response Program
PSS	Palustrine Scrub/Shrub
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
SCC	Virginia State Corporation Commission
SHFA	Special Flood Hazard Area
SPCC	Spill Prevention, Control, and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture

Acronym	Definition
bgs	below ground surface
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VA DWR	Virginia Department of Wildlife Resources
VaFWIS	Virginia Fish and Wildlife Information Service
VCRIS	Virginia Cultural Resources Information System
VDCR	Virginia Department of Conservation and Recreation
VDH	Virginia Department of Health
VDHR	Virginia Department of Historic Resources
VEPCO	Virginia Electric and Power Company, a subsidiary of Dominion Energy
VPDES	Virginia Pollutant Discharge Elimination System
WERMS	Wildlife Environmental Review Map Service
WIM	Wetland Identification Model

Based on consultations with the Virginia Department of Environmental Quality (DEQ), NextEra Energy Transmission Virginia, Inc. (NEET VA) has developed this DEQ Supplement to facilitate review and analysis of the MidAtlantic Resiliency Link (MARL) Project by DEQ and other relevant agencies.

1. Project Description

Environmental Resources Management, Inc. (ERM) on behalf of NextEra Energy Transmission MidAtlantic, Inc. (NEET MA) and NextEra Energy Transmission Virginia, Inc. (NEET VA) for the MidAtlantic Resiliency Link (MARL) Project have prepared this Virginia Department of Environmental Quality (DEQ) Supplement. This DEQ Supplement presents the necessary information that is needed for DEQ to review the MARL Project. The MARL Project is a 107.5-mile, 500 kilovolt (kV) transmission line that will traverse portions of Pennsylvania, West Virginia, Maryland, and Virginia, as well as the new 500/138 kV Woodside Substation site in Frederick County, Virginia.¹

PJM Interconnection LLC (PJM) has directed NEET MA and NEET VA to develop, construct, own, operate, and maintain the MARL Project to resolve significant and widespread reliability criteria violations on the Bulk Electric System that serves the PJM region,² due to load growth and anticipated resource retirements in the PJM region. To meet this purpose and need, the MARL Project will have the following facilities in Frederick County, Virginia:

- A new 2.4-mile, 500 kV single-circuit transmission line that will interconnect with a new 500 kV transmission line to be constructed by FirstEnergy Corp. (FirstEnergy); and
- A new 500/138 kV substation (Woodside Substation) that will interconnect to the new 500 kV line being constructed by FirstEnergy, as well as an existing 500 kV line owned by Virginia Electric and Power Company (VEPCO, a subsidiary of Dominion Energy), and two new 138 kV transmission lines that will connect to the existing FirstEnergy Stonewall high-voltage facility.³

The proposed transmission line will generally encompass the geographic area between the endpoints of the 502 Junction Substation in Greene County, Pennsylvania, and the handoff point (a new 500 kV transmission line to be constructed by FirstEnergy) in Frederick County, Virginia. The proposed Woodside Substation is also in Frederick County, Virginia, but approximately

¹ NEET MA is responsible for constructing the portions of the MARL Project in Pennsylvania, West Virginia, and Maryland. NEET VA is responsible for constructing the portions of the MARL Project in Virginia, as well as a new 500/138 kV Woodside Substation site in Frederick County, Virginia.

² The PJM region includes 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.

³ Specifically, the Woodside Substation will connect to Dominion Energy's existing 500 kV Bismark-Doubs transmission line, two new FirstEnergy 138 kV transmission lines that will connect the Woodside Substation with the nearby existing FirstEnergy Stonewall 138 kV Substation, and to FirstEnergy's upgraded Gore-Doubs-Goose Creek 500 kV transmission line.

11 miles to the east of the eastern terminus of the proposed transmission line handoff point. These facilities are collectively referred to as the MARL Project.

For the MARL Project, the NEET MA and NEET VA retained ERM to perform the detailed routing and siting analysis (Routing Study) and prepare associated testimony for the respective state siting applications for approval of the MARL Project as well as the environmental studies and permitting. NEET MA and NEET VA also retained ERM to lead the environmental scope of work associated with the transmission line routing analysis supporting the state siting applications and eventual federal, state, and local environmental permitting for the MARL Project.

NEET MA and NEET VA identified six end-to-end route alternatives (the Proposed Route and Alternative Routes B through F) for the overall MARL Project between the 502 Junction Substation and the handoff point (see Routing Study). As identified in the Routing Study, the Routing Team has selected Alternative Route A as the Proposed Route. A description of the Proposed Routes and the Alternative Routes in Virginia are as follows:

The Proposed Route and the five Alternative Routes are similar in length within Frederick County, Virginia. The Proposed Route and Alternative Routes C, D, and E follow the same alignment in Virginia and are, therefore, discussed together throughout. Similarly, Alternative Routes B and F follow the same alignment as each other and are, therefore, discussed together throughout. As the Proposed Route and five Alternative Routes proceed to the Virginia border, Alternative Routes B and F diverge north of the shared alignment of the Proposed Route and Alternative Routes C, D, and E. East of milepost (MP) 105.8, all six routes follow a shared alignment for 1.6 miles to the handoff point.

Proposed Route and Alternative Routes C, D, and E

The shared alignment of the Proposed Route and Alternative Routes C, D, and E enter Virginia in Frederick County at MP 105.0 (as measured on the Proposed Route). The alignment continues southeast, paralleling an existing 500 kV transmission corridor for 0.3 mile. The routes then deviate away from the existing 500 kV transmission corridor for 0.6 mile to avoid residential properties on Fletcher Road. The Proposed Route and Alternative Routes C, D, and E then continue in a southeasterly direction until reaching the existing transmission corridor. At this point, the routes cross the corridor perpendicularly, crossing both a 500 kV and 138 kV transmission lines near MP 106.2 (as measured on the Proposed Route). Once the routes cross the transmission line corridors, they immediately head east, paralleling the transmission line corridors on the south side and crossing over Isaacs Creek at MP 106.5. Near MP 106.7 (as measured on the Proposed Route), the routes deviate away from the existing transmission lines to avoid a substation and residential development, crossing Parishville Road, and terminating at the handoff point.

Alternative Routes B and F

The shared alignment of Alternative Routes B and F enter Virginia in Frederick County at MP 104.9 (as measured on Alternative Route B), less than 200 feet north of where the shared alignment of the Proposed Route and Alternative Routes C, D, and E enter Virginia. Alternative Routes B and F alignment continues northeasterly for 0.5 mile then turn southeasterly, meeting up with the Proposed Route and Alternatives C, D, and E near MP 105.6 (as measured on Alternative Route B). Alternative Routes B and F then continue in a southeasterly direction until reaching the existing transmission line corridor. At this point, the routes cross the corridor perpendicularly, crossing a 500 kV transmission line and a 138 kV transmission line near MP 106.0 (as measured on Alternative Route B). Once the routes cross the transmission line corridors, they immediately head east, paralleling the transmission line corridors on the south side. Near MP 106.5 (as measured on Alternative Route B), the routes deviate away from the existing transmission line corridors, crossing Parishville Road, and terminating at Structure 107-2 near the handoff point.

Woodside Substation Site

The proposed Woodside Substation site will be located on two parcels that total an approximately 72-acre site that is 7.1 miles north of the Town of Winchester, along Interstate 81 (I-81). The site is between Carter Machinery and the Fruit Hill site to the north, Ridgeway Estates subdivision to the west, Thistle Lane to the south, and I-81 to the east. The Woodside Substation will interconnect with the existing Dominion Bismark-Doubs 500 kV transmission line, two new FirstEnergy 138 kV transmission lines that will connect the MARL Project with the nearby existing FirstEnergy Stonewall 138 kV substation, and the new FirstEnergy Gore-Doubs-Goose Creek 500 kV transmission line.

2. Environmental Analysis

ERM on behalf of NEET VA has conducted an environmental analysis on the MARL Project. The following is a summary of the detailed environmental analysis conducted for the Virginia component of the MARL Project (Appendix D of the Routing Study). The environmental analysis considers the impacts of: (1) the 2.4-mile-long portion of the MARL Project Proposed Route and five Alternative Routes within Virginia; and (2) the proposed Woodside Substation site. Please see the following subsections of this DEQ Supplement for pertinent details about the MARL Project in Virginia.

A. Air Quality

For the MARL Project, NEET VA will control fugitive dust during construction in accordance with DEQ regulations. During construction of the Proposed Route, if the weather is dry for an extended period, there will be airborne particles from the use of vehicles and equipment.

However, minimal earth disturbance will take place and vehicle speed, which is often a factor in airborne particulate, will be kept to a minimum. Erosion and Sediment Control (ESC) Plan is addressed in Section 2.H of this Supplement. The majority of the passenger trucks and single short-haul vehicles will be diesel-fueled. Other equipment that is powered by gasoline or diesel motors will be used during the construction of the MARL Project so there will be exhaust from those motors; however, exhaust from those motors will result in minimal air pollution. Tree clearing will be required as part of the MARL Project. NEET VA will use various methods of tree clearing and removal, which could include open burning; however, if required, all necessary approvals will be obtained from the applicable state, county, or local jurisdictions. NEET VA's tree clearing methods are described in Section 2.L.

Construction of the Woodside Substation site will result in similar impacts on the transmission line.

During operations of the MARL Project, fugitive dust will be limited in nature.

B. Water Source

No new groundwater withdrawal wells will be installed for use during construction activities; however, NEET VA may, where necessary, use existing groundwater wells with approval from Frederick County and/or landowners. Best management practices (BMPs) for protecting groundwater include containment for leachable materials and/or chemicals, low permeability liners for liquids retention/detention, restricting discharge, and stormwater runoff control. Construction activities are not expected to affect existing water wells. If water wells are encountered during preconstruction or construction activities, the area where work is being completed and any other aboveground appurtenances will be protected using fencing or guarding. If wells are damaged during construction, NEET VA will notify the property owner and the Virginia Department of Health (VDH).

This discussion focuses on waterbodies that will be crossed by the MARL Project Proposed Route and Alternative Routes.

ERM on behalf of NEET VA conducted a desktop wetland and waterbody assessment of publicly available information for the portion of the MARL Project located in Virginia. A copy of ERM's Wetland and Waterbody Desktop Assessment for the MARL Project is included as Attachment 2 of Appendix D of the Routing Study. In accordance with DEQ and the Virginia State Corporation Commission's (SCC) Memorandum of Agreement, the desktop assessment was completed to identify and evaluate potential MARL Project impacts on aquatic resources (wetlands, streams, creeks, runs, and open water features) using various datasets that may indicate wetland location and type. The desktop assessment did not include field investigations

for wetland and waterbody delineation within the Proposed Route and Alternative Route Siting Corridors, as defined in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory 1987) and the 2012 Regional Supplement to the USACE Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) (Environmental Laboratory 2012). Field delineation of wetlands and waterbodies within the Proposed Route and Alternative Route Siting Corridors is required to verify the accuracy and extent of aquatic resource boundaries. Formal wetland and waterbody delineation field surveys were conducted for the Woodside Substation site in early 2025, and no jurisdictional wetland or waterbody resources were identified.

