

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

Before the State Corporation Commission of Virginia

500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects

Application No. 350

Case No. PUR-2025-00056

Filed: March 28, 2025

Volume 5 of 5

# Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects Case No. PUR-2025-00056

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Environmental Feature <sup>a, b</sup>	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
ROUTE LENGTH AND CONSTRUCTION FOOTPRINT								
Centerline Length	miles	9.4	9.3	8.3	8.3	9.8	0.6	1.9
New Right-of-Way	acres	123.5	121.7	108.6	109.3	129.3	5.0	29.1
Collocation with Existing Dominion Rights-of-way	acres	22.0	23.0	23.0	23.0	22.0	1.9	0.8
Structures	count	92	06	83	83	97	7	21
ROUTING OPPORTUNITIES °								
Dominion Infrastructure (total)	miles	2.9	4.1	4.1	4.5	3.1	0.3	0.1
Dominion Transmission Lines	miles	2.8	4.0	4.0	4.4	2.8	0.3	0.1
Dominion Distribution Lines	miles	0.1	0.1	0.1	0.1	0.3	0.0	0.0
Roads (total)	miles	5.3	2.9	1.4	1.4	5.5	0.0	0.1
Carters School Road	miles	0.4	0.4	0.4	0.4	0.4	0.0	0.0
Claiborne Parkway	miles	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Digital Dulles Drive	miles	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Dulles Greenway	miles	0.5	0.0	0.0	0.0	0.5	0.0	0.0
Loudoun County Parkway	miles	8. 4.	1.5	0.0	0.0	2.6	0.0	0.0
Old Ox Road	miles	0.3	0.3	0.3	0.3	0.3	0.0	0.0

FEATURE CROSSING TABLE FOR THE GOLDEN TO MARS PROJECT



ERM CLIENT: Dominion Energy Virginia DATE: March 2025

	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
Pacific Boulevard	miles	0.6	0.6	0.6	0.6	0.6	0.0	0.0
Ryan Road	miles	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Sully Road (Rt. 28)	miles	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Other Utility Infrastructure Corridors (total)	miles	1.5	1.6	1.7	1.5	1.5	0.0	0.0
Broad Run Interceptor	miles	0.6	0.8	1.3	1.1	0.6	0.0	0.0
Other Loudoun Water Utility Infrastructure	miles	6.0	0.9	0.4	0.4	6.0	0.0	0.0
LAND USE								
Land Ownership								
Parcels Crossed (total)	count	60	52	56	52	73	ю	ъ
Private	count	58	49	49	47	71	ю	ъ
Public	count	2d	ω	7	Ŋ	2 <sup>d</sup>	0	0
Board of Supervisors-owned Parcels	count acres	1 <sup>d</sup> <0.1	1 0.9	5 8.7	3 4.9	1 <sup>d</sup> <0.1	0.0	0.0
NOVA Parks-owned Parcels	count acres	1 0.9	1 0.9	1 0.9	1 0.9	1 0.9	0.0	0 0.0
Loudoun County School Board- owned Parcels	count acres	0 0.0	1 3.2	1 3.0	1 7.1	0.0	0 0.0	0.0
Board of Supervisors Open Space Easements (privately-owned land)	count acres	$\frac{1}{3.1}$	1 0.9	2 5.1	1 2.5	0 0.0	0.0	0 0.0
Land Use/Land Cover <sup>e</sup>								
Forested	acres	50.3	64.7	66.5	67.0	49.1	4.4	23.2



Environmental Feature <sup>a, b</sup>	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
Agricultural	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Developed	acres	28.7	23.0	19.8	21.2	31.2	0.1	1.6
Open Space	acres	42.4	31.6	20.3	19.2	46.8	0.3	4.3
Open Water	acres	2.2	2.4	2.0	1.9	2.2	0.1	<0.1
Recreation Areas			-	-	-	-		
Moorefield Station Regional Trail and Neighborhood Trail	acres miles	NA 0.7	NA 0.0	NA 0.0	NA 0.0	NA 0.7	0.0	NA 0.0
Broad Run Stream Valley Park and Broad Run Trail	acres miles	0.0	0.9 0.1	8.6 0.7	4.9 0.4	0.0	0.0	0.0
Valley Falls Community Park	acres miles	2.6 0.3	2.6 0.3	0.0	0.0	2.6 0.3	0.0	0.0
Washington & Old Dominion Trail	acres miles	0.9 <0.1	0.9 <0.1	0.9 <0.1	0.9 <0.1	0.9 <0.1	0.0	0.0
<b>Residences and Other Structures</b>								
Dwellings within ROW	count	0	0	0	0	0	0	0
Dwellings within 100 Feet of Centerline	count	116	110	4	-	125	0	0
Dwellings within 250 Feet of Centerline	count	275	231	28	10	312	0	0
Dwellings within 500 Feet of Centerline	count	984	697	133	69	1,163	0	0
Non-residential Buildings within ROW <sup>f</sup>	count	1		4	4	m	0	0
Noichhordo					-			

# Neighborhoods



Environmental Feature <sup>a, b</sup>	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
Birchwood at Brambleton	acres miles	1.9 0.2	1.9 0.2	0.0	0.0	1.9 0.2	0.0	0.0
Dulles Parkway Center	acres miles	0.3 <0.1	0.0	0.0	0.0	0.3 <0.1	0.0	0.0
Loudoun Parkway Center	acres miles	1.4 0.1	2.3 0.2	2.3 0.2	2.3 0.2	1.4 0.1	0.0	0.0
Loudoun Valley Estates I	acres miles	9.3 0.8	0.8 0.1	0.8 0.1	0.0	5.3 0.5	0.0	0.0
Loudoun Valley Estates II	acres miles	25.3 2.0	27.2 2.2	10.1 0.8	4.3 0.4	26.2 2.1	0.0	0.0
Loudoun Valley Estates III	acres miles	0.0	0.0	1.5 0.1	2.7 0.1	0.0	0.0	0.0
Moorefield Station	acres miles	7.6 0.7	0.0	0.0	0.0	12.0 1.1	0.0	0.0
Park at Belle Terra	acres miles	0.0	0.0	0.0	0.0	<0.1 0.0	0.0	0.0
Reserve at Belle Terra	acres miles	0.0	0.0	0.0	0.0	0.8 0.1	0.0	0.0
Cemeteries, Schools, and Places of Worship								
Cemeteries within 500 Feet of Centerline	count	0	0	0	0	0	0	0
Schools within 500 Feet of Centerline	count	2	0		7	7	0	0
Places of Worship within 500 Feet of Centerline	count	0	0	0	0	0	0	0
Place Types								
Suburban Employment	miles	1.4	1.4	1.4	1.4	1.4	0.0	0.0



Environmental Feature <sup>a, b</sup>	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
Suburban Industrial/Mineral Extraction	miles	1.6	2.8	3.2	3.4	1.6	0.0	1.9
Suburban Mixed Use	miles	1.0	1.0	1.0	1.0	1.0	0.0	0.0
Suburban Neighborhood	miles	3.0	3.0	1.6	1.5	3.0	0.0	0.0
Urban Employment	miles	0.7	0.7	0.7	0.7	0.7	0.6	0.0
Urban Mixed Use	miles	0.1	0.0	0.0	0.0	0.6	0.0	0.0
Urban Transit Center	miles	1.5	0.3	0.3	0.3	1.5	0.0	0.0
Planned Developments					•	•		
Planned Developments Crossed (Total)	miles	3.7	2.8	2.3	2.3	3.9	6.0	1.9
Birchwood at Brambleton Active Adult Community	miles	0.2	0.2	0.0	0.0	0.2	0.0	0.0
Cyrus One Sterling 11 Data Center Phase II	miles	0.2	0.2	0.1	0.1	0.2	0.0	0.0
Digital Dulles and Western Lands Substations	miles	0.4	0.4	0.4	0.4	0.4	0.0	1.8
Dulles Commerce Center and West Dulles Redevelopment	miles	0.2	0.2	0.2	0.2	0.2	0.0	0.0
Dulles 28 Technology Park	miles	0.3	0.3	0.3	0.3	0.3	0.0	0.0
Moorefield Station	miles	0.6	0.0	0.0	0.0	0.6	0.0	0.0
Northwoods Property	miles	0.0	<0.1	<0.1	<0.1	0.0	0.0	0.0
Pacific Corporate Park	miles	0.2	0.2	0.2	0.2	0.2	0.0	0.0
Paragon Park III Technology Park	miles	0.2	0.2	0.2	0.2	0.2	0.0	0.0



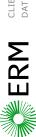
Environmental Feature <sup>a, b</sup>	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
Prentice Drive Substation	miles	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Project NOVA – Broad Run	miles	0.5	0.5	0.5	0.5	0.5	0.0	0.0
Project NOVA – Southeast	miles	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Silver District West	miles	0.5	0.3	0.3	0.3	0.5	0.0	0.0
Silver District West Multi-Family	miles	0.1	0.0	0.0	0.0	0.1	0.0	0.0
The Shops at Moorefield/Moorefield Gas Station	miles	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Stone Hill Residential Rezoning	miles	0.2	0.2	0.0	0.0	0.2	0.0	0.0
Transportation	_		_			_		
Existing Road Crossings (total)	count	16	10	10	6	21		0
Local Roads	count	15	6	6	8	20		0
State Highways	count	н	H	1	н	t.	0	0
Planned Roads	count	2	4	4	4	7		0
NATURAL RESOURCES	_		_			_		
Wetlands <sup>9</sup>								
Wetlands Affected (total)	acres miles	27.2 1.5	34.7 2.1	28.1 1.5	29.8 1.6	27.2 1.5	1.2 0.1	3.1 0.2
Palustrine Forested	acres	15.8	21.9	19.8	22.1	15.5	1.0	2.2
Palustrine Scrub-Shrub	acres	0.8	0.8	NA	NA	0.6	NA	NA



Environmental Feature <sup>a, b</sup>	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
Palustrine Emergent	acres	6.4	6.4	3.6	3.6	6.5	NA	0.5
Palustrine Unconsolidated Bottom	acres	2.2	2.4	1.9	1.9	2.5	AN	<0.1
Riverine	acres	2.1	3.2	2.8	2.2	2.1	0.2	0.3
Waterbodies <sup>h</sup>					-	-		
Waterbody (total)	count	33	40	34	31	37	2	ъ
Perennial	count	9	13	11	2	9	-	0
Intermittent	count	12	6	Ŋ	9	13	0	2
Lake/Pond	count	2		1		2	0	0
Non-NHD Mapped Waterbodies	count	13	17	17	17	16	÷	ĸ
River and Stream Corridor Resource								
100-foot Buffer Crossing	acres	20.3	20.2	9.7	11.0	24.1	0.0	0.9
300-foot Buffer Crossing	acres	10.6	29.9	38.9	30.3	10.6	1.7	0.0
Natural Heritage Resources								
SCS or Conservation Sites								
Broad Run - Rt. 607 Stream Conservation Site	acres	13.3	16.3	16.3	16.3	13.3	2.2	0.0
Ecological Cores								
C1: Outstanding	count acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Environmental Feature <sup>a, b</sup>	Unit	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop
C2: Very High	count acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C3: High	count acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C4: Moderate	count acres	1 11.8	$\begin{array}{c}1\\11.8\end{array}$	1 11.8	1 11.8	$\begin{array}{c}1\\11.8\end{array}$	0.0	1 15.7
C5: General	count acres	3 12.1	4 23.4	4 22.4	4 23.8	3 12.1	1 4.8	0.0
Forest Conservation Value								
Average (1)	acres	38.2	42.0	43.8	45.6	38.2	4.8	12.3
Moderate (2)	acres	2.8	16.9	14.9	14.3	2.8	0.0	0.0
High (3)	acres	0.0	0.6	0.6	0.6	0.0	0.0	0.0
Very High (4)	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Outstanding (5)	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Protected Species								
Bald Eagle Nests within 330 Feet	count	0	0	0	0	0	0	0
Bald Eagle Nests within 660 Feet	count	H	Ţ	7	1	H	0	0
NRCS Soil Classification (SSURGO)								
Prime Farmland	acres	62.3	54.8	45.0	45.9	67.2	3.4	17.0
Farmland of Statewide Importance	acres	17.0	14.0	15.0	14.5	15.3	0.3	0.0



							230 kV Loop	230 kV Loop
Significant Geological Resources	-	-			-	-		
Diabase Soils ac	acres	3.5	4.3	1.9	3.8	3.5	0.0	0.0
CULTURAL RESOURCES	-							
Archaeological Sites within ROW cc	count	12	11	8	2	11		
NRHP Eligible and NRHP Listed cc Properties, NHLs, Battlefields, and Historic Landscapes within ROW	count	-	-	-		-	0	0
NRHP Eligible and NRHP Listed cc Properties, NHLs, Battlefields, and Historic Landscapes within 0.5 Mile	count	2	7	5	2	7	0	-
NHLs between 1.0 and 1.5 Miles cc	count	0	0	0	0	0	0	0
Historic Districts Crossed co	count	1	1	1	1	1	0	0
NRHP Listed Battlefields Crossed co	count	0	0	0	0	0	0	0
NRHP Eligible Battlefields Crossed co	count	0	0	0	0	0	0	0
VDHR Easements Crossed cc	count	0	0	0	0	0	0	0
Battlefields (National Park Service cc ABPP) Crossed	count	0	0	0	0	0	0	0
ABPP = American Battlefield Protection Program; NHL = National Historic Landmark; NRHF way; SCS = Stream Conservation Site; VDHR = Virginia Department of Historic Resources a The sum of the parts may not equal the totals due to rounding. b The crossing lengths presented in this table for all feature categories are based on hypot alternative.	m; NHL = = Virginia Is due to for all fea	National Hi Departmen rounding. ture categor	National Historic Landmark; NRHP Department of Historic Resources ounding. ure categories are based on hypoth	ark; NRHP = Resources d on hypothe	= National Re letical centerli	gister of Hist nes within th	L = National Historic Landmark; NRHP = National Register of Historic Places; ROW = right-of- inia Department of Historic Resources to rounding. feature categories are based on hypothetical centerlines within the right of way for each route	<pre>N = right-of- or each route</pre>

c Collocation includes areas where the routes overlap or are immediately adjacent to existing transmission right-of-way, roads, and major utilities. d Public parcels include two crossings of NOVA Parks land along the W&OD Trail, which is entirely within an existing Dominion easement and no

additional land rights at this location is required, and one Loudoun County BOS access drive that is 15 feet wide located north of Loudoun County

ERM CLIENT: Dominion Energy Virginia

Parkway and is planned to become a public roadway within the Moorefield Station planned development. While formal land rights for this access drive crossing have not been obtained as of March 2025, Loudoun County has indicated that it can be crossed by new transmission lines. e Based on Virginia Land Cover Dataset (VGIN 2024).

f Non-residential buildings within the rights-of-way include storage sheds but do not include primary commercial or industrial buildings.

g Wetland acreages are based on results of the wetland and waterbody desktop study (see Appendix D). NA indicates not applicable due to absence of a wetland type within the Project footprint.

h Waterbody counts are based on the USGS National Hydrography Dataset (USGS 2024).





# APPENDIX E WETLAND AND WATERBODY DESKTOP STUDY



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Virginia Department of Environmental Quality Office of Environmental Impact Review Ms. Bettina Rayfield, Manager P.O. Box 1105 Richmond, Virginia 23218 DATE March 28, 2025

SUBJECT GOLDEN-MARS 230 KV ELECTRIC TRANSMISSION PROJECT

REFERENCE 0642267

Dear Ms. Rayfield:

Environmental Resources Management (ERM), on behalf of Virginia Electric and Power Company (Dominion Energy Virginia, Dominion, or the Company), conducted a desktop wetland and waterbody review of publicly available information for the proposed Golden-Mars 230 kilovolt (kV) Electric Transmission Line Project (Project) in Loudoun County, Virginia. This delineation was done using desktop resources and methodology. A field delineation is required to verify the accuracy and extent of aquatic resource boundaries. Project route alternatives are shown in Attachment 1, with aquatic resource type and probability shown in Attachments 2 and 3.

Dominion Energy Virginia is filing an application with the State Corporation Commission (SCC) to:

- Construct a new approximately 8.2-mile overhead 500 kV single circuit transmission line and a new overhead 230 kV single circuit transmission line almost entirely on new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the future 500-230 kV Golden Substation and continue to the future 500-230 kV Mars Substation (Golden–Mars Lines);<sup>1</sup>
- Construct a new approximately 0.6-mile overhead double-circuit 230 kV transmission line on one set of double circuit structures by cutting the proposed 230 kV Golden-Mars Line and looping it into and out of the existing 230-34.5 kV Lockridge Substation (Lockridge 230 kV Loop);

<sup>&</sup>lt;sup>1</sup> The Golden Substation was approved by the SCC for construction and operation as part of the Aspen-Golden 500-230 kV Projects in Case No. PUR-2024-00032, and the Mars Substation was approved by the SCC for construction and operation as part of the approved Mars–Wishing Star Project in Case No. PUR\_2022-00183. Construction of the future Golden and Mars Substations is not a part of this Project.



ERM

- Construct a new approximately 1.9-mile overhead double circuit 230 kV transmission line on one set of double circuit monopole structures from the future Mars Substation to the existing Sojourner Substation (Sojourner 230 kV Loop); and
- Minor substation-related work at the future Golden and Mars Substations.

These facilities are collectively referred to as the Project.

The Project is necessary to relieve violations of North American Electric Reliability Corporation Reliability Standards brought on by significant increases in electrical demand as well as expected demand growth projected for the future, to interconnect future load, and to maintain the structural integrity and reliability of its transmission system.

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

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

# PROJECT STUDY AREA AND POTENTIAL ROUTES

The Project study area encompasses more than 22 square miles in eastern Loudoun County and includes the area around the future Golden Substation, the future Mars Substation, the existing Lockridge Substation, and the existing Sojourner Substation. The study area is generally bounded by the following features:

- Gloucester Parkway to the north;
- Sully Road (Virginia State Route [Rt.] 28) to the east;
- Dulles Airport to the south; and
- Belmont Ridge Road to the west.

The study area encompasses portions of several census-designated places and unincorporated areas within eastern Loudoun County, including Ashburn, Dulles, Moorefield, Brambleton, and Sterling. Notable places within the study area include parts of Data Center Alley (DCA), which is the world's largest agglomeration of data center campuses, Washington Dulles International Airport (Dulles Airport), the Metrorail Silver Line terminus at Ashburn Station, and suburban residential neighborhoods. The study area was predominately farmland prior to 2002 but has developed rapidly over the past 25 years.



DATE March 28, 2025 REFERENCE 0642267

Land use in the study area consists primarily of data center campuses, flex industrial warehouses, and low to medium density single-family housing. Broad Run, a tributary of the Potomac River, bisects the study area from northeast to southwest. The stream is surrounded a forested riparian corridor. The Dulles Greenway (Rt. 267) bisects the study area from northwest to southeast and forms a partial divide between data centers and industrial areas to the north (within DCA) and residential areas to the south and west of Broad Run. Loudoun County Parkway (Rt. 607) also bisects the study area from northeast to southwest as it passes through DCA, crosses the Dulles Greenway, and passes residential areas before reaching Old Ox Road (Rt. 606). Old Ox Road is located in southern portion of the study area and separates Dulles Airport from adjacent industrial and residential areas to the north and west. The study area is shown in Attachment 1.

# GOLDEN-MARS LINES

## ROUTE 1

Route 1 is approximately 9.4 miles long. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. This segment of the route alignment from the Golden Substation to the Dulles Greenway is the same for all Golden-Mars route alternatives.

South of the Greenway, the route turns northwest, paralleling the south side of the Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side and parallels the south and west side of the parkway (as the road turns south) from Gleedsville Manor Drive south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.

# ROUTE 2

Route 2 is approximately 9.3 miles long. Route 2 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west and crosses Broad Run three times before reaching Loudoun County Parkway. The route continues south and parallels the west side of Loudoun County Parkway past Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old



REFERENCE 0642267

Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.

# ROUTE 3

Route 3 is approximately 8.3 miles long. Route 3 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before turning south and crossing Loudoun Reserve Drive. The route continues south through Broad Run Stream Valley Park and across Overland Road. The route then turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation.

## ROUTE 4

Route 4 is approximately 8.3 miles long. Route 4 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns south and continues to parallel existing transmission lines before turning west along Loudoun Reserve Drive. The route then turns south through Broad Run Stream Valley Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation.

#### ROUTE 5

Route 5 is approximately 9.8 miles long. Route 5 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side, and parallels the south and west side of Loudoun County Parkway (as the road turns south) past Gleedsville Manor Drive, then turns west to parallel the north side of Ryan Road. Near Claiborne Parkway, the route turns south to rejoin Loudoun County Parkway and continues south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.



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# LOCKRIDGE 230 KV LOOP

# LOCKRIDGE 230 KV LOOP

The Lockridge 230 kV Loop is approximately 0.6 mile long. The route originates approximately 0.3 mile north of the Dulles Greenway and 0.2 east of Shellhorn Road, where it ties into the Golden–Mars Lines (within the segment shared by Routes 1–5). The route travels east from the Golden–Mars Lines and crosses Broad Run and Lockridge Road before terminating at Lockridge Substation. Because the route is entirely on property owned by SDC Ashburn I LLC and was developed in coordination with the landowner, ERM and Dominion did not consider any alternative routes between the Lockridge Substation and the Golden–Mars Lines.

# SOJOURNER 230 KV LOOP

## SOJOURNER 230 KV LOOP

The Sojourner Loop Proposed Route is approximately 1.9 miles long. The route originates at Sojourner Substation between Beaver Meadow Road and Digital Dulles Drive. The route travels east before turning south to parallel the western perimeter of Dulles Airport. The route then turns west, terminating at the future Golden Substation. Because the route is entirely on Digital Dulles property and was developed in coordination with the developers of Digital Dulles, ERM and Dominion did not consider any route alternatives between the Sojourner and Mars Substations.

# DESKTOP EVALUATION METHODOLOGY

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

- USA NAIP Imagery: Color Infrared NAIP Infrared Images, Virginia, 1-meter pixel resolution (NAIP 2024a)
- USA NAIP Imagery: Natural Color Images (2010-2022), Virginia, 1-meter pixel or better resolution (NAIP 2024b)
- Recent aerial imagery, taken in Fall of 2023 (NAIP 2023);
- Loudoun County Aerial Archive (Loudoun County 2024);
- Google Earth aerial imagery (Google LLC 2024);
- ESRI World Elevation Terrain 2-foot contours (ESRI et al. 2024);
- NWI maps from the USFWS online data mapping portal (USFWS 2024);
- The National Hydrography Dataset (NHD) Plus High Resolution (USGS 2024);



• Soil Survey Geographic Database soils data from the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2024).

# NATURAL COLOR AND INFRARED AERIAL PHOTOGRAPHY

Recent (2023 and 2024) natural color aerial photography was used to provide a visual overview of the Project area and to assist in evaluating current conditions. Infrared aerial photography was used to identify the potential presence of wetlands based on signatures associated with the levels of reflectance. For example, areas that are inundated with water appear very dark (almost black) due to the low level of reflectance in the infrared spectrum. The presence of these dark colors can be used as a potential indicator of hydric or inundated soils that are likely associated with wetlands.

# TOPOGRAPHIC MAPS

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

# USFWS NATIONAL WETLAND INVENTORY MAPPING

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

# USDA-NRCS SOILS DATA

Soils in the study area were identified and assessed using the SSURGO database, which is a digital version of the original county soil surveys (USDA-NRCS 2024). The attribute data within the SSURGO database provides the proportionate extent of the component soils and their properties (e.g., hydric rating) for each soil map unit. The soils in the study area were grouped into three categories based on the hydric rating of the component soils within each map unit: hydric, partially hydric, and non-hydric. Hydric soils were defined as those where the major component soils, and minor components in some cases, are designated as hydric. Hydric components in these map units account for more than 80 percent of the map unit.



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hydric soils include map units that only contain minor component soils that are designated as hydric. The partially hydric map units in the Project area contain 10 percent or less hydric soils. The remaining map units do not contain any component soils that are designated as hydric. Areas mapped as hydric or partially hydric have a higher probability of containing wetlands than areas with no hydric soils.

# USGS NATIONAL HYDROGRAPHY DATASET

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

# PROBABILITY ANALYSIS

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

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

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

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

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



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Medium/Low	Hydric soils only; or NWI data with or without overlap by partially hydric soils
Low	Partially hydric soils only
Very Low	Non-hydric soils only

# WETLAND AND WATERBODY CROSSINGS

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

- Palustrine emergent (PEM) wetlands characterized by erect, rooted, herbaceous hydrophytes (i.e., aquatic plants) and woody species less than 3 feet in height, excluding mosses and lichens;
- Palustrine scrub-shrub (PSS) wetlands characterized by woody vegetation, excluding woody vines, approximately 3 to 20 feet in height;
- Palustrine forested (PFO) wetlands characterized by woody vegetation, excluding woody vines, approximately 20 feet or more in height and 3 inches or larger diameter at breast height (DBH);
- Palustrine unconsolidated bottom (PUB) —open waters characterized by bottom substrate particles smaller than stones (less than 10 inches in diameter) covering greater than 25% of the area, with plants covering less than 30% of the area; and
- Riverine streams channels containing periodically or continuously moving water (USFWS 2013).

As stated above, field delineations were not performed and would be required to verify the accuracy and extent of aquatic resource boundaries.

# RESULTS

Results of the probability analysis are presented in Table 2 below. Wetland occurrence probabilities are reported from very low to high. The probability of wetland occurrence increases as multiple indicators begin to overlap towards the "high" end of the spectrum. The medium, medium-high, and high probability categories are the most reliable representation of in-situ conditions, due to overlapping data sets, and these categories are reported in the summary below as a percentage of the total acreage of each route. Attachment 2 depicts the type and 3 depicts the probability of medium or higher interpreted wetlands displayed on color base map images. Summaries are provided in the sections following the table.



#### Table 2: Summary of the Probabilities of Wetland and Waterbody Occurrence along the **Route Alternatives**

Probability	Total Within		Wetland and	Waterbody	type (acres)	
	Right-of- way (acres) <sup>a</sup>	PEM (Emergent)	PFO (Forested)	PSS (Scrub- Shrub)	PUB (Freshwater pond)	Riverine (Stream
Golden-Mars	Lines	·	•	·	·	•
Route 1						
High	0.9	0.2	0.3	0.2	NA	0.1
Medium/High	13.9	3.0	8.4	0.5	0.8	1.2
Medium	12.5	3.2	7.0	0.0	1.4	0.7
Medium/Low	0.8	0.3	<0.1	0.1	0.3	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 2				·		
High	1.1	0.2	0.6	0.2	NA	0.2
Medium/High	18.6	3.2	12.1	0.5	1.0	1.7
Medium	15.0	3.0	9.2	<0.1	1.4	1.3
Medium/Low	0.6	0.3	<0.1	0.1	NA	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 3						
High	0.3	<0.1	0.2	NA	NA	<0.1
Medium/High	14.1	1.4	9.9	NA	1.3	1.5
Medium	13.7	2.2	9.7	NA	0.6	1.3
Medium/Low	0.6	0.3	<0.1	NA	NA	0.2
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 4						



Probability	Total		Wetland and	Waterbody	type (acres)	
	Within Right-of- way (acres) <sup>a</sup>	PEM (Emergent)	PFO (Forested)	PSS (Scrub- Shrub)	PUB (Freshwater pond)	Riverine (Stream)
High	0.3	<0.1	0.3	NA	NA	<0.1
Medium/High	15.5	1.4	11.6	NA	1.3	1.3
Medium	14.0	2.2	10.3	NA	0.6	0.9
Medium/Low	0.4	0.3	<0.1	NA	NA	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 5						
High	0.9	0.2	0.3	0.3	NA	0.1
Medium/High	14.0	3.1	8.4	0.4	0.9	1.2
Medium	12.2	3.2	6.7	<0.1	1.6	0.7
Medium/Low	0.7	0.3	<0.1	<0.1	0.3	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Lockridge 230	) kV Loop					
High	0.4	NA	0.4	NA	NA	<0.1
Medium/High	0.6	NA	0.4	NA	NA	0.2
Medium	0.2	NA	0.2	NA	NA	<0.1
Medium/Low	NA	NA	NA	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Sojourner 230	) kV Loop					
High	0.1	<0.1	0.1	NA	NA	<0.1
Medium/High	3.1	0.2	2.7	NA	NA	0.2
Medium	0.1	0.1	<0.1	NA	NA	<0.1



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

NA = Not applicable due to absence of a wetland type within the route

Wetland acreages have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. If less than 0.05 acre of the wetland is present, it has been symbolized as <0.1.

<sup>a</sup> Wetland acreages within this table are inclusive of new and existing right-of-way.

# WETLAND CROSSINGS

Wetlands within the Golden-Mars Routes study area are predominantly forested and associated with Broad Run and its tributaries, including Horsepen Run, Stallion Branch, and other associated perennial and intermittent tributaries. Large areas of PFO wetlands are concentrated in the northern and central portions of the study area around Broad Run, Stallion Branch, and Beaverdam Run.

As discussed in more detail below, sections of the Golden-Mars Lines have been collocated with or share right-of-way with existing or future transmission lines along Broad Run between Dulles Greenway and Hemmingford Circle and between Old Ox Road and the future Mars Substation, avoiding new permanent wetland impacts in these locations. Table 3 provides the acres of medium or higher wetlands identified within new and existing or permitted rights-of-way along each route. Impacts on wetlands in shared rights-of-way have either already occurred or will occur in association with other transmission line projects. Where the routes are collocated with existing transmission lines, fragmentation of PFO wetlands is minimized by clearing trees adjacent to existing cleared rights-of-way rather than in unfragmented areas. Therefore, wetlands within shared rights-of-way would be limited to temporary impacts. The Lockridge and Sojourner Loops do not overlap with existing transmission rights-of-way.

Table 3: Acreage of High, Medium-high, and Medium Probability Wetlands and Waterbodies
Within the Project Footprint

Route	Right-of-way	Total <sup>a</sup>	PFO	PSS	PEM	PUB	Riverine
Golden-Mars Route 1 $^{\rm b}$	New	20.6	9.4	0.8	6.2	2.2	2.0
	Existing	6.6	6.3	NA	0.2	NA	0.1
	Total	27.2	15.8	0.8	6.4	2.2	2.1



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Golden-Mars Route 2 <sup>b</sup>	New	27.5	15.5	0.8	5.8	2.3	3.1
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	34.7	21.9	0.8	6.4	2.4	3.2
Golden-Mars Route 3 <sup>b</sup>	New	20.9	13.4	NA	3.1	1.7	2.7
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	28.1	19.8	NA	3.6	1.9	2.8
Golden-Mars Route 4 <sup>b</sup>	New	22.6	15.8	NA	3.0	1.7	2.1
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	29.8	22.1	NA	3.6	1.9	2.2
Golden-Mars Route 5 b	New	20.5	9.1	0.6	6.3	2.5	2.0
	Existing	6.6	6.3	NA	0.2	NA	0.1
	Total	27.2	15.5	0.6	6.5	2.5	2.1
Lockridge 230 kV Loop	New	0.8	0.7	NA	NA	NA	0.2
	Existing	0.3	0.3	NA	NA	NA	<0.1
	Total	1.2	1.0	NA	NA	NA	0.2
Sojourner 230 kV Loop	New	3.1	2.2	NA	0.5	<0.1	0.3

kV = kilovolt(s); NA = Not applicable due to absence of a wetland type within the Project footprint a Values have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. A value of <0.1 indicates that less than 0.05 acre of a wetland type is present. b Values within the "new" column include only aquatic resources within only proposed new right-of-way only. "Existing" consists of wetlands within the rights-of-way of existing or permitted transmission lines.



## **GOLDEN-MARS LINES**

## Route 1

The length of the corridor for Route 1 is approximately 9.4 miles and encompasses a total of approximately 123.5 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 22.0 percent (27.2 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 27.2 acres, 15.8 acres consist of PFO wetlands, 0.8 acre consist of PSS wetlands, 6.4 acres consist of PEM wetlands, 2.2 acres consist of PUB open water features, and 2.1 acres consist of riverine features.

Route 1 partially shares right-of-way with existing or permitted transmission line route rightsof-way, which avoids 6.6 acres of new wetland impacts within the shared right-of-way.

## Route 2

The length of the corridor for Route 2 is approximately 9.3 miles and encompasses a total of approximately 121.5 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 28.6 percent (34.7 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 34.7 acres, 21.9 acres consist of PFO wetlands, 0.8 acre consist of PSS wetlands, 6.4 acres consist of PEM wetlands, 2.4 acres consist of PUB open water features, and 3.2 acres consist of riverine features.

The Route 2 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

#### Route 3

The length of the corridor for Route 3 is approximately 8.3 miles and encompasses a total of approximately 108.3 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 25.9 percent (28.1 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 28.1 acres, 19.8 acres consist of PFO wetlands, 3.6 acres consist of PEM wetlands, 1.9 acres consist of PUB open water features, and 2.8 acres consist of riverine features.

The Route 3 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

#### Route 4

The length of the corridor for Route 4 is approximately 8.3 miles and encompasses a total of approximately 109.1 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 27.3 percent (29.8 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 29.8 acres, 22.1 acres consist of PFO wetlands, 3.6 acres consist of PEM wetlands, 1.9 acres consist of PUB open water features, and 2.2 acres consist of riverine features.