Publicly available data from the U.S. Geological Survey (USGS) National Hydrography Database Plus High-Resolution dataset, USGS topographic maps, and U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) were reviewed to assess the extent of wetland and waterbody features within the Proposed Route and Alternative Route Siting Corridors and the Woodside Substation site. In addition, a deep learning-based Wetland Identification Model (WIM; Appendix H of the Routing Study) was used to further evaluate wetland and waterbody resources within the Proposed Route and Alternative Route Siting Corridors to supplement the desktop review of publicly available data and provide a more robust and enhanced desktop assessment. The WIM assessment did not include the Woodside Substation site; however, no jurisdictional wetland resources were identified at this site based on field wetland and waterbody delineation surveys.

The MARL Project will be constructed as a new overhead single-circuit 500 kV transmission line where the transmission line conductors would aerially span waterbodies; no transmission structures are planned to be installed within waterbodies. The Proposed Route and Alternative Routes have 10 single and complete centerline crossings of National Hydrography Dataset (NHD)-mapped waterbodies, including 7 perennial waterbody crossings (Isaacs Creek, 5 crossings of Nixon Run, and 1 unnamed tributary to Nixon Run) and 3 unnamed intermittent tributaries to Isaacs Creek and Nixon Run. These waterbodies are all also classified as Riverine per NWI mapping. In some areas, forested riparian buffers adjacent to waterbodies would be cut and permanently converted to maintained scrub/shrub or herbaceous cover within the right-of-way (ROW) Corridor during operation. Removal of forested riparian vegetation would result in indirect impacts on waterbodies, including localized increases in water temperature and decreased dissolved oxygen levels.

Ancillary facility impacts outside of the ROW Corridor for the Proposed Route and Alternative Routes C, D, and E include one temporary access road crossing of Nixons Run. In addition, four other temporary ancillary facility workspaces outside of the ROW Corridor contain NHD-mapped waterbodies / NWI-mapped riverine wetlands. Nixon Run is located within two

of these ancillary facility workspaces, and an unnamed intermittent tributary to Nixon Run and an unnamed intermittent tributary to Dry Run are located within separate ancillary facility workspaces. For Alternative Routes B and F, ancillary facility impacts outside of the ROW Corridor include one temporary access road crossing of Nixon Run. In addition, three other temporary ancillary facility workspaces outside of the ROW Corridor contain NHD-mapped waterbodies / NWI-mapped riverine wetlands. Nixon Run is located within two of these ancillary facility workspaces, and an unnamed intermittent tributary to Dry Run is located within a separate ancillary facility workspace.

C. Discharge of Cooling Water

No discharge of cooling waters is associated with the MARL Project.

D. Tidal and Non-tidal Wetlands

As noted in Section 2.B of this Supplement, ERM conducted a desktop wetland and waterbody assessment as well as a deep learning-based WIM report in accordance with DEQ and the SCC's Memorandum of Agreement. The process and steps used for the assessment are identified in detail in Attachment 2 of Appendix D of the Routing Study.

No tidal wetlands were identified for the MARL Project. Non-tidal wetlands are summarized below.

There are no NWI-mapped Palustrine Emergent (PEM), Palustrine Scrub/Shrub (PSS), or Palustrine Forested (PFO) wetlands within the Proposed Route and Alternative Route ROW Corridors, and no PEM, PSS or PFO wetlands were predicted within the ROW Corridors based on the WIM assessment. In addition, no PEM, PSS, or PFO wetlands are mapped or predicted associated with the Proposed Route and Alternative Routes ancillary facilities located outside of the ROW Corridors. No jurisdictional wetland resources were identified associated with the Woodside Substation site. There would be limited impacts on wetland resources as a result of the MARL Project in Virginia.

The Proposed Route has been designed to minimize impacts on wetlands, including siting structures and access roads outside of wetland areas, to the maximum extent practicable. Existing roads will be used, when feasible, to minimize new disturbance. Impacts on wetlands within the Proposed Route and ancillary facilities, if any, would include temporary impacts from construction activities, including vegetative clearing and matting (as needed), and temporary impacts from operational ROW vegetative maintenance activities in non-forested areas. If present, wetland areas would be aerially spanned by transmission line conductors; however, there could be permanent conversion of some PFO wetlands to PEM and/or PSS wetlands within the maintained ROW Corridor during operation.

Prior to construction, applicable permits will be obtained through the USACE and the DEQ for authorization under Section 404 and Section 401 of the Clean Water Act and the State Water Control Law for nontidal wetland impacts, if any. As applicable, NEET VA will comply with the mitigation requirements and ratios of permits to compensate for unavoidable permanent impacts on nontidal wetlands, including conversion impacts. Mitigation requirements will be determined by the USACE and DEQ.

To comply with state stormwater requirements, NEET VA will obtain coverage either under the Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Discharges of Stormwater from Construction Activities (VAR10) or an Individual VPDES Permit. A MARL Project-specific ESC Plan and Stormwater Pollution Prevention Plan (SWPPP) will be developed in coordination with state and local agencies to meet applicable requirements and implement BMPs. Dewatering, if necessary, will be discharged in accordance with the practices described in the DEQ Stormwater Manual (VDEQ 2024), which may include the use of a sediment trap or basin. If other devices are proposed, NEET VA will obtain approval from the DEQ prior to use. Implementation of these plans will further minimize impacts on wetlands within the ROW Corridor.

A Spill Prevention, Control, and Countermeasures (SPCC) Plan will be developed, if required, to avoid or minimize impacts on wetlands due to inadvertent releases of fuel or mechanical fluids in accordance with the U.S. Environmental Protection Agency (USEPA) regulations (40 CFR Part 112).

E. Floodplains

Federal Emergency Management Agency maps were reviewed to determine whether mapped floodplains are present within the Proposed Route and Alternative Route Siting Corridors, as well as the Woodside Substation site (FEMA n.d.). Flood hazard areas identified on Flood Insurance Rate Maps are designated as Special Flood Hazard Areas (SFHAs). SFHAs are defined as the area that will be inundated by the flood event having a 1 percent chance of being equaled or exceeded in any given year. The 1 percent annual chance of flood is also referred to as the base flood or 100-year flood. High risk flood zones are labeled Zone A (with a floodplain present) or Zone AE (with a floodplain and floodway present). Moderate risk flood zones are labeled Zone X or also referred to as the 500-year flood.

The MARL Project crosses one Zone A floodplain in Virginia where the Proposed Route and Alternative Routes share an overlapping Siting Corridor. The shared Proposed Route and Alternative Route Siting Corridors cross 4.6 acres of one Zone A floodplain (1 percent annual flood hazard) associated with Isaacs Creek. There are no floodplains located within the Woodside Substation site.

F. Solid and Hazard Waste

ERM conducted a search of environmentally regulated properties within 1,000 feet of the Proposed Route and Woodside Substation site. ERM utilized publicly available databases from USEPA, USACE, and DEQ to identify sites or facilities operating under environmental regulatory permits. These databases provide information about facilities, sites, or places subject to environmental regulation or of environmental interest. These include sites that use and/or store hazardous materials; waste producing facilities operating under permits from the USEPA or other regulatory authorities; Comprehensive Environmental Response, Compensation, and Liability Act sites; Resource Conservation and Recovery Act (RCRA) sites; Brownfield sites; formerly used defense sites (FUDS), petroleum storage, and petroleum release sites; solid waste sites; and other federal or state program managed/permitted environmental site. The identification of a site in the databases is not necessarily indicative of contaminated soil or groundwater.

Prior to construction, NEET VA will conduct in-depth reviews of sites within close proximity to the Proposed Route and Woodside Substation site to identify/verify sites with a potential to impact soil and/or groundwater. A future in-depth review may require the NEET VA to submit Freedom of Information Requests to the USEPA and DEQ for site-specific information. A summary of the information from the USEPA and DEQ databases within a 1,000-foot buffer of the edges of the Proposed Route ROW Corridor and Woodside Substation site is provided in Table F-1 below.

Table F-1 Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 1,000 feet

Site Type	Proposed Route	Woodside Substation Site
<i>USEPA</i>		
Air Quality	0	0
Brownfield Properties	0	0
Hazardous Waste Sites ^a	0	2
ICIS-Air	0	0
Water Dischargers	0	0
Superfund Sites	0	0
Toxic Release Inventory	0	0
<i>DEQ</i>		
Air	0	2
Alternate Water Supplies	0	0
Petroleum Releases	0	1
Registered Petroleum Tank Facilities	0	1
Solid Waste Permits	0	0
VRP Sites	0	0

Site Type	Proposed Route	Woodside Substation Site
Water Permits	0	0
Other	1	1
<i>USACE</i>		
FUDS	0	0

Sources: USACE 2025; USEPA 2025; VDEQ 2025

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; DEQ = Department of Environmental Quality; FUDS = Formerly Used Defense Sites; ICIS = Integrated Compliance Information System; USACE = U.S. Army Corps of Engineers; USEPA = U.S. Environmental Protection Agency; VRP = Voluntary Remediation Program

^a Hazardous waste sites include Resource Conservation and Recovery Act active, inactive, large quantity generator, small quantity generators, transporters, treaters, storers, and disposers.

U.S. Environmental Protection Agency Regulated Sites

Based on the most recent available data in the USEPA’s database, there are no USEPA regulated sites located within 1,000 feet of any of the routes. There are two RCRA (waste) sites located within 1,000 feet of the Woodside Substation site (Table F-2).

Table F-2 U.S. Environmental Protection Agency Regulated Sites

Facility	Address	Type	Status
Carter Machinery Company Inc.	351 Zachary Ann Lane, Clear Brook, VA 22624	Small quantity generator	Active RCRA site
MMS Winchester	4027 Martinsburg Pike, Clear Brook, VA 22624	Small quantity generator	Active RCRA site

RCRA = Resource Conservation and Recovery Act

No detailed description is available for the types of waste being generated at these facilities. There are two additional small quantity generators (Exxon Co USA #26442, and Vernon E Stup Co) shown within close proximity to the Woodside Substation site. However, the addresses listed for these facilities are not within 1,000 feet of the Woodside Substation site and are not included.

Department of Environmental Quality Regulated Sites

ERM identified one report of release within 1,000 feet of the Proposed Route, within the Pollution Response Program (PReP) reports database (Table F-3). The release was reported in November 2025 and is still under open investigation. Initial reports are a vehicle accident which is a temporary and isolated incident.

Table F-3 Department of Environmental Quality Regulated Sites

Incident ID	Address	Description	Status
321392	8909 Northwestern Turnpike, Gore, VA 22637	Vehicle Accident—Discharge into tributary	Under investigation

Within 1,000 feet of the Woodside Substation site, three unique facilities with environmental monitoring were identified (Table F-4). Petroleum Release, Voluntary Remediation Program, and PReP databases were used to identify sites within 1,000 feet of the Proposed Route and Woodside Substation site. Several facilities were identified, and are summarized below:

Table F-4 Facilities with Environmental Monitoring

Facility	Address	Type	Description	Status
Carter Machinery Company Inc.,	351 Zachary Ann Lane, Clear Brook, VA 22624	Registered Petroleum Tank	4 active ASTs, 1 inactive UST	Active
		PReP Report	Diesel Exhaust Fluid Spill to Storm Drain	Closed
McKesson Medical-Surgical Wholesale Center	4027 Martinsburg Pike, Clear Brook, VA 22624	Active air site	NO _x , VOCs, CO, Particulate, SO ₂	Active
Dobrinski Brothers Inc—Portable 81690	4027 Martinsburg Pike, Clear Brook, VA 22624	Active air site		Temporarily shutdown
DeHaven Family LLC Property	4273 Martinsburg Pike, Clear Brook, VA 22624	Petroleum Release	Confirmed	Closed

AST = aboveground storage tank; CO = carbon monoxide; NO_x = nitrogen oxides; PReP = Pollution Response Program; SO₂ = sulfur dioxide; UST = underground storage tank; VOC = volatile organic compound

The Dobrinski Brothers Inc. facility is listed as a rock crushing operation, with the same address as the McKesson facility. Based on a review of the historical aerial imagery, it appears that the Dobrinski Brothers Inc. operated on the property prior to the construction of the McKesson facility in approximately 2013 and is no longer present.

U.S. Army Corps of Engineers Sites

There are no FUDS within 1,000 feet of either the Proposed Route or the Woodside Substation site.

Summary

One temporary report near the Proposed Route, and three unique facilities (address) near the Woodside Substation site were identified within the state or federal environmental databases. The reported release near the Proposed Route is related to a vehicle accident and not an active industrial or commercial facility. Near the Woodside Substation site, one release occurred at a residential property (DeHaven) in 2010 and was closed in 2011, and does not appear to be a

long-term concern. The two other facilities, Carter Machinery Company Inc., and McKesson Medical-Surgical Wholesale Center (the same address as MMS Winchester) appear to be the only active industrial/commercial facilities with state or federal monitoring/permits.

NEET VA will have procedures in place to safely identify, manage, and dispose of any suspected hazardous or contaminated media encountered during construction. If contaminated soil or groundwater are identified, the associated regulatory agency will be coordinated with, and the soils disposed of in accordance with applicable regulations.

G. Natural Heritage, Threatened and Endangered Species

The Virginia Department of Conservation and Recreation's (VDCR) Natural Heritage Program (NHP) was contacted to provide an environmental review of the Proposed Route and Alternative Routes to identify National Heritage Resources (NHRs) within the Siting Corridors. The requested NHP review included natural area preserves, conservation sites, stream conservation sites, and ecological cores (VDCR n.d.). The VDCR responded to ERM's request for environmental review of the Proposed Route and Alternative Routes in a letter dated October 10, 2025. The VDCR's review identified one conservation site and three ecological cores within the Siting Corridors for the Proposed Route and Alternative Routes. In addition, the NHP's ecological datasets for the area within 0.25 mile of the centerlines of the Siting Corridors and the Woodside Substation site were reviewed through VDCR's Natural Heritage Data Explorer.

Construction and operation would result in various temporary and permanent impacts on NHRs within the ROW Corridors and ancillary facilities workspaces. Permanent impacts on conservation sites and ecological cores would result from construction, mainly from the conversion of forested habitats to maintained ROW. The permanent conversion of forested habitat to herbaceous and shrub/scrub habitat would result in the loss of NHR lands and could potentially increase forest fragmentation in the vicinity of the Proposed Route and Alternative Route ROW Corridors. The MARL Project has been designed to minimize the impacts on NHR lands by minimizing the total amount of tree clearing to the extent practicable, as well as impacts on wetlands and associated vegetation. The MARL Project was also designed to parallel existing high-voltage transmission line ROWs, where possible, to avoid and minimize impacts from new forested habitat fragmentation.

Temporary and/or permanent impacts on protected species and/or their habitats, if present, could occur within the ROW Corridors for the Proposed Route and Alternative Routes and the Woodside Substation site. For additional details see below on listed species as well as Appendix D of the Routing Study. Impacts on potentially suitable habitat associated with the ROW Corridors would be temporary if the existing land cover type is:

- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Emergent Herbaceous Wetland
- Grassland/Herbaceous
- Open Water
- Pasture/Hay
- Shrub/Scrub

These habitats within the ROW Corridor will be restored or allowed to regenerate with select vegetation management as required and expected to provide suitable habitat for the life of the MARL Project. Other temporary impacts from construction and routine maintenance activities (e.g., noise and vibration) within the ROW Corridors could cause temporary displacement of more mobile species to areas outside of construction zones. Most displaced species are expected to return to the area following construction and would be expected to use the newly established and revegetated herbaceous and shrub/scrub habitat during operation. Loss of less mobile species or plants, if present within the ROW Corridors, could occur as a result of ground disturbances associated with construction and routine maintenance activities.

Permanent impacts on forested habitats would result from construction, mainly from the conversion of forested habitats to maintained ROW. The permanent conversion of forested habitat to herbaceous and shrub/scrub habitat would result in the loss of potentially suitable habitat for protected species and could potentially increase forest fragmentation in the vicinity of the Proposed Route and Alternative Route ROW Corridors. The MARL Project has been sited and designed to minimize the total amount of tree clearing to the extent practicable, as well as impacts on wetlands and associated vegetation. The MARL Project was also sited to parallel existing high-voltage transmission line ROWs, where possible, to avoid and minimize impacts from new forested habitat fragmentation.

NEET VA will coordinate with applicable federal and state agencies and other stakeholders to determine avoidance and minimization measures, as appropriate, to minimize and prevent impacts on NHR lands. Construction and routine maintenance activities for the MARL Project will comply with MARL Project-specific permit requirements and conditions and will be conducted under MARL Project-specific plans and procedures to avoid and minimize impacts on NHR areas during construction and operation. Following construction, the MARL Project will establish and maintain native vegetation that would be expected to be used by some wildlife species during the MARL Project's operational life.

Permanent impacts on potentially suitable habitat within the Woodside Substation site would occur from MARL Project construction. These habitats will be converted to industrial uses and would no longer be available to species for the operational life of the Woodside Substation site.

The conservation sites, ecological cores, and the NHRs from the VDCR environmental review (i.e., protected animal and plant species) are discussed below. Based on the NHP ecological datasets reviewed, there are no NHRs within the Woodside Substation site.

Conservation Sites

The VDCR NHP review found that the Proposed Route and Alternative Route ROW Corridors cross the Isaacs Creek PROW Conservation Site. This conservation site contains approximately 154 acres of partially forested land, located adjacent to the eastbound lane of US 50 between Fairview Road and Parishville Road. Appendix D of the Routing Study provides a detailed discussion.

The portion of Isaacs Creek PROW Conservation Site that would be affected by construction within the Proposed Route and Alternative Route ROW Corridors is forested. Impacts on the site would be permanent due to the conversion of forested habitat to maintained ROW. A total of 11.2 acres of forested habitat would be affected by construction of the MARL Project, representing 7 percent of the 154-acre site.

Impacts on Isaacs Creek PROW would also occur associated with access roads and ancillary facilities outside of the Proposed Route and Alternative Route ROW Corridors. There would be 0.2 acres of impacts associated with temporary access roads and 0.7 acres of impacts associated with other temporary ancillary facilities outside of the ROW Corridors. Forested habitat within ancillary facilities workspaces outside of the ROW Corridor would be allowed to return to preconstruction conditions, although regrowth of trees within previously forested areas would occur over a period of 20 or more years, effectively resulting in a long-term conversion of forested land to herbaceous and scrub/shrub habitat. Impacts on the Isaacs Creek PROW Conservation Site associated with temporary access roads and other temporary ancillary facilities represent 0.5 percent of the approximate 154 acres encompassed by the site. No impacts associated with permanent access roads would occur in Virginia.

Ecological Cores

The VDCR NHP review found that the Proposed Route and Alternative Route ROW Corridors intersect three ecological cores with rankings of C5. There are no ecological cores within the Woodside Substation site.

Impacts on ecological cores are driven by tree clearing and subsequent conversion of forested habitat to herbaceous and shrub/scrub habitat that are compatible with maintained ROW. Habitat conversion can result in changes that reduce ecosystem processes, biodiversity, population viability, and habitat quality (VDCR 2018).

The total acreage of ecological cores within the Proposed Route and Alternative Routes ROW Corridors that would be affected during construction ranges from 40.8 acres to 44.6 acres (Table G-1). These impacts represent 5.5 percent to 6.0 percent of the 741.0 acres encompassed by these sites.

Table G-1 Ecological Cores Within the Siting Corridors, ROW Corridors, and the Woodside Substation Site (Acres)

Ecological Core ID (Rank)	Proposed Route / Alternative Routes C, D, and E		Alternative Routes B and F		Woodside Substation Site
	Siting Corridor	ROW Corridor	Siting Corridor	ROW Corridor	
26836 (5)	42.1	17.7	33.2	13.8	NA
26877 (5)	18.3	7.6	18.3	7.6	NA
26981 (5)	46.8	19.3	46.8	19.3	NA
Total ^a	107.2	44.6	98.3	40.8	NA

Source: Attachment 3 of Appendix D of the Routing Study

ID = identification; NA = not applicable; ROW = right-of-way

^a Total may not match the sum of addends due to rounding.

Impacts on ecological cores would also occur associated with access roads and ancillary facilities outside of the Proposed Route and Alternative Route ROW Corridors. There are no permanent access roads, and there would be 0.4 acres of temporary access roads within ecological cores 26877 and 26981 (0.2 acres in each). In addition, the Proposed Route would have a total of 6.5 acres of impacts from other temporary ancillary facility workspaces that occur outside of the ROW Corridor (ecological core 26836 would have 0.6 acres; core 26877 would have 3.8 acres; and core 26981 would have 2.1 acres). Impacts on ecological cores associated with access roads and other temporary ancillary facilities represent 1.6 percent of the approximate 741 acres encompassed by these sites. No impacts associated with permanent access roads would occur in Virginia.