The Route 4 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

# Route 5

The length of the corridor for Route 5 is approximately 9.8 miles and encompasses a total of approximately 129.3 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 21.0 percent (27.2 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 27.2 acres, 15.5 acres consist of PFO wetlands, 0.6 acre consist of PSS wetlands, 6.5 acres consist of PEM wetlands, 2.5 acres consist of PUB open water features, and 2.1 acres consist of riverine features.

The Route 5 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 6.6 acres of new wetland impacts within the shared right-of-way.

## LOCKRIDGE 230 KV LOOP

The length of the corridor for this Lockridge 230 kV Loop is approximately 0.6 mile and encompasses a total of approximately 5.0 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 24.0 percent (1.2 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 1.2 acres of wetlands, 1.0 acre consists of PFO wetlands and 0.2 acre consist of riverine features.

#### SOJOURNER 230 KV LOOP

The length of the corridor for this Sojourner 230 kV Loop is approximately 1.9 miles and encompasses a total of approximately 29.1 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 10.7 percent (3.1 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 3.1 acres, 2.2 acres consist of PFO wetlands, 0.5 acre consist of PEM wetlands, less than 0.1 acre consist of PUB open water features, and 0.3 acre consist of riverine features.

# WATERBODY CROSSINGS

ERM identified and mapped waterbodies in the study area using similar publicly available GIS databases as those used to identify and map wetlands. Named waterbodies crossed by the Project include the perennial Broad Run (Golden Mars Lines Routes 1-5, multiple crossings, and the Lockridge Line, one crossing) and Stallion Branch (Sojourner 230 kV Loop, one crossing). In addition to these named waterbodies, the Routes would cross unnamed perennial and intermittent tributaries and open waterbody features. Based on recent (2024) aerial imagery, open waterbody features appear to be stormwater features.



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Waterbodies Crossed	Golden- Mars Route 1	Golden- Mars Route 2	Golden- Mars Route 3	Golden- Mars Route 4	Golden- Mars Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop Route
Total Waterbodies Crossed	33	40	34	31	37	7	N
NHD-Mapped Perennial Streams/Rivers	Q	13	11	7	Q	Ţ	o
NHD-Mapped Intermittent Streams/Rivers	12	6	ъ	9	13	0	2
NHD-Mapped Perennial Lakes/Ponds	7	1	1	1	2	0	o
Non-NHD Mapped Waterbodies <sup>a</sup>	13	17	17	17	16	1	ε
a Identified via current (Loudoun County 2024) and (Goodle LLC 2024) aerial imagery during deckton analysis		hae (LCOC vite		opemi leiroe (M	ry during dockt	oloviene no	

Table 4: Waterbodies Crossed by the Route Alternatives

<sup>a</sup> Identified via current (Loudoun County 2024), and (Google LLC 2024) aerial imagery during desktop analysis. Source: NHD – National Hydrography Dataset (USGS 2024)



#### GOLDEN-MARS LINES

#### Route 1

Route 1 would cross 33 waterbodies, of which 20 are NHD-mapped, including eight perennial waterbodies (four crossings of Broad Run, two perennial tributaries to Broad Run, and two open waterbodies) and 12 unnamed, intermittent streams. Additionally, ERM identified seven unnamed, unclassified streams and six unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 1 would encompass approximately 2.2 acres of PUB open water features, and 2.1 acres of riverine features.

#### Route 2

Route 2 would cross 40 waterbodies, of which 23 are NHD-mapped, including 14 perennial waterbodies (ten crossings of Broad Run, three tributaries to Broad Run, and one open waterbody) and nine unnamed, intermittent streams. Additionally, ERM identified 12 unnamed, unclassified streams and five unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 2 would encompass approximately 2.4 acres of PUB open water features, and 3.2 acres of riverine features.

#### Route 3

Route 3 would cross 34 waterbodies, of which 17 are NHD-mapped, including 12 perennial waterbodies (ten crossings of Broad Run, three tributaries to Broad Run, and one open waterbody) and five unnamed, intermittent streams. Additionally, ERM identified 14 unnamed, unclassified streams and three unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 3 would encompass approximately 1.9 acres of PUB open water features, and 2.8 acres of riverine features.

#### Route 4

Route 4 would cross 31 waterbodies, of which 14 are NHD-mapped, including eight perennial waterbodies (six crossings of Broad Run and one open waterbody) and six unnamed, intermittent streams. Additionally, ERM identified 14 unnamed, unclassified streams and three unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 4 would encompass approximately 1.9 acres of PUB open water features, and 2.2 acres of riverine features.



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## Route 5

Route 5 would cross 37 waterbodies, of which 21 are NHD-mapped, including eight perennial waterbodies (four crossings of perennial Broad Run, two associated perennial tributaries to Broad Run, and two open waterbodies) and 13 unnamed, intermittent streams. Additionally, ERM identified eight unnamed, unclassified streams and eight unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 5 would encompass approximately 2.5 acres of open water features 2.0 acres of riverine features.

# LOCKRIDGE 230 KV LOOP

The Lockridge 230 kV Loop would cross two waterbodies, of which one is NHD-mapped perennial Broad Run. Additionally, ERM identified one unnamed, unclassified stream within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for the Lockridge 230 kV Loop would encompass approximately 0.2 acre of riverine features.

## SOJOURNER 230 KV LOOP

The Sojourner 230 kV Loop would cross five waterbodies, of which two are NHD-mapped, including intermittent Stallion Branch and one unnamed, intermittent stream. Additionally, ERM identified two unnamed, unclassified streams and one unclassified open water feature within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for the Sojourner 230 kV Loop would encompass approximately less than 0.1 acre of PUB open water features, and 0.3 acre of riverine features.

# **PROJECT IMPACTS**

Avoiding or minimizing new impacts on wetlands and streams was among the criteria used in developing routes for the Project. To minimize impacts on wetland areas, the transmission line has been designed to span or avoid wetlands and waterbodies where possible, keeping transmission structures outside of aquatic resources to the extent practicable. As discussed in more detail above, sections of the Golden-Mars Lines have been collocated with or share right-of-way with existing or future transmission lines along Broad Run between Dulles Greenway and Hemmingford Circle and between Old Ox Road and the future Mars Substation, avoiding new wetland impacts in these locations. Direct impacts to wetlands would be limited to placement of structures within wetlands if unavoidable and the permanent conversion of PSS/PFO wetlands within the proposed right-of-way to PEM type wetlands.

There would be no change in contours of wetlands and waterbodies, or redirection of the flow of water, and the amount of spoil from foundations and structure placement would be minimal. Excess soil in wetlands generated through foundation construction would be mitigated through



Best Management Practices (erosion and sediment controls) and would be removed from the wetland.

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

Waterbodies crossed in shared rights-of-way are within the existing maintained corridor, with vegetation/riparian buffer only along the proposed expanded right-of-way segments of the features, thereby minimizing riparian buffer loss at these crossings.



# **SUMMARY**

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

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

If you have any questions regarding this wetland assessment, please contact me at 857-302-6502 or by email at <u>jake.bartha@erm.com</u>.

Sincerely,

Jake Bartha Environmental Resources Management

cc: James P. Young, Dominion Energy Virginia Greg R. Baka, Dominion Energy Virginia

Enclosures: Attachments 1, 2, and 3

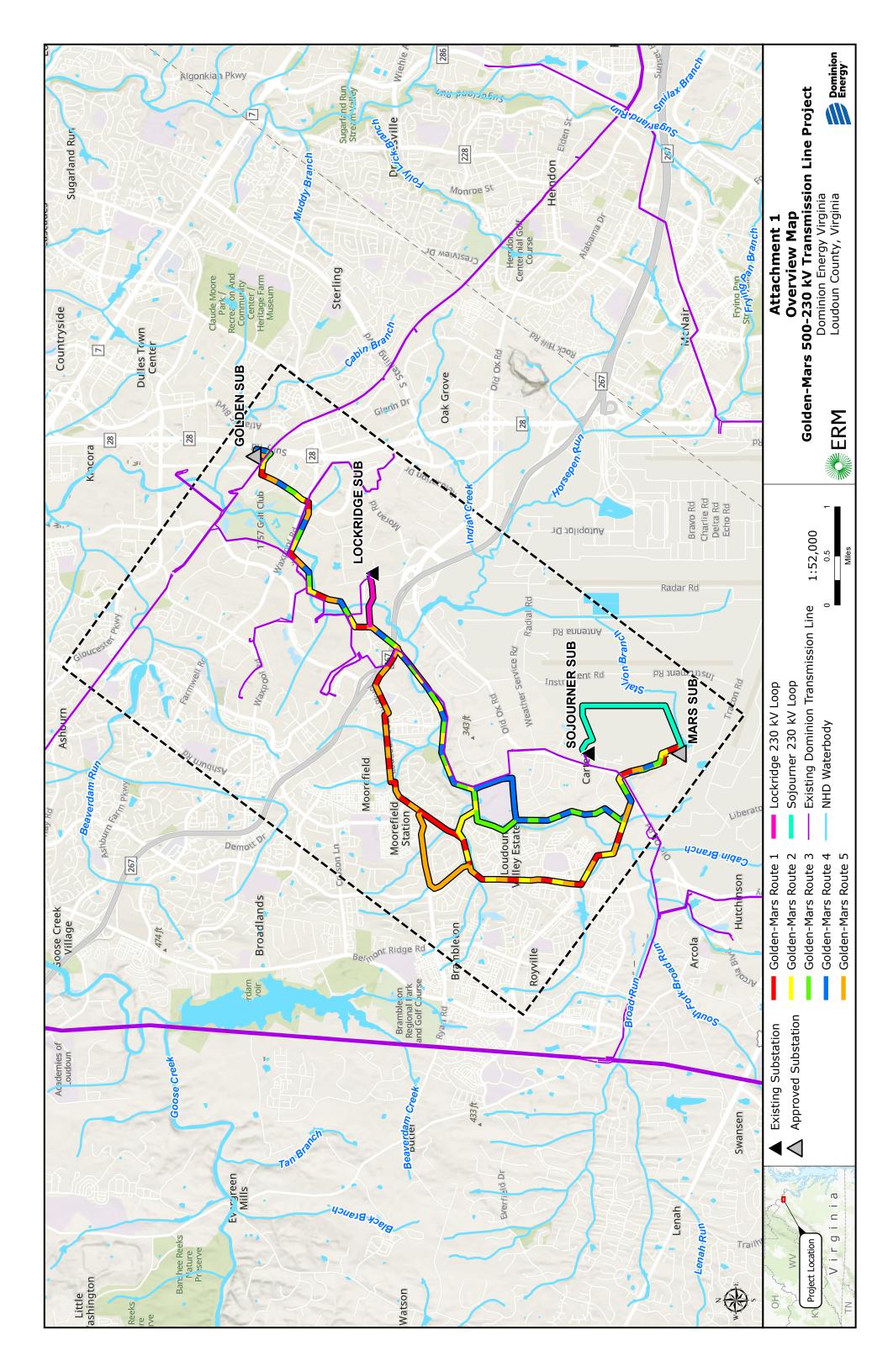


# REFERENCES

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- National Agricultural Imagery Program (NAIP). 2024b. USA NAIP Imagery: Natural Color. Available online at: https://naip-usdaonline.hub.arcgis.com/. Accessed December 2024.
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- USFWS (U.S. Fish and Wildlife Service). 2024. *National Wetlands Inventory*. Available online <u>https://www.fws.gov/program/national-wetlands-inventory/wetlands-data</u>. Accessed December 2024.
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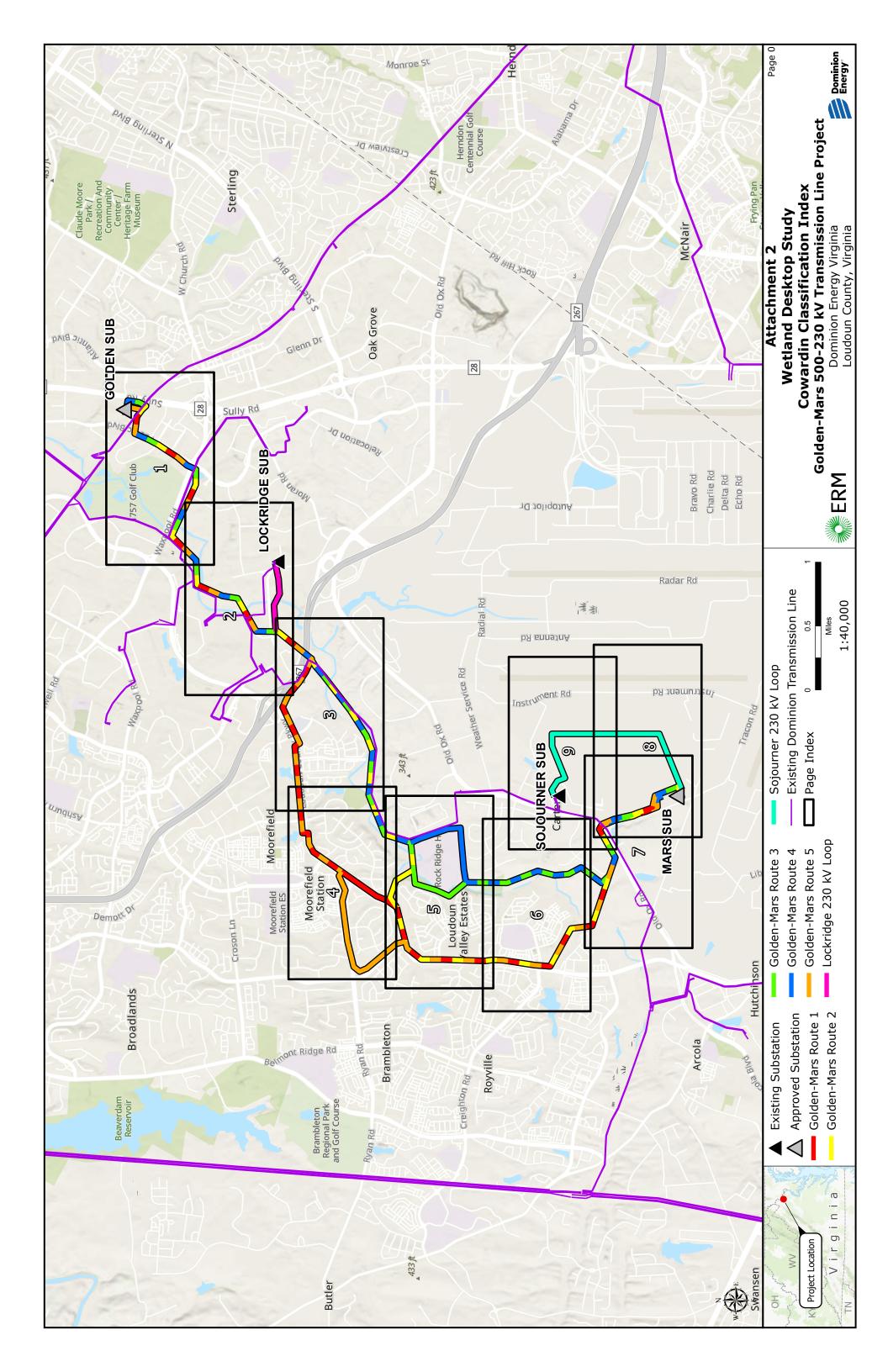


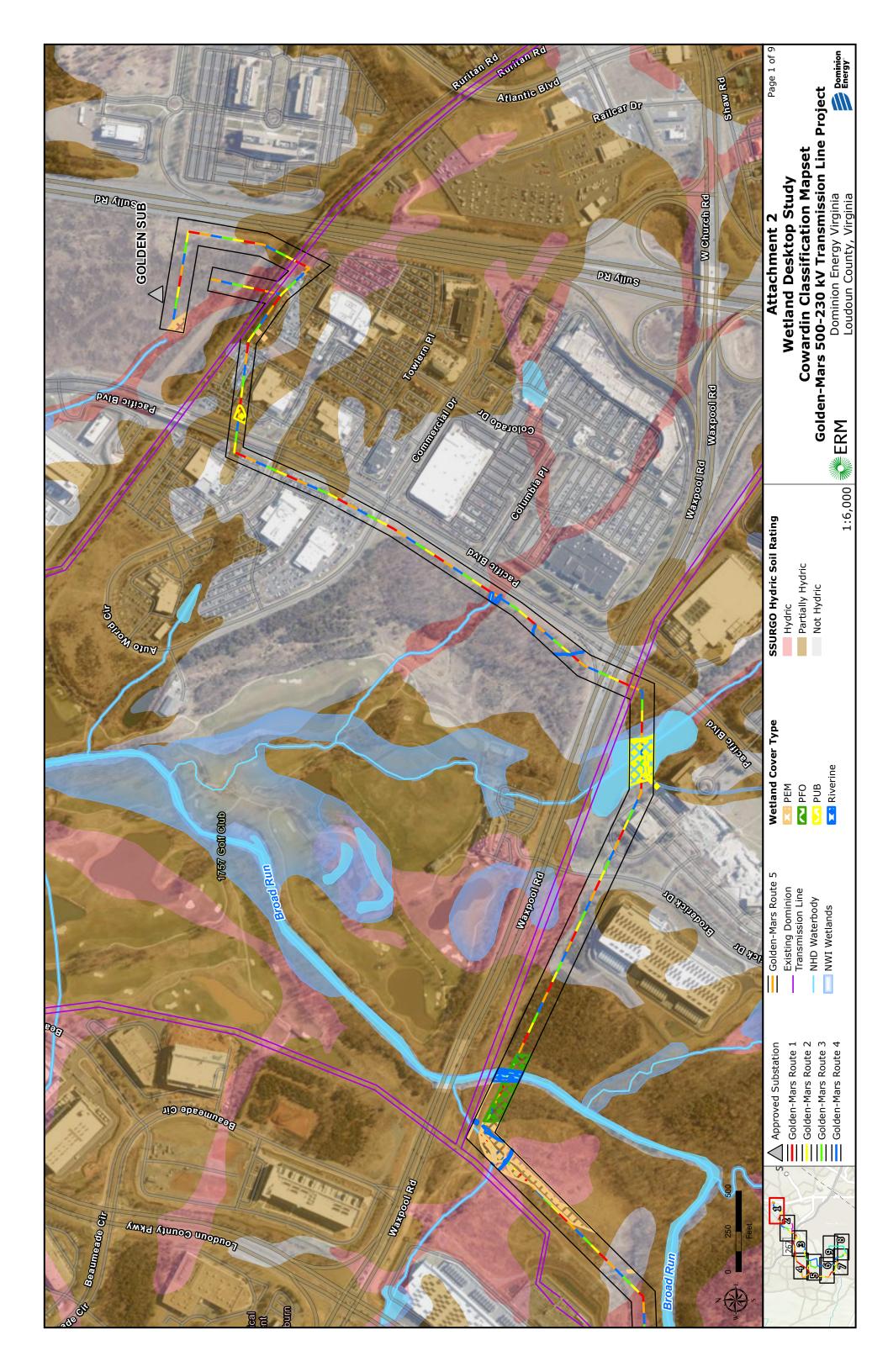
# **ATTACHMENT 1**

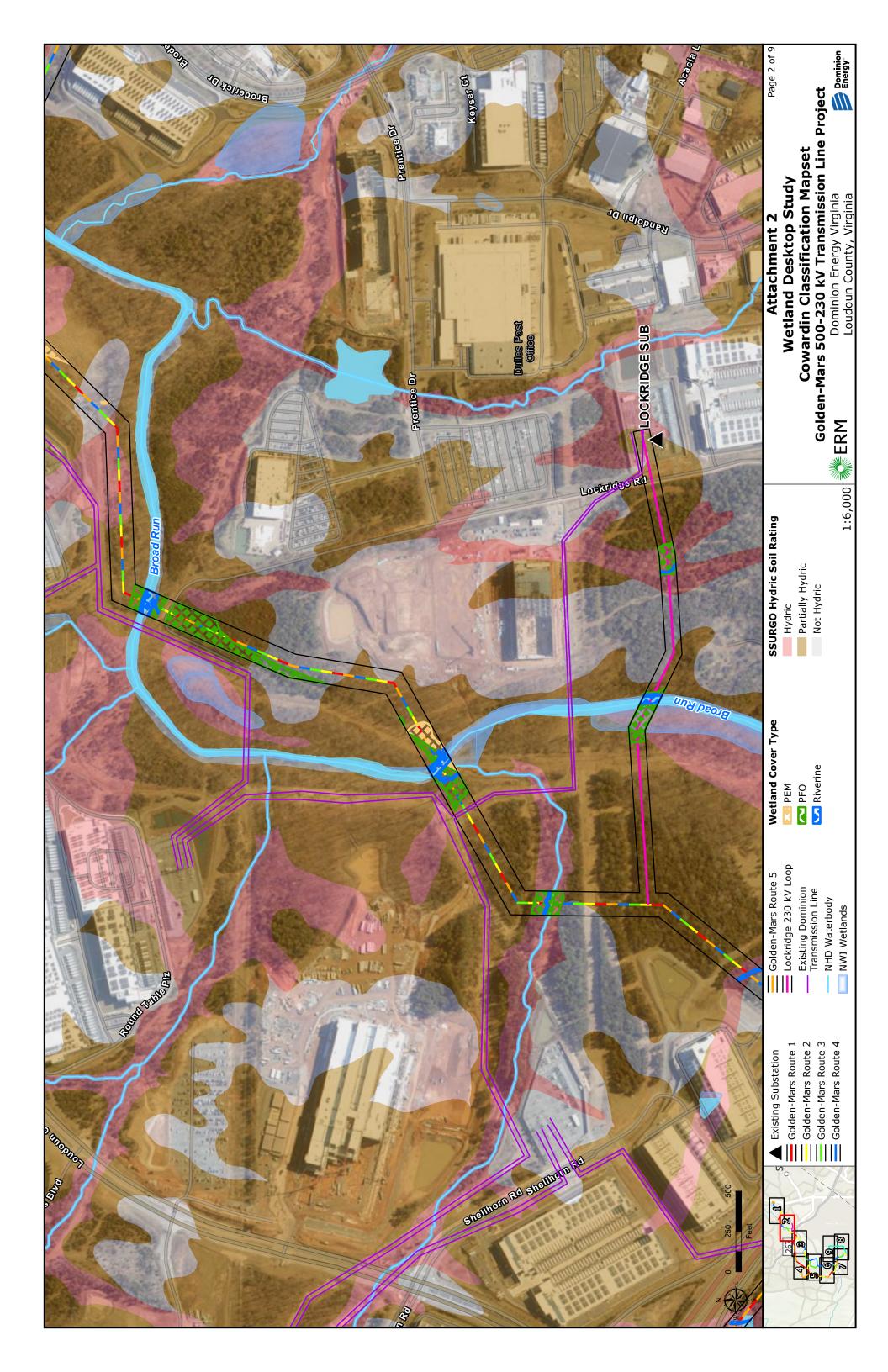


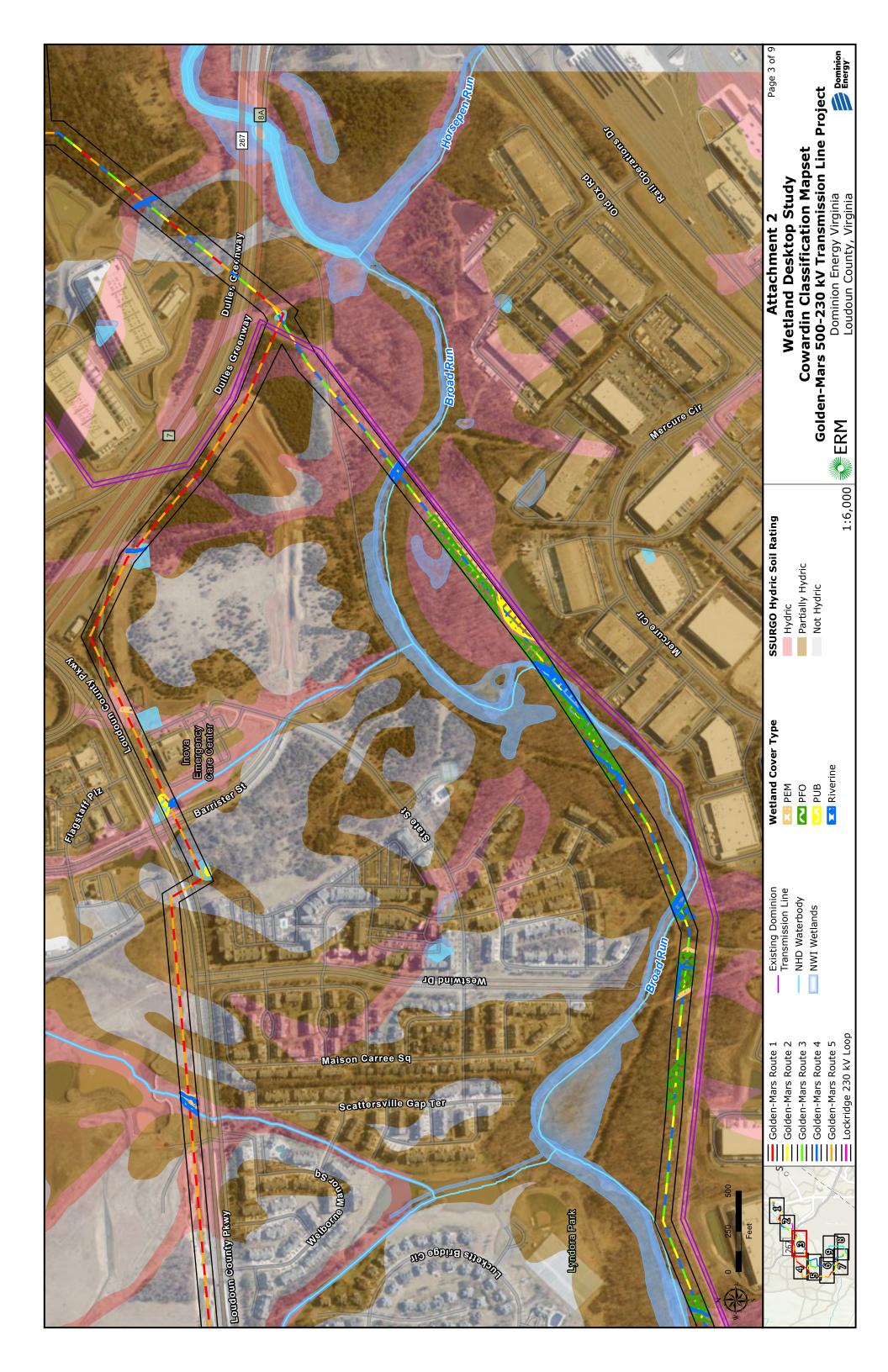


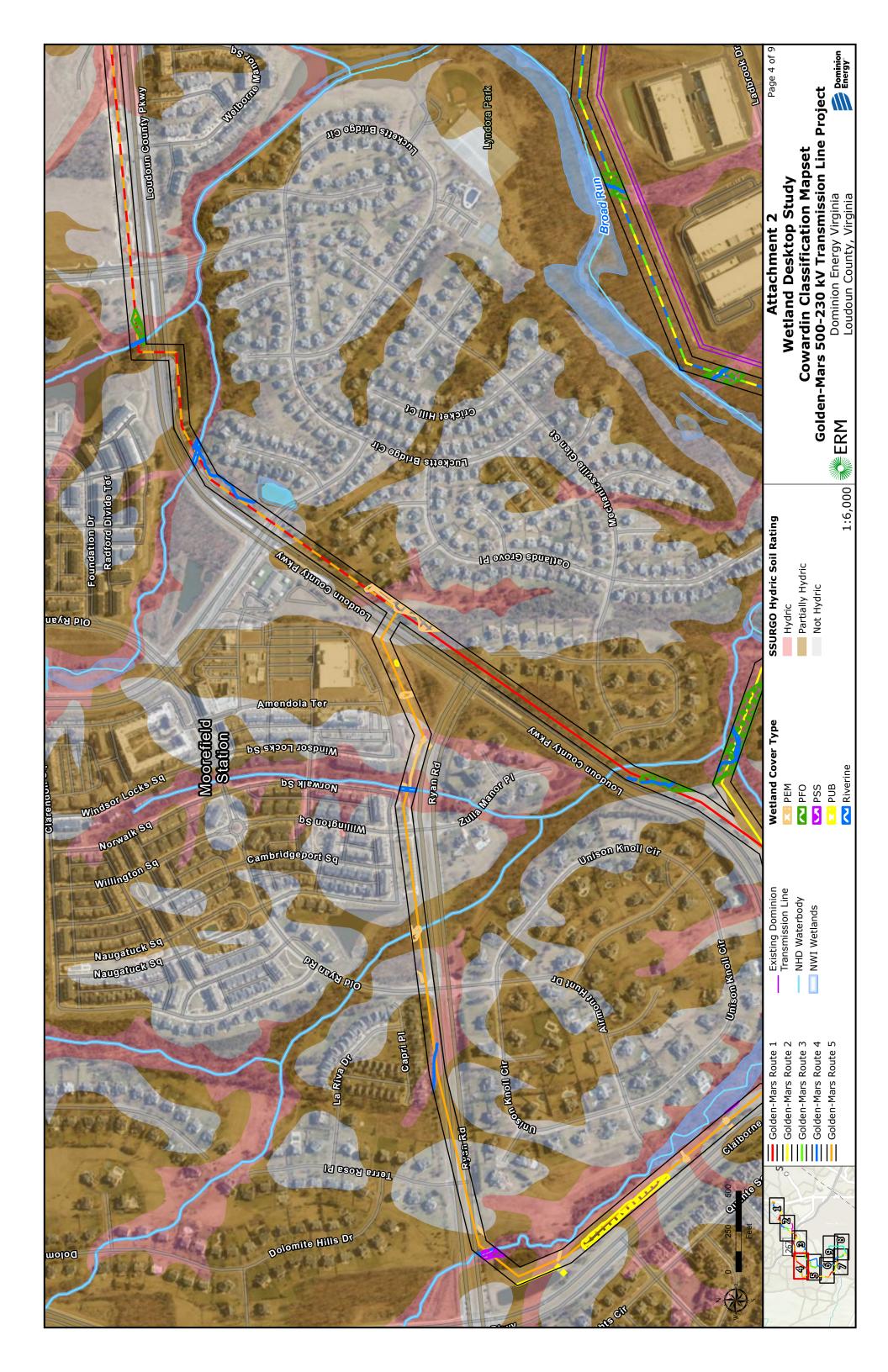
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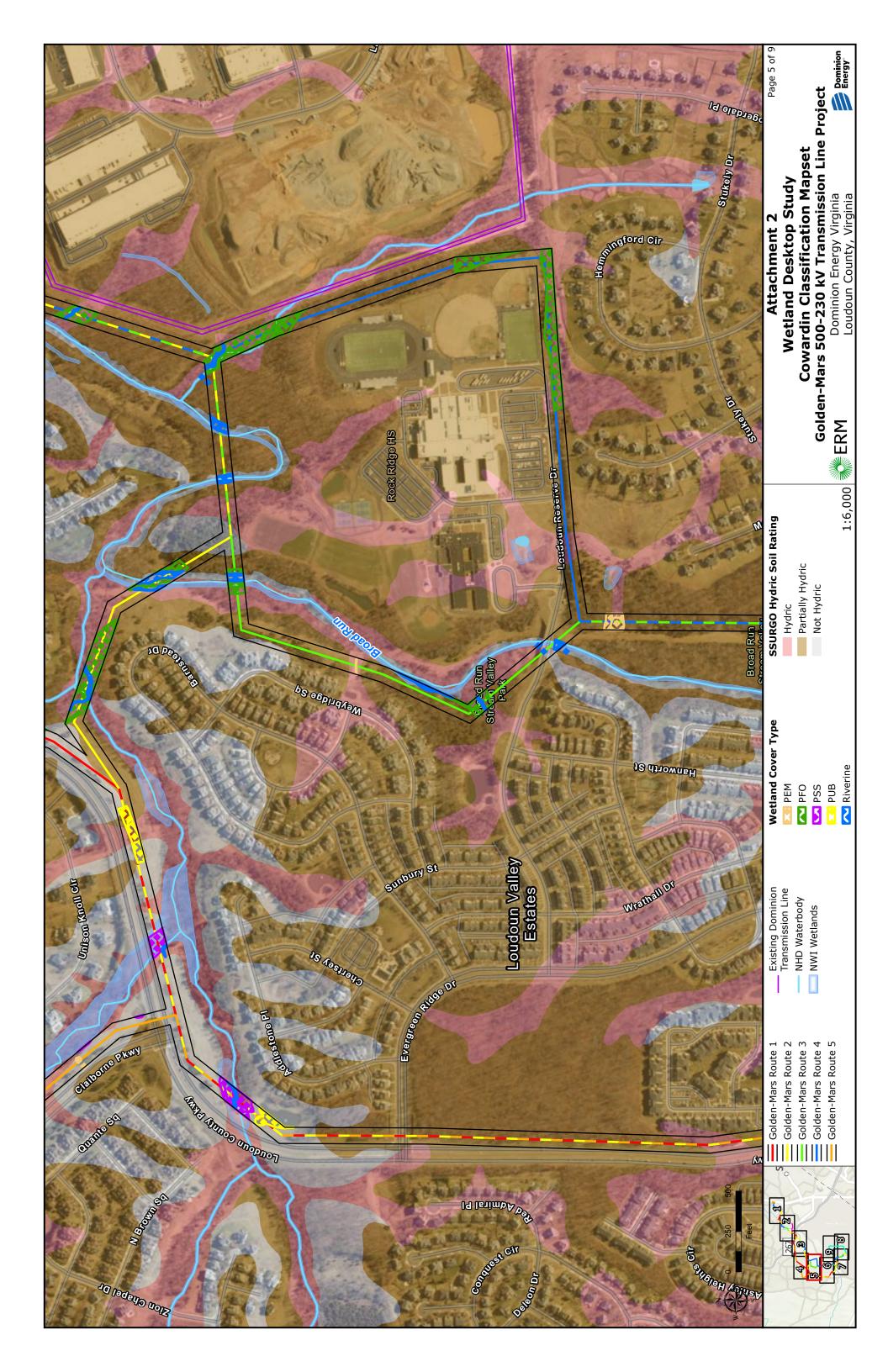