Protected Animals and Plant Species

ERM reviewed protected species according to the following regulations:

- Federal- and state-listed species protected under the federal Endangered Species Act enacted in 1973 and administered by the USFWS and the National Oceanic and Atmospheric Administration, in cooperation with the Virginia Department of Wildlife

Resources (VA DWR), and state-listed species protected under the Virginia Endangered Plant and Insect Species Act administered by the Virginia Department of Agriculture and Consumer Services in cooperation with the VDCR;

- Bald eagles (*Haliaeetus leucocephalus*) protected under the federal Bald and Golden Eagle Protection Act enacted in 1940 and administered by the USFWS; and
- Migratory birds protected under the Migratory Bird Treaty Act (MBTA) enacted in 1918 and administered by the USFWS.

A VDCR Environmental Review was completed for the Proposed Route and the Alternative Routes Siting Corridors, received in October 2025. In addition, the following publicly available sources were used to identify protected species along and near the Proposed Route and Alternative Routes Siting Corridors and the Woodside Substation site:

- USFWS Information for Planning and Consultation System (IPaC) online system (USFWS n.d.)
- VDCR NHP (VDCR n.d.)
- VA DWR Wildlife Environmental Review Map Service (WERMS) (VA DWR 2025b)
- Virginia Fish and Wildlife Information Service (VaFWIS) (VA DWR 2025a)
- Center for Conservation Biology Eagle Nest Locator (Watts and Byrd 2013)

In addition to the above database queries, ERM obtained digital data from the VDCR to identify locations within the Proposed Route and Alternative Route Siting Corridors, as well as the Woodside Substation site, that potentially support protected species.

Query results from the VDCR include species known to occur in the area and communities known to contain protected species either historically or currently (VDCR n.d.). Query results from IPaC include species that may occur in the Proposed Route and Alternative Route Siting Corridor, as well as the Woodside Substation site (USFWS n.d.). A copy of the IPaC is included in Attachment 3 of Appendix D of the Routing Study. Query results from the VaFWIS include species known to occur or likely to occur within a 2.0-mile radius of the Proposed Route and Alternative Routes (VA DWR 2025a). Species known to occur within the Proposed Route and Alternative Route Siting Corridors, as well as the Woodside Substation site, were identified based on review of digital VA DWR WERMS data (VA DWR 2025b). Bald eagle nest data and migratory bird information are provided in the Center for Conservation Biology database (Watts and Byrd 2013).

Federally Listed Threatened and Endangered Species

Review of publicly available databases and coordination with the applicable resource agencies discussed above identified multiple federally listed and proposed species that have the potential to occur within and adjacent to the Proposed Route and Alternative Route Siting Corridors. Species include Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), tri-colored bat (*Perimyotis subflavus*), monarch butterfly (*Danaus plexippus*), and green floater (*Scripus ancistochaetus*). In addition, Indiana bat and monarch butterfly have the potential to occur within the Woodside Substation site. Table G-2 provides information on the federally listed and proposed species with potential to occur within the Siting Corridors or the Woodside Substation site.

Table G-2 Federally Listed or Proposed Threatened or Endangered Species Potentially Occurring Within the Siting Corridors and Woodside Substation Site

Common Name	Scientific Name	Protection Status	Preferred Habitat
Indiana bat ^a	<i>Myotis sodalis</i>	FE	Old-growth or late-successional interior forests. Partially dead or decaying trees are used for summer roosting and foraging. Hibernation occurs primarily in caves, mines, and tunnels.
Northern long-eared bat	<i>Myotis septentrionalis</i>	FE	Old-growth or late-successional interior forests. Partially dead or decaying trees are used for summer roosting and foraging. Hibernation occurs primarily in caves, mines, and tunnels.
Tri-colored bat	<i>Perimyotis subflavus</i>	FPE, SE	Partly open landscapes with large trees and plentiful woodland edge.
Monarch butterfly ^a	<i>Danaus plexippus</i>	FPE	Migratory; fields, roadside areas, and open fields that contain milkweed.
Green floater	<i>Lasmigona subviridis</i>	FPT	Slow moving streams; in sand to gravel substrate.

Source: USFWS n.d.

FE = Federally Endangered; FPE = Federally Proposed as Endangered; FPT = Federally Proposed as Threatened; SE = State Endangered

^a This species potentially occurs within the Woodside Substation site.

Impacts on Indiana, northern long-eared, and tri-colored bats are largely driven by the loss of potentially suitable forested roosting habitat that is used by individuals, if present, from April 1 to October 15. The total acreage of potentially suitable roosting habitat that would be affected by construction within the Proposed Route and Alternative Routes ROW Corridors and the Woodside Substation site is provided in Table G-3. Temporary impacts on roosting individuals could occur, if present adjacent to the ROW Corridors or within the Woodside Substation site.

Disturbance associated with construction or routine maintenance activities could occur, but displaced individuals would be expected to return to forested habitats adjacent to the ROW Corridor or Woodside Substation site following construction.

The potentially suitable roosting habitat⁴ impacts associated with the ROW Corridors for the Proposed Route and Alternative Routes C, D, and E represents 0.3 percent of the 17,749.4 acres of potentially suitable roosting habitat within the MARL Project Study Area in Virginia. The ROW Corridors for Alternative Routes B and F represent 0.2 percent of the potentially suitable roosting habitat within the MARL Project Study Area in Virginia. In addition, the Woodside Substation site has abundant suitable habitat adjacent to site.

Table G-3 Potentially Suitable Bat Habitat Within the Siting Corridors, ROW Corridors, and the Woodside Substation Site (Acres)

Potentially Suitable Habitat	Proposed Route / Alternative Routes C, D, and E		Alternative Routes B and F		Woodside Substation Site
	Siting Corridor	ROW Corridor	Siting Corridor	ROW Corridor	
Potential roosting habitat	113.8	47.6	107.3	44.4	2.9
Potential foraging habitat	140.8	59.4	141.1	58.6	71.8
Known summer maternity habitat	0.0	0.0	0.0	0.0	0.0
Hibernation/staging/swarming habitat	0.0	0.0	0.0	0.0	0.0

Source: USGS 2024

ROW = right-of-way

Additional impacts on listed bats could occur from the temporary loss of foraging habitat within the Proposed Route and Alternative Route ROW Corridors during construction and routine maintenance activities. The total acreage of foraging habitat⁵ that would be affected by construction within the ROW Corridors is provided in Table G-3. These impacts would remain until vegetation is established within disturbed areas following construction. Displaced individuals would be expected to return to the area and use the newly established and revegetated habitats for foraging and commuting following construction. Foraging habitat quality would improve as areas are revegetated. The potentially suitable foraging habitat impacts associated with the ROW Corridors for the Proposed Route and Alternative Routes C, D, and E represents 0.2 percent of the 27,799.8 acres of potentially suitable foraging habitat

⁴ During the active seasons (staging, maternity, swarming) listed bats use the following land cover types for roosting, including deciduous forest; evergreen forest; mixed forest; and woody wetlands

⁵ During the active seasons (staging, maternity, swarming) listed bats use additional land cover types for foraging, including barren land (rock/sand/clay); cultivated crops; developed, open space; emergent herbaceous; grassland/herbaceous; open water; pasture/hay; and shrub/scrub.

within the MARL Project Study Area in Virginia. Alternative Routes B and F also represent 0.2 percent of the potentially suitable foraging habitat.

Impacts on potentially suitable bat habitat would also occur associated with access roads and ancillary facilities outside of the Proposed Route and Alternative Route ROW Corridors (Table G-4). Impacts associated with temporary access roads and other temporary ancillary facilities associated with the Proposed Route and Alternative Routes each represent less than 0.1 percent of the 17,749.4 acres of potentially suitable roosting habitat and less than 0.1 percent of the 27,799.8 acres of potentially suitable foraging habitat present within the MARL Project Study Area in Virginia. Similarly, permanent impacts from forest conversion associated with temporary access roads and other temporary ancillary facilities represent less than 0.1 percent of the 17,749.4 acres of potentially suitable roosting habitat and less than 0.1 percent of the 27,799.8 acres of potentially suitable foraging habitat present within the MARL Project Study Area in Virginia. No permanent impacts associated with access roads are expected to occur in Virginia.

Table G-4 Potentially Suitable Bat Habitat and Known Occurrences Within Ancillary Facilities Outside of the ROW Corridor (Acres)

Potentially Suitable Habitat	Proposed Route / Alternative Routes C, D, and E			Alternative Routes B and F		
	Permanent Access Roads ^a	Temporary Access Roads	Other Temporary Ancillary Facilities	Permanent Access Roads ^a	Temporary Access Roads	Other Temporary Ancillary Facilities
Potential roosting habitat	0.0	0.9	8.5	0.0	0.9	7.9
Potential foraging habitat	0.0	1.8	11.6	0.0	1.8	10.8

Source: USGS 2025

ROW = right-of-way

^a There are no permanent access roads for the Proposed Route or Alternative Routes in Virginia.

Construction of the Woodside Substation site will result in a permanent loss of potentially suitable roosting and foraging habitat, as described in Table G-3. While the existing habitats would be converted to industrial uses, there is abundant potentially suitable habitat in the vicinity of the Woodside Substation site.

Impacts on monarch butterfly are largely driven by the loss of open grassland and herbaceous habitats that meet the species’ habitat requirements. The total acreage of potentially suitable monarch butterfly habitat that would be temporarily disturbed within the ROW Corridors during construction and routine maintenance activities is provided in Table G-5. Some loss of individual larvae and/or eggs could occur if present within the ROW Corridors. Loss of adults

would not be expected given their volant nature. Following construction, the MARL Project will result in the establishment and maintenance of potentially suitable habitats within the ROW Corridors that could be used by resident and migrating monarch butterflies during operation. The potentially suitable monarch butterfly habitat impacts associated with the Proposed Route and Alternative Route ROW Corridors represent 0.1 percent and 0.2 percent, respectively, of the 8,815.8 acres of potentially suitable monarch butterfly habitat within the MARL Project Study Area in Virginia.

Table G-5 Potentially Suitable Monarch Butterfly Habitat Within the Siting Corridor, ROW Corridors, and the Woodside Substation Site (Acres)

Potentially Suitable Habitat	Proposed Route / Alternative Routes C, D, and E		Alternative Routes B and F		Woodside Substation Site
	Siting Corridor	ROW Corridor	Siting Corridor	ROW Corridor	
Monarch butterfly habitat	25.6	11.6	32.5	13.9	40.4

Source: USGS 2024

ROW = right-of-way

Impacts on potentially suitable monarch butterfly habitat would also occur associated with temporary access roads (1.0 acres) and ancillary other temporary facilities (3.0-3.1 acres depending on the route) outside of the Proposed Route and Alternative Route ROW Corridors. Impacts associated with temporary access roads and other temporary ancillary facilities associated with the Proposed Route and Alternative Routes each represent less than 0.1 percent of the 8,815.8 acres of potentially suitable monarch butterfly habitat within the MARL Project Study Area in Virginia. No permanent impacts associated with access roads or forest conversion are expected to occur in Virginia.