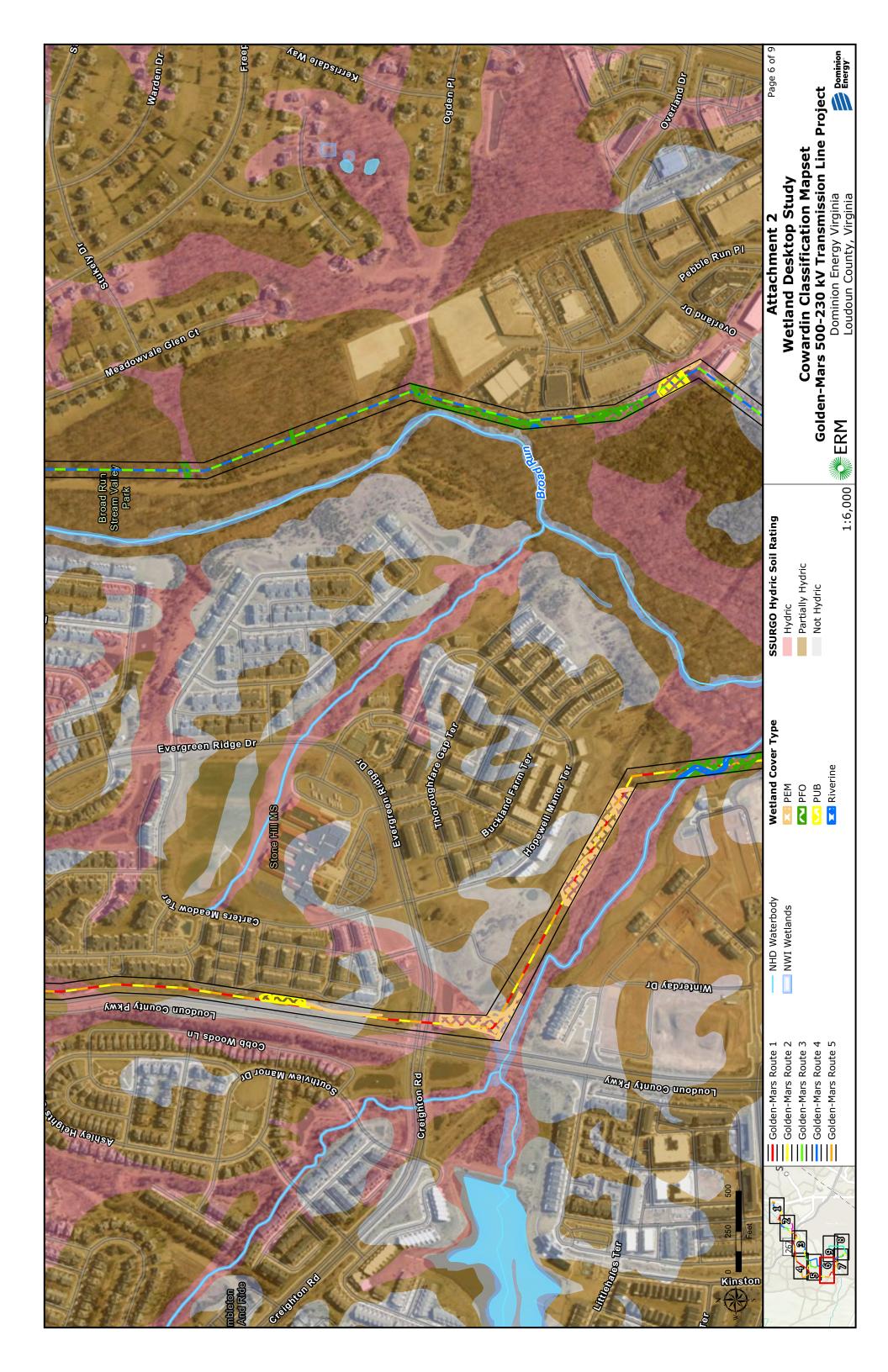


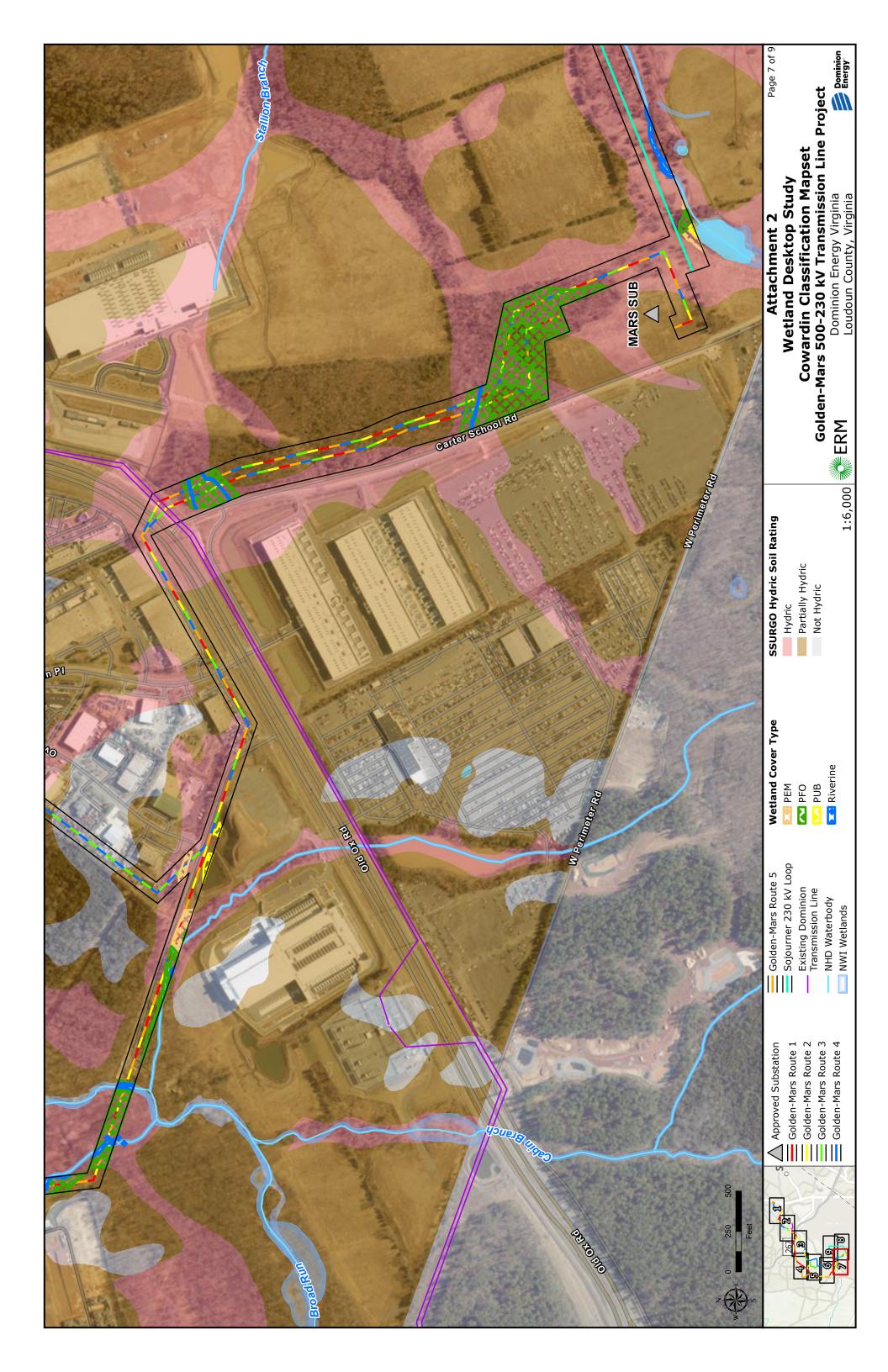


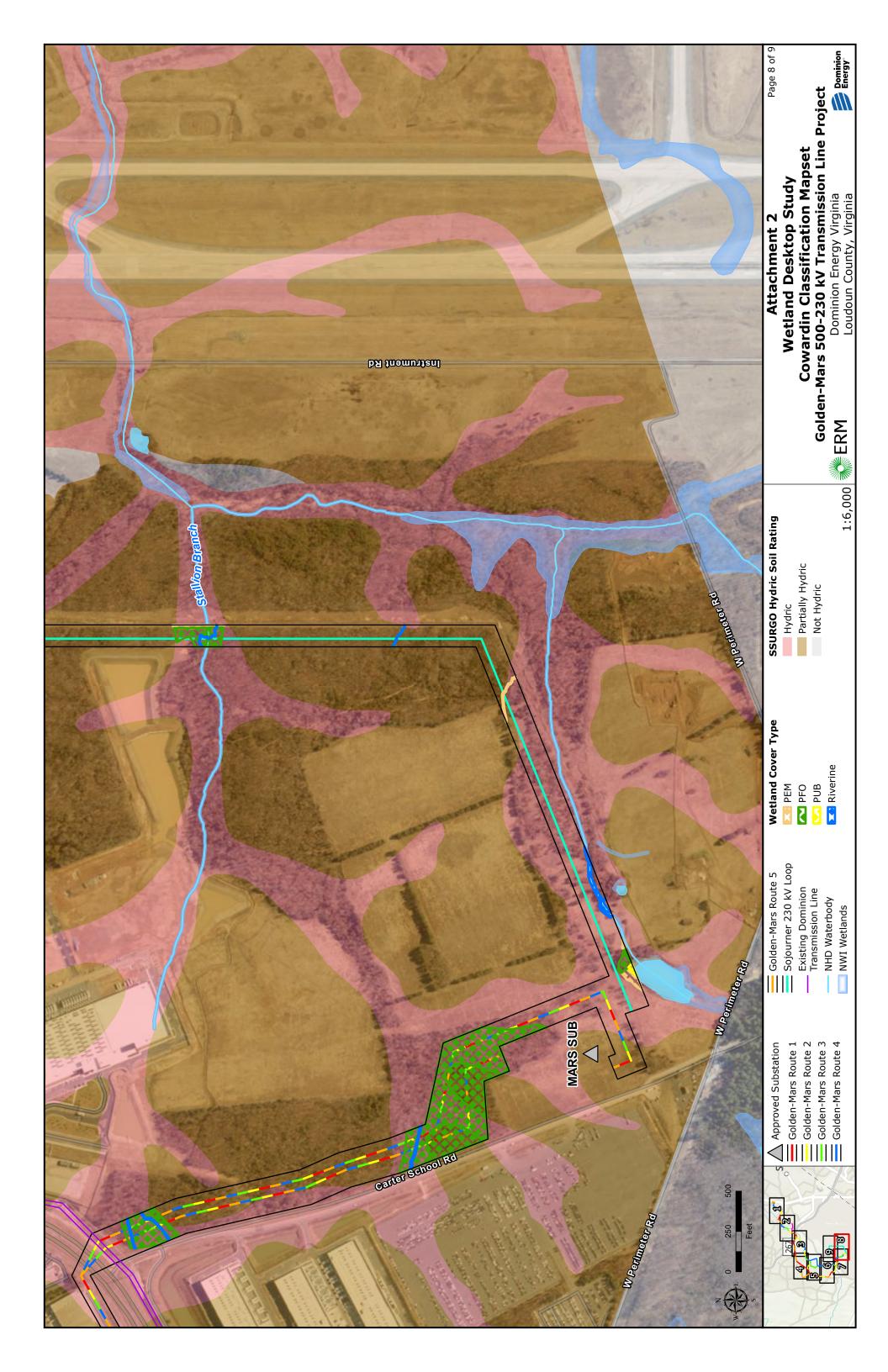


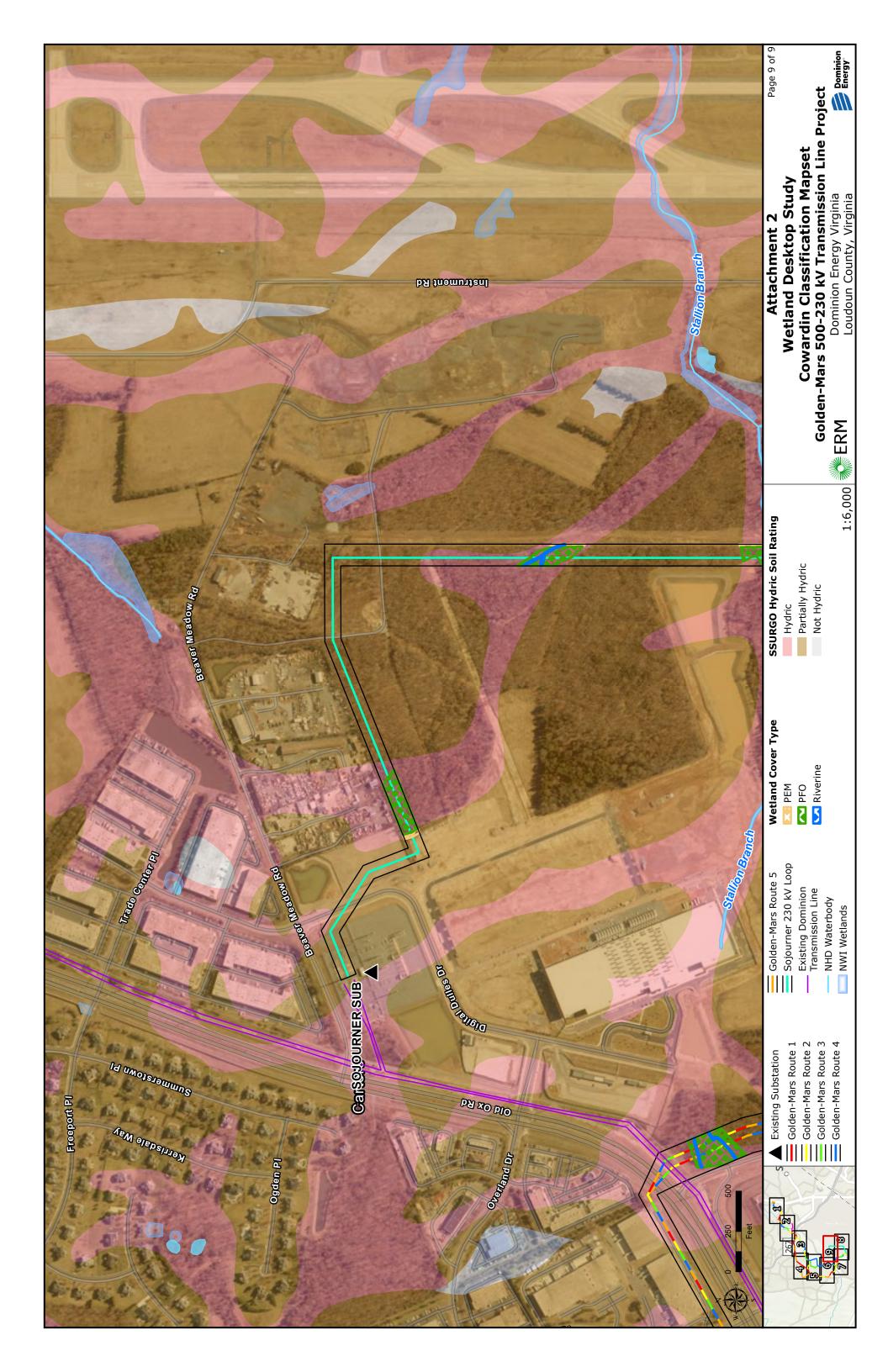






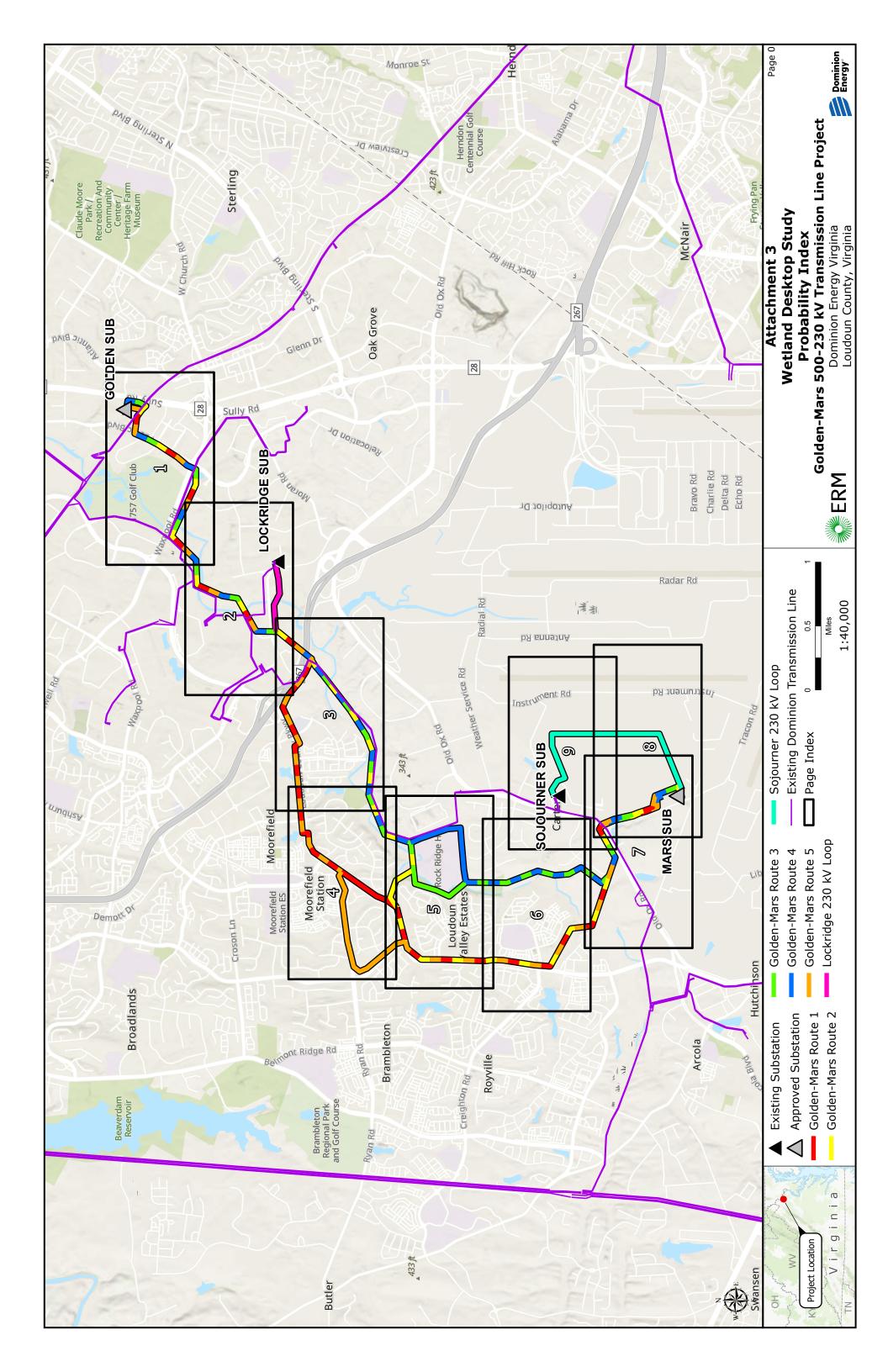


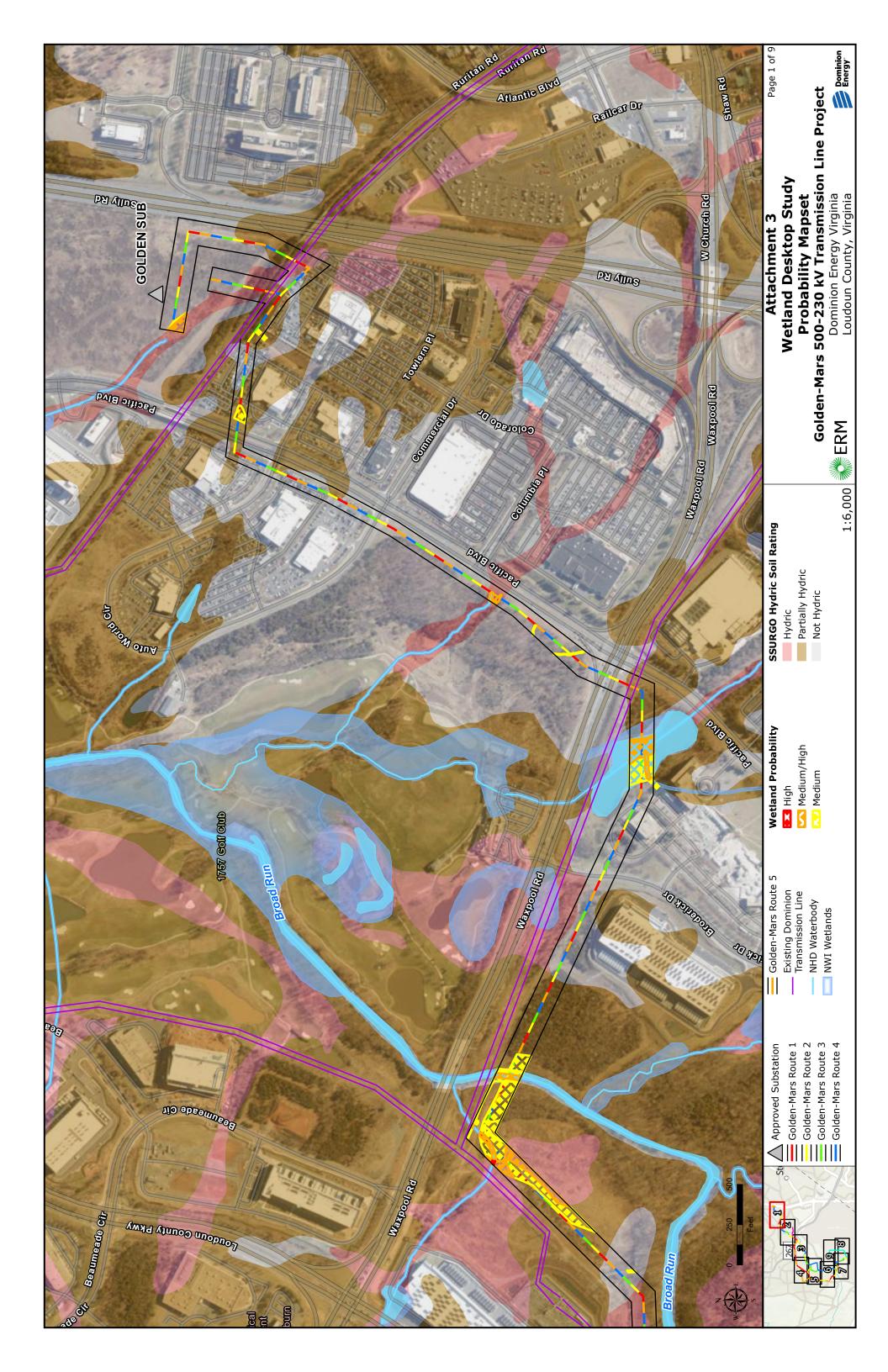


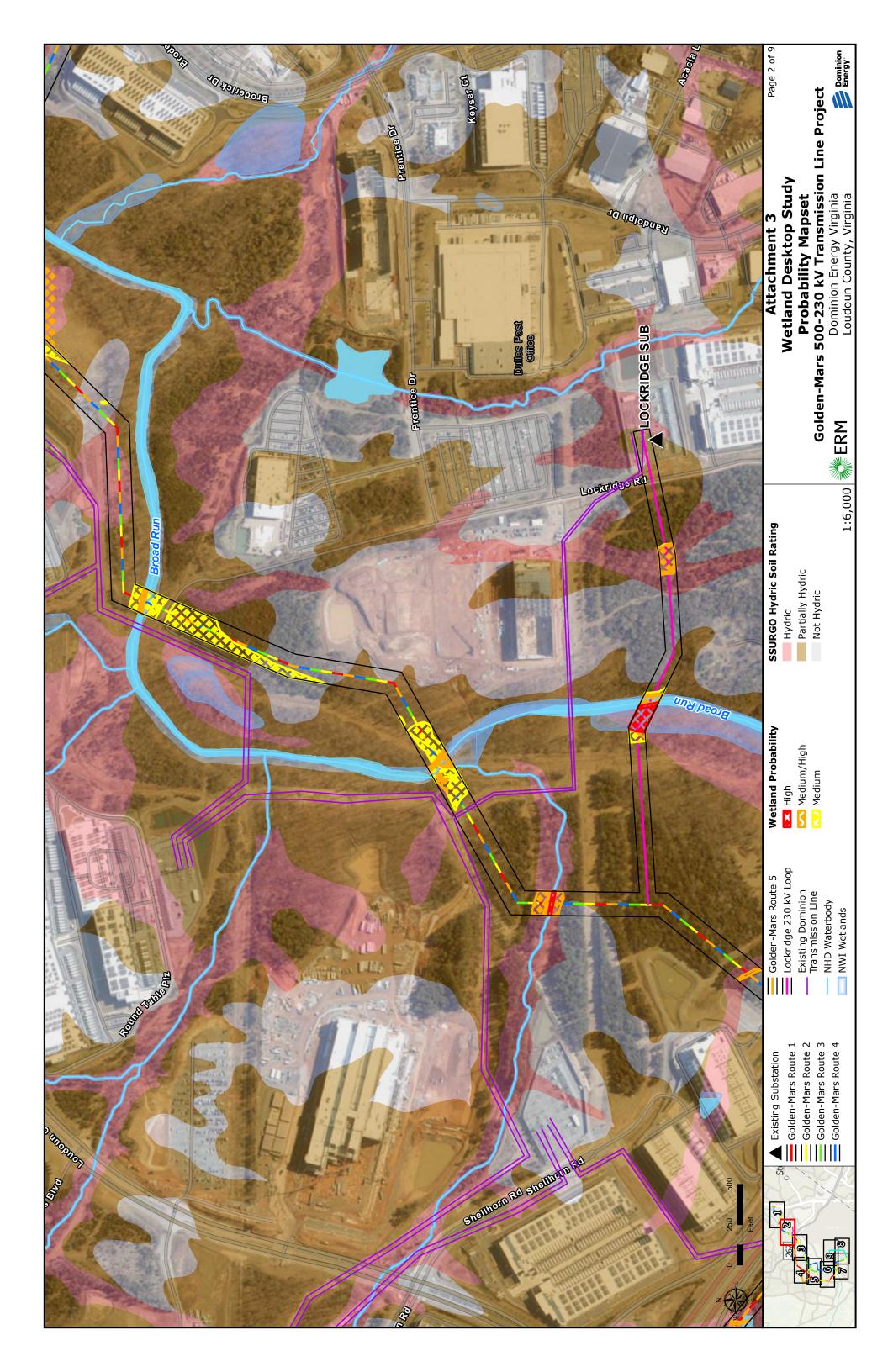


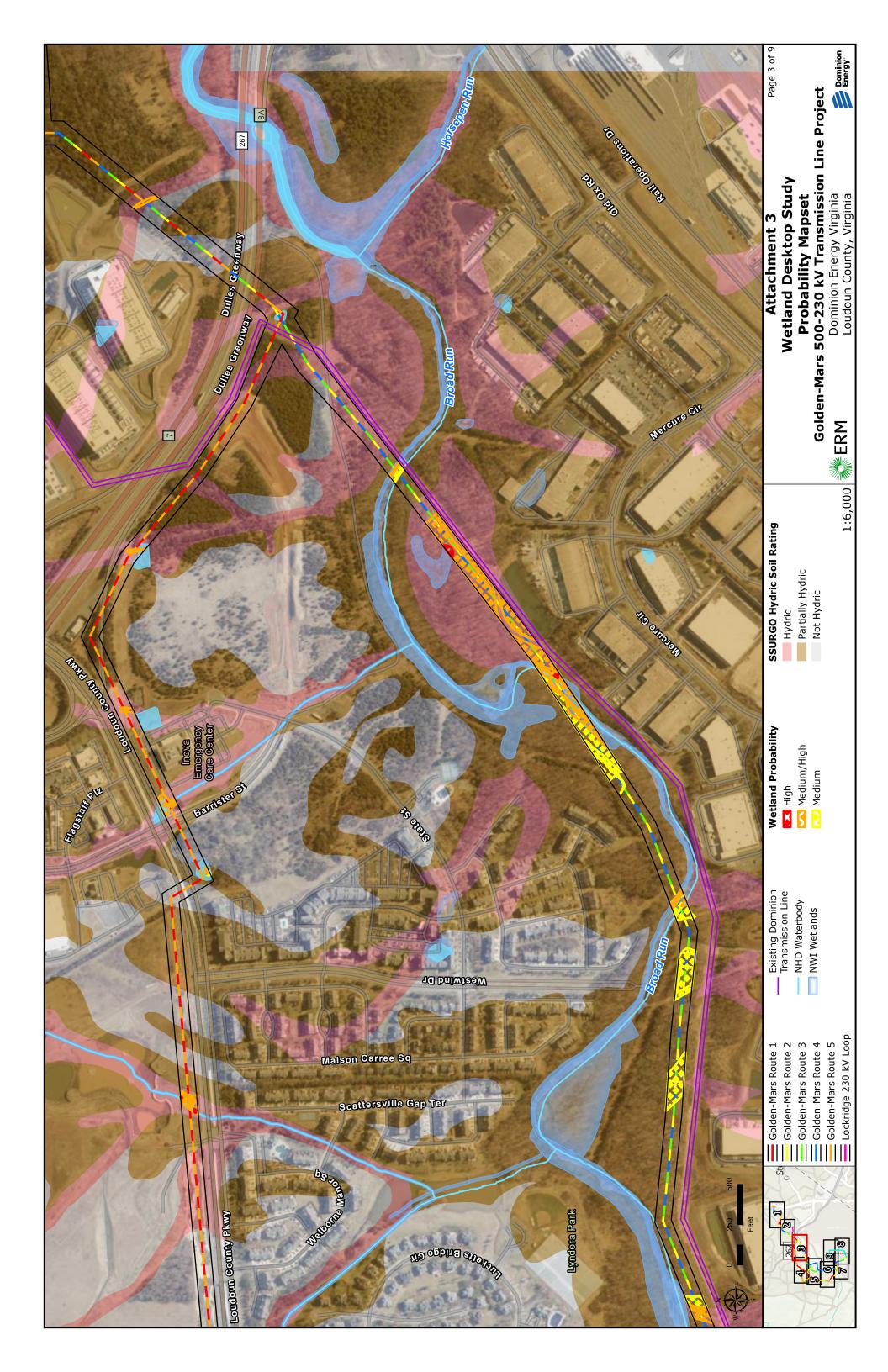


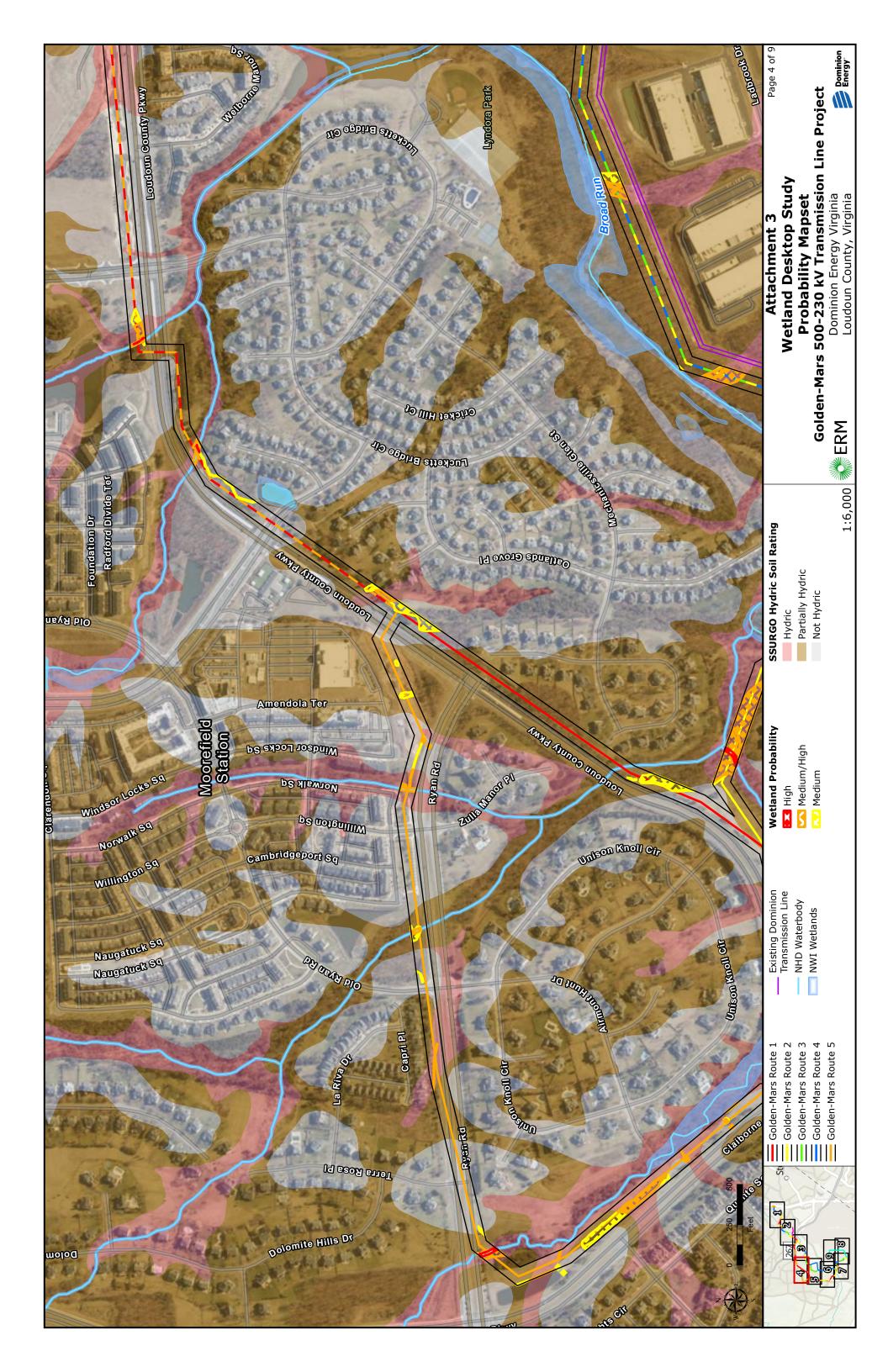
# **ATTACHMENT 3**

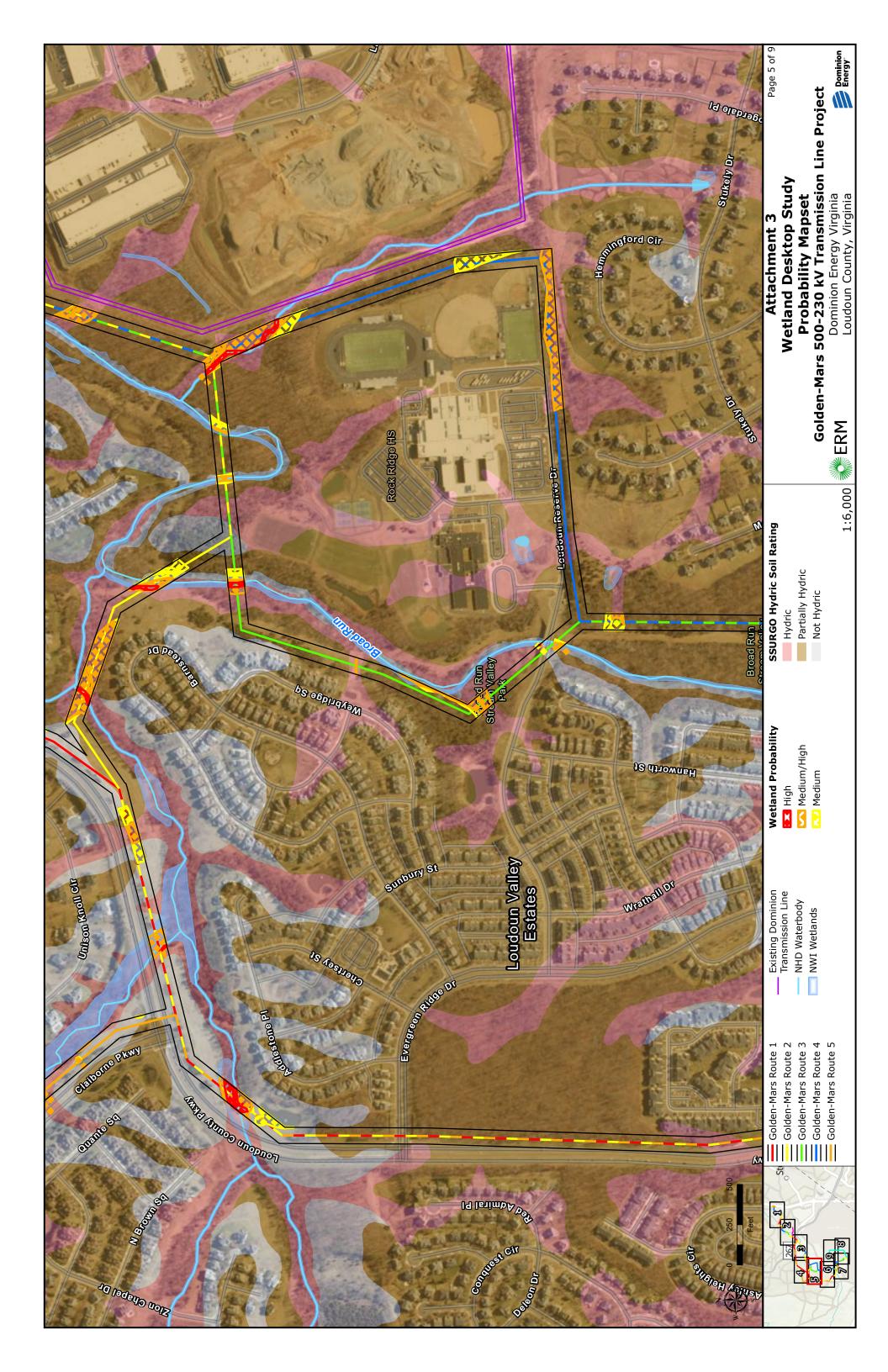


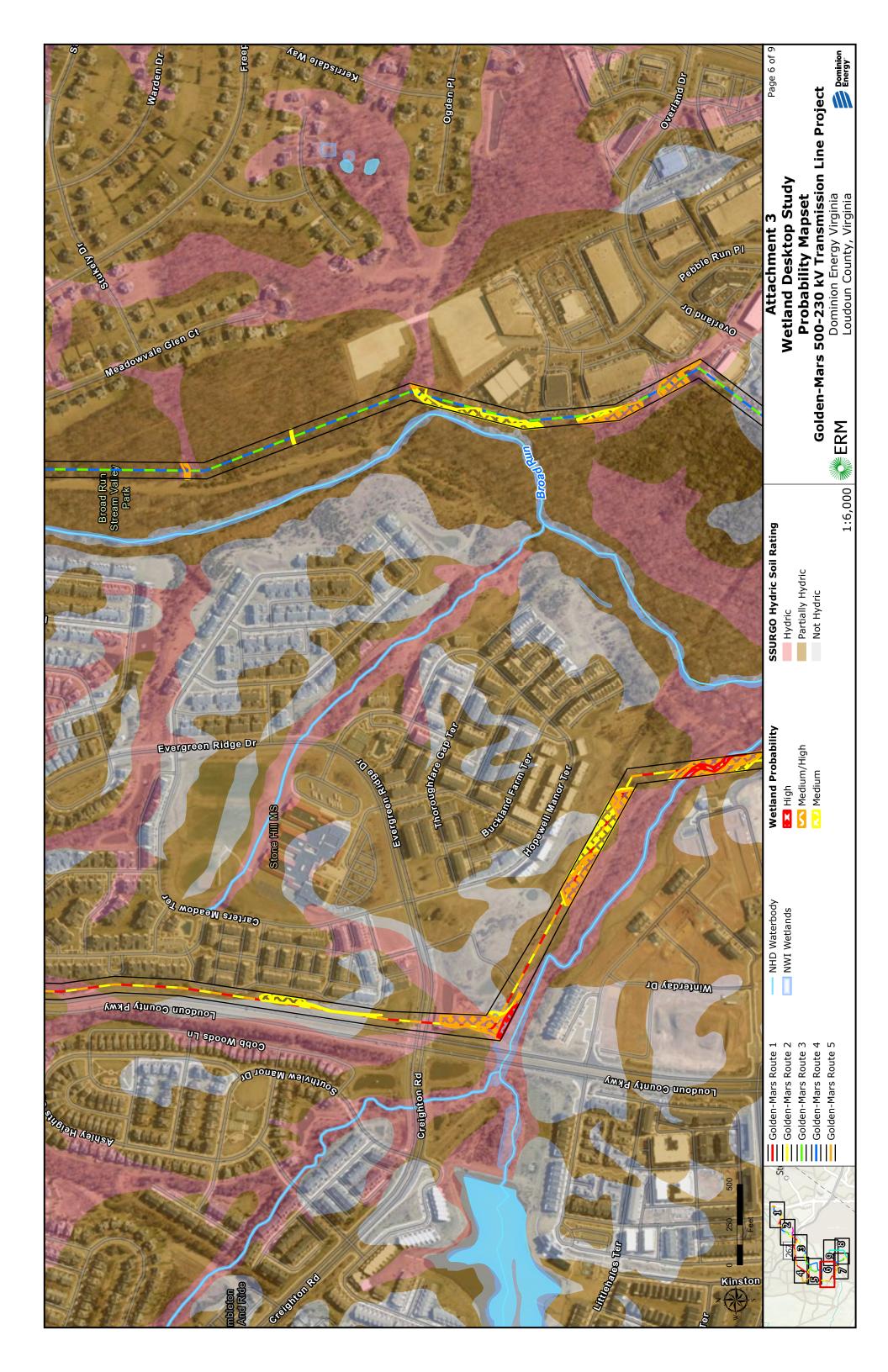


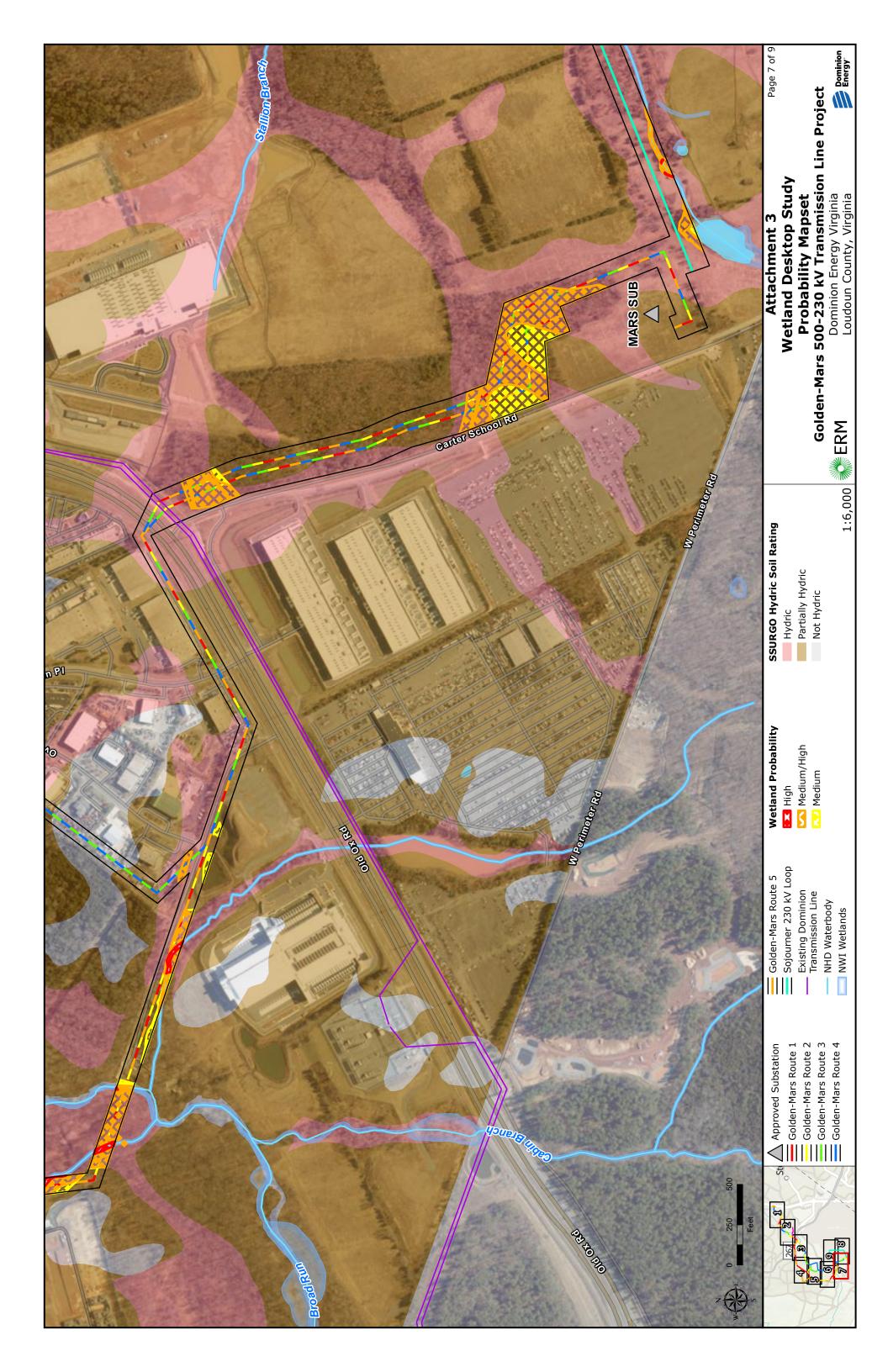


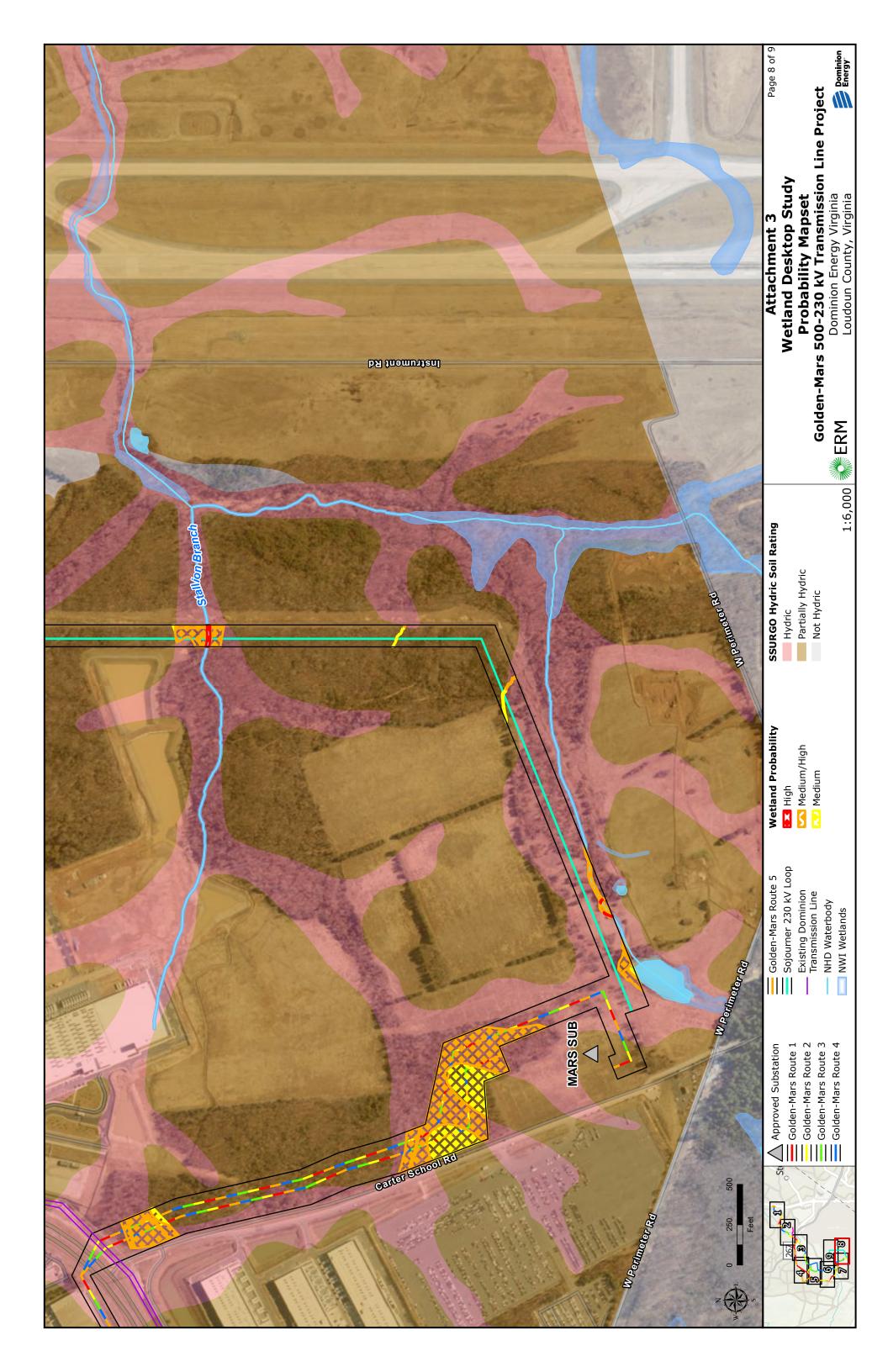


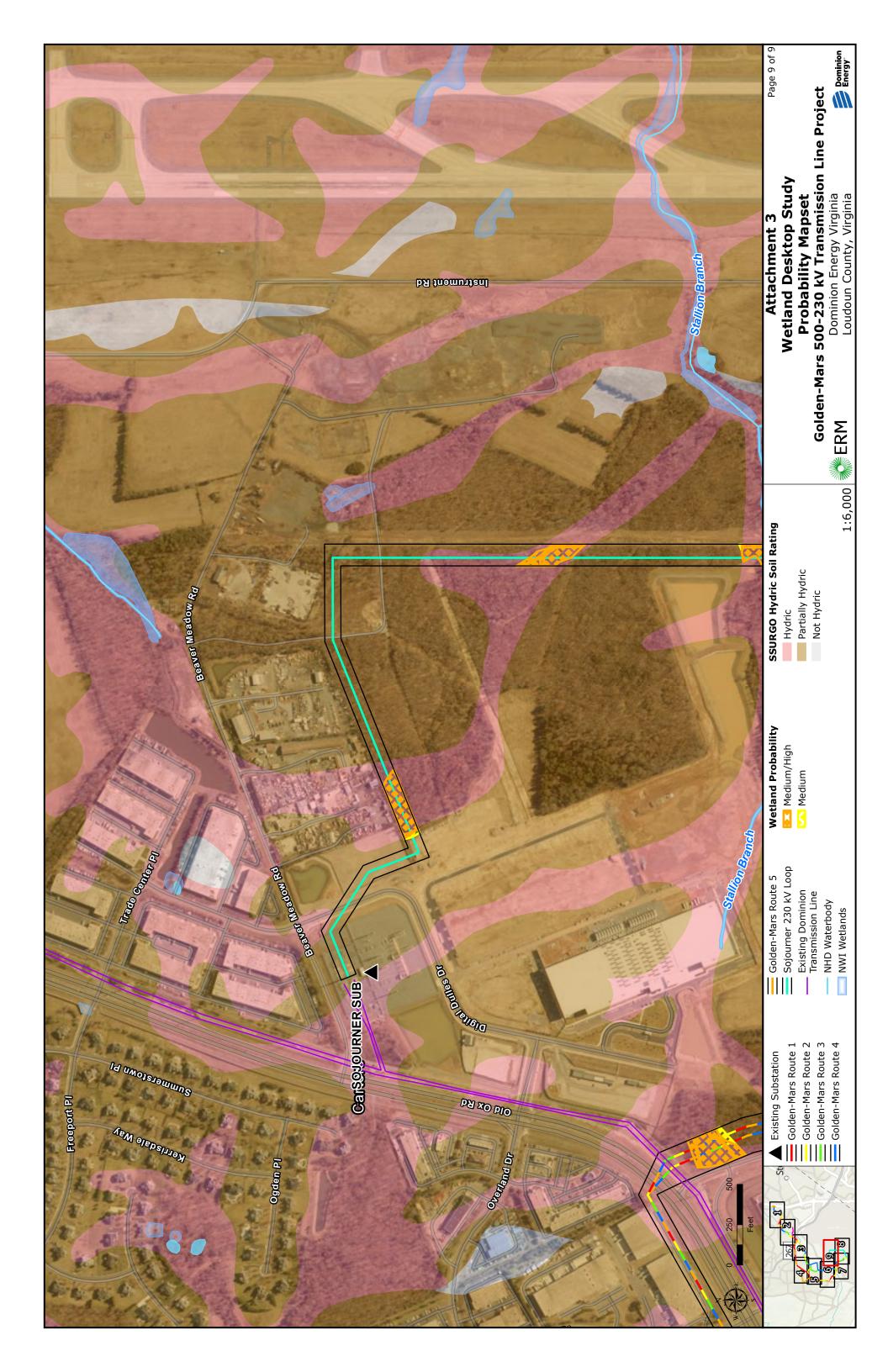














# APPENDIX F VDCR CORRESPONDENCE AND FEDERAL-AND STATE-LISTED SPECIES DATA

Matthew S. Wells *Director* 

Andrew W. Smith Chief Deputy Director



Frank N. Stovall Deputy Director for Operations

Darryl Glover Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis Deputy Director for Administration and Finance

November 25, 2024

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

Re: 0642267, Golden-Mars Rereview

Dear Ms. Cooney:

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

Additionally, according to the information in our files, the Broad Run - Rt. 607 Stream Conservation Site (SCS) is located within the project area. SCSs encompass stream/river reaches, waterbodies, and terrestrial contributing areas containing or associated with aquatic or semi-aquatic resources, including upstream and downstream reaches and tributaries up to 3-km stream distance from the aquatic resources. The size and dimensions of an SCS are based on the hydrology of the waterway and surrounding landscape, taking into consideration dam locations and whether the waterway is tidal. SCSs are also given a biodiversity significance ranking (B-rank) based on the rarity, quality, and number of element occurrences they contain. The Broad Run - Rt. 607 SCS has been given a B-rank of B4, which represents a site of moderate significance. The natural heritage resource associated with this SCS is:

Lampsilis cariosa

Yellow Lampmussel

G3G4/S2/NL/NL

The Yellow Lampmussel ranges from Nova Scotia to Georgia in Atlantic slope drainages (NatureServe, 2009). In Virginia, it is recorded from the Roanoke, Chowan, James, York, and Potomac drainages. It is found in larger streams and rivers where good currents exist over sand and gravel substrates and in small creeks and ponds (Johnson, 1970).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water

600 East Main Street, 24th Floor | Richmond, Virginia 23219 | 804-786-6124

State Parks • Soil and Water Conservation • Outdoor Recreation Planning Natural Heritage • Dam Safety and Floodplain Management • Land Conservation management laws and regulations, establishment/enhancement of riparian buffers with native plant species and maintaining natural stream flow.

According to the diabase screening layer and a review by a DCR biologist, several rare plants which are typically associated with prairie vegetation and inhabit semi-open diabase glades in Virginia, may also occur at this location if suitable habitat is present. Diabase glades are characterized by historically fire-dominated grassland vegetation on relatively nutrient-rich soils underlain by Triassic bedrock. Diabase flatrock, a hard, dark-colored volcanic rock, is found primarily in northern Virginia counties and is located within the geologic formation known as the Triassic Basin. Where the bedrock is exposed, a distinctive community type of drought-tolerant plants occurs. Diabase flatrocks are extremely rare natural communities that are threatened by activities such as quarrying and road construction (Rawinski, 1995).

In Northern Virginia, diabase supports occurrences of several global and state rare plant species: Earleaf False foxglove (*Agalinis auriculata*, G3/S1/NL/NL), American bluehearts (*Buchnera americana*, G5?/S1S2/NL/NL), Downy phlox (*Phlox pilosa*, G5/S1/NL/NL), Torrey's Mountain-mint (*Pycnanthemum torreyi*, G2/S2/SOC/LT), Stiff goldenrod (*Solidago rigida var. rigida*, G5T5/S2/NL/NL), and Hairy hedgenettle (*Stachys arenicola*, G4?/S1/NL/NL).

Please note that Torrey's Mountain-mint is listed as threatened by the Virginia Department of Agriculture and Consumer Services (VDACS). Torrey's Mountain-mint is also listed as a Species of Concern (SOC) by United States Fish and Wildlife Service (USFWS); however, this is not a legal designation.

Due to the potential for this site to support populations of natural heritage resources, DCR recommends an inventory for rare plants associated with diabase soils in the study area. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at <u>anne.chazal@dcr.virginia.gov</u> or 804-786-9014 to discuss availability and rates for field work.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on statelisted threatened and endangered plant and insect species. Survey results should be coordinated with DCR-DNH. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

Furthermore, if tree removal occurs outside of the open area or existing rights-of-way (ROWs), the proposed project has the potential to impact multiple Ecological Cores (C4) as identified in the Virginia Natural Landscape Assessment (<u>https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla</u>). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: <u>http://vanhde.org/content/map</u>.

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

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

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

DCR recommends the development and implementation of an invasive species plan to be included as part of the maintenance practices for the right-of-way (ROW). The invasive species plan should include an invasive species inventory for the project area based on the current DCR Invasive Species List (<u>https://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2023.pdf</u>) and methods for treating the invasives. DCR also recommends the ROW restoration and maintenance practices planned include appropriate revegetation using native species in a mix of grasses and forbs, robust monitoring and an adaptive management plan to provide guidance if initial revegetation efforts are unsuccessful or if invasive species outbreaks occur.

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

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

A fee of \$1,000.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24<sup>th</sup> Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

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

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

Sincerely,

Norlde And for

Nicki Gustafson Natural Heritage Project Review Assistant

#### Literature Cited

Johnson, R.I. 1970. The systematics and zoogeography of the Unionidae (Mullusca: Bilvava) of the southern Atlantic slope region. Bulletin Museum of Comparative Zoology vol 140(6): 362-365.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <u>http://www.natureserve.org/explorer</u>. (Accessed: April 27, 2010).

Rawinski, T.J. 1995. Natural communities and ecosystems: Conservation priorities for the future. Unpublished report for DCR-DNH.

Williams, J.D., M.L. Warren, Jr., K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of freshwater mussels of the United States and Canada. Fisheries 18: 6-9.

# VaFWIS Search Report Compiled on 1/22/2025, 4:28:11 PM

<u>Help</u>

Known or likely to occur within a 2 mile buffer around line beginning 39.0342600 -77.4598099 in 059 Fairfax County, 107 Loudoun County, VA

# <u>View Map of</u> <u>Site Location</u>

748 Known or Likely Species ordered by Status Concern for Conservation (displaying first 36) (36 species with Status\* or Tier I\*\* or Tier II\*\* )

BOVA Code	<u>Status*</u>	Tier**	Common Name	<u>Scientific Name</u>	Confirmed	Database(s)
050022	FEST	Ia	<u>Bat, northern long-</u> eared	Myotis septentrionalis		BOVA
060003	FESE	Ia	<u>Wedgemussel,</u> <u>dwarf</u>	Alasmidonta heterodon		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA,HU6
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus	<u>Yes</u>	BOVA,SppObs
060006	SE	Ib	<u>Floater, brook</u>	Alasmidonta varicosa		BOVA
030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes	BOVA,Habitat,SppObs,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	<u>Shrike,</u> loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	<u>Sparrow,</u> <u>Henslow's</u>	Centronyx henslowii	Potential	BOVA,BBA,HU6
100155	ST	Ia	<u>Skipper,</u> <u>Appalachian</u> grizzled	Pyrgus wyandot		BOVA,HU6
060081	FPST	IIa	<u>Floater, green</u>	Lasmigona subviridis		BOVA,HU6
040292	ST		<u>Shrike, migrant</u> loggerhead	Lanius ludovicianus migrans		BOVA
100248	FP	Ia	<u>Fritillary, Regal</u>	Speyeria idalia idalia		BOVA,HU6
100079	FP	IIIa	Butterfly, Monarch	Danaus plexippus		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
030012	СС	IVa	<u>Rattlesnake,</u> <u>timber</u>	Crotalus horridus		BOVA,HU6

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010077	Ia	Shiner, bridle	Notropis bifrenatus		BOVA
040092	Ia	Eagle, golden	Aquila chrysaetos		BOVA
040040	Ia	<u>Ibis, glossy</u>	Plegadis falcinellus		BOVA,HU6
040306	Ia	Warbler, golden- winged	Vermivora chrysoptera		BOVA
040213	Ic	<u>Owl, northern</u> saw-whet	Aegolius acadicus		BOVA,HU6
040052	IIa	<u>Duck, American</u> <u>black</u>	Anas rubripes		BOVA,HU6
040033	IIa	Egret, snowy	Egretta thula		BOVA
040029	IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036	IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea	Potential	BOVA,BBA
040181	IIa	Tern, common	Sterna hirundo		BOVA,HU6
040320	IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140	IIa	Woodcock, American	Scolopax minor		BOVA,HU6
060071	IIa	<u>Lampmussel,</u> <u>yellow</u>	Lampsilis cariosa		BOVA,HU6
040203	IIb	<u>Cuckoo, black-</u> <u>billed</u>	Coccyzus erythropthalmus		BOVA
040105	IIb	Rail, king	Rallus elegans		BOVA
040304	IIc	<u>Warbler,</u> Swainson's	Limnothlypis swainsonii		BOVA,HU6
100154	IIc	Butterfly, Persius duskywing	Erynnis persius persius		BOVA,HU6
100166	IIc	Skipper, Dotted	Hesperia attalus slossonae		BOVA,HU6

#### To view All 748 species View 748

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

\*\*I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; Virginia Widlife Action Plan Conservation Opportunity Ranking:

III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

a - On the ground management strategies/actions exist and can be feasibly implemented.; b -

On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.; c -

No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All **Observation Tables** 

#### Bat Colonies or Hibernacula: Not Known

## **Anadromous Fish Use Streams**

N/A

# **Impediments to Fish Passage** (4 records)

#### <u>View Map of All</u> <u>Fish Impediments</u>

ID	Name	River	View Map
1239	ASHBURN VILLAGE LAKE #1	TR-RUSSEL BRANCH	Yes
1221	DULLES AIRPORT DAM	TR-HORSEPEN RUN	Yes
1220	HORSEPEN DAM	HORSEPEN RUN	Yes
1233	QUAIL RIDGE DAM	TR-BROAD RUN	Yes

## **Colonial Water Bird Survey**

N/A

# **Threatened and Endangered Waters**

N/A

## **Managed Trout Streams**

N/A

# **Bald Eagle Concentration Areas and Roosts**

N/A

## **Bald Eagle Nests**

N/A

Species	<b>Species Observations</b> (564 records - displaying first 20, 5 Observations with Threatened or Endangered species )				Q <u>uery Results</u> ions		
obsID	class	Date Observed	Observer	Different Species	N Species Highest TE <sup>*</sup>	Highest Tier <sup>**</sup>	View Map
<u>635472</u>	SppObs		Leah Card; Ellison Orcutt; Steve Roble	1	ST	Ι	Yes

642036	SppObs	Nov 14 2022	Leah Card; Ellison Orcutt; Steve Roble	1	ST	Ι	<u>Yes</u>
623115	SppObs	Jul 23 2015	Linda; Sieh	1	ST	Ι	Yes
<u>59558</u>	SppObs	Sep 12 1998	TOM ACKRE	1	ST	Ι	<u>Yes</u>
<u>644076</u>	SppObs	Jul 29 2022	Chanston Osborne	1	FPSE	Ι	<u>Yes</u>
<u>632616</u>	SppObs	Jun 22 2016	Gabriela Conrad-DiStasio; Lauren Worley	1		III	Yes
632608	SppObs	Oct 6 2015	Dorothy Lewis	1		III	Yes
<u>633211</u>	SppObs	Jun 17 2015	Rick Browder; Gabriel Darkwah	4		III	Yes
<u>618039</u>	SppObs	Aug 27 2013	Bobby; Colicci	2		III	<u>Yes</u>
<u>616962</u>	SppObs	May 29 2012	Dorothy; Lewis	1		III	Yes
<u>601718</u>	SppObs	Jun 2 2009	Richard; Browder	8		III	<u>Yes</u>
<u>605059</u>	SppObs	Oct 31 2008	Dorothy; Lewis	1		III	Yes
<u>600623</u>	SppObs	Oct 9 2008	Jan; Cornwell	1		III	Yes
<u>318779</u>	SppObs	Mar 13 2007	Christine Geist	7		III	<u>Yes</u>
318780	SppObs	Jan 9 2007	Christine Geist	1		III	Yes
<u>317211</u>	SppObs	Aug 3 2006	Christine Geist	1		III	Yes
317210	SppObs	Aug 2 2006	Christine Geist	1		III	Yes
317209	SppObs	Jul 28 2006	Christine Geist	1		III	Yes
317200	SppObs	Jun 13 2006	Christine Geist	1		III	Yes
313415	SppObs	May 4 2005	Meredyth Breed Principle Permitee	1		III	Yes

Displayed 20 Species Observations

Selected 564 Observations <u>View 500 (system constraint) Species Observations</u>

Habitat Predicted for Aquatic WAP Tier I & II Species (13 Reaches)

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

	Tier Species						
Stream Name	Highest TE <sup>*</sup>				de, Status <sup>*</sup> , 7 & Scientific		View Map
Beaverdam Creek (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> wood	Glyptemys insculpta	<u>Yes</u>
Beaverdam Run (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> wood	Glyptemys insculpta	Yes