Construction of the Woodside Substation site would result in a permanent loss of potentially suitable monarch butterfly habitat, as described in Table G-5. While the existing habitats would be converted to industrial uses, there is abundant potentially suitable habitat in the vicinity of the Woodside Substation site.

No impacts on the green floater are anticipated associated with the Woodside Substation site.

NEET VA will coordinate with applicable federal and state agencies and other stakeholders to determine avoidance and minimization measures, as appropriate, to minimize and prevent impacts on protected species and their habitats.

Virginia Protected Species

A review of database query results from the VDCR NHP, the VaFWIS, and the VA DWR WERMS identified several species known or likely to occur within 2 miles of the Proposed

Route and Alternative Route Siting Corridors (Table G-6). Based on a review of the VA DWR WERMS data (VA DWR 2025b), there are no known occurrences of state-listed endangered or threatened species within the Woodside Substation site.

Table G-6 State and Federally Listed and Proposed Species and Species of Collection Concern Potentially Occurring Within 2 Miles of the Siting Corridors

Common Name	Scientific Name	Protection Status	Preferred Habitat
Appalachian grizzled skipper	<i>Pyrgus wyandot</i>	ST	Shale barren outcrops, glades, forest edge, open oak forest, pine-oak barrens, as well as pastures and ROWs.
Bewick's wren	<i>Thryomanes bewickii</i>	SE	Old fields, hardwood and coniferous woodlands and Shrub/scrub.
Little brown bat	<i>Myotis lucifugus</i>	SE	Old-growth or late-successional interior forests. Partially dead or decaying trees are used for summer roosting and foraging. Hibernation occurs primarily in caves, mines, and tunnels.
Loggerhead shrike (resident / migrant)	<i>Lanius ludovicianus (L.l. migrans)</i>	ST	Open old field, grassland/herbaceous habitats with scattered trees and shrubs.
Monarch butterfly	<i>Danaus plexippus</i>	FP	Migratory; fields, roadside areas, and open fields that contain milkweed.
Northern long-eared bat	<i>Myotis septentrionalis</i>	FE, SE	Old-growth or late-successional interior forests. Partially dead or decaying trees are used for summer roosting and foraging. Hibernation occurs primarily in caves, mines, and tunnels.
Peregrin falcon	<i>Falco peregrinus</i>	ST	Various open situations from forested mountainous regions to urban habitats.
Regal fritillary	<i>Speyeria idalia</i>	FP	Grassland/herbaceous uplands and wetlands, as well as old fields and savanna.
Timber rattlesnake	<i>Crotalus horridus</i>	CC	Forested hardwood, coniferous, and mixed uplands and wetlands, bare rock, scree, talus, and cliffs.
Tri-colored bat	<i>Perimyotis subflavus</i>	FP, SE	Partly open landscapes with large trees and plentiful woodland edge.
Wood turtle	<i>Glyptemys insculpta</i>	ST	Forested and herbaceous uplands, wetlands, and riparian habitats.

Source: VA DWR 2025a, VA DWR 2025b

CC = Collection Concern; FE = Federally Endangered; FP = Federally Proposed; ROW = rights-of-way; SE = State Endangered; ST = State Threatened

Impacts on Appalachian grizzled skipper and other state-listed species, if present, are largely driven by loss of potentially suitable habitat and direct impacts on less mobile species and/or life stage. Construction and operation could result in both temporary and permanent impacts on these species and/or their habitats. The extent of impacts on potentially suitable habitat for state-listed species, if present, that could occur within the ROW Corridors is summarized in Table G-7.

Impacts would be temporary if existing land cover type is:

- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Emergent Herbaceous Wetland
- Grassland/Herbaceous
- Open Water
- Pasture/Hay
- Shrub/Scrub

These habitats will be restored or allowed to regenerate with select vegetation management as required by site conditions. The total acreage of potentially suitable non-forested habitat that would be temporarily disturbed within the Proposed Route and Alternative Route ROW Corridors during construction and routine maintenance activities ranges from 11.8 to 14.2 acres (Table G-7). The non-forested habitat impacts associated with the ROW Corridors for the Proposed Route and Alternative Routes each represent 0.1 percent of the 10,050.3 acres of non-forested habitat within the MARL Project Study Area in Virginia.

Permanent impacts on forested habitats within the ROW Corridors would result from construction, mainly from the conversion of forested habitats to maintained ROW and affect species that use forested habitat. The total acreage of permanent impacts on forested habitats ranges from 44.4 to 47.6 acres within the Proposed Route and Alternative Route ROW Corridors. The forested habitat impacts associated with the ROW Corridors for the Proposed Route and Alternative Routes each represent 0.3 percent of the 17,749.4 acres of forested habitat within the MARL Project Study.

Table G-7 Potentially Suitable Habitat for Virginia-Listed Species Within the Siting Corridors, ROW Corridors, and the Woodside Substation Site (Acres)

Potentially Suitable Habitat	Proposed Route / Alternative Routes C, D, and E		Alternative Routes B and F		Woodside Substation Site
	Siting Corridor	ROW Corridor	Siting Corridor	ROW Corridor	
Non-forested	27.0	11.8	33.8	14.2	68.9
Forested	113.8	47.6	107.3	44.4	2.9
Total ^a	140.8	59.4	141.1	58.6	71.8

Source: USGS 2024

ROW = right-of-way

^a Totals may not match the sum of addends due to rounding.

As discussed previously, the Isaacs Creek PROW Conservation Site provides potentially suitable habitat for the Appalachian grizzled skipper. Impacts on Appalachian grizzled skipper are largely driven by the loss of potentially suitable habitats that meet the species’ habitat requirements. The shared Proposed Route and Alternative Route ROW Corridors intersect 11.2 acres of the Isaacs Creek PROW Conservation Site, which represent 7 percent of the 154-acre site.

In addition to potentially suitable habitat impacts, impacts on state-listed species could occur, if present within and adjacent to the ROW Corridors. Temporary impacts from construction activities (e.g., noise and vibration) could cause temporary displacement of more mobile species to areas outside of construction zones. Due to the volant nature of some of these species, direct impacts would not be expected during construction and routine maintenance. Loss of potentially suitable habitat within the Proposed Route and Alternative Route ROW Corridors would occur during construction. Displaced mobile state-listed species are expected to return to the area following construction and would be expected to use the newly established and revegetated herbaceous and shrub/scrub habitat during operation. Loss of less mobile species and plants, if present within the ROW Corridors, could occur as a result of ground disturbances.

Impacts on potentially suitable habitat for state-listed species would also occur associated with access roads and ancillary facilities outside of the Proposed Route and Alternative Route ROW Corridors (Table G-8). Impacts on habitat associated with access roads and other temporary ancillary facilities each represent less than 0.1 percent of the 10,050.3 acres of non-forested habitat within the MARL Project Study Area in Virginia. Similarly, permanent impacts from the conversion of forested habitat to non-forested habitat associated with temporary access roads and other temporary ancillary facilities associated with the Proposed Route and

Alternative Routes each represent less than 0.1 percent of the 17,749.4 acres of forested habitat within the MARL Project Study Area in Virginia. No permanent impacts associated with access roads are expected to occur in Virginia.

Construction of the Woodside Substation site would result in a permanent loss of potentially suitable protected species habitat, as described in Table G-7. While the existing habitats would be converted to industrial uses, there is abundant potentially suitable habitat in the vicinity of the Woodside Substation site.

Table G-8 Potentially Suitable Habitat For Virginia-Listed Species Within Ancillary Facilities Outside of the ROW Corridor (Acres)

Potentially Suitable Habitat	Proposed Route / Alternative Routes C, D, and E			Alternative Routes B and F		
	Permanent Access Roads ^a	Temporary Access Roads	Other Temporary Ancillary Facilities	Permanent Access Roads ^a	Temporary Access Roads	Other Temporary Ancillary Facilities
Non-forested	1.0	3.1	1.0	1.0	3.0	1.0
Forested	0.9	8.5	0.9	0.9	7.9	0.9
Total ^b	1.8	11.6	1.8	1.8	10.8	1.8

Source: USGS 2024

ROW = right-of-way

^a There are no permanent access roads for the Proposed Route or Alternative Routes in Virginia.

^b Total may not match the sum of addends due to rounding.

Migratory Bird Treaty Act Species

Migratory birds are protected under the MBTA, as administered by the USFWS. Table G-9 lists the migratory bird species of concern that may occur within the Siting Corridors and the Woodside Substation site according to the USFWS IPaC database. In total, there are 10 species of migratory birds that have the potential to occur within the Proposed Route and Alternative Route Siting Corridors, of which 6 have the potential to occur within the Woodside Substation site. Of the 10 species, 9 are birds of conservation concern, and the bald eagle is protected under the Bald and Golden Eagle Protection Act (further discussed below).

Table G-9 Migratory Birds with Potential to Occur Within the Siting Corridors and Woodside Substation Site

Common Name	Scientific Name	Status	Breeding Season
Bald eagle ^a	<i>Haliaeetus leucocephalus</i>	Vulnerable ^b	September 1 to August 31
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	BCC	May 15 to October 10
Black-capped chickadee ^a	<i>Poecile atricapillus praticus</i>	BCC	April 10 to July 31
Canada warbler	<i>Cardellina canadensis</i>	BCC	May 20 to August 10
Chimney swift ^a	<i>Chaetura pelagica</i>	BCC	March 15 to August 25

Common Name	Scientific Name	Status	Breeding Season
Eastern whip-poor-will	<i>Antrostomus vociferus</i>	BCC	May 1 to August 20
Prairie warbler ^a	<i>Setophaga discolor</i>	BCC	May 1 to July 31
Red-headed woodpecker ^a	<i>Melanerpes erythrocephalus</i>	BCC	May 10 to September 10
Rusty blackbird	<i>Euphagus carolinus</i>	BCC	NA ^c
Wood thrush ^a	<i>Hylocichla mustelina</i>	BCC	May 10 to August 31

Source: USFWS n.d.

BCC = bird of conservation concern; NA = not applicable

^a This species also has the potential to occur at the Woodside Substation site.

^b This is not a BCC but is protected under the Bald and Golden Eagle Protection Act.

^c This species does not occur within the Siting Corridors for the Proposed Route or Alternative Routes or the Woodside Substation site during the breeding season and no nesting impacts would be expected.

Impacts on MBTA species are largely driven by loss of potentially suitable habitat and direct impacts during the nesting season when eggs or non-volant chicks are present. Construction and operation could result in both temporary and permanent impacts on MBTA species and/or their habitats. The extent of impacts on potentially suitable habitat for MBTA species, if present, that could occur within the ROW Corridors and the Woodside Substation site is described in Table G-7.

Impacts would be temporary if existing land cover type is:

- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Emergent Herbaceous Wetland
- Grassland/Herbaceous
- Open Water
- Pasture/Hay
- Shrub/Scrub

Within the ROW Corridor, these habitats will be restored or allowed to regenerate with select vegetation management as required by site conditions. The total acreage of potentially suitable MBTA species habitat within the ROW Corridors that would be temporarily disturbed ranges from 11.8 to 14.2 during construction and routine maintenance activities (Table G-7). The non-forested MBTA habitat impacts associated with the ROW Corridors for the Proposed Route and Alternative Routes each represent 0.1 percent of the 10,050.3 acres of non-forested habitat within the MARL Project Study Area in Virginia.

Permanent impacts on forested habitats would result from construction, mainly from the conversion of forested habitats to maintained ROW and affect species that use forested habitat.

The total acreage of permanent impacts on forested habitats ranges from 44.4 to 47.6 acres within the ROW Corridors (Table G-7). The forested MBTA species habitat impacts associated with the ROW Corridors for the Proposed Route and Alternative Routes each represent 0.3 percent of the 17,749.4 acres of forested habitat within the MARL Project Study Area in Virginia.

Impacts on potentially suitable habitat for MBTA species would also occur associated with access roads and ancillary facilities outside of the Proposed Route and Alternative Route ROW Corridors (Table G-8). Impacts on non-forested habitat associated with access roads and other temporary ancillary facilities associated with the Proposed Route and Alternative Routes each represent less than 0.1 percent of the 10,050.3 acres of non-forested habitat within the MARL Project Study Area in Virginia. Similarly, permanent impacts from the conversion of forested habitat to non-forested habitat associated with temporary access roads and other temporary ancillary facilities associated with the Proposed Route and Alternative Routes each represent less than 0.1 percent of the 17,749.4 acres of forested habitat within the MARL Project Study Area in Virginia. No permanent impacts associated with access roads are expected to occur in Virginia.

Construction of the Woodside Substation site would result in a permanent loss of potentially suitable MBTA species habitat, as described in Table G-7. While the existing habitats would be converted to industrial uses, there is abundant potentially suitable habitat in the vicinity of the Woodside Substation site.

Bald and Golden Eagle Protection Act

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act and MBTA. While noted on the IPaC reports, queries of publicly available databases indicate there are no known bald eagle nests within a 660-foot buffer of the Proposed Route and Alternative Route Siting Corridors or the Woodside Substation site. The lack of nest observations does not mean bald eagle nests do not exist but only that they have not been observed. The closest observed bald eagle nest is 3.9 miles east of the shared Siting Corridors for the Proposed Route and Alternative Routes (Watts and Byrd 2013). If nests or individuals are identified before, during, or after construction, NEET VA will coordinate with applicable stakeholders to avoid and minimize impacts on bald eagle throughout the MARL Project's operation.

H. Erosion and Sediment Control

The Proposed Route and Alternative Route ROW Corridors have been sited and designed to avoid structure placement in waterbodies. Impacts on waterbodies within the ROW Corridors include predominantly temporary impacts from construction activities. In addition, vegetation

clearing, grading, or other earth disturbance activities associated with ROW construction and construction/use of ancillary facilities (access roads and other temporary facilities outside of the ROW Corridor) in proximity to waterbodies would temporarily result in increased potential for erosion and stormwater runoff impacts, including increased nutrient loading, turbidity, and sedimentation in waterbodies. Impacts on waterbodies as a result of temporary access road crossings could temporarily increase sedimentation, disrupt flow, and alter habitat during construction. There are no permanent access roads associated with the Proposed Route and Alternative Routes.

A MARL Project-specific ESC Plan and SWPPP will be prepared and included as part of the State Stormwater permit application, in accordance with the DEQ Stormwater Management Handbook. The SWPPP will incorporate spill prevention and response procedures, as applicable. NEET VA will coordinate with state and local agencies during the development of the ESC Plan and SWPPP to incorporate and implement applicable state and local requirements. Appropriate BMPs will be used to manage stormwater runoff including silt sock, silt fence, construction entrances, temporary matting and bridges, and erosion matting based on the site-specific conditions in of each area of construction.

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

ERM conducted a Stage I Pre-Application Analysis (Stage I Analysis) of potential impacts on cultural resources for the Proposed Route, Alternative Routes, and the Woodside Substation site in accordance with the Virginia Department of Historic Resources' (VDHR) Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (Guidelines) (VDHR 2008). A copy of the Stage I Analysis, which was provided to VDHR on February 25, 2025, is included as Attachment 4 of Appendix D of the Routing Study. For each route, the analysis identified and considered previously recorded resources within the following study tiers as specified in the Guidelines:

- National Historic Landmark (NHL) properties located within a 1.5-mile radius of each Alternative Route;
- National Register of Historic Places (NRHP)-listed properties, NHLs, battlefields, and historic landscapes within a 1.0-mile radius of each Alternative Route;
- NRHP-eligible and listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of each Alternative Route; and
- Qualifying architectural resources and archaeological sites located within the ROW Corridor for each Alternative Route.

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

In addition to the VCRIS, ERM collected information from Rural Landmarks Survey Report of Frederick County, Virginia (Kalbian 1992) to identify locally significant resources within a 1.0-mile radius of each Alternative Route and the Woodside Substation site to find locally significant resources within a 1.0-mile radius of each centerline. Two locally significant resources were identified within the relevant study tiers for the Woodside Substation site during the data collection effort.

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

A summary of the considered resources identified in the vicinity of the Proposed Route, Alternative Routes, and the Woodside Substation site and recommendations concerning the MARL Project effects are provided in the following discussion. The information presented here derives from existing records and does not purport to encompass the entire suite of historic and archaeological resources that may ultimately be affected by the undertaking.

The resources located within the ROW of the Proposed Route, Route Alternatives, and Woodside Substation site may be subject to both potential direct impacts from placement of the transmission line across the property as well as potential visual impacts from changes to the viewshed introduced by the new transmission infrastructure. Resources in the 0–0.5-mile study tier would not be directly impacted but would likely be visually impacted unless topography or vegetation obscures the view from the resource to the transmission line. At a distance over 0.5 mile, it becomes less likely that a resource would be within line-of-sight of the new transmission facilities. Beyond 1.0 mile, it becomes even less likely that a given resource would be within line-of-sight of the MARL Project. However, a full architectural survey (to be completed following the selection of a route) is necessary to determine which resources would potentially be visually impacted and to survey for additional unrecorded resources.

The nature of the potential impacts of the Proposed Route, Routes Alternatives, and Woodside Substation site, while estimated in this study with the assistance of photo simulations, will depend on the final MARL Project design in which the exact placement and height of transmission line structures is confirmed. As part of the forthcoming full architectural survey, potential MARL Project impacts on these and any newly identified resources would be assessed. The study area for the survey would be defined based on the height of the transmission line structures, topography, tree cover, and other factors potentially impacting line-of-sight from resources to the Proposed Route, Alternative Routes, and Woodside Substation site.

Proposed Route and Alternative Routes

One aboveground historic resource was identified within the VDHR study tiers for the Proposed Route and Route Alternatives, as the Proposed Route and Alternative Routes are identical in this area of the MARL Project (Table I-1). Construction and operation of the facilities would have no impact on the one resource (034-0486).

The Robert Muse House/Sunrise (034-0486) is located 0.6 mile to the south of the Proposed Route and each Alternative Route at MP 106.7. The resource would have no view of the Proposed Route and Alternative Routes due to distance and intervening vegetation. Thus, the Proposed Route and Alternative Routes would have no impact on 034-0486, the Robert Muse House/Sunrise.

Table I-1 Resources in VDHR Tiers for the Proposed Route and Alternative Routes

Buffer (miles)	Considered Resources	VDHR #	Description	Potential Impact
1.0–1.5	National Historic Landmarks	NA	NA	NA
0.5—1.0	National Register—Listed	034-0486	Robert Muse House/Sunrise	None
	Battlefields	NA	NA	NA
	Historic Landscapes	NA	NA	NA
0.0–0.5	National Register—Eligible	NA	NA	NA
	Locally Significant	NA	NA	NA
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed and Eligible)	NA	NA	NA

Source: VDHR 2025

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. One previously recorded archaeological site located partially within and adjacent to the ROW Corridor for the Proposed Route and Alternative Routes was identified during this undertaking:

44FK0696. 44FK0696 consists of a small prehistoric lithic scatter of unknown cultural affiliation. The site is located within the Proposed Route and each Alternative Route ROW Corridor, approximately 30 feet to the west of the route centerline. The site was identified within the existing VEPCO transmission line corridor during a 2011 survey. Although initially recommended ineligible for the NRHP by the survey team, the site was later assessed as potentially eligible by the VDHR. No transmission structures for the MARL Project currently are planned to be installed within the site boundary.

Woodside Substation Site

Two aboveground historic resources were identified within the VDHR study tiers for the Woodside Substation site (Table I-2). Construction and operation of the facility would have a potential minimal impact on the two resources (034-0137 and 034-0929).

The Branson House/Greenwood Farm (034-0137) is located 0.30 mile to the east-southeast of the Woodside Substation site. The surrounding area is a mixture of rural and commercial land use, with a pharmaceutical distribution center to the southwest, an existing transmission line to the north, and trees bordering the resource. The Woodside Substation site would be visible from the western edge of the resource, but would likely not be visible from inside the tree line of the resource, due to the lower elevation where the dwelling and outbuildings are situated. Although the construction of the Woodside Substation site would introduce additional modern elements to the resource's western viewshed, this is consistent with other features, such as the existing transmission line, that are visible from the site. Thus, the Woodside Substation site would have a potential minimal impact on 034-0137, the Branson House/Greenwood Farm.

The Hugh Lupton House (034-0929) is located 0.38 mile to the south of the Woodside Substation site. The surrounding area is a mixture of rural, residential, and commercial land use, with pastureland to the north, west, and east, dwellings to the south, and a pharmaceutical distribution center to the north. The resource is situated between Interstate 81 and Martinsburg Pike/Route 11. The Woodside Substation site would be visible from inside the resource boundary, separated by the line of trees flanking Interstate 81 between the resource and the Woodside Substation site. Although the construction of the Woodside Substation site would add additional modern elements to the northern viewshed, its visibility would be small and in the distance, and consistent with other modern elements already present in the viewshed (such as the pharmaceutical distribution center). Thus, the Woodside Substation site would have a potential minimal impact on 034-0929, the Hugh Lupton House.

Table I-2 Resources in VDHR Tiers for the Woodside Substation Site

Buffer (miles)	Considered Resources	VDHR #	Description	Potential Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
0.5-1.0	National Register—Listed	NA	NA	NA
	Battlefields	NA	NA	NA
	Historic Landscapes	NA	NA	NA
0.0- 0.5	National Register—Eligible	NA	NA	NA
	Locally Significant	034-0137	Branson House/Greenwood Farm	Minimal
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed and Eligible)	034-0929	Hugh Lupton House	Minimal

Source: VDHR 2025

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to previously recorded archaeological resources. However, no previously recorded archaeological sites fall within the ROW for the Woodside Substation site.