VAFWIS Seach Report

Broad Run (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
Cabin Branch (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
Cub Run (20700101)	ST	030062	ST	Ia	<u>Turtle,</u> wood	Glyptemys insculpta	<u>Yes</u>
Dead Run (20700101)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
Horsepen Run (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
Lenah Run (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
Russell Branch (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
Sand Branch (20700101)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
Stallion Branch (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
tributary (20700081)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
tributary (20700101)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>
tributary (20700101)	ST	030062	ST	Ia	<u>Turtle,</u> <u>wood</u>	Glyptemys insculpta	<u>Yes</u>

# Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

# Virginia Breeding Bird Atlas Blocks (16 records)

#### <u>View Map of All Query Results</u> <u>Virginia Breeding Bird Atlas Blocks</u>

			Breeding Bird Atlas Species				
BBA ID	Atlas Quadrangle Block Name	<b>Different Species</b>	Highest TE <sup>*</sup>	Highest Tier <sup>**</sup>	View Map		
50204	<u>Arcola, CE</u>	41		III	<u>Yes</u>		
50203	<u>Arcola, CW</u>	44		III	Yes		
50202	<u>Arcola, NE</u>	43		III	Yes		
50201	<u>Arcola, NW</u>	45		III	Yes		
50206	<u>Arcola, SE</u>	72	ST	Ι	Yes		
51204	Herndon, CE	59		III	Yes		
51203	Herndon, CW	29		IV	Yes		

VAFWIS Seach Report

51202	Herndon, NE	51		III	Yes
51201	Herndon, NW	47	ST	Ι	Yes
51205	Herndon, SW	49		III	Yes
50214	Leesburg, CE	63		III	Yes
50216	Leesburg, SE	69		III	Yes
51214	Sterling, CE	76		II	Yes
51213	Sterling, CW	64		III	Yes
51216	Sterling, SE	72		III	Yes
51215	Sterling, SW	6		III	Yes

#### **Public Holdings:**

N/A

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

<b>FIPS Code</b>	City and County Name	<b>Different Species</b>	Highest TE	Highest Tier
059	<u>Fairfax</u>	559	FESE	Ι
107	Loudoun	438	FESE	Ι

#### **USGS 7.5' Quadrangles:**

Arcola Leesburg Herndon Sterling

### **USGS NRCS Watersheds in Virginia:**

N/A

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

HU6 Code	USGS 6th Order Hydrologic Unit	<b>Different Species</b>	Highest TE	Highest Tier
PL14	Goose Creek-Big Branch	59	FTST	Ι
PL17	Broad Run-Lenah Run	49	FPST	Ι
PL18	Horsepen Run	61	FPST	Ι
PL19	Broad Run-Beaverdam Run	53	FPST	Ι
PL20	Potomac River-Selden Island	47	FPST	Ι
PL21	Sugarland Run	63	FPSE	Ι
PL45	Cub Run	70	FTST	Ι

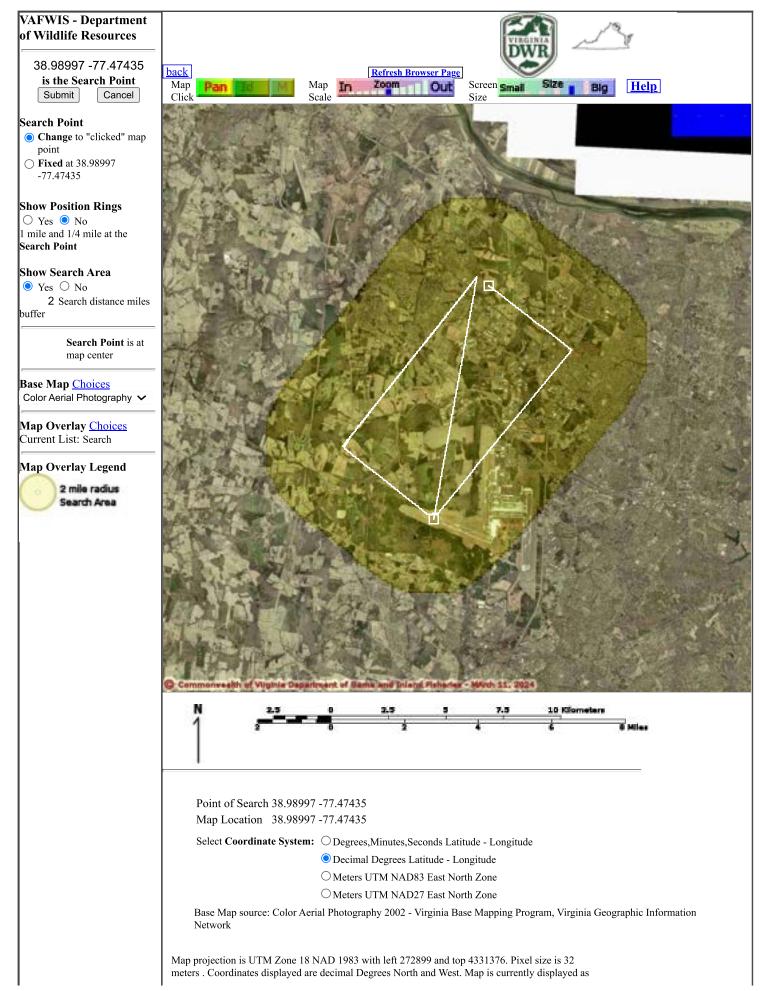
Compiled on 1/22/2025, 4:28:11 PM 13497797.0 report=all searchType=L dist= 3218 poi= 39.0342600 -77.4598099 siteDD= 39.0342600 -77.4598198;39.0307600 -77.4536898;39.0272600 -77.4475698;39.0327600 -77.453198;39.0105700 -77.4571998;39.0132600 -77.4230798;39.010500 -77.4174698;39.0046200 -77.4228498;38.9996100 -77.4278098;38.9946500 -77.4237098;38.9946500 -77.4237098;38.994500 -77.4278098;38.994500 -77.4278098;38.994500 -77.4278098;38.994500 -77.4278098;38.994500 -77.4278098;38.944500 -77.4278098;38.944500 -77.4278098;38.944500 -77.4284998;38.944190 -77.4879998;38.947700 -77.4940798;38.951500 -77.501598;38.954500 -77.5026398;38.994500 -77.42824998;38.994500 -77.501298;38.954500 -77.501298;38.994500 -77.4284998;39.047100 -77.4284998;39.047100 -77.501298;38.954500 -77.501298;38.994500 -77.501298;38.994500 -77.501298;38.994500 -77.501298;38.994500 -77.428498;39.0047100 -77.4282498;38.944190 -77.4282498;38.994500 -77.501298;38.994500 -77.501298;38.994500 -77.501298;38.994500 -77.428498;39.047100 -77.428498;39.047100 -77.428498;39.04100 -77.428498;39.04100 -77.428498;39.04100 -77.428498;39.04100 -77.428498;38.944190 -77.4874998;38.944190 -77.4874998;38.944190 -77.4874998;38.944190 -77.4874998;38.944190 -77.4874998;38.944190 -77.501298;38.944190 -77.501298;38.944190 -77.487498;39.04100 -77.487498;39.048200 -77.487498;39.048100 -77.487498;39.048200 -77.487498;39.048200 -77.487498;39.048200 -77.487498;39.048200 -77.487498;39.048200 -77.487498;39.048200 -77.487498;39.048400 -77.487498;39.048200 -77.487498;39

#### 1/22/25, 3:28 PM

#### VAFWIS Seach Report

PixelSize=64; Anadromous=0.022282; BBA=0.047615; BECAR=0.020226; Bats=0.020903; Buffer=0.389662; County=0.059971; HU6=0.060328; Impediments=0.023007; Init=0.435642; PublicLands=0.025971; Quad=0.035491; SppObs=0.435143; TEWaters=0.02849; TierReaches=0.066299; TierTerrestrial=0.044145; Total=1.622159; Tracking\_BOVA=0.234385; Trout=0.023105; huva=0.035088

VaFWIS Map



#### VaFWIS Map

,	
	800 columns by 800 rows for a total of 640000 pixles. The map display represents 25600 meters east to west by 25600 meters north to south for a total of 655.3 square kilometers. The map display represents 84003 feet east to west by 84003 feet north to south for a total of 253.1 square miles.
	Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network. Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.
	map assembled 2024-03-11 17:07:45 (qa/qc March 21, 2016 12:20 - tn=1820416 dist=3218 I ) \$poi=39.0342600 -77.4598200
	© 1998-2024 Commonwealth of Virginia Department of Wildlife Resources   <u>DWR</u>   <u>Credits</u>   <u>Disclaimer</u>   <u>Contact</u>   <u>Web Policy</u>



### United States Department of the Interior





In Reply Refer To: Project Code: 2024-0061009 Project Name: Golden to Mars - 0642267

01/22/2025 20:20:58 UTC

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

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

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

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

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

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds

# **OFFICIAL SPECIES LIST**

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

This species list is provided by:

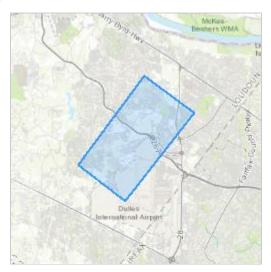
**Virginia Ecological Services Field Office** 6669 Short Lane Gloucester, VA 23061-4410 (804) 693-6694

### **PROJECT SUMMARY**

Project Code:	2024-0061009
Project Name:	Golden to Mars - 0642267
Project Type:	Transmission Line - New Constr - Above Ground
Project Description:	This request is a part of a pre-permitting effort to determine feasibility of
	overhead powerline routes.

Project Location:

The approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/@38.99000385,-77.47452758851136,14z</u>



Counties: Loudoun County, Virginia

### **ENDANGERED SPECIES ACT SPECIES**

There is a total of 5 threatened, endangered, or candidate species on this species list.

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

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

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

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

### MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/9045</u>	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/10515</u>	Proposed Endangered
NAME	STATUS
Dwarf Wedgemussel Alasmidonta heterodon No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/784</u>	Endangered
Green Floater Lasmigona subviridis There is <b>proposed</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/7541</u>	Proposed Threatened

### INSECTS

NAME	STATUS
Monarch Butterfly Danaus plexippus	Proposed
There is <b>proposed</b> critical habitat for this species. Your location does not overlap the critical	Threatened
habitat.	
Species profile: <u>https://ecos.fws.gov/ecp/species/9743</u>	

# CRITICAL HABITATS

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

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

# USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

# **BALD & GOLDEN EAGLES**

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act  $^2$  and the Migratory Bird Treaty Act (MBTA)  $^1$ . Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

- 1. The <u>Bald and Golden Eagle Protection Act</u> of 1940.
- 2. The <u>Migratory Birds Treaty Act</u> of 1918.
- 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your **project** area.

### **Measures for Proactively Minimizing Eagle Impacts**

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the <u>National Bald Eagle Management Guidelines</u>. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to <u>Bald Eagle Nesting and Sensitivity to Human Activity</u>.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional <u>Migratory Bird Office</u> or <u>Ecological Services Field Office</u>.

If disturbance or take of eagles cannot be avoided, an <u>incidental take permit</u> may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the <u>Do I Need A Permit Tool</u>. For assistance making this determination for golden eagles, please consult with the appropriate Regional <u>Migratory Bird Office</u> or <u>Ecological Services Field Office</u>.

### **Ensure Your Eagle List is Accurate and Complete**

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the <u>Supplemental Information</u> on <u>Migratory Birds and Eagles</u>, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere

### **PROBABILITY OF PRESENCE SUMMARY**

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read <u>"Supplemental Information on Migratory Birds and Eagles"</u>, specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### **Probability of Presence** (

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

### Breeding Season (=)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

### Survey Effort ()

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

### No Data (-)

A week is marked as having no data if there were no survey events for that week.

			prob	ability of	presenc	e br	eeding se	eason	survey e	effort -	no data
 JAN	FEB	MAR	APR	MAY	JUN			SEP	OCT		DEC

Golden Eagle Non-BCC Vulnerable

Additional information can be found using the following links:

- Eagle Management <u>https://www.fws.gov/program/eagle-management</u>
- Measures for avoiding and minimizing impacts to birds <u>https://www.fws.gov/library/</u> <u>collections/avoiding-and-minimizing-incidental-take-migratory-birds</u>
- Nationwide avoidance and minimization measures for birds <u>https://www.fws.gov/sites/</u> <u>default/files/documents/nationwide-standard-conservation-measures.pdf</u>
- Supplemental Information for Migratory Birds and Eagles in IPaC <u>https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action</u>

# **MIGRATORY BIRDS**

The Migratory Bird Treaty Act (MBTA) <sup>1</sup> prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

- 1. The Migratory Birds Treaty Act of 1918.
- 2. The <u>Bald and Golden Eagle Protection Act</u> of 1940.
- 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <u>https://ecos.fws.gov/ecp/species/1626</u>	Breeds Sep 1 to Jul 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9399</u>	Breeds May 15 to Oct 10

NAME	BREEDING SEASON
Cerulean Warbler Setophaga cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 28 to Jul 20
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9406</u>	Breeds Mar 15 to Aug 25
Chuck-will's-widow Antrostomus carolinensis This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9604	Breeds May 10 to Jul 10
Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/10678</u>	Breeds May 1 to Aug 20
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <u>https://ecos.fws.gov/ecp/species/1680</u>	Breeds elsewhere
Grasshopper Sparrow Ammodramus savannarum perpallidus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <u>https://ecos.fws.gov/ecp/species/8329</u>	Breeds Jun 1 to Aug 20
Kentucky Warbler <i>Geothlypis formosa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9443</u>	Breeds Apr 20 to Aug 20
King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/8936</u>	Breeds May 1 to Sep 5
Prairie Warbler Setophaga discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9513</u>	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9439</u>	Breeds Apr 1 to Jul 31

NAME	BREEDING SEASON
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9398</u>	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <u>https://ecos.fws.gov/ecp/species/9478</u>	Breeds elsewhere
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9431</u>	Breeds May 10 to Aug 31

### **PROBABILITY OF PRESENCE SUMMARY**

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read <u>"Supplemental Information on Migratory Birds and Eagles"</u>, specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### **Probability of Presence** (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

### Breeding Season (=)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

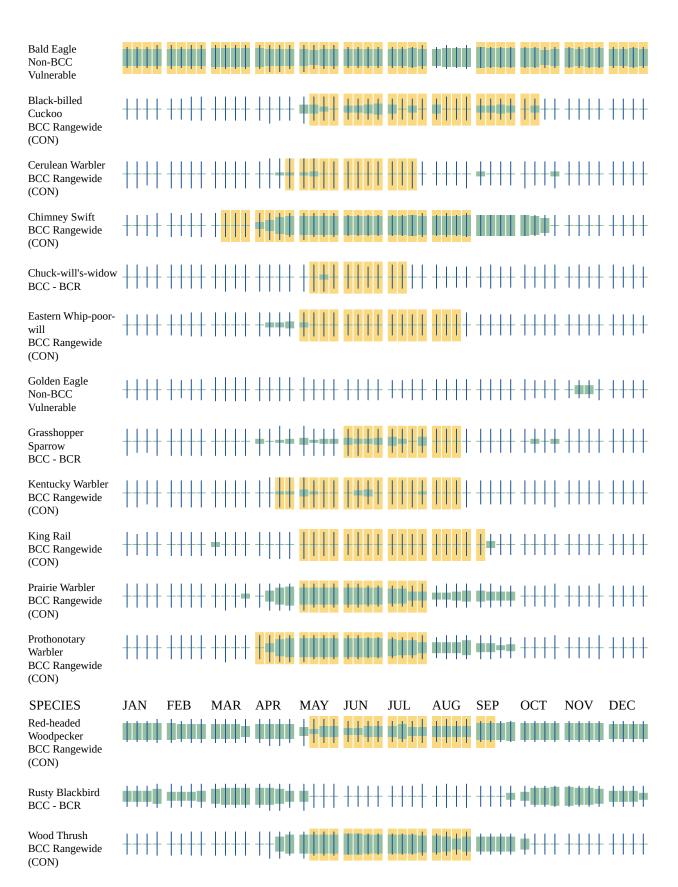
### Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

### No Data (-)

A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort — no data SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds <u>https://www.fws.gov/library/</u> <u>collections/avoiding-and-minimizing-incidental-take-migratory-birds</u>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <u>https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action</u>

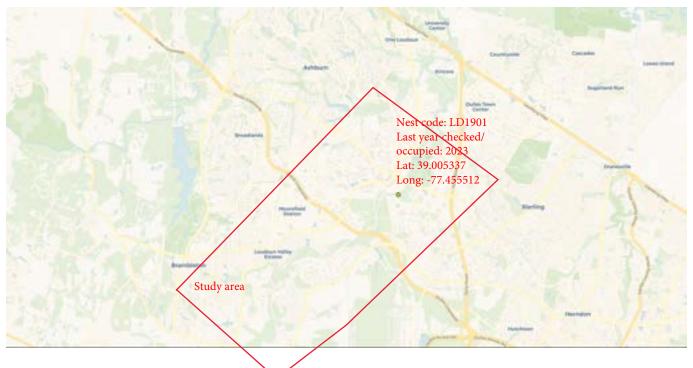
### **IPAC USER CONTACT INFORMATION**

Agency:	Environmental Resources Management
Name:	Briana Cooney
Address:	222 South 9th Street
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The CENTER for CONSERVATION BIOLOGY

# **CCB** Mapping Portal



Layers: VA Eagle Nest Locator

Map Center [longitude, latitude]: [-77.49069213867188, 39.00004253852356]

### Map Link:

 $\label{eq:https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&zoom=13&lat=39.00004253852356&lng=-77.490692\\ 13867188&legend=legend\_tab\_7c321b7e-e523-11e4-\\ aaa0-0e0c41326911&base=Street+Map+%280SM%2FCarto%29\\ \end{tabular}$ 

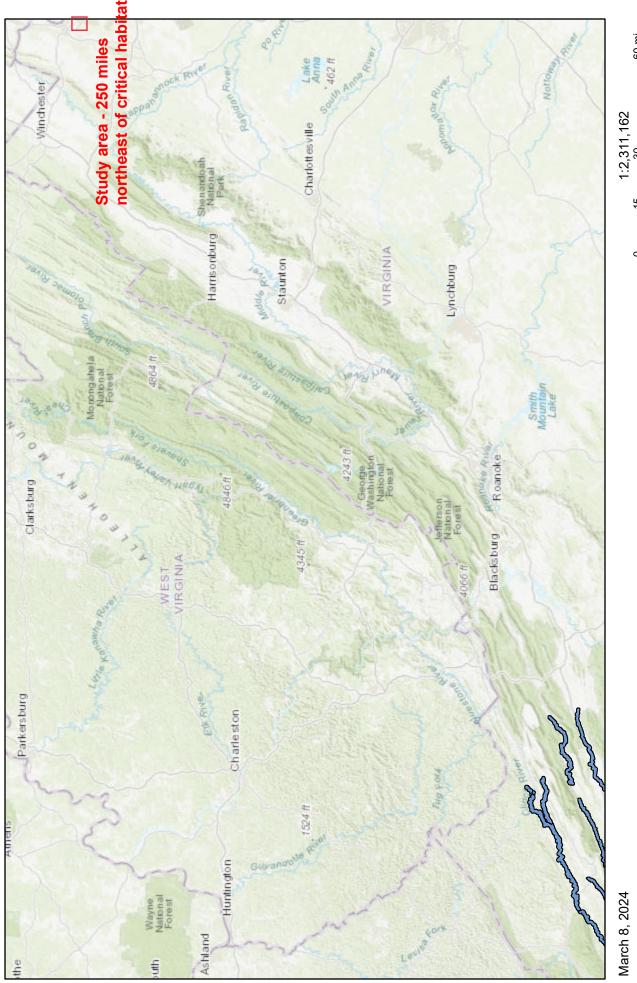
### Report Generated On: 03/08/2024

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Report generated by <u>The Center for Conservation Biology Mapping Portal</u>.

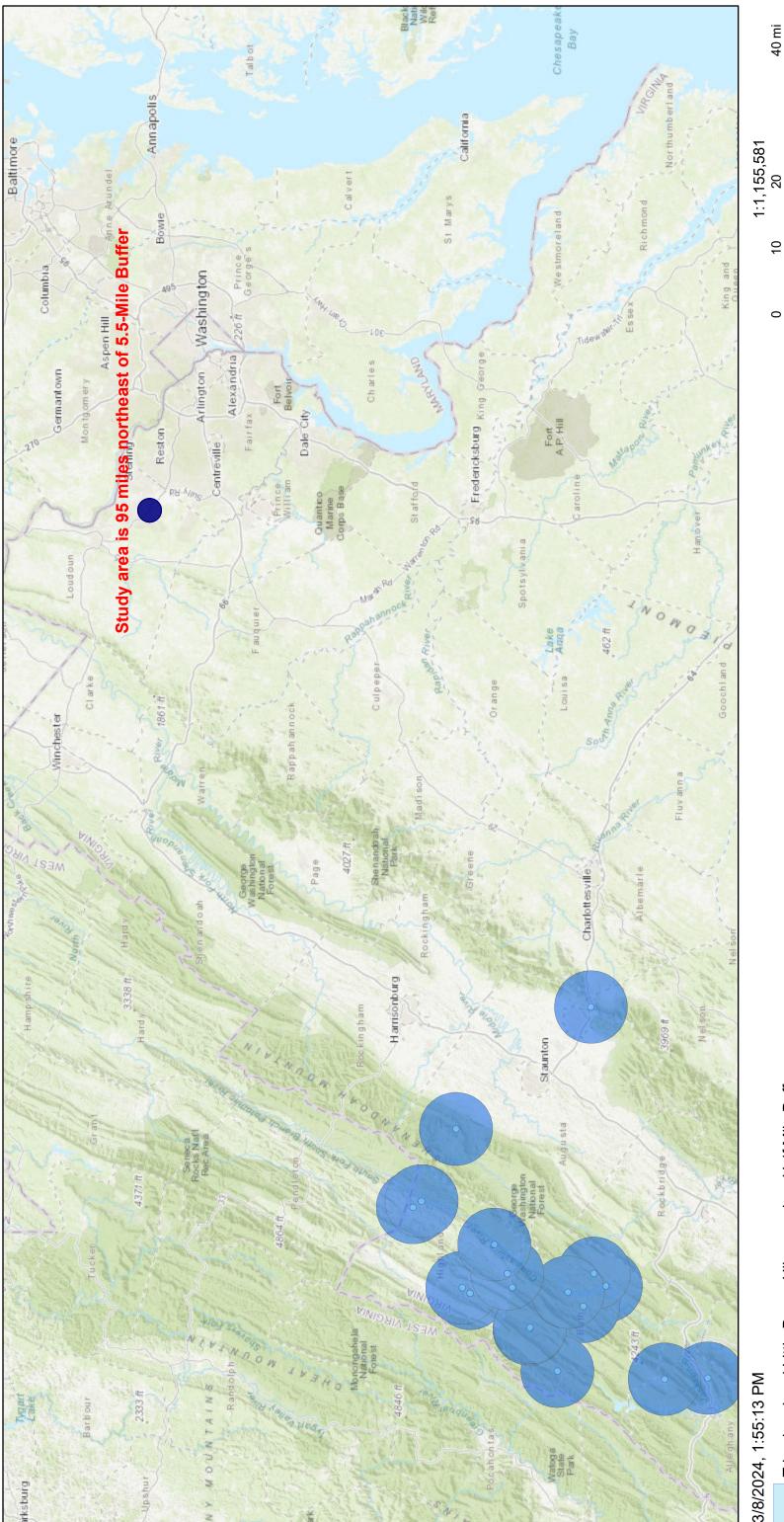
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Virginia Critical Habitat (published)

# MYLU-PESU Locations and Roost Trees - Golden to Mars



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

40 mi

9

0

60 km

30

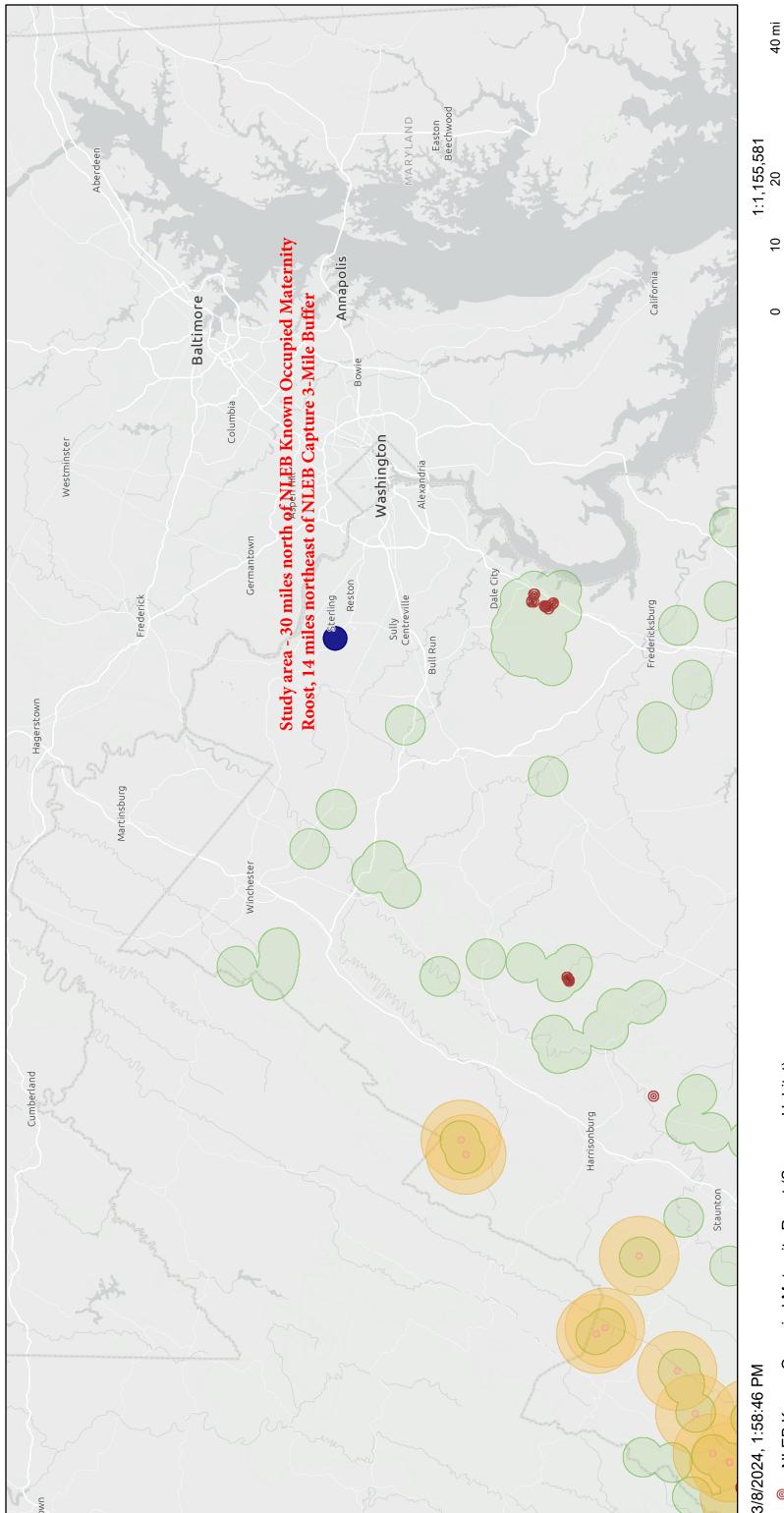
15

0

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

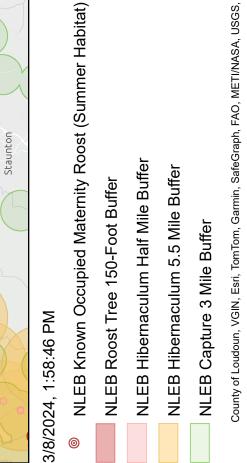
Tri-colored and Little Brown Hibernaculum Half Mile Buffer 3/8/2024, 1:55:13 PM

# NLEB Locations and Roost Trees - Golden to Mars





County of Loudoun, VGIN, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS



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

### **EXTERNAL MESSAGE**

Briana,

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

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

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

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

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

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

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

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

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

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

Thank you,

Nicki Gustafson (she/her) Project Review Assistant Division of Natural Heritage Virginia Department of Conservation and Recreation 600 E. Main Street, 24th Floor Richmond, VA 23219 804-625-3979 | nicki.gustafson@dcr.virginia.gov



From: nhreview (DCR) <nhreview@dcr.virginia.gov>
Sent: Tuesday, May 21, 2024 11:48 AM
To: Briana Cooney <Briana.Cooney@erm.com>
Subject: Re: 0642267, Golden-Mars

Briana,

Thanks for you for reaching out again. We passed your question on to our Data Management Division when we received your email. They do the modeling for the Ecological Cores and the Stream Conservation Sites and we wanted to be sure we were giving you accurate information. I will circle back with them and see if they have more information for you. Thank you for your patience with this.

Best,

### Nicki Gustafson (she/her) Project Review Assistant

Division of Natural Heritage Virginia Department of Conservation and Recreation 600 E. Main Street, 24th Floor Richmond, VA 23219 804-625-3979 | <u>nicki.gustafson@dcr.virginia.gov</u>



From: Briana Cooney <Briana.Cooney@erm.com>
Sent: Tuesday, May 21, 2024 11:37 AM
To: nhreview (DCR) <nhreview@dcr.virginia.gov>
Subject: RE: 0642267, Golden-Mars

Hello!

I just wanted to follow up on my email below. Is someone able to address my questions? Thanks!



Sustainability is our business

Briana Cooney Senior Consultant, Scientist She/Her/Hers

Minneapolis 612-347-7114 erm.com



# APPENDIX G KEY OBSERVATION POINT DESCRIPTIONS, PHOTOGRAPHS, AND SIMULATIONS



# Key Observation Point Descriptions, Photographs, and Simulations

Golden to Mars 500-230 kV Electric Transmission Project

### 1. INTRODUCTION

This appendix supplements the analysis in Section 5.3 of the Environmental Routing Study (Routing Study) for Virginia Electric and Power Company's (Dominion Energy Virginia, Dominion, or the Company) 500-230 kilovolt (kV) Golden–Mars Lines located in Loudoun County, Virginia (Project). It describes the existing visual resource conditions at each key observation point (KOP) and an assessment of the anticipated changes to these conditions based on commonly used visual federal resource management systems, including:

- Federal Highway Administration Guidelines for the Visual Impact Assessment of Highway Projects (FHWA 2015)
- U.S. Department of Agriculture Forest Service Scenery Management System (USFS 1995)
- Bureau of Land Management Visual Resource Management (BLM 1984)

These systems provide standardized approaches that recognize both the environmental setting (visual features that contribute to the landscape) and viewer perception of this setting (viewer preferences and sensitivity). While each of these systems is tailored to best meet these needs and landscapes of its respective federal agency, the systems share common elements that can assess projects that lack a federal nexus. Specifically, these systems establish a set of procedures or techniques that can objectively describe the exiting visual resource conditions of the landscape and estimate the level of visual change from a project.

For purposes of this assessment, the existing landscape conditions and changes to these conditions are centered on establishing and evaluating three primary criteria, described below.

- 1. Landscape character: the set of attributes, qualities, or traits in the landscape that make it identifiable (or unique). The landscape character is a combination of the following:
  - Landforms—the distinct topographic features of the landscape including any visible water bodies or rivers,
  - Vegetation—the variety of vegetation/vegetated communities present on the landscape, and
  - Built Environment—the existing structures, facilities, or other human modifications on the landscape.
- Viewer Types and Sensitivity: viewers are defined by their interaction with a landscape (e.g., residents, motorists) and their preferences or sensitivity to changes or modifications to the landscape.
- 3. Distance Zones: a frame of reference to discuss the landscape character and specific features based on their distance from a specific location. Distance zones include the:
  - foreground (up to 0.5-mile);
  - middle ground (0.5 to 2 miles); and
  - background (greater than 2-miles).

The sections below describe the landscape visible from each KOP in terms of these criteria and include a photograph of existing conditions and a photographic simulation of the project. Larger format photographs and simulations are provided after the KOP descriptions. This information was used in the identification of visual resource impacts presented in the Routing Study.

### 2. KOP DESCRIPTIONS

The Golden and Mars Substations (the origin and terminus points, respectively, of the Golden-Mars Lines) have been approved as part of another project. These facilities are depicted, where appropriate, in the simulation images. Except where noted, all distances are approximate and are rounded to the nearest 0.1 mile or 100 feet.

### 2.1 KOP 201

### 2.1.1 EXISTING CONDITIONS



### FIGURE 1: KOP 201, EXISTING CONDITIONS

KOP 201 is located on the sidewalk in front of the main entrance of 1757 Golf Club, 0.1 mile north of the intersection of Waxpool Road and Broderick Drive (Figure 1). The KOP faces south towards Waxpool Road. From this location, parking areas, internal access roads, landscaped areas (grass, shrubs, and trees), roadside vegetation (primarily trees), the tops of several commercial/industrial buildings and other human modification are dominant on the landscape. The characteristics of the landscape visible from KOP 201 are described below.

### 2.1.1.1 LANDFORMS

• The landscape is predominately smooth and flat with subtle undulations (low berms in the parking lot) perceptible in the foreground.

### 2.1.1.2 VEGETATION

- The parking lot is bordered by a mix of maintained lawns, shrubs, and deciduous trees. This foreground area includes low, smooth, green to light brown grassy areas interspersed with short, rectangular and rounded clumps of green shrubs, and several taller, multistemmed deciduous trees that add height and amorphous forms to the view.
- A mostly contiguous row of trees along the south side of Waxpool Road forms a low, green wall that partially screens the commercial/industrial buildings beyond.
- The trees in the parking lot and along Waxpool Road add height and a variety of forms to the view, while also screening more distant views into the background from this location.

### 2.1.1.3 BUILT ENVIRONMENT

- A flat, smooth, medium grey paved parking lot with painted white parking lines and tan cement curbs and sidewalk are visible in the foreground.
- A tall, dark brown, overhead streetlight sits nearly in the center of the view

- On the right side of the view, hanging traffic signals are perceptible but are partially absorbed into the adjacent vegetation. The silver-grey arms with vertical poles extend across the intersection with access road into 1757 Golf Club and Waxpool Road.
- The upper portion of a data center building is visible through the trees to the south (beyond the intersection) and an office building is partially visible to the left (southeast). These buildings add large geometric forms, straight horizontal lines, and subdued greys and tans to the landscape.
- Existing Lines #2165 and #2170 parallel the south side of Waxpool Road. A single, tall, thin, vertical pole for these lines is one of the tallest structures on the landscape and extends above the office building on the left side of the view. Other poles associated with these lines are obscured by the trees in the parking lot and along Waxpool Road. Multiple thin, horizontal, overhead lines extend between the poles.

The primary viewer group at KOP 201 is recreationists, specifically golfers. These viewers would have medium to high sensitivity to changes in visual conditions; however, their ability to perceive changes on the landscape may be limited to this parking lot location, because the golf course is oriented to the north-northwest (away from the line) and includes vegetated screening that limit views beyond the immediate golf course.

### 2.1.2 SIMULATED CONDITIONS WITH THE PROJECT



### FIGURE 2: KOP 201, SIMULATED CONDITIONS

The shared alignment of Routes 1 through 5 parallel the south side of Waxpool Road 0.1 mile from KOP 201 (Figure 2). From KOP 201, the Project would result in changes to the visual characteristics of the landscape, as described below.

### 2.1.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain.

### 2.1.2.2 VEGETATION

• While the Project may require some tree and vegetation clearing, there would be no discernible changes to vegetation.

### 2.1.2.3 BUILT ENVIRONMENT

- The Project would add vertical poles and multiple thin, horizontal overhead conductors to the landscape.
- Two new thin, vertical poles would be partially visible through existing vegetation. These new vertical features would be next to and shorter than existing structures for Lines #2165/#2170.

• A series of new conductors would add multiple thin, parallel, horizontal lines above Waxpool Road. These new lines would be particularly noticeable against the open sky and would increase the level of visual clutter in the area.

While the Project would add vertical and horizontal forms and lines to the view at KOP 201, most of the new structures would be either partially screened by existing vegetation or would repeat existing forms and lines already present on the landscape. As such, the degree of change in visual conditions at this location would be small.

### 2.2 KOP 202

### 2.2.1 EXISTING CONDITIONS



### FIGURE 3: KOP 202, EXISTING CONDITIONS

KOP 202 is located on the Loudoun County Parkway Trail on the north side of Loudoun County Parkway, 0.2 mile west of the intersection with Claude Moore Drive (Figure 3). The KOP faces south and provides a view of the paved trail and tree lined roadway corridor. The characteristics of the landscape visible from KOP 202 are described below.

### 2.2.1.1 LANDFORMS

• The landscape is low with some gentle slopes (generally sloping down from right to left in the view) and berms visible in the foreground.

### 2.2.1.2 VEGETATION

- Mowed, patchy, medium-green grass borders both sides of the paved trail. The grass adds fine textures that complement the smooth pavement. Several small trees add vertical features to the foreground along the trail.
- Densely forested areas on both sides of Loudoun County Parkway create a horizontal strip that extends across the middle ground. These forested areas are predominantly deciduous, medium to dark green trees that create an uneven, irregular line across the sky.
- The dense stands of trees on both sides of Loudoun County Parkway screen more distant views, although the break in the trees from the roadway provides an extended view into the middle ground.

### 2.2.1.3 BUILT ENVIRONMENT

• The smooth, medium grey paved trail along the top of a grassy berm, parallel to Loudoun County Parkway is prominent in the foreground.

- Loudoun County Parkway is a smooth, wide roadway that appears as a thin, flat strip that curves from left to right and cuts through the dense vegetation on both sides of the road. A cement median is visible in the far middle ground.
- The tops of several multi-story single family homes (left) are partially visible among the trees.

The primary viewer groups at KOP 202 are residents, motorists, and recreationists. Recreationists and residents at this location would have medium to high sensitivity to changes in visual conditions, while motorists would have a medium sensitivity.

### 2.2.2 SIMULATED CONDITIONS WITH THE PROJECT

### 2.2.2.1 ROUTE 1



### FIGURE 4: KOP 202, SIMULATED CONDITIONS

The shared alignment of Routes 1 and 5 would be less than 0.1 mile south of KOP 202. Route 5 (discussed below) would split from the common alignment 0.4 mile from the KOP. Route 1 would parallel the left (east) side of Loudoun County Parkway (Figure 4). From KOP 202, the Project would result in changes to the visual characteristics of the landscape, as described below.

### Landform

• There would be no discernable changes to the landform or terrain.

### Vegetation

• The dense tree line along the left (south) side of the roadway would be partially cleared to for the route, but a solid undulating line of remaining trees would continue to screen views to the south.

### **Built Environment**

- The Project's structures would parallel the left side of the Loudoun County Parkway, following the curve of the roadway to the southwest.
- The scale and height, as well as the repeating line of tall, vertical galvanized steel structures of these new linear features would make them prominent on the landscape.
- Long, thin, curvilinear overhead conductors would stretch between the poles. These new horizontal lines would be visible against the open sky and would contribute to the increased built features along this suburban roadway.

The transmission line infrastructure at KOP 202 would introduce tall, vertical utility structures to the wide, tree-lined roadway, adding new forms and lines to the view. This would result in a high degree of change in existing visual conditions in this location.

### 2.2.2.2 ROUTE 5



### FIGURE 5: KOP 202, SIMULATED CONDITIONS

Routes 1 and 5 share the same corridor along Loudoun County Parkway until Route 5 turns west to follow the north side of Ryan Road (Figure 5). From KOP 202, the changes in the visual characteristics of the landscape due to Route 5 would be the same as described for Route 1, except the existing treeline on the north side of Loudoun County Parkway screens potential views of structures along Ryan Road.

As with Route 1, the Route 5 transmission line infrastructure would introduce tall vertical utility structures to the wide, tree-lined roadway, adding new forms and lines to the view from KOP 202. Similar to Route 1, Route 5 would result in a high degree of change to existing visual conditions in this location.

### 2.3 KOP 203

### 2.3.1 EXISTING CONDITIONS



### FIGURE 6: KOP 203, EXISTING CONDITIONS

KOP 203 is located on the shared-use paved trail south of Loudoun County Parkway, between Hillsburo Hunt Drive to the west and Pickett Corner Terrace to the east, less than 0.1 mile east of the Loudoun County Parkway/Hillsburo Hunt Drive intersection (Figure 6). It is within the Loudoun Valley Estates I Subdivision and faces northwest. The characteristics of the landscape visible from KOP 203 are described below.

### 2.3.1.1 LANDFORMS

- The smooth landscape gently slopes from the top of the hillside to the right downhill to the left.
- The hill's gentle grade limits views to the foreground in this location, creating a clean horizon line in the foreground along the right side of the view.

### 2.3.1.2 VEGETATION

- The grassy lawn and hillside are mowed, and a mix of mature deciduous and evergreen trees extends along both sides of the trail.
- The trees create rounded, amorphous (deciduous) and pyramidal (evergreen) shapes. The rich dark green color and coarser textures of the trees (especially evergreens) contrasts with the lighter green, smooth grasses.

### 2.3.1.3 BUILT ENVIRONMENT

• A flat, smooth medium grey, paved trail bisects the sloping landscape and creates a strong linear form that draws the viewers eye towards the left side of the view.

The primary viewer groups at KOP 203 are area residents and recreationists, both of whom would have medium to high sensitivity to changes in visual conditions.

### 2.3.2 SIMULATED CONDITIONS WITH THE PROJECT



### FIGURE 7: KOP 203, SIMULATED CONDITIONS

The shared alignment of Routes 1 and 5 would be less than 0.1 mile north of KOP 203, parallel to the north side of Loudoun County Parkway (Figure 7). From KOP 203, the Project would result in changes to the visual characteristics of the landscape, as described below.

### 2.3.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

### 2.3.2.2 VEGETATION

• There would be no discernable changes to the vegetation.

### 2.3.2.3 BUILT ENVIRONMENT

- The Project's structures would be partially screened by the hillside and the trees in the immediate foreground.
- The scale and height, as well as the repeating line of tall, vertical galvanized steel structures of these new linear features could attract the viewer's eye. The tops of the

structures would be below the treeline from this location but could be visible above or between trees from nearby locations on the trail.

• Long, thin, curvilinear overhead conductors stretching between the poles would be visible against the open sky in between the trees and would contribute to the increase in built features along this suburban roadway.

The Project would introduce tall, vertical utility structures and associated horizontal conductors to the predominately vegetated view from KOP 203, increasing the extent of built environment features within the view. This would result in a small to medium degree of change in existing visual conditions in this location.

### 2.4 KOP 204

### 2.4.1 EXISTING CONDITIONS



### FIGURE 8 KOP 204, EXISTING CONDITIONS

KOP 204 is located at the start of the paved trail on the west side of the parking lots for the Lyndora Park athletic fields on the south side of Lucketts Bridge Circle, east of the intersection with Mechanicsville Glen Street (Figure 8). The panoramic view is oriented to the south. The characteristics of the landscape visible from KOP 204 are described below.

### 2.4.1.1 LANDFORMS

• The landscape is largely smooth and flat.

### 2.4.1.2 VEGETATION

- A large, open mowed athletic field dominates the foreground with grass that ranges from tan and yellow to bright green. The field adds a fine, smooth texture that contrasts with the coarser texture of the surrounding trees
- The field is framed by tall, mature, medium to dark evergreen and deciduous trees, drawing the viewers' eye slightly deeper into the vegetated backdrop of the view.
- The trees display a range of rounded and irregular forms individually but in aggregate appear as a dense wall of vegetation with an irregular but continuous strong horizontal line across the sky.

### 2.4.1.3 BUILT ENVIRONMENT

• The edge of a small outbuilding is visible on the left side of the view. Its low, geometric form with slanting triangular roof, is distinct and the neutral colors help reduce its visual prominence.

- Multiple aluminum framed soccer goals with medium blue netting are scattered around the field. The small structures are visible but are generally absorbed into the natural colors of the field and bordering trees.
- A narrow, smooth, horizonal paved trail borders the right side of the view and guides the viewer's eye toward the trees that enclose the back of the view.

The primary viewer groups at KOP 204 are recreationists that would have medium to high sensitivity to changes in visual conditions at this location.

### 2.4.2 SIMULATED CONDITIONS WITH THE PROJECT

### FIGURE 9: KOP 204, SIMULATED CONDITIONS

The shared alignment of Routes 2 through 4 would run parallel to the south side of Broad Run, approximately 0.2 mile south of KOP 204 (Figure 9). From KOP 204, the Project would result in changes to the visual characteristics of the landscape, as described below.

### 2.4.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain in this location.

### 2.4.2.2 VEGETATION

- Tree clearing for the Project adjacent to Broad Run would not result in perceptible changes to vegetation.
- The existing treeline would provide partial vegetated screening of the route.

### 2.4.2.3 BUILT ENVIRONMENT

- The top portions of several galvanized steel monopoles and associated linear conductors would be skylined above the existing treeline.
- The monopoles would add built environment features and would introduce tall, straight, vertical lines to the view.
- The slightly undulating conductors would add multiple thin, parallel, horizontal lines above the existing tree line.

Due to the addition of vertical and horizontal forms and lines, and scale of the transmission line within the foreground of KOP 204, the degree of change in visual conditions at this location would be medium.

### 2.5 KOP 205

### 2.5.1 EXISTING CONDITIONS



### FIGURE 10: KOP 205, EXISTING CONDITIONS

KOP 205 is located on the paved, multi-use path at the south end of the Loudoun Parkway Center Subdivision, south of Chadwick Terrace (Figure 10). The view is oriented to the southeast. The characteristics of the landscape visible from KOP 205 are described below.

### 2.5.1.1 LANDFORMS

• The landscape is largely smooth and flat, with a gentle downhill grade towards Broad Run (beyond the trees at the center of the view).

### 2.5.1.2 VEGETATION

- The foreground features mowed, short, light brown and green grasses to the right of the multi-use path and overgrown, medium to tall, light brown and green grasses and other herbaceous plants to the left of the multi-use path. The soft, smooth to fine textures contrasts with the coarser textures in the trees.
- A prominent willow on the lefthand side of the view has draping branches that create a distinctive, flowing form and soft vertical lines.
- A mixture of medium to dark-green deciduous and evergreen trees surrounds the grassy area. These trees have more rounded or irregular forms and form a dense undulating wall that encloses the view.

### 2.5.1.3 BUILT ENVIRONMENT

• A smooth, light grey paved path creates a curvilinear line that leads the viewers eye towards the framing trees in the back of the view.

The primary viewer groups at KOP 205 are local residents and recreationists, who would have medium to high sensitivity to visual changes at this location.

### 2.5.2 SIMULATED CONDITIONS WITH THE PROJECT



### FIGURE 11: KOP 205, SIMULATED CONDITIONS

The shared alignment of Routes 2 through 4 cross Broad Run 0.1 mile southeast of KOP 205 (Figure 11). From KOP 205, the Project would result in changes to the visual characteristics of the landscape, as described below.

### 2.5.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain.

### 2.5.2.2 VEGETATION

- Tree removal for the Project would in the center of the view would open views to the industrial buildings and surrounding area to the south.
- The vegetated slope on the south side of Broad Run would be visible due to the vegetation removal along the project corridor.

### 2.5.2.3 BUILT ENVIRONMENT

- The Project would add a series of thin, parallel lines above the treeline to the south, introducing built features to a view that is currently dominated by natural features.
- The new horizontal lines would be highly visible against the open sky and would increase the level of visual clutter in the area.
- The commercial area visible through the gap in the treeline would introduce rectangular shapes and white and tan colors to the view.

The installation of Routes 2, 3, or 4 would remove vegetation, open the enclosed view, and add new horizontal lines and geometric buildings to the landscape. This would result in a medium to large degree of visual change at KOP 205.

### 2.6 KOP 206

### 2.6.1 EXISTING CONDITIONS



### FIGURE 12: KOP 206, EXISTING CONDITIONS

KOP 206 is located on the Loudoun County Parkway Trail on the south side of Loudoun County Parkway (Figure 12), 0.3 mile east of the intersection with Claiborne Parkway. The view from KOP 206 faces west. The characteristics of the landscape visible from KOP 206 are described below.

### 2.6.1.1 LANDFORMS

• The landscape is largely smooth and flat in the foreground, but slopes uphill to the right (north) to a berm that blocks views in that direction and creates a gentle undulating horizontal line across the right side of the view.

### 2.6.1.2 VEGETATION

- Mowed tan and light to medium green grasses border a paved trail and lead to taller grasses to the right and left of the trail, creating smooth, fine textures across the view.
- A treeline of mixed deciduous and evergreen trees borders the left (south) side of the view creating an undulating horizon line of rounded forms that block views to the south.
- Above the grassy berm to the right, a cluster of distinctly branching deciduous trees punctuate the horizon line formed by the berm near the center of the view. On the far right, the triangular tops of dark green evergreen trees create a jagged horizon line above the berm.

### 2.6.1.3 BUILT ENVIRONMENT

• A paved medium grey path bisects the left side of the view and creates a strong linear feature that draws the viewer's eye towards the distant tree line.

The primary viewer group at KOP 206 is recreationists, who would have a medium to high sensitivity to changes in visual conditions at this location.

### 2.6.2 SIMULATED CONDITIONS WITH THE PROJECT



### FIGURE 13: KOP 206, SIMULATED CONDITIONS

The shared alignment of Routes 1, 2, and 5 cross directly overhead of KOP 206 (Figure 13). From KOP 206, the Project would result in changes to the visual characteristics of the landscape as described below.

### 2.6.2.1 LANDFORMS

• There would be no discernible changes to the landform or terrain.

### 2.6.2.2 VEGETATION

• The skylined deciduous trees above the berm would be removed, making the overall view more open.

### 2.6.2.3 BUILT ENVIRONMENT

- The Project would add a series of new, repetitive, galvanized steel vertical poles with short, horizontal crossarms to the landscape. Because these structures would be primarily in the foreground at this location, their height and scale would make them visually dominant.
- The slightly undulating conductors add multiple thin, parallel, horizontal lines above the trail. The new horizontal lines would be highly visible against the open sky and would increase the level of visual clutter in the area.

Due to the additional vertical and horizontal forms and lines and the scale of the transmission line bisecting the view at KOP 206, the degree of change in visual conditions at this location would be large.

## 2.7 KOP 207

## 2.7.1 EXISTING CONDITIONS



## FIGURE 14: KOP 207, EXISTING CONDITIONS

KOP 207 faces southeast from a narrow, paved path within the Loudoun Valley Estates II Subdivision that provides access from Barnstead Drive to Broad Run Stream Valley Park (Figure 14). The KOP is 0.1-mile northeast of the intersection of Barnstead Drive and Weybridge Square. The characteristics of the landscape visible from KOP 207 are described below.

## 2.7.1.1 LANDFORMS

• The landscape is predominantly smooth and flat with a subtle slope running downhill to the left, towards Broad Run.

## 2.7.1.2 VEGETATION

- Short, mowed grasses characterize the right side of the paved path, while taller grasses characterize the left side of the view towards the treeline.
- The grasses on both side of the path add a variety of light to medium green hues with strips and patches of yellow-brown tones. The soft, flowing textures in the grasses contrasts with the coarser textures in the adjacent trees.
- A line of medium to dark green deciduous and evergreen trees frames the back of the view, restricting views to within the open grassy field to the south-southeast.
- The trees contribute irregular, vertical forms and dense, layered textures to the view.

## 2.7.1.3 BUILT ENVIRONMENT

- A meandering, light grey, paved path crosses through the foreground of the view, curving to the southeast out of view behind the taller grasses on the left side of the view.
- The path adds soft, curvilinear lines that cut across the broad grass fields.

The primary viewer groups at KOP 207 are local residents and recreationists, who would have a high sensitivity to changes in visual conditions at this location.

## 2.7.2 SIMULATED CONDITIONS WITH THE PROJECT

## 2.7.2.1 ROUTE 2



## FIGURE 15: KOP 207, SIMULATED CONDITIONS

Route 2 would be less than 0.1 mile east of KOP 207 (Figure 15). From KOP 207, the Project would result in changes to the visual characteristics of the landscape, as described below.

## Landform

• There would be no discernable changes to the landform or terrain.

## Vegetation

- A cleared section of the forest on the left side of the view would open views towards Broad Run. The right-of-way through these trees would split the existing, contiguous forest into two distinct treelines, one on either side of the route. The closest treeline would partially screen views into the middle-ground.
- The cleared right-of-way would appear as an extension of the open grass field on the left side of the path.

## **Built Environment**

- The Project's poles would appear as tall, thin, vertical, galvanized steel structures that would be taller than all other existing features on the landscape and would be skylined above the treeline.
- Long, thin, slightly undulating horizontal conductors would stretch between the poles. The new horizontal lines visible against the open sky would add visual clutter in the area.

The Project would add new industrial forms and lines that would be more prominent than the otherwise natural-appearing forest and other vegetation in the view from KOP 207. This would result in a large degree of change to existing visual conditions.

## 2.7.2.2 ROUTE 3



## FIGURE 16: KOP 207, SIMULATED CONDITIONS

Route 3 would be 0.1 mile southeast of KOP 207 (Figure 16). From KOP 207, the Project would result in changes to the visual characteristics of the landscape, as described below.

## Landform

• There would be no discernable changes to the landform or terrain.

## Vegetation

• Route 3 would require removal of forest in the far right of the view, at the edge of the open field. This would provide an axial view to the south along the cleared right-of-way, which would appear as an extension of the grassy area on the right side of the path.

## **Built Environment**

- The Project's poles would appear as tall, thin, vertical, galvanized steel structures that would be taller than all other existing features on the landscape. The entire height of the poles within the north-south segment of Route 3 would be visible, while other poles would be partially skylined behind and above the existing treeline.
- Long, thin, slightly undulating horizontal conductors would stretch between the poles. The new horizontal lines visible against the open sky would add visual clutter in the area.

The transmission line infrastructure at KOP 207 would add prominent new industrial forms and lines that would be more prominent than the otherwise natural-appearing forest and other vegetation in the view. This would result in a large degree of change to existing visual conditions.

## 2.8 KOP 209 SOUTH

## 2.8.1 EXISTING CONDITIONS



## FIGURE 17: KOP 209 SOUTH, EXISTING CONDITIONS

KOP 209 South is located at the top of the bleachers on the east side of the football field at Rock Ridge High School, 0.2 mile northeast of the eastern terminus of Loudoun Reserve Drive (Figure 17). The view is oriented to the south and shows the school's athletic fields, as well as the Loudoun Valley Estates III subdivision south of Loudoun Reserve Drive. The characteristics of the landscape visible from KOP 209 are described below.

## 2.8.1.1 LANDFORMS

• The landscape is largely smooth and flat with subtle undulations perceptible in the foreground and low rounded hills in the background of the view.

## 2.8.1.2 VEGETATION

- Smooth, brighter green athletic fields are visible in the foreground.
- Tall, predominantly deciduous medium to dark green trees interspersed with shorter evergreen trees block the view to the left (east).
- A low hillside of densely covered medium green trees sits to the right (southwest) behind the athletic fields.
- The trees provide a coarse, dense texture that contrasts with the smooth surfaces of the buildings and lawns.
- The trees and other vegetation soften the prominence of built features in the view from this location.
- A distant treeline creates a smooth undulating horizon line.

## 2.8.1.3 BUILT ENVIRONMENT

- The view predominantly includes human-made with sports facilities, school buildings, and other infrastructure dominant on the landscape.
- The foreground includes the silver-grey aluminum bleachers, railings and chain link fence (covered by a black banner with red lettering) bordering the back and sides of the bleachers. These features introduce a series of horizontal and diagonal lines and rectilinear forms.
- The other athletic fields to the south have chain link fencing and bleachers that provide additional geometric features.

- The southeastern part of the smooth black track with its white lane markers and yellow numbering adds curvilinear lines to the lower right corner of the view. An additional light grey paved walkway borders the outside of the track.
- The adjacent buildings have rectangular forms with low, sloped roofs.
- The geometric rooftops of the homes in the nearby Loudoun Valley Estates III Subdivision are partially visible in front of the distant treeline.
- The overhead lighting at the sports fields introduces tall linear features that are partially skylined. The lights at the tops of the poles introduce rounded geometric features to the view.
- Existing Lines #2095/#2218 add to the vertical skylined structures in the southeastern part of the view. The associated conductors are partially visible above the rooftops and treeline and add to the horizontal lines of the fencelines in the foreground.

The primary viewer groups at KOP 209 South are area residents and workers (school staff, students, and visitors), who would have medium to high sensitivity to visual changes at this location.



## 2.8.2 SIMULATED CONDITIONS WITH THE PROJECT

## FIGURE 18: KOP 209 SOUTH, SIMULATED CONDITIONS

Route 4 would be less than 0.1 mile east of KOP 209 South (Figure 18). From the elevated vantage point in the bleachers, the full height and breadth of the project structures would be visible. From KOP 209 South, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.8.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

## 2.8.2.2 VEGETATION

• Tree clearing in the Route 4 right-of-way would further open views of the nearby Loudon Valley Estates III Subdivision to the south and views to the east.

## 2.8.2.3 BUILT ENVIRONMENT

- The route's poles would appear as tall, thin, vertical, galvanized steel structures that would be taller than all other existing features on the landscape, although they would appear comparable in size to the existing light towers.
- Long, thin, slightly undulating horizontal conductors would stretch between the poles. The new horizontal lines visible against the open sky would add to the visual clutter in the area.

The Project would add prominent new forms and lines to the existing infrastructure and vertical structures within the view from KOP 209 South. This would result in a medium to large degree of change to existing visual conditions.

## 2.9 KOP 209 WEST

## 2.9.1 EXISTING CONDITIONS



## FIGURE 19: KOP 209 WEST, EXISTING CONDITIONS

KOP 209 West faces west from the same location as KOP 209 South and looks across the athletic field and track towards the Rock Ridge High School building and the west bleachers (Figure 19). The athletic complex and school buildings dominant the view in this location. The characteristics of the landscape visible from KOP 209 are described below.

## 2.9.1.1 LANDFORMS

• The landscape is predominantly smooth and flat with subtle undulations perceptible in the foreground.

## 2.9.1.2 VEGETATION

- A dense wooded area of mature deciduous and evergreen trees frames the right (northwest) side of the view, blocking views beyond the bleachers and school buildings.
- A line of shorter, rounded trees extends to the left of the bleachers in front of the school building providing additional screening of the school.

## 2.9.1.3 BUILT ENVIRONMENT

- The bright green artificial turf athletic field stretches across the bottom of the view within the encircling track. The low, smooth field and its markings add geometric forms that contrast with the organic shapes of nearby trees.
- The landscape is dominated by human-made features including the bleachers, athletic fields, track, associated fencing, and school buildings.
- The low, smooth black track and surrounding light grey paved walkway creates a rectangular form along the bottom portion of the view.
- The silver-grey bleachers across the field add broad, horizontal and angular forms with a series of soft horizontal lines and more prominent vertical lines defined by the handrails along the bleacher staircases.
- Black chain link fencing surrounds the field, adjacent cell tower, and associated athletic outbuilding.

- Additional small structures like athletic practice equipment, picnic benches, and rounded trash cans are at regular intervals within the foreground.
- The smooth light grey paved parking lot on the east side of the school is visible to the left of the bleachers along with the tan paved concrete meandering sidewalks between the school and athletic fields.
- Rock Ridge High School appears as a large, rectangular forms with red brick and tan/light gray hues. The buildings add smooth, hard textures that are common throughout the view.
- Several tall gray steel monopoles for lighting and a cell phone tower are partially skylined above the trees and school and introduce prominent vertical lines. These structures are the tallest features on the landscape.
- The field and parking lights are rounded, while the cellular antenna array provides jagged, geometric features.
- Several other short, vertical structures are scattered throughout the view, including two small utility poles.

The primary viewer groups at KOP 209 West are area residents and workers (school staff, students, and visitors), who would have medium to high sensitivity to visual changes at this location.



## 2.9.2 SIMULATED CONDITIONS WITH THE PROJECT

## FIGURE 20: KOP 209 WEST, SIMULATED CONDITIONS

Route 3 would be 0.4 mile west of KOP 209 West (Figure 20). From the elevated vantage point of the bleachers, the upper portions of the Project structures and conductors would be visible above Rock Ridge High School and the trees to the right of the bleachers. From KOP 209 West, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.9.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

## 2.9.2.2 VEGETATION

• Due to the distance from the project and the screening vegetation and buildings, no changes in vegetation would be discernable.

## 2.9.2.3 BUILT ENVIRONMENT

• The upper portion of the Project's new poles would appear as tall, thin, vertical, galvanized steel structures that extend above the roofline of the school building adding to the existing

vertical structures in the view. The structures would be noticeable but not prominent in the view.

- The conductors appear as new, thin, horizontal lines that would be visible above the treetops to the right (northwest) and to the school roof to the left.
- While not prominent, the Project's infrastructure would add to the extent of human-built features and visual clutter in the view.

The Project would add vertical and horizontal forms and lines to the existing features within the view from KOP 209 West. This would result in a small degree of change to existing visual conditions in this location.

## 2.10 KOP 211

## 2.10.1 EXISTING CONDITIONS



## FIGURE 21: KOP 211, EXISTING CONDITIONS

KOP 211 faces south from the southeast side of the intersection of Loudoun County Parkway and Evergreen Ridge Drive (Figure 21). The view is from the Loudoun County Parkway Trail that parallels the east side of the Parkway. The characteristics of the landscape visible from KOP 211 are described below.

## 2.10.1.1 LANDFORMS

• The landscape is predominantly smooth and flat, running uphill away from the viewer.

## 2.10.1.2 VEGETATION

- Planting beds with dark brown wood chips, ornamental grasses, maintained medium green woody shrubs, and several flowering plants with red, dark pink, and white flowers are visible in the immediate foreground bordering the brick walls and neighborhood entrance structure. Other vegetation near the wall and structure includes low dark green and medium yellow shrubs.
- The landscaped flower beds and shrubs introduce rounded, organic forms that balance the smooth, hard forms and lines of the adjacent wall. The flower beds also add pops of vibrant red and white that draw the viewer's eye to this area.
- Mowed, bright green grasses line both sides of the Loudoun County Parkway Trail.
- Tall, mature, dark green deciduous trees border both the left and right side of the view, creating a natural frame that encloses the views to the Loudoun County Parkway corridor.
- The irregular forms of the trees add coarse textures that contrast with the adjacent smooth textures in the lawns and other human-made features. The tops of the trees create a smooth, irregular line against the sky.

## 2.10.1.3 BUILT ENVIRONMENT

- The view is bordered by the medium red brick and tan stone/concrete structure that denotes the entrance to the Loudoun Valley Estates Subdivision. The structure includes several arches with black metal fencing and a mock clock tower with triangular sloping roof that extends above the image.
- A tan rectangular stone sign and low parallel brick wall on the outside of the landscaped planter beds matches the taller brick wall that extends parallel to the Parkway.
- The narrow, smooth, paved, light grey Loudoun County Parkway Trail is a curvilinear line that follows the east side of Loudoun County Parkway.
- Loudoun County Parkway is a wide, smooth, grey, paved and striped surface on the right side of the view. Several associated road signs add red colors that stand out in the grey and green dominated view.
- The brick wall and paved trail and road introduce linear features that attract the viewer's eye farther into the distance.

The primary viewer groups at KOP 211 are local residents, recreationists, and motorists. Local residents and recreationists would have a high sensitivity to changes in visual conditions. Motorists would have a medium to high sensitivity to changes visual conditions. For motorists, sensitivity may be moderated by speed and the direction of travel.

## 2.10.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 22: KOP 211, SIMULATED CONDITIONS

The shared alignment of Routes 1, 2, and 5 would be nearly overhead at KOP 211 (Figure 22). The Project would parallel the left (east) side of the trail and Loudoun County Parkway. From KOP 211, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.10.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

## 2.10.2.2 VEGETATION

• The tree line along the left (east) side of the trail would be cut back to facilitate construction and installation of the route. The remaining adjacent trees would continue to screen views to the east. Tree clearing would not meaningfully change the vegetation component of the view.

## 2.10.2.3 BUILT ENVIRONMENT

- The Project's structures would parallel the left side of the Loudoun County Parkway Trail. The repeating line of tall, vertical, galvanized steel poles dominates the view. The scale and height of these new linear features makes them prominent (if not dominant) in the landscape.
- Long, thin, straight overhead conductors would stretch between the poles. These new horizontal lines would be visible against the open sky and would contribute to the increased sense of development and visual clutter along this suburban roadway.

From KOP 211, the Project would introduce tall vertical utility structures to the wide, tree-lined roadway, adding new forms and lines to the view. This would result in a high degree of change in existing visual conditions in this location.

## 2.11 KOP 212

## 2.11.1 EXISTING CONDITIONS



## FIGURE 23: KOP 212, EXISTING CONDITIONS

KOP 212 faces east from Creekside Park, within the Loudoun Valley Estates II Subdivision on the west side of Hanworth Street, less than 0.1 mile north of the intersection with Fontenoy Way (Figure 23). The characteristics of the landscape visible from KOP 212 are described below.

## 2.11.1.1 LANDFORMS

- The landscape is predominantly smooth and flat with subtle undulations visible in the foreground.
- The landscape dips toward Broad Run (away from the viewer), although most of this topographic relief is screened by existing vegetation.

## 2.11.1.2 VEGETATION

- The foreground includes light brown and medium green mowed lawns and grassy shoulders along Hanworth Street and the parallel sidewalk. The grassy areas create soft horizontal lines across the lower portion of the view.
- Predominantly mature, deciduous, medium to dark green trees fill the center the view, blocking views to the east and restricting views to the immediate foreground.
- The trees introduce layered, coarse textures and rounded but irregular forms. The tops of the trees create a distinct, uneven, undulating horizontal line across the sky.

## 2.11.1.3 BUILT ENVIRONMENT

- The flat, smooth, paved light grey road and adjacent tan cement sidewalk create strong linear forms along the lower portion of the view that extend across the foreground.
- Multi-story single family homes on the left (north) and townhomes on the right (south) are
  partially visible due to the dense treeline. These structures add rectangular forms and
  sloped roofs, strong but short vertical and horizontal lines, and muted earth tones (tan,
  light grey) to the view.

The primary viewer groups at KOP 212 are local residents traveling along Hanworth Street. Local residents would have medium to high sensitivity to visual changes at this location.