J. Chesapeake Bay Preservation Areas

The MARL Project is not located in a locality subject to the Chesapeake Bay Preservation Act.

K. Wildlife Resources

Forested, open water, agricultural, and open space land use areas and wetlands provide wildlife habitat. Forested areas within the Proposed Route and Alternative Routes ROW Corridors would be cleared of trees and converted to maintained ROW vegetation, which would eliminate forest habitat and cover but may provide edge habitat or open space for some species. Waterbodies, as discussed in 2.B of this Supplement, would be spanned by the transmission line conductors, with impacts on aquatic species limited to any temporary construction impacts associated with vegetation clearing adjacent to the waterbody and the elimination of riparian buffer benefits (erosion control, water filtration, habitat, and temperature control through shading), if any. No NWI-mapped wetlands were identified as discussed in 2.D of this Supplement. Permanent impacts on forested vegetation would result from construction, mainly from the conversion of forested habitats to maintained ROW and construction of the Woodside Substation site. The permanent conversion of forested habitat to herbaceous and shrub/scrub habitat or industrial use would result in the loss of potentially suitable habitat for a variety of plant and wildlife species and could potentially increase forest fragmentation associated with the ROW Corridors. The MARL Project has been sited and designed to minimize the total

amount of tree clearing to the extent practicable and minimize impacts on wetlands and associated vegetation. The MARL Project was also sited and designed to parallel existing high-voltage transmission line ROWs, where possible, to avoid and minimize impacts from new forested habitat fragmentation.

L. Recreation, Agricultural, and Forest Resources

The MARL Project is expected to have minimal incremental impacts on recreational, agricultural, and forest resources. Opportunities for paralleling other rights-of-way were considered, where possible, as a means of avoiding or minimizing impacts on resources. Where the route crosses agricultural lands, impacts would be limited to structure placement. During operation, agricultural activities will generally be allowed to continue, resulting in no long-term change in land cover. Where forested areas are crossed, trees would be removed, and vegetation kept to maintained heights within the ROW.

Frederick County follows the federal definition of important farmlands, which include Prime Farmland, Unique Farmland, and Farmland of Statewide or Local Importance, with these designations reported to and tracked by the U.S. Department of Agriculture (USDA). NEET VA determined from the USDA Natural Resources Conservation Service Soil Survey Geographic Database that neither the Proposed Route or any Alternative Routes cross any Prime Farmland or Farmland of Local, Statewide, or Unique Importance.

The Virginia Agricultural and Forestal Districts Act provides for the creation of conservation districts designed to conserve, protect, and encourage the development and improvement of a locality's agricultural and forested lands. According to the Virginia Department of Forestry, the MARL Project would not cross any Agricultural and Forestal Districts.

The Virginia Scenic Rivers Act seeks to identify, designate, and protect rivers and streams that possess outstanding scenic, recreational, historic, and natural characteristics of statewide significance for future generations. The MARL Project will not cross any state scenic rivers. Similarly, the MARL Project would not cross any parks, outdoor recreational use areas, or other designated natural resource areas (e.g., protected trails) crossed by the Proposed Route and Alternative Routes C, D, and E.

The MARL Project ROW Corridor will primarily affect Deciduous Forest (74.6 percent) and Pasture/Hay (14.4 percent) land cover types, while developed land (all of which is Developed, Open Space) will be 5.0 percent of the ROW Corridor. Similarly, the temporary ancillary facilities outside of the ROW Corridor will primarily affect Deciduous Forest and Pasture/Hay land cover types.

Construction would result in temporary restrictions on access to land used for work areas within the ROW Corridor (which affects the ability to use that land). Construction activities would also result in temporary access restrictions to existing public roads used for access roads, work areas, laydown areas, construction staging areas, and other construction-related spaces. Upon completion of construction, these areas would no longer be restricted from access.

During construction, forested portions of the ROW Corridor and ancillary facilities workspaces will be cleared of trees. Vegetation coverage within the ROW Corridor will be converted to herbaceous and scrub/shrub land cover for the life of the MARL Project. The 56.7 combined acres of Deciduous, Evergreen, and Mixed Forest within the ROW Corridor and 9.3 acres within the ancillary facilities workspaces represent 0.3 percent and less than 0.1 percent (respectively) of the total forested land in the MARL Project Study Area in Virginia. The 8.8 acres of agricultural land (Cultivated Crops and Pasture/Hay combined) in the ROW Corridor and 4.0 acres in the ancillary facilities workspaces represent 0.2 percent and less than 0.1 percent (respectively) of the total agricultural lands in the MARL Project Study Area in Virginia.

M. Use of Pesticides and Herbicides

After the MARL Project is placed in service, the NEET VA Operations Group will take over operation and maintenance of the line and substation. This organization has highly skilled personnel, including subject matter experts on ROW maintenance and vegetation management. A vegetation management prescription will be developed utilizing industry best practices that meet state and federal regulations. Vegetation control methods include hand and mechanized tree trimming within the ROW Corridor and removal of danger timber outside of the ROW Corridor. Mowing, trimming, clearing, and spot treatment of herbicides for incompatible species will be used to control the vegetation. Inspections will be performed at specified intervals with a combination of aerial and ground inspections. Vegetation management work prescriptions will be identified and recorded during inspections and maintenance will be scheduled and carried out as required to meet the specifications of the work prescription. Any herbicides that are used in right-of-way maintenance will comply with USEPA label requirements and other requirements for ROW application. Maintenance personnel that apply herbicides will be adequately licensed. Generally speaking, some higher growth of compatible species may be allowed outside of the conductor zone. The standard vegetation maintenance cycle will be every three to five years. If necessary, the schedule can be adjusted based on data from inspections.

N. Geology and Mineral Resources

The Proposed Route and Alternative Route Siting Corridors, as well as the Woodside Substation site, are within middle section of the Valley and Ridge physiographic province (NPS 2017). The land surface elevation within the Siting Corridors starts high on Timber Ridge in western Frederick County, decreases toward the east into the Isaacs Creek valley, and then rises again to Little Timber Ridge before terminating. Elevation along the Siting Corridors ranges from approximately 1,200 feet above mean sea level (amsl) on the ridges to approximately 900 feet amsl in the valley. The Woodside Substation site is located within the Shenandoah Valley and sits on relatively flat-lying topography at approximately 650 feet amsl.

Impacts on geology within the ROW Corridor and ancillary facilities include temporary impacts from construction activities and permanent impacts resulting from installation of transmission structures. The Proposed Route within Virginia has 12 structures out of the total 452 for the MARL Project. Structure foundations and footers will be embedded into the ground surface. The footprint of the permanent structures is limited to a small area of the tower foundations and footers and does not extend the entire length of the ROW Corridor. The average span length between towers is 1,258 feet. Structure foundation types are subject to final engineering design, geophysical surveys, and geotechnical investigations. Typical installation would be drilled piers with reinforced concrete; however, micropiles could be used in certain circumstances. Other foundation types will be considered, on an as-needed basis. The need for blasting is not anticipated for the MARL Project. If blasting is needed pending future engineering design and construction planning, NEET VA will prepare a blasting plan. Drilling, if used, may have a localized impact at structure foundation locations, particularly if karst is present. BMPs will be implemented if karst features are identified during construction. Further geophysical evaluation will be required, as engineering design is advanced.

The Woodside Substation site is a permanent facility and would have permanent impacts on the surface and near surface geology. Impacts during construction could include drilling, coring, or other mechanical disturbances of bedrock.

ERM reviewed publicly available data from Virginia Department of Energy, USGS topographic maps, USGS Mineral Resources Data System (MRDS), and high-resolution aerial imagery acquired for the MARL Project to identify mineral resources near the MARL Project components (ROW Corridor, ancillary facilities, and the Woodside Substation site). After reviewing USGS MRDS and Virginia's Department of Energy mineral mining resources, the closest mine or mineral site is the Covia Sand Mine in Gore, Virginia, located 1.9 miles southeast of the MARL Project's endpoint. Industrial (silica) sand was mined until the site was idled in 2024. There is also an active quarry (Clearbrook Quarry) operated by Carmeuse North America located at 508 Quarry Ln, Clear Brook, Virginia, 1.3 miles southeast of the Woodside

Substation site. Frederick County Board of Supervisors approved a 400-acre expansion of this quarry. The proposed expansion area is located 0.5 mile east of the Woodside Substation site. There are no metallic mineral resources, prospects, or abandoned mine lands near MARL Project components. Construction or operation of the MARL Project's transmission or substation infrastructure is not anticipated to impact, or be impacted by the quarry operations. Karst features are not anticipated during construction of the Proposed Route, but if encountered, NEET VA will notify the DEQ for further guidance and conduct additional investigations, as necessary. One possible karst depression has been identified at the Woodside Substation site (VDE n.d.-b). Sinkholes have been identified on the opposite side of I-81, approximately 320 feet east of the eastern substation footprint, and approximately 1,600 feet south of the substation footprint (VDE n.d.-a). Because of the carbonate bedrock of the Beekmantown Group located at or near the surface, there is potential for the development of karst features at the Woodside Substation site. A karst investigation will be conducted prior to construction following the Karst Assessment Standard Practice (Virginia Cave Board n.d.), for review by Frederick County. A Karst Management Plan will be developed, as necessary.

O. Transportation Infrastructure

Roads and Railroads

The Virginia Department of Transportation's Six-Year Improvement Program (VDOT 2025a) does not include any road or railroad improvement projects in or near the Siting Corridors or Woodside Substation site. Frederick County's Interstate Road Improvement Plan (Frederick County 2024a) and 2026 Primary Road Improvement Plan (Frederick County 2024b) and the Winchester-Frederick County Metropolitan Planning Organization's 2035 Transportation Plan Update (Win-Fred MPO 2012) identify transportation priorities for upgrades to I-81 (widening, interchange upgrades) and US 11 (widening to a four- to six-lane system) and intersection improvements along US 50; however, any improvement projects on these roads require state funding and contracting. As a result, there are no known or reasonably foreseeable planned transportation improvements along the roads listed in Table O-1.