## 2.11.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 24: KOP 212, SIMULATED CONDITIONS

The shared alignment of Routes 3 and 4 would be 0.2 mile east of KOP 212 (Figure 24). The Project would parallel the east side of the existing, cleared, north-south right-of-way for the Broad Run Interceptor. From KOP 212, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.11.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain.

## 2.11.2.2 VEGETATION

• There would be no discernible changes to vegetation due to distance from the project and the screening vegetation in the foreground.

## 2.11.2.3 BUILT ENVIRONMENT

- The Project would be partially visible against the open sky, above the trees where the treeline dips down.
- The Project would add a new, thin, vertical pole and several new, thin, horizontal lines to the view. The new forms and lines would be perceptible, but not dominant new features on the landscape due to their distance from the KOP.

While the Project adds new forms and lines, the degree of change to existing visual conditions would be small. This is due to distance, as well as screening from foreground vegetation.

## 2.12 KOP 213

## 2.12.1 EXISTING CONDITIONS



## FIGURE 25: KOP 213, EXISTING CONDITIONS

KOP 213 is in Hemmingford Circle Park within the Loudoun Valley Estates III Subdivision (Figure 25), 0.1-mile northeast of the intersection of Hemmingford Circle, Warden Drive, and Stukely Drive. The KOP faces northwest and is surrounded by single-family standalone twostory residences, whose back yards border the park. The characteristics of the landscape visible from KOP 213 are described below.

## 2.12.1.1 LANDFORMS

• The landscape is largely smooth and flat with subtle undulations visible in the foreground.

## 2.12.1.2 VEGETATION

- The green to light brown grass covers the area around the residential structures. These broad, flat areas add smooth textures and a soft, horizontal band of green across the lower portion of the view.
- Small to medium sized ornamental shrubs and trees around the residences have rounded, organic forms that contrast with the geometric forms of the adjacent homes. Most of these shrubs and trees are darker green and stand out against the lighter greens of the lawn and neutral hues of nearby homes.
- A dense, dark green line of mature trees is visible between and behind the homes on the northwest (far) side of the street. Several mature trees also frame either side of the view, with an evergreen tree on the right and deciduous tree on the left.
- The trees partially screen the geometric shapes of the residences within the view and soften the associated harsh lines.

## 2.12.1.3 BUILT ENVIRONMENT

- The dominant human-made features in this view are houses, including two residences adjacent to the park that are prominent in the foreground.
- The houses introduce rectangular forms with sloped roofs in a uniform pattern typical of a planned, suburban development. The houses feature strong horizontal and vertical lines, light colors (white, pale tan, light to medium reds, and pale grey), and smooth, matte textures.
- Short black fencing adds to the existing abundance of rigid lines in the foreground.
- In the center of the view between the two houses in the foreground, the skylined upper portion of multiple poles supporting lighting fixtures for the athletic fields at Rock Ridge

High School are visible above the tree and roof lines. These lighting fixtures appear as tall, vertical lines along the horizon.

The primary viewer groups at KOP 213 are local residents and recreationists, who would have high sensitivity to changes in visual conditions at this location.

## 2.12.2 SIMULATED CONDITIONS WITH THE PROJECT

## 2.12.2.1 ROUTES 2 AND 3

The shared alignment of Routes 2 and 3 would be more than 0.5 mile north of KOP 213. From KOP 213, the Project would not be visible, due to screening by vegetation and structures, and thus would not result in any changes in existing visual conditions.

## 2.12.2.2 ROUTE 4



## FIGURE 26: KOP 213, SIMULATED CONDITIONS

Route 4 would cross the view 0.1 mile north of KOP 213 (Figure 27). The Project parallels the southern side of Loudon Reserve Drive and is clearly visible from this location. From KOP 213, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.12.2.3 LANDFORMS

• There would be no discernable changes to the landform or terrain.

## 2.12.2.4 VEGETATION

• Tree removal within the maintained right-of-way for Route 4 would open views to the school building and would lower the perceived horizon line between the two closest houses.

## 2.12.2.5 BUILT ENVIRONMENT

- Tree clearing within the maintained right-of-way would provide a direct view of a small portion of the Rock Ridge High School building, adding a flat, red brick feature that differs from other colors and texture in the view
- The Project would introduce new vertical lines to the view. Specifically, the galvanized steel light gray transmission poles would extend above existing trees and homes and would be the tallest structures on the landscape. The height and scale of these features would make them prominent in the view.
- New, thin, slightly undulating horizontal lines would stretch between the poles. These would be new horizontal lines and perceptible against the open sky in this foreground location.

Due to the additional vertical and horizontal forms and lines, the opening of the view due to tree removal, and the scale of the transmission route in the foreground of KOP 213, the degree of change in visual conditions at this location would be high.

## 2.13 KOP 214

## 2.13.1 EXISTING CONDITIONS



## FIGURE 27: KOP 214, EXISTING CONDITIONS

KOP 214 is located at Southview Park within the Loudoun Valley Estates II Subdivision (Figure 27). The KOP faces east in a residential neighborhood with a flat open field and maintained vegetation. The characteristics of the landscape visible from KOP 214 are described below.

## 2.13.1.1 LANDFORMS

• The landscape is smooth and flat with subtle undulations visible in the foreground.

## 2.13.1.2 VEGETATION

- The light green, low, mowed grass field of Southview Park dominates the foreground and provides a nearly uniform, smooth texture in the entire lower portion of the view.
- The planted deciduous trees and shrubs along Southview Manor Drive and Ashley Heights Circle are regularly spaced around the edge of the park and in front of adjacent homes. These shrubs and trees add rounded, irregular forms and layered textures to the view.
- The rounded crowns of the treeline paralleling Loudoun County Parkway to the east are visible between residences and above the rooflines.

## 2.13.1.3 BUILT ENVIRONMENT

- The view is dominated by closely spaced, multi-story, single family detached homes in a residential subdivision. The continuous row of homes creates a linear pattern of similarly sized, rectilinear forms with a mix of short vertical and horizontal lines.
- Smooth, flat sidewalks and windows introduce other geometric forms and straight lines to the view.
- Southview Manor Drive and Ashley Heights Circle appears as smooth, grey, narrow, unstriped horizontal linear features that extend across the view.
- Streetlights along the roads add short, black, vertical features to the view.

The primary viewer groups at KOP 214 are local residents and recreationists, who would have high sensitivity to changes in visual conditions at this location.

## 2.13.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 28: KOP 214, SIMULATED CONDITIONS

The shared alignment of Routes 1, 2, and 5 would be 0.1 mile to the east of KOP 214 (Figure 28). The Project would parallel the east side of Loudoun County Parkway behind the row of homes in the foreground of this view. From KOP 214, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.13.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain.

## 2.13.2.2 VEGETATION

• There would be no discernable changes to vegetation.

## 2.13.2.3 BUILT ENVIRONMENT

- The Project would introduce tall, vertical utility structures and thin, horizontal lines to the residential view. The series of new, repetitive vertical poles and multiple, thin, parallel, horizontal lines between the utility poles would be prominent in the foreground and middleground and would add to the visual clutter in the view.
- While the lower portion of the poles would be screened by the nearby homes, the poles and conductors would be the tallest features in the view. These features would extend above the rooflines and would be clearly visible against the open sky.

Due to the additional vertical and horizontal forms and lines and the scale of Project infrastructure in the view from KOP 214, the degree of change in visual conditions at this location would be medium to large.

## 2.14 KOP 216

## 2.14.1 EXISTING CONDITIONS



## FIGURE 29: KOP 216, EXISTING CONDITIONS

KOP 216 is located on the Old Ox Road Path, which parallels the west side of Old Ox Road at the intersection of Old Ox Road and Beaver Meadow Road (Figure 29). The view from KOP 216 is oriented southeast along Old Ox Road. The characteristics of the landscape visible from KOP 216 are described below.

## 2.14.1.1 LANDFORMS

- The landscape is largely smooth and flat with slight undulations in the foreground.
- The flat terrain allows for longer views into the middle ground and beyond along Old Ox Road.

## 2.14.1.2 VEGETATION

- Low, narrow bands of mowed grass parallel Old Ox Road, Old Ox Road Path, and the vegetated median dividing Old Ox Road. These areas of light brown to light green introduce soft textures along the adjacent pavement to the predominately built view.
- A small cluster of branching deciduous and evergreen trees and tall shrubs are grouped within the northwest corner of fencing around Sojourner Substation. The trees screen a portion of the view to the southeast.
- Trees farther south along both sides of Old Ox Road create an undulating horizon line across the middle of the view. The trees contribute rounded, organic forms and soft, irregular lines to the otherwise highly linear built features in the landscape.

## 2.14.1.3 BUILT ENVIRONMENT

- The flat, smooth, grey, paved, striped and divided roadway of Old Ox Road bisects the view and creates a strong linear form that draws the viewer's eye toward the center (south) of the view.
- The smooth paved striped surface of Beaver Meadow Road runs along the left (east) side of the view, providing a secondary linear focal point.
- The light grey galvanized steel monopoles for existing lines #2095/#2137/#2218 and Sojourner Substation are prominent to dominant features on the left (east) side of Old Ox Road and along Beaver Meadow Road. This infrastructure adds tall, repetitive, vertical forms and lines, and a substantial number of thin, horizontal lines to the landscape. The height and scale of this infrastructure adds to their prominence and increases the visual clutter in the view.
- A shorter distribution line parallels Old Ox Road to the east of existing Lines #2095/#2218, increasing the number of horizontal and vertical structures in the view.
- A low, smooth, solid, vibrant blue construction fence parallels the east side of Old Ox Road, and the south side of Beaver Meadow Road.
- A medium brown and light tan sound barrier wall is visible in the immediate foreground on the right side of the view paralleling the Old Ox Road Path.
- Multi-story, rectangular, gray and black industrial and commercial buildings are visible south of Sojourner Substation and farther south along Old Ox Road.

The primary viewer groups at KOP 216 are local residents, recreationists, and motorists, all of whom would have moderate sensitivity to changes in visual conditions at this KOP. Sensitivity would be lower than described for these groups in other locations, due to the existing

transmission lines. For motorists, sensitivity may also be moderated by speed and the direction of travel.

## 2.14.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 29: KOP 216, SIMULATED CONDITIONS

The shared alignment of Routes 1 through 5 would cross Old Ox Rd 0.4 mile southwest of KOP 216 (Figure 30). Sojourner Loop would be less than 0.1 mile southeast of KOP 216 on the east side of Sojourner Substation. From KOP 216, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.14.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain.

## 2.14.2.2 VEGETATION

• There would be no discernable changes to vegetation.

## 2.14.2.3 BUILT ENVIRONMENT

- The Project would result in removal of existing Lines #2095/#2137 from along Old Ox Road heading south from Sojourner Substation. This would reduce visual clutter and vertical and horizontal features along the left (east) side of Old Ox Road.
- The Project would add silver-grey galvanized steel monopoles and black, horizontal conductors to the view along the right side of the view as they cross and parallel Old Ox Road. This infrastructure would add vertical and horizontal features to a portion of the view where no such features currently exist.
- The Project's turning structures at the intersection of Old Ox Road and Beaver Meadow Road would add several large-diameter monopoles to the view. This infrastructure would replace but would be slightly bulkier (and would occupy more of the view) than existing turning structures in this location, increasing the extent of tall, vertical lines to the landscape.

Because of the strong vertical and horizontal forms and visual clutter already present at KOP 216, as well as the removal of existing transmission infrastructure along Old Ox Road, the degree of change in visual conditions at this site would be small.

## 2.15 KOP 217

## 2.15.1 EXISTING CONDITIONS



## FIGURE 30: KOP 217, EXISTING CONDITIONS

KOP 217 is located on the paved Brambleton Fitness Trail across the top of the dam on the eastern end of Lake Birchwood, less than 0.1 mile south of the intersection of Creighton Road and Cumulus Terrace (Figure 31). The view from KOP 217 faces east toward a suburban landscape with a mix of natural vegetation, residential development, and utility infrastructure. The characteristics of the landscape visible from KOP 217 are described below.

## 2.15.1.1 LANDFORMS

- The landscape is largely smooth and flat with subtle undulations perceptible in the foreground.
- The downhill slope of the dam and rise to the Loudoun County Parkway roadway is partially visible in the immediate foreground of the view.

## 2.15.1.2 VEGETATION

- The medium and dark green tree crowns and bright green leaves of the woody shrubs below the dam dominate the immediate foreground, screening direct views of Loudoun County Parkway and partially screening views of the residential area beyond.
- The vegetation fills the right side of the view screening views to the south.
- The tree canopies create rounded, organic forms and a continuous, irregular line across the view.
- A dense dark green wooded area provides a more uniform, smooth horizon on the far left side of the view.

## 2.15.1.3 BUILT ENVIRONMENT

- Multi and single-family residences are visible through gaps in the tree line on the east side of Loudoun County Parkway. These buildings introduce rectangular forms with peaked roofs to the view. They also contribute straight horizontal lines across the horizon and pops of dark grey, red, and white that contrast with the adjacent vegetation.
- The intersection of Creighton Road (west side)/Evergreen Ridge Drive (east side) and Loudoun County Parkway (including the associated hanging traffic signals) is partially visible through the gaps in tree crowns in the center of the view.
- Medium green-gray distribution poles extend above the trees and are visible against the open sky. The associated thin silver conductors are also visible as thin, horizontal lines that stretch above the trees between the vertical poles.

• The linear forms of the upper portion of several additional transmission structures are visible above the residential building rooflines in the distance to the southeast.

The primary viewer groups at KOP 217 are local residents and recreationists, who would have medium to high sensitivity to changes in visual conditions at this location.

## 2.15.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 31: KOP 217, SIMULATED CONDITIONS

The shared alignment of Routes 1, 2, and 5 would be 0.2 mile east of KOP 217 (Figure 32). From KOP 217, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.15.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain.

## 2.15.2.2 VEGETATION

• There would be no discernible changes to vegetation.

## 2.15.2.3 BUILT ENVIRONMENT

- The series of new, repetitive vertical poles would be similar in form to but substantially taller and larger than other existing transmission poles in the view. These structures would be highly visible against the open sky and would increase the level of visual clutter in the area.
- The slightly undulating conductors add multiple thin, parallel, horizontal lines that crisscross the existing lines above the rooflines and trees.

Due to the additional vertical and horizontal forms and lines and scale of the transmission infrastructure within the foreground and middle ground of KOP 217, the degree of change in visual conditions at this location would be medium.

## 2.16 KOP 221

## 2.16.1 EXISTING CONDITIONS



## FIGURE 32: KOP 221, EXISTING CONDITIONS

KOP 221 is located on the eastern end of the Washington & Old Dominion (W&OD) Trail bridge where it crosses over Virginia State Route (Rt.) 28, 0.1 mile south of Warp Drive (Figure 33). The view from KOP 221 faces northwest. The characteristics of the landscape visible from KOP 221 are described below.

## 2.16.1.1 LANDFORMS

- The landscape is mixed open flat landscape with gentle slopes around Cabin Branch to the north and low hills across the surrounding area.
- The eastern and western approaches to the bridge are on filled slopes that elevate the trail (which is otherwise at grade) to allow the overpass crossing of Rt. 28.

## 2.16.1.2 VEGETATION

- Bright to dark green tree canopies overhang the W&OD Trail to the west, creating a shadowed vegetated tunnel with rounded crowns.
- A large wooded area, including Cabin Branch occupies the left (west) side of Rt. 28, as defined by mature medium green deciduous trees visible to the right of the bridge. Tall grasses border the area between the treeline and Rt. 28.
- Mature trees interspersed with rooftops and the upper portions of buildings in the background create a slightly undulating horizon line. The trees soften the angular block shapes of the buildings throughout the view.
- The layered, coarse textures provided by the trees contrasts with the smooth, flat built structures in the area.

## 2.16.1.3 BUILT ENVIRONMENT

- The smooth, tan, concrete overpass and tall, black chain link fence bisect the view and create a strong linear form that draws the viewer's eye towards the left side of the view.
- The grid formed by the chain-link fencing mutes and partially obscures most of the natural and built features in the view, except in areas above the fence or along the axis of the path itself.
- The flat, smooth, paved and striped medium grey roadway for Route 28 follows the topography of the landscape and creates a wide linear form that draws the viewer's eye to the right side of the view.

- Multiple green road signs on silver-grey poles, and overhead lighting on narrow vertical poles add to the visual clutter of the Rt. 28 area.
- A distribution line parallels the left (west) side of Route 28. The smooth wooden greengrey poles add repeating, tall, vertical lines to the view and add smooth curvilinear horizontal conductors that are partially visible above the treeline. Additional conductors and wooden poles are visible along the right (east) side of Rt. 28.
- Several white and light gray multistory commercial buildings are visible throughout the fore and middle ground with rectangular and geometric shapes and flat rooftops.
- A light gray, steel lattice tower for existing Lines #2081/#2150 runs parallel to the south side of the W&OD Trail. This line is partially visible through the chain link fence on the left (south) side of the bridge. Similar towers are more prominently visible on nearby portions of the trail.

The primary viewer group at KOP 221 is recreationists (e.g., pedestrians, bicyclists), who would have moderate to high sensitivity to changes in visual condition at this location.



## 2.16.2 SIMULATED CONDITIONS WITH THE PROJECT

## FIGURE 33: KOP 221, SIMULATED CONDITIONS

The shared alignment of Route 1 through 5 crosses the Trail 0.1-mile northeast of KOP 221 (Figure 34). Golden Substation, simulated to the right of the trail in this view, is a previously permitted facility, as discussed in the introduction to Section 2.From KOP 221, the Project (excluding Golden Substation) would result in changes to the visual characteristics of the landscape as described below.

## 2.16.2.1 LANDFORMS

• There will be no discernible changes to the landform or terrain.

## 2.16.2.2 VEGETATION

• Tree clearing within the maintained right-of-way along Rt. 28 would open views to the northwest, providing a wider view of the wooded areas bordering Cabin Branch.

## 2.16.2.3 BUILT ENVIRONMENT

 The Project's galvanized steel H-frame structures would replace the lattice tower for existing Lines #2081/#2150, slightly reducing the extent of visual clutter associated with the lattice structures. Nonetheless, the Project would add a series of new, repetitive vertical poles with short, horizontal crossarms on the left side of Rt. 28. This increase the number of large, visually dominant vertical forms in the viewshed. • The new overhead conductors would add thin, parallel, horizontal lines above the landscape to the west. These lines would be highly visible against the open sky and would increase the level of visual clutter in the area. They would be most perceptible in the foreground and would tend to disappear against the sky into the middle ground.

The route would increase the infrastructure paralleling the west side of Route 28 and would increase the number of structures in the view from the W&OD Trail. As such, the degree of change in visual conditions at this location would be large.

## 2.17 KOP 322

## 2.17.1 EXISTING CONDITIONS



## FIGURE 34: KOP 322, EXISTING CONDITIONS

The view from KOP 322 faces northeast from the top of the bleachers on the west side of the track and field at Rock Ridge High School, 0.2 mile north of the eastern terminus of Loudoun Reserve Drive (Figure 35). The characteristics of the landscape visible from KOP 322 are described below.

## 2.17.1.1 LANDFORMS

• The landscape is largely smooth and flat with subtle undulations perceptible in the foreground. A low hill is visible along the smooth, gently undulating horizon line of the view.

## 2.17.1.2 VEGETATION

- A wooded area with tall, mature, deciduous trees surrounds the northern and eastern side of the athletic field, screening views to the north.
- The predominantly leaf-off conditions provide partial views beyond the athletic fields, through the angular linear branches of the trees.
- The trees provide tall, vertical features along the exterior of the track with rounded, irregular forms that are not well defined, due to the limited extent of foliage. They also contribute muted, natural colors (dark reds, dark brown, and dark yellow) and coarser textures that contrast with the vibrant colors and smooth textures of the adjacent track and field.
- The tree crowns create an irregular, broken horizontal line that stretches across the view.
- Additional treelines are visible as darker patches in the middle and background of the view.

## 2.17.1.3 BUILT ENVIRONMENT

- The view is predominantly human-made with sports facilities, and a neighboring construction area dominant on the landscape.
- The foreground is dominated by the smooth black track with painted white lane markers that adds curvilinear lines around the rectangular greens, black, orange, and white painted smooth turf field in the center of the view. An additional light grey paved walkway borders the outside of the track.
- The silver-grey aluminum bleachers on the west side of the field (the location of KOPs 209 South and 209 West), railings, and chain link fence bordering the back and sides of the bleachers introduce a series of horizontal and diagonal lines and rectilinear forms.
- The overhead lighting at the athletic field introduces a tall, linear feature that is partially skylined. The lights at the tops of the pole introduce rounded geometric features to the view. This light pole is the tallest structure on the landscape. Other similar poles are visible on either side of the view.
- The curved lanes of the track add curvilinear lines to the foreground that contrast with the predominantly horizontal lines in the view.
- Rectangular industrial buildings and an active construction site (distinguished by a crane) are visible through the trees.
- Existing Lines #2095/#2218 run north-south on the east side of the athletic fields. The vertical structures are below the treeline and blend in with the vertical tree trunks. The associated conductors introduce thin horizontal curvilinear lines that are visible behind the bleachers and the thin treeline that surrounds the athletic field.

The primary viewer groups at KOP 209 are area residents and workers (school staff, students, and visitors) who would have medium to high sensitivity to visual changes at this location.

## 2.17.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 35: KOP 322, SIMULATED CONDITIONS

Route 4 would be 0.1 mile east of KOP 322 (Figure 36). The Project would be visible behind and above the trees and other vegetation that border the track and field. From KOP 322, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.17.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

## 2.17.2.2 VEGETATION

• Vegetation would be cleared to the east/behind the bleachers opening views to the east.

## 2.17.2.3 BUILT ENVIRONMENT

- The Project's new tall, thin, vertical, galvanized steel monopoles with short horizontal crossarms would be the tallest features on the landscape and would. These structures add new vertical lines to the landscape.
- The corridor would parallel the existing Line #2095/#2218 corridor, slightly reducing the visual clutter and contrast created by the new structures.
- The new conductors would be visible above the treetops, introducing long, thin, slightly undulating horizontal lines that stretch between the poles. The new horizontal lines would be visible against the open sky and would have a similar orientation to the other dominant horizontal lines on the landscape.

From KOP 322, the Project would add new tall, thin forms and vertical and horizontal lines to the landscape. These additional forms and lines would be larger than but similar in form to others in the existing view. This would result in small to medium change in visual conditions at KOP 322.

## 2.18 KOP 324

## 2.18.1 EXISTING CONDITIONS



## FIGURE 36: KOP 324, EXISTING CONDITIONS

KOP 324 is located at the main entrance of Rock Bridge High School, less than 0.1 mile north of Loudoun Reserve Drive (Figure 37). The view faces west into school parking lot. The characteristics of the landscape visible from KOP 324 are described below.

## 2.18.1.1 LANDFORMS

• The landscape is predominately smooth and flat, with subtle undulations perceptible in the foreground.

## 2.18.1.2 VEGETATION

- A mixed evergreen and deciduous treeline extends horizontally across the view on the south side of Loudoun Reserve Drive. The trees (which are all approximately the same height), provide a blend of angular branches and autumn foliage that ranges from muted shades of orange, brown, yellow, and red.
- A cluster of taller trees within the Loudoun Valley Estates III subdivision south of Loudoun Reserve Drive creates variation in the overall horizon line formed by vegetation and structures. The trees partially screen the residences to the south.

• Narrow grass islands featuring deciduous trees with yellow and green hues border parking spaces within the paved parking lot.

## 2.18.1.3 BUILT ENVIRONMENT

- The foreground is dominated by the smooth, wide, light grey paved parking lot. The rectilinear forms in the pavement are prominent and add large, flat, smooth areas to the view.
- Dark brown poles supporting overhead geometric lighting are evenly distributed throughout the parking lot. The light poles add simple, vertical forms that contrast with the horizontal orientation of the parking lot.
- The rooftops and geometric forms of several nearby homes are partially visible through the trees that frame the end of the parking lot. These structures add white and gray colors and short, primarily horizontal lines to the view.

The primary viewer groups at KOP 324 are area residents and workers (school staff, students, and visitors), who would have medium to high sensitivity visual changes at this KOP.

## 2.18.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 37: KOP 324, SIMULATED CONDITIONS

Route 4 would be 0.1 mile south of KOP 324, along the south side of Loudoun Reserve Drive (Figure 38). From KOP 324, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.18.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

## 2.18.2.2 VEGETATION

• Tree clearing along Loudoun Reserve Drive would reduce the overall volume of vegetation in this area, would open direct views of houses in Loudoun Valle Estates III (see Built Environment), and would also reduce the extent of rounded, organic forms in the view.

## 2.18.2.3 BUILT ENVIRONMENT

 The Project would add tall, thin vertical forms and lines to the landscape that span the length of the view. These new structures would be the tallest features in the view and would be visually prominent to dominant, due to their placement in the foreground and the absence of screening features.

- Long, thin, draping, curvilinear horizontal conductors would stretch between the poles, creating a series of distinct and noticeable lines against the open sky.
- The short, geometric forms of several neighboring homes would be more clearly visible where trees have been removed from the operational right-of-way.

From KOP 324, the Project would add prominent new forms and lines to the existing landscape. This would result in a large degree of change to existing visual conditions in this location.

## 2.19 KOP 325

## 2.19.1 EXISTING CONDITIONS



## FIGURE 39: KOP 325, EXISTING CONDITIONS

KOP 325 is located on the paved sidewalk on the southeast end of Hopewell Manor Terrace with the Loudoun Valley Estates II Subdivision (Figure 39). The view from KOP 325 faces southeast between several multifamily residential units. The characteristics of the landscape visible from KOP 325 are described below.

## 2.19.1.1 LANDFORM

- The landscape is largely smooth and flat with undulations to allow for runoff and residential grading.
- The topography slopes gently downhill towards the back and right of the view. The far edge of the grassy area in the view indicates the top of the steeper slope down to Broad Run, which flows through the forest at the back of the view.

## 2.19.1.2 VEGETATION

- Mowed, smooth, grassy areas of mixed bright green and tan blanket the foreground of the view between the residential buildings.
- Several thin, branching, deciduous trees are planted within the grassy area, and dark green maintained shrubs and evergreen trees border the left-most residential buildings.
- A dense treeline of mixed deciduous and evergreen trees frames the background of the view with a mixture of autumn foliage that includes muted shades of orange, brown, yellow, and red.
- The treeline creates a gentle undulating horizon line with filigreed edges, due to the partial leaf-off conditions.

## 2.19.1.3 BUILT ENVIRONMENT

- Rectangular multi-story, multi-family residences border both sides of the view, providing tan, brown, and white hues and flat roofs.
- The smooth and flat paved surfaces of the roadway and driveways provide a linear surface that draws the eye into the view, especially on the left side of the image. The driveways for the left-most residences are flat and light grey, while the right-most residence has a sloping dark grey driveway.
- Several light green and dark green utility boxes introduce low cubes to the open landscape between the residential buildings.
- A distribution line crosses the view behind the residences, introducing vertical features and horizontal, draping, curvilinear conductors below the treeline.
- Due to the bright silver-grey of the conductors, the horizontal lines stand out against the darker hues of the treeline.

The primary viewer group at KOP 325 are local residents, who would have a medium to high sensitivity visual changes at this KOP.

## 2.19.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 38: KOP 325, SIMULATED CONDITIONS

The shared alignment of Routes 1, 2, and 5 would be 0.1 mile southwest of KOP 325 (Figure 40). From KOP 325, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.19.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

## 2.19.2.2 VEGETATION

• There would be no discernible changes to vegetation.

## 2.19.2.3 BUILT ENVIRONMENT

 The tops of new transmission line poles and segments of conductors would be skylined above the treeline. This infrastructure would add thin, horizontal and vertical lines to the landscape and would marginally add to visual clutter in the view. appear as tall, thin, vertical, galvanized steel monopoles with short horizontal crossarms, and would be taller all other existing features on the landscape. These structures would add new vertical lines to the landscape from behind the existing treeline. The Project would add new tall, thin forms and both vertical and horizontal lines to the landscape at KOP 325. These additional forms and lines would be similar to others in the existing view. This would result in small change in visual conditions at KOP 325.

## 2.20 KOP 326

## 2.20.1 EXISTING CONDITIONS



## FIGURE 39: KOP 326, EXISTING CONDITIONS

KOP 326 is located on a paved sidewalk 0.1 mile west of the northeast corner of the intersection of Ryan Road and Willington Square (Figure 41). The view from KOP 326 faces west. The characteristics of the landscape visible from KOP 326 are described below.

## 2.20.1.1 LANDFORMS

• The landscape is largely smooth and flat with a subtle downhill slope in the foreground and the start of a more substantial slope (leading to a stormwater feature) visible along the grassy area to the right of the sidewalk in the foreground.

## 2.20.1.2 VEGETATION

- Mowed, bright green grass-covered areas border both sides of Ryan Road and the paved sidewalks and fill the vegetated median of Ryan Road.
- Deciduous trees with light grey knobby trunks and angular branches sit on either side of the sidewalk in the immediate foreground.
- Dense vegetation of mixed shrubs and deciduous and evergreen trees provide a mixture of autumn foliage that ranges from muted shades of orange, brown, yellow, and red. These trees screen views to the northwest, limiting views of the neighboring residential area. Additional evergreen trees on the west side of Old Ryan Road provide additional screening.
- A narrow treeline on the left side of Ryan Road includes evergreen and deciduous trees of varied heights. The treeline extends along the visible length of Ryan Road.
- The trees add irregular but rounded forms to the landscape that contrast with the prominent geometric forms of the built environment at this KOP.

## 2.20.1.3 BUILT ENVIRONMENT

 The smooth paved and striped medium grey surface of Ryan Road, and the narrow curvilinear smooth medium grey and tan sidewalk (and charcoal grey path beyond the sidewalk) on the right side of Ryan Road create strong linear lines that draw the viewer's eye towards the treeline in the middle ground.

- A black, metal fence with red brick columns in the foreground is prominent on the right side of the view. The fence and column add geometric forms and straight lines to the landscape.
- The left side of Ryan Road is bordered by a silver-grey guardrail. Several traffic signals on silver-grey horizontal arms attached to vertical structures overhang the intersection with Old Ryan Road, providing small pops of yellow and other colors.
- A distribution line parallels the right side of Ryan Road, introducing repeating, thin, greengrey vertical poles with short horizontal crossarms and associated horizontal linear conductors.
- Multiple residences with sloped roofs are partially visible behind the vegetation on both sides of Ryan Road. These buildings add geometric shapes, subtle colors, and short, horizontal lines to the view.

The primary viewer groups at KOP 326 are residents, motorists, and recreationists. Recreationists and residents at this location would have medium to high sensitivity, while motorists would have a medium sensitivity to changes in visual conditions. For motorists, sensitivity may be moderated by speed and the direction of travel.

## 2.20.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 40: KOP 326, SIMULATED CONDITIONS

Route 5 crosses directly overhead of KOP 326 and parallels the right (north) side of Ryan Road before crossing the road to the southwest (Figure 42). From KOP 326, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.20.2.1 LANDFORM

• There would be no discernable changes to the landform or terrain.

## 2.20.2.2 VEGETATION

• The trees and vegetation paralleling the sidewalk on the right side of Ryan Road would be removed, because they would be within the project corridor. The tree removal would increase visibility along Ryan Road, opening views of the treeline in the middle ground and background.

## 2.20.2.3 BUILT ENVIRONMENT

• The Project would add tall, thin vertical forms and lines to the landscape along Ryan Road and Claiborne Parkway. These new structures would be the tallest features in view and would be visually prominent to dominant, due to their placement in the foreground and lack of screening features. • Long, thin, draping, curvilinear horizontal conductors would stretch between the poles, creating a series of distinct and noticeable lines against the open sky.

The Project would add new tall, thin, forms and both vertical and horizontal lines to the landscape. These additional forms and lines would be similar to but substantially larger than others in the existing view. This would result in a large change in visual conditions at KOP 326.

## 2.21 KOP 327

## 2.21.1 EXISTING CONDITIONS



## FIGURE 41: KOP 327, EXISTING CONDITIONS

KOP 327 is located 0.1 mile north of the intersection of Unison Knoll Circle and Airmont Hunt Drive, within the Loudoun Valley Estates I Subdivision (Figure 43). The view from KOP 327 faces west. The characteristics of the landscape visible from KOP 327 are described below.

## 2.21.1.1 LANDFORMS

- The landscape is largely smooth and gently slopes away from the residences in the immediate foreground.
- Additional undulations are visible towards Claiborne Parkway, including the fill slope for the road.

## 2.21.1.2 VEGETATION

- The immediate foreground is dominated by the smooth, mowed, medium green lawns and ornamental trees and shrubs of residences. The dark green evergreen shrubs and trees, dark brown branching shrubs, and light brown and grey deciduous trees add with angular and curving branches adjacent to residences and denote property lines.
- Behind the residences, an open field of mixed light green, yellow, and pale reddish grasses leads to a line of deciduous and evergreen trees that screens views of Claiborne Parkway and the Loudoun Valley Estates II Subdivision residences.
- The line of dark green trees adds individual pyramidal forms within a contiguous block of vegetation. The trees and a few distant roof lines form an irregular horizon line between homes in the immediate foreground. The rounded shapes and coarse textures of the trees contrast with the geometric structures.

## 2.21.1.3 BUILT ENVIRONMENT

• Two multi-story residences with sloping multi-level roofs are visible in the immediate foreground. These contribute geometric forms and primarily horizontal lines to the view.