Table O-1 Roads Within and Near the Siting Corridors and Woodside Substation Site

Road	Description	AADT (Year)
I-81	Limited-access freeway with two lanes in each direction, paved shoulders, a wide, landscaped median, and grade-separated interchanges	54,000 (2022)
US 50	Paved and striped, with one lane in each direction and a typical paved width of approximately 24 feet. Intermittent unpaved or graveled shoulders	8,500 (2022)
US 11	Three total travel lanes, including one lane in each direction and a bi-directional center turn lane, with a typical paved width of approximately 40 feet and no shoulders	7,700 (2022)
Fletcher Road	Paved, unstriped local road with a nominal typical width of 22 feet and no shoulders	100 (2020)
Parishville Road	Paved, unstriped local road with a nominal typical width of 24 feet and no shoulders	430 (2017)
Hopewell Road	Paved, striped road with one travel lane in each direction, a typical paved width of 24 feet, and no shoulders	5,000 (2022)
Cedar Hill Road	Paved, striped road with one travel lane in each direction, a typical paved width of 22 feet, and no shoulders	790 (2022)
Thistle Lane	Unpaved and paved, unmarked local road with a typical paved width of 20 feet and no shoulders	20 (2020)

Source: VDOT 2025b

AADT = annual average daily traffic; I- = Interstate; US = U.S. Route

During MARL Project construction, crossings of the roads would result in temporary impacts on traffic. These impacts would take the form of multiple, separate, short-duration (5- to 20-minute) intermittent closures for safety as the transmission lines are being installed between the structures on either side of each road crossing.

In addition, the MARL Project will require the use and upgrade of some existing roads to access the ROW Corridor, as well as the installation of temporary construction and long-term maintenance access roads from existing public roads along the ROW Corridor. Upgrade of existing roads and installation of new temporary or permanent access roads may result in temporary traffic impacts, such as single lane or shoulder closures, especially where new access roads meet existing roads. MARL Project operation (including routine maintenance) will require minimal use of access roads and, therefore, would not meaningfully affect local traffic.

The MARL Project would not cross any existing railroads; therefore, there would be no impact on railroads.

The MARL Project’s construction protocols include protective measures, such as clearance poles, cranes, or bucket trucks placed on each side of the road to protect the roadway during cable pulling activities. NEET VA will coordinate with state and local road authorities and law

enforcement agencies to schedule and implement any temporary road closures required for transmission line crossings. Similarly, NEET VA will coordinate with these agencies to implement any upgrades of existing roads or temporary closure of shoulders or lanes on public roads necessary to install temporary or permanent access roads. NEET VA will develop Maintenance of Traffic (MOT) Plans in coordination with applicable road authorities and law enforcement agencies. The MOT Plans will include traffic management measures, such as the use of road signs, flagging crews, lane closures, and detours. The MOT Plans will also include measures to maintain access for emergency vehicles during construction.

Airports

ERM reviewed the Federal Aviation Administration’s (FAA) website to identify public use airports, airports operated by a federal agency or the U.S. Department of Defense, airports or heliports with at least one FAA-approved instrument approach procedure, and public use or military airports under construction (FAA n.d.-a). Based on this review, 10 airports (6 in Virginia and 4 in West Virginia), are within 10 nautical miles (nm) of the proposed facilities, pursuant to the Code of Federal Regulations, Title 14, Section 157.5 (14 CFR § 157.5). The FAA only regulates public use and federally operated (military use) airports and heliports. Of the airports identified, the only public use airports within 10 nm of any MARL Project feature are Winchester Regional Airport and Eastern West Virginia Regional / Shepherd Field Airport, which are both near the Woodside Substation site.

All MARL Project components are outside of the civil airport imaginary surfaces of the public airports identified in Table O-2 and are, thus, outside of the relevant airport safety overlay zones for Winchester Regional Airport and Eastern West Virginia Regional Airport / Shepherd Field. None of the MARL Project’s features would exceed surfaces or Terminal Instrument Procedures obstruction standards for the two airports.

Table O-2 Airports and Heliports Located within 10 Nautical Miles of the MARL Project

Airport/Heliport Name	FAA ID	Distance and Direction from Nearest MARL Project Component ^a	Use	Maximum Runway Length (feet)
Al’s Field Airport	48VA	0.9 nm northeast of Handoff Point	Private	1,500
Timber Ridge Airpark	VA46	1.2 nm north of Handoff Point	Private	2,700
River’s Edge Farm Airport	38WV	3.0 nm north of Siting Corridors	Private	1,800
Talbott Field Airport	8WV8	3.7 nm north of Woodside Substation site	Private	1,015
Jucapa Farms Airport	9VG9	6.3 nm north-northeast of Handoff Point	Private	1,500
Kuhn Heliport	4VA2	6.6 nm north-northeast of Handoff Point	Private	NA

Airport/Heliport Name	FAA ID	Distance and Direction from Nearest MARL Project Component ^a	Use	Maximum Runway Length (feet)
Winchester Medical Center Heliport	2VA4	6.9 nm southwest of Woodside Substation site	Private	NA
Michaels Farms Airport	WV17	7.9 nm north-northwest of Woodside Substation site	Private	2,000
Winchester Regional Airport	OKV	8.3 nm south-southwest of Woodside Substation site	Public	5,498
Eastern West Virginia Regional / Shepherd Field Airport	MRB	9.0 nm north-northeast of Woodside Substation site	Public	8,815

Source: FAA n.d.-a, n.d.-b

FAA = Federal Aviation Administration; ID = identification; NA = not applicable; nm = nautical mile

^a Distance (nm) is measured from the end or edge of the nearest runway to the nearest MARL Project feature.

Va. Code § 5.1-25.1 prohibits erection of any structure that penetrates any licensed airport’s clear zone, approach zone, imaginary surface, obstruction clearance surface, obstruction clearance zone, or surface or zone (as defined by the FAA or the regulations of the Virginia Department of Aviation) without first securing a permit from the Board of Aviation. This requirement does not apply to structures erected in a jurisdiction that has an ordinance regulating the height of such structures to prevent the penetration of zones and surfaces established in 14 CFR Part 77 and Rule 19 of the Virginia Department of Aviation. State law (Va. Code §§ 15.2 2280, 15.2 2282, 15.2 2293, and 15.2 2294) gives local jurisdictions the power to establish and regulate zoning districts, make airspace subject to their zoning ordinance, and establish airport safety zoning.

Frederick County’s Airport (AP1) zoning district regulates structure heights near Winchester Regional Airport. The portions of the MARL Project in Virginia (including the Siting Corridors) would be outside of this zoning district.

The proposed transmission line structures for the MARL Project would not exceed 200 feet above ground level. NEET VA would likely use cranes to install the MARL Project’s transmission structures. Based on the typical maximum crane height needed for construction (assumed to be approximately 35 feet above the structure height), these cranes may exceed the FAA notification thresholds. As a result, NEET VA may be required to submit FAA Form 7460-1, Notice of Proposed Construction or Alteration, pursuant to 14 CFR Part 77 for FAA notification. Any such submittal would occur after a route is selected by the SCC during the permitting phase of the MARL Project.

The FAA does not regulate private airports and heliports. The six private runways and two heliports are within 10 nm of the MARL Project facilities. An existing transmission line corridor (with collocated FirstEnergy 500 kV and Dominion 138 kV transmission lines) is

between the handoff point and Al's Field and Timber Ridge Airpark, the two closest private airports to the MARL Project (FAA n.d.-a). These existing transmission lines also lie between the MARL Project facilities and other private airports. As a result, construction and operation of the MARL Project would not affect private airports.

MARL Project construction may require the use of helicopters to facilitate construction and for structure setting, wire pulling operations, or equipment transport on an as-needed basis due to topographic, constructability, or environmental constraints. Helicopter activity would primarily remain above the ROW Corridor and/or ancillary facilities workspaces (or between airports/heliports and the MARL Project). Helicopter flights would originate at existing public airports and heliports or possibly at temporary helipads closer to the MARL Project facilities. The frequency and duration of such flights (if any) and the location of temporary helipads (if any) would be determined as part of MARL Project design and permitting. The location of any temporary helipads in Virginia would be identified as part of this analysis and assumes that airports or heliports used for these flights would have sufficient capacity to accommodate MARL Project-related flights. Pilots would obey relevant laws and regulations applicable to air operations.

P. Drinking Water Wells

ERM reviewed publicly available water well data from the VDE (2025) and the USGS National Water Information System (USGS 2019). There are no known water wells or springs within or in close proximity to the Siting Corridors. The few water wells reported for northwestern Frederick County are installed between 45 and 130 feet below ground surface (bgs). The nearest water level data indicate the depth to groundwater is approximately 25 feet bgs.

Groundwater is of sufficient quality and quantity for domestic and public supply within Frederick County. Additionally, there are no known groundwater protection areas within the Siting Corridors.

At the Woodside Substation site, in Frederick County, one water well is reported approximately 1,400 feet southwest of the site boundary, and one spring (Branson Spring) is located approximately 1,900 feet east of the site boundary. Nearby wells indicate that the depth to water varies seasonally but is generally between 15 and 55 feet bgs (USGS 2005). Groundwater in Frederick County is used for domestic and public supply. There are no known groundwater protection areas in the vicinity of the Woodside Substation site.

Impacts on groundwater are not anticipated, as permanent structures will be located within the shallow subsurface and above anticipated groundwater levels. BMPs for protecting

groundwater include containment for leachable materials and/or chemicals, low permeability liners for liquids retention/detention, restricting discharge, and stormwater runoff control. The MARL Project will implement such measures during construction.

Drilling or other earth work required for installation of the structural foundations will be limited to the footprint of the transmission structures and will not cover the entire length of the ROW Corridors. Groundwater extracted from within the Siting Corridors is not anticipated to be used during construction activities. Temporary construction activities are not expected to interfere with groundwater recharge, usage, or quality. No shallow unconfined groundwater or artesian conditions are known within the ROW Corridors that will be encountered during construction activities. If groundwater is encountered during drilling, dewatering may be required during construction as a temporary measure. Dewatering is expected to be localized to the immediate construction area. BMPs for water discharge such as water diversion and the use of liners will be implemented to minimize surface erosion. Due to the anticipated and limited extent of dewatering, subsidence is not expected to affect the MARL Project or surrounding overburden.

Construction activities are not expected to affect existing water wells. If water wells are encountered during preconstruction or construction activities, the area where work is being completed and any other aboveground appurtenances will be protected using fencing or guarding. If wells are damaged during construction, NEET VA will notify the property owner and VDH.

Q. Pollution Prevention

To comply with state stormwater requirements, NEET VA will obtain coverage either under the VPDES General Permit for Discharges of Stormwater from Construction Activities (VAR10) or an Individual VPDES Permit. A MARL Project-specific ESC Plan and SWPPP will be developed in coordination with state and local agencies to meet applicable requirements and implement BMPs. Dewatering, if necessary, will be discharged in accordance with the practices described in the DEQ Stormwater Manual (VDEQ 2024), which may include the use of a sediment trap or basin. If other devices are proposed, NEET VA will obtain approval from the DEQ prior to use.

An SPCC Plan will be developed, if required, to avoid or minimize impacts on wetlands due to inadvertent releases of fuel or mechanical fluids in accordance with the USEPA regulations (40 CFR Part 112).

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