- A black chain-link fence borders the property of the residence to the left, introducing thin vertical and horizontal lines to the view.
- Additional multi-story single family residences are partially visible through breaks or above the treeline in the middle ground of the view.
- The residences are a mixture of pale red brick, cream and white siding, medium grey slanted roofs, and dark windows.
- Along with the treeline the rooftops create a mixture of a smooth and coarse udulating horizon line. The greys of the rooftops blend with the darker autumn hues and branches of the treeline.

The primary viewer group at KOP 327 is local residents who would have high sensitivity to changes in visual conditions at this location.

## 2.21.2 SIMULATED CONDITIONS WITH THE PROJECT



## FIGURE 42: KOP 327, SIMULATED CONDITIONS

Route 5 crosses the view 0.1 mile west of KOP 327 on the east side of Claiborne Parkway (Figure 44). From KOP 327, the Project would result in changes to the visual characteristics of the landscape, as described below.

## 2.21.2.1 LANDFORMS

• There would be no discernable changes to the landform or terrain.

## 2.21.2.2 VEGETATION

• There would be no discernible changes to vegetation.

## 2.21.2.3 BUILT ENVIRONMENT

- The Project would add tall, thin vertical forms and lines to the landscape across the width of the view. These new structures would be the tallest features in the view and would be visually prominent, due to their placement in the foreground and lack of screening features.
- Long, thin, horizontal conductors would stretch between the poles creating a series of distinct and noticeable lines against the open sky.

The transmission line infrastructure at KOP 327 would add prominent new forms and lines to the existing landscape. This would result in a medium to large degree of change to existing visual conditions in this location.

## 2.22 KOP 332

## 2.22.1 EXISTING CONDITIONS



## FIGURE 43: KOP 332, EXISTING CONDITIONS

KOP 332 is located at the intersection of Weybridge Square and Reigate Way within the Loudoun Valley Estates II Subdivision (Figure 45). The KOP faces east in a residential neighborhood toward a stormwater catchment area between residences. The characteristics of the landscape visible from KOP 332 are described below.

## 2.22.1.1 LANDFORMS

- The landscape is largely smooth and flat and gently slopes away from the residences and roadway in the foreground.
- A stormwater catchment basin with raised slopes is partially visible in the center of the view.

## 2.22.1.2 VEGETATION

- The immediate foreground is dominated by the smooth, mowed, light green and tan lawns and areas paralleling either side of the sidewalk on the far side of Weybridge Square.
- Ornamental medium to dark green shrubs with coarse textures are clustered in the center of the view.
- Rounded deciduous trees with narrow, grey, vertical trunks border are regularly spaced along the far side of the sidewalk across the view.
- Beyond the sidewalk, the crowns of multiple medium to dark green deciduous and evergreen trees are visible, along with several grey-green and medium green shrubs.
- A solid treeline of deciduous trees frames the background of the view, screening views to the east.
- The shrubs and trees add rounded, irregular forms and layered textures to the view.

## 2.22.1.3 BUILT ENVIRONMENT

- The smooth paved surface of Weybridge Circle (medium grey) and the parallel sidewalk (tan) create strong horizontal linear features across the immediate foreground.
- A narrow vertical pipe creating a small fountain feature is visible in the center of the view within the catchment area.
- A lamppost and a road sign introduce narrow vertical features along the sidewalk.

• A multi-story residence with multi-level roofs is visible on the left side of the view, adding geometric forms to the view. The residence is a mixture of cream and tan siding, pale red brick, and medium grey slanted roofs, contrasting with the rounded natural forms of the surrounding trees.

The primary viewer group at KOP 332 is local residents, who would have high sensitivity to changes in visual conditions at this location.

## 2.22.2 SIMULATED CONDITIONS WITH THE PROJECT

## 2.22.2.1 ROUTE 3



## FIGURE 44: KOP 332, SIMULATED CONDITIONS

Route 3 crosses the view less than 0.1 mile east of KOP 332 on the east side of Weybridge Square (Figure 46).

## Landforms

• There would be no discernable changes to the landform or terrain.

## Vegetation

• Several larger deciduous trees within the maintained right-of-way would be removed. The more distant treeline would remain and would continue to limit views to within the neighborhood.

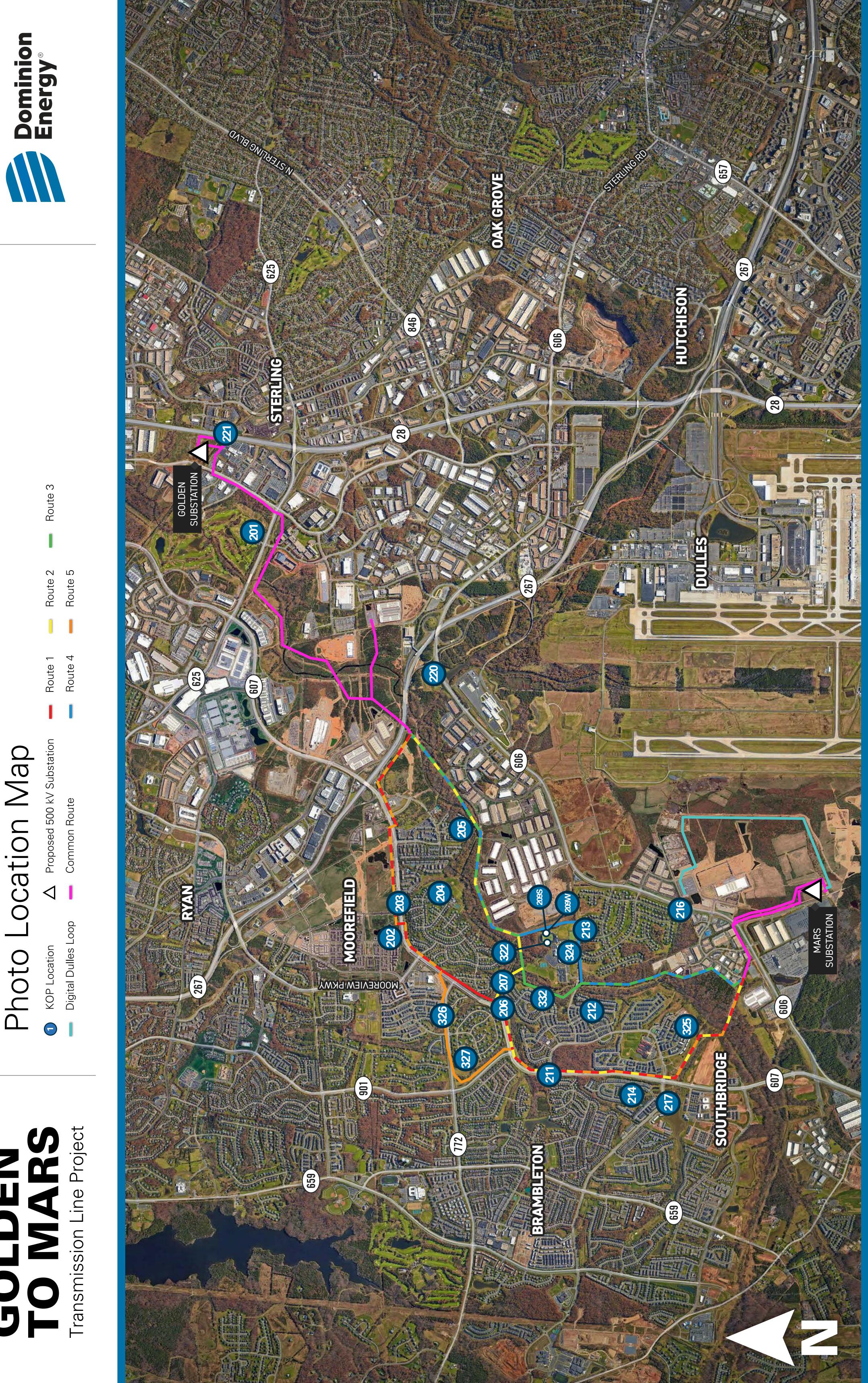
## **Built Environment**

- The series of new, repetitive silver-gray vertical transmission poles and multiple, thin, parallel, horizontal lines between the utility poles would be prominent in the foreground and would add to the visual clutter in the view.
- While the lower portion of the northern pole would be screened by the nearby homes, the pole across from the KOP would be fully visible. The poles and conductors extend above the rooflines and treelines and would be clearly visible against the open sky.

Due to the additional vertical and horizontal forms and lines and scale of the transmission line within the foreground of KOP 332, the degree of change in visual conditions at this location would be medium to large.

## 2.22.2.2 ROUTE 4

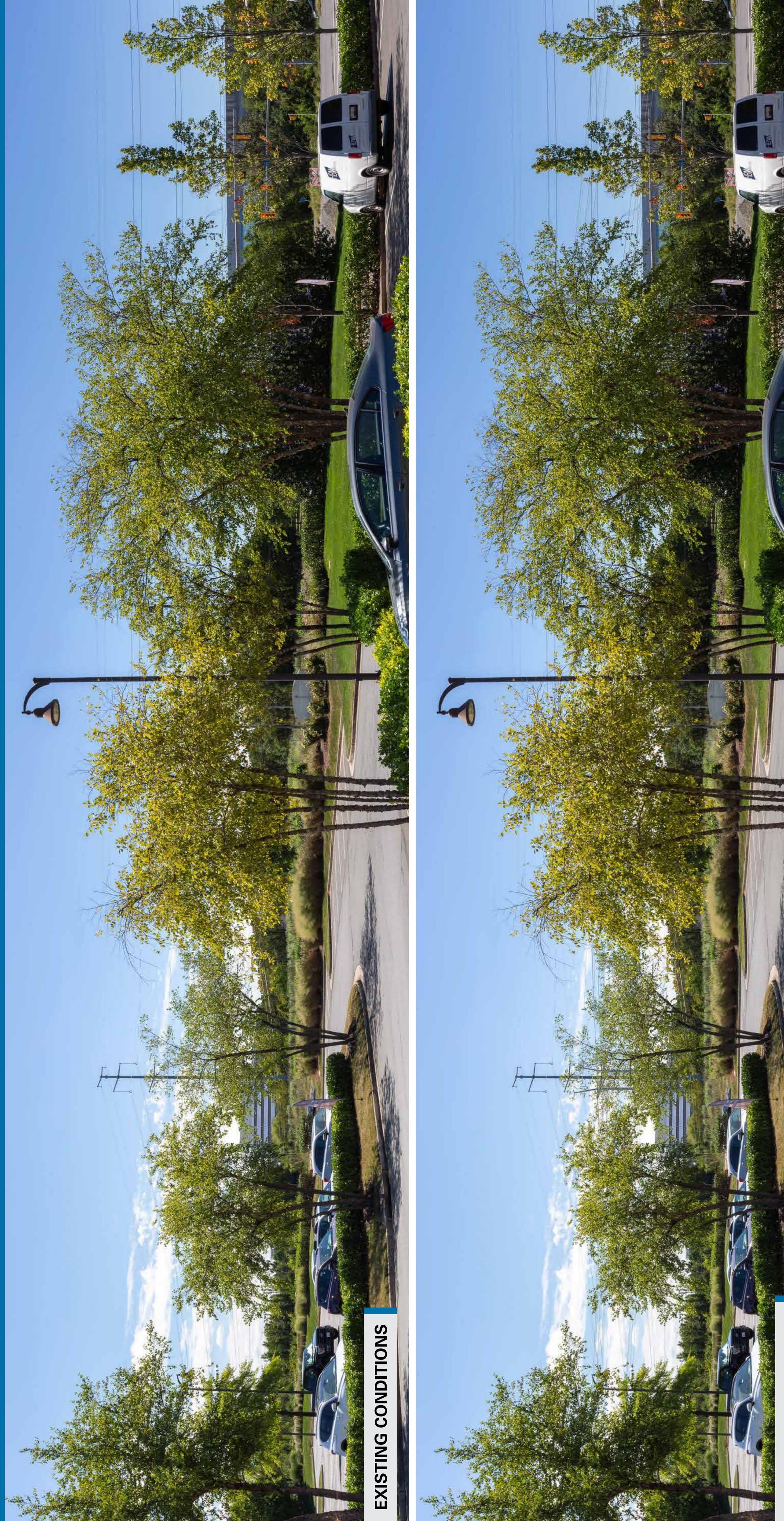
Route 4 would be 0.5 mile east of KOP 332, and the Project would not be visible, due to screening by vegetation and structures. Thus Route 4 would not result in any changes in existing visual conditions.













## 

Date: 08/31/2023 Time: 10:52 am Viewing Direction: South

Common Route Proposed 500 kV Substation















## **EXISTING CONDITIONS**

# **PROPOSED CONDITIONS**







## **EXISTING CONDITIONS**

## **PROPOSED CONDITIONS**







### 203

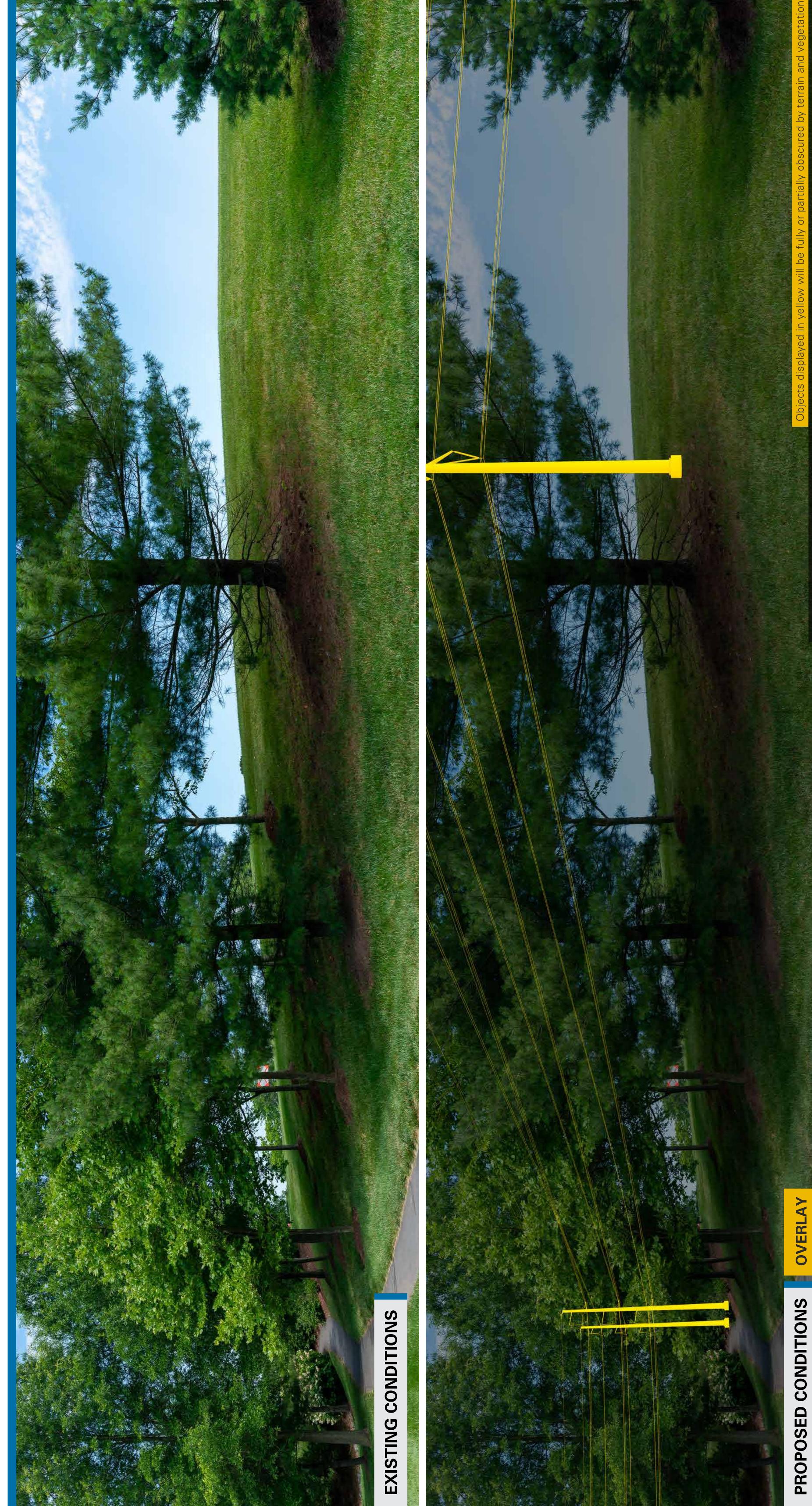
Date: 06/12/2024 Time: 9:02 am Viewing Direction: Northwest Route 5 Route 1











discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

### 203

Date: 06/12/2024 Time: 9:02 am Viewing Direction: Northwest Route 5 Route 1





Common Route KOP Location 





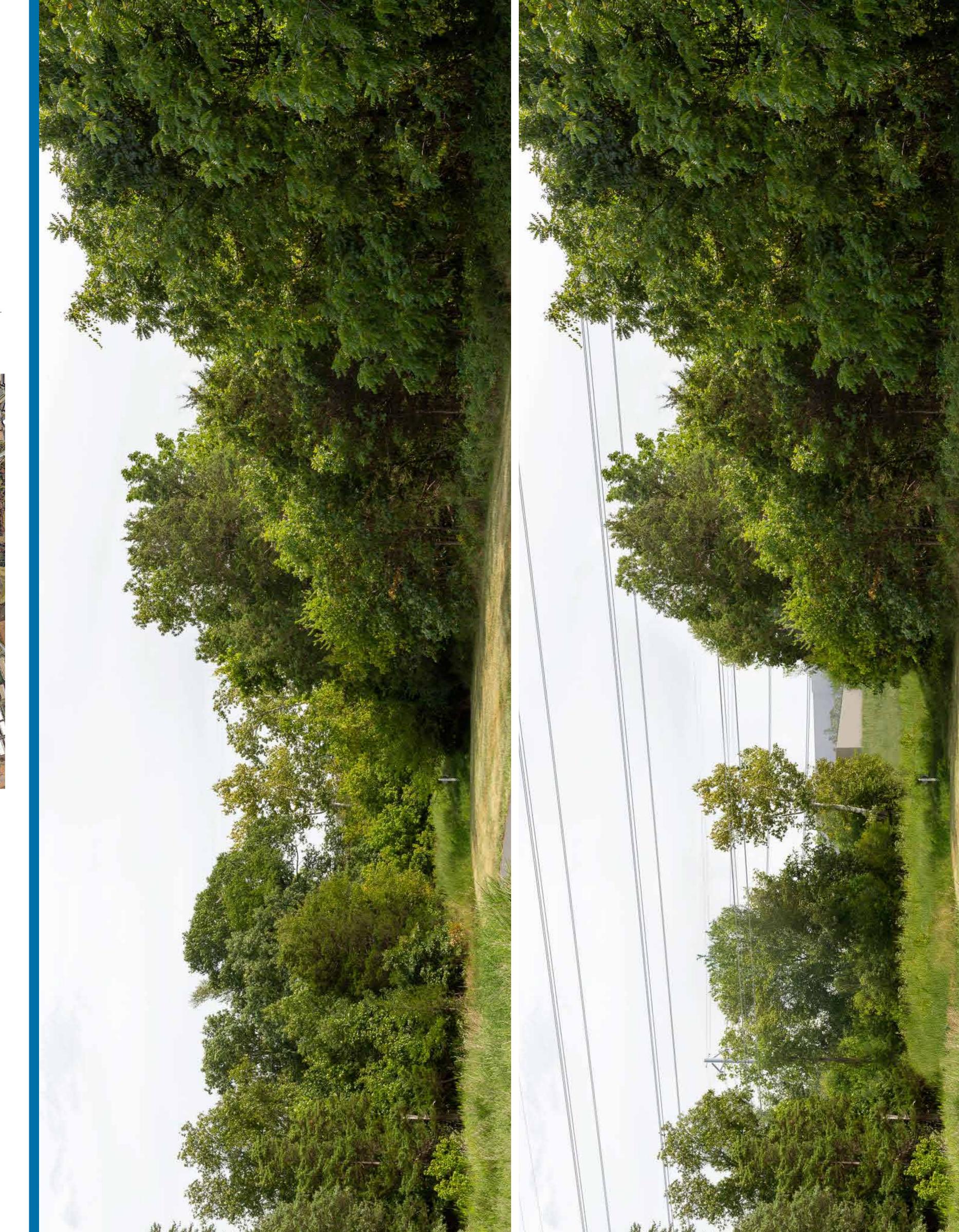












and public, engineer discussion purposes only. Final design is subject to change pending Photo simulations are for



Route 4 Date: 08/30/2023 Time: 2:11 pm Viewing Direction: Southeast Route 3 Route 2













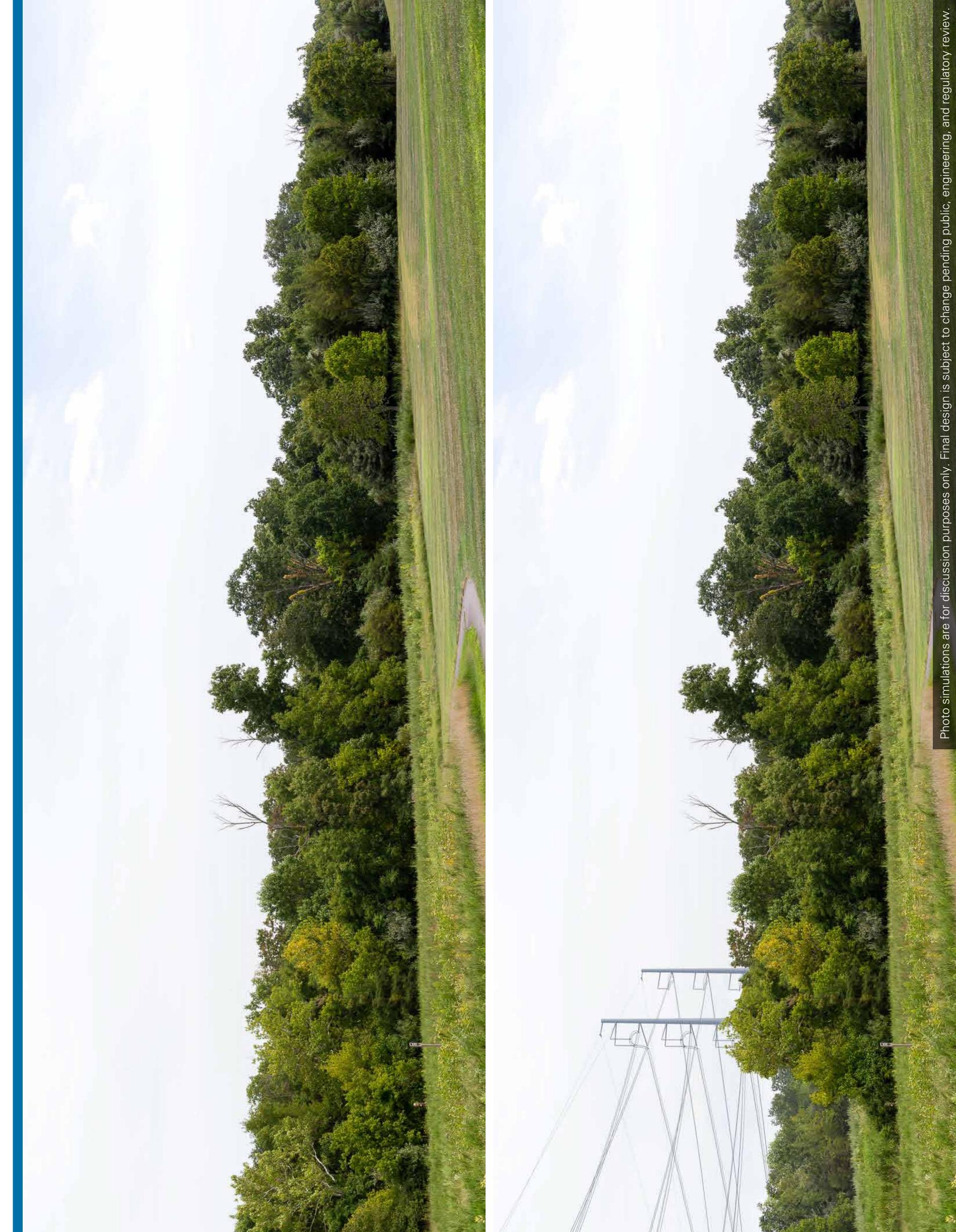






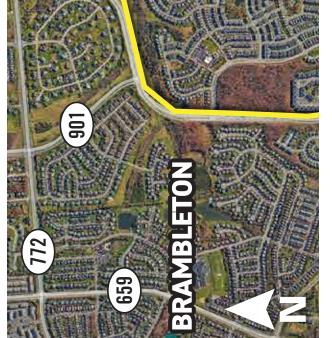








Date: 08/30/2023 Time: 1:35 pm Viewing Direction: Southeast KOP Location – Route 2



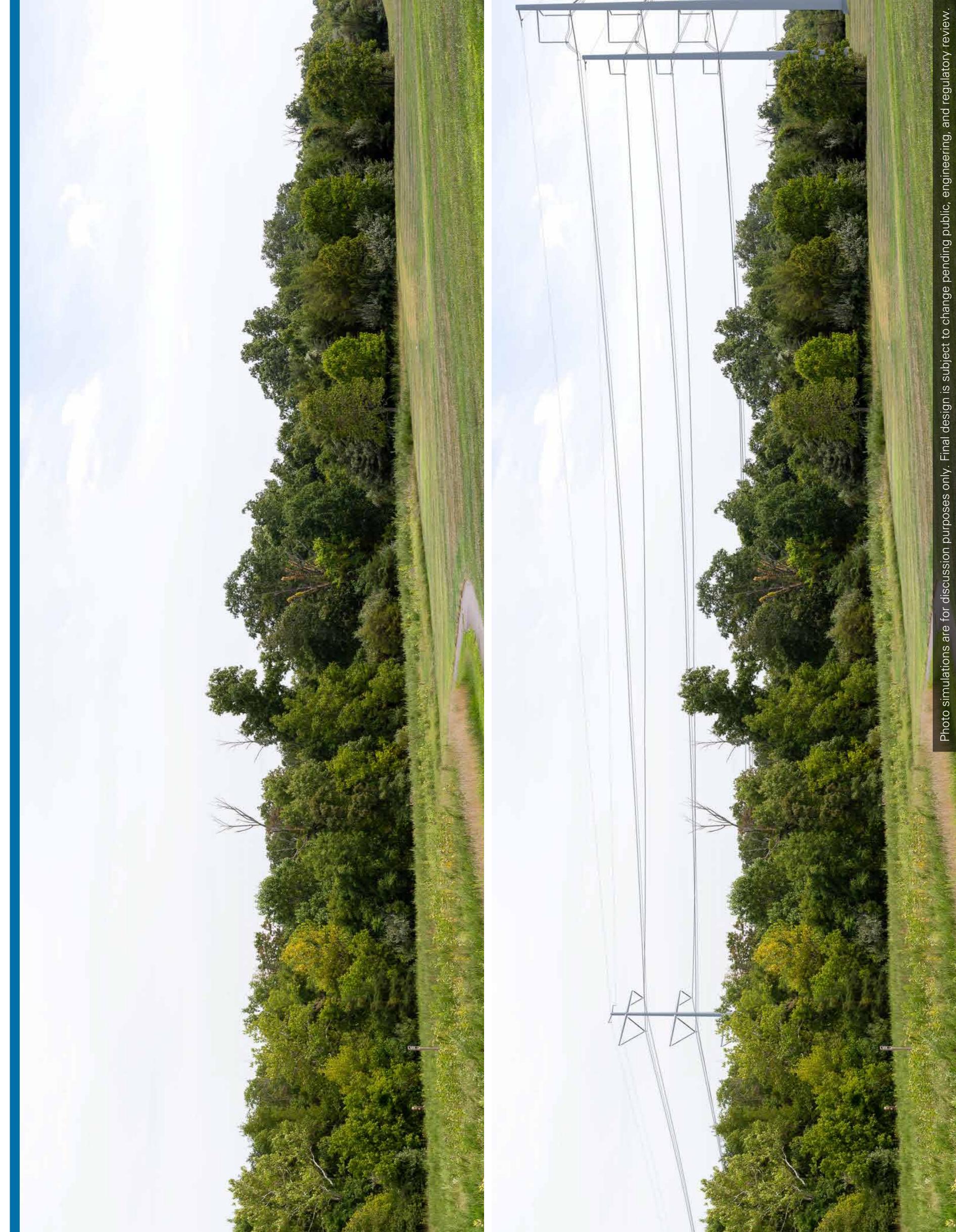






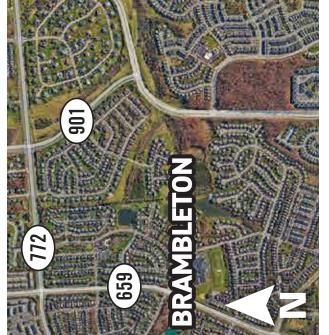








Date: 08/30/2023 Time: 1:35 pm Viewing Direction: Southeast Route 3





💓 KOP Location





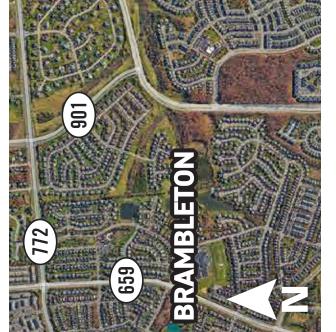








Date: 06/12/2024 Time: 10:57 am Viewing Direction: Southeast Route 4



# **DEDEN DEDEN Transmission** Line Project

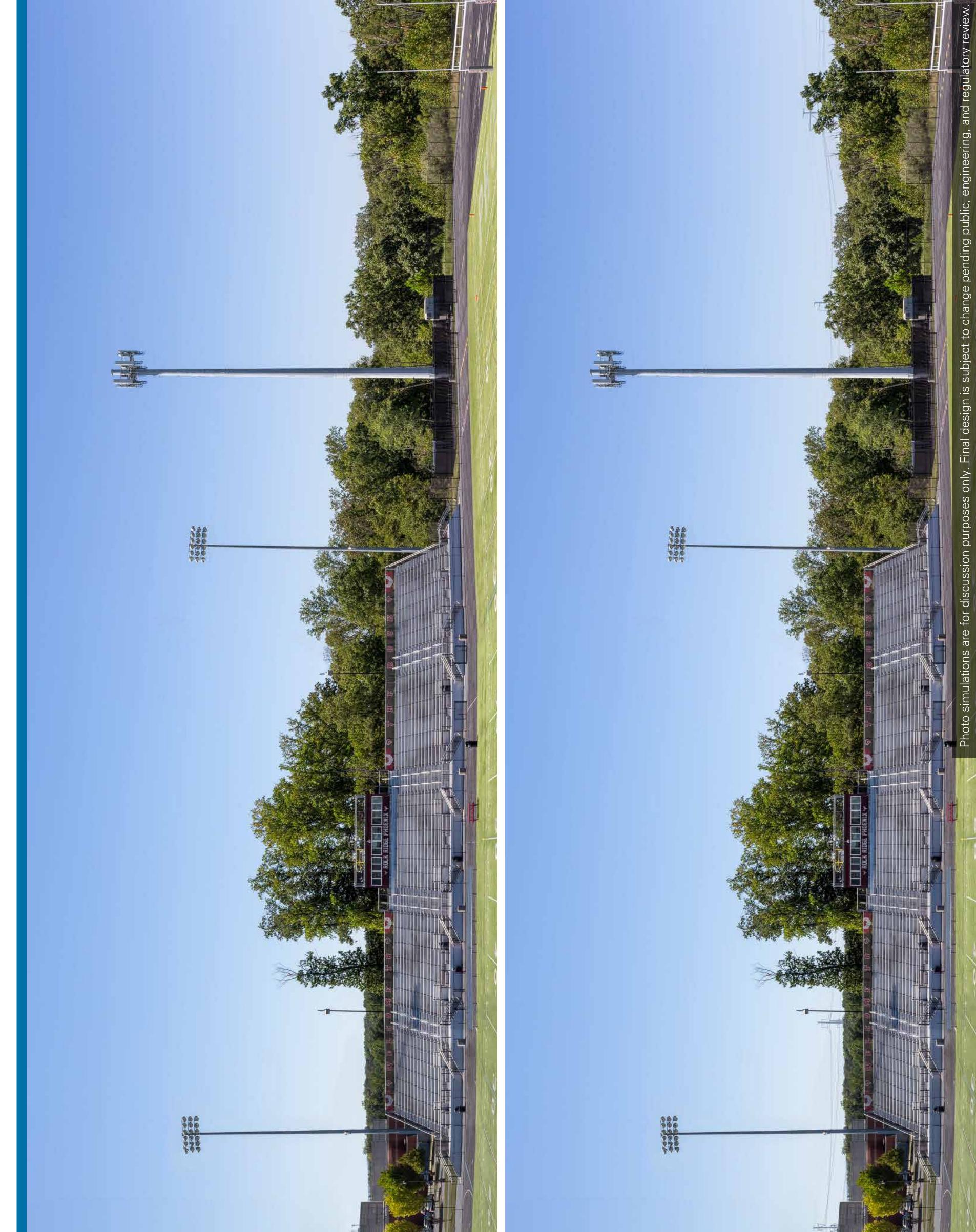
KOP Location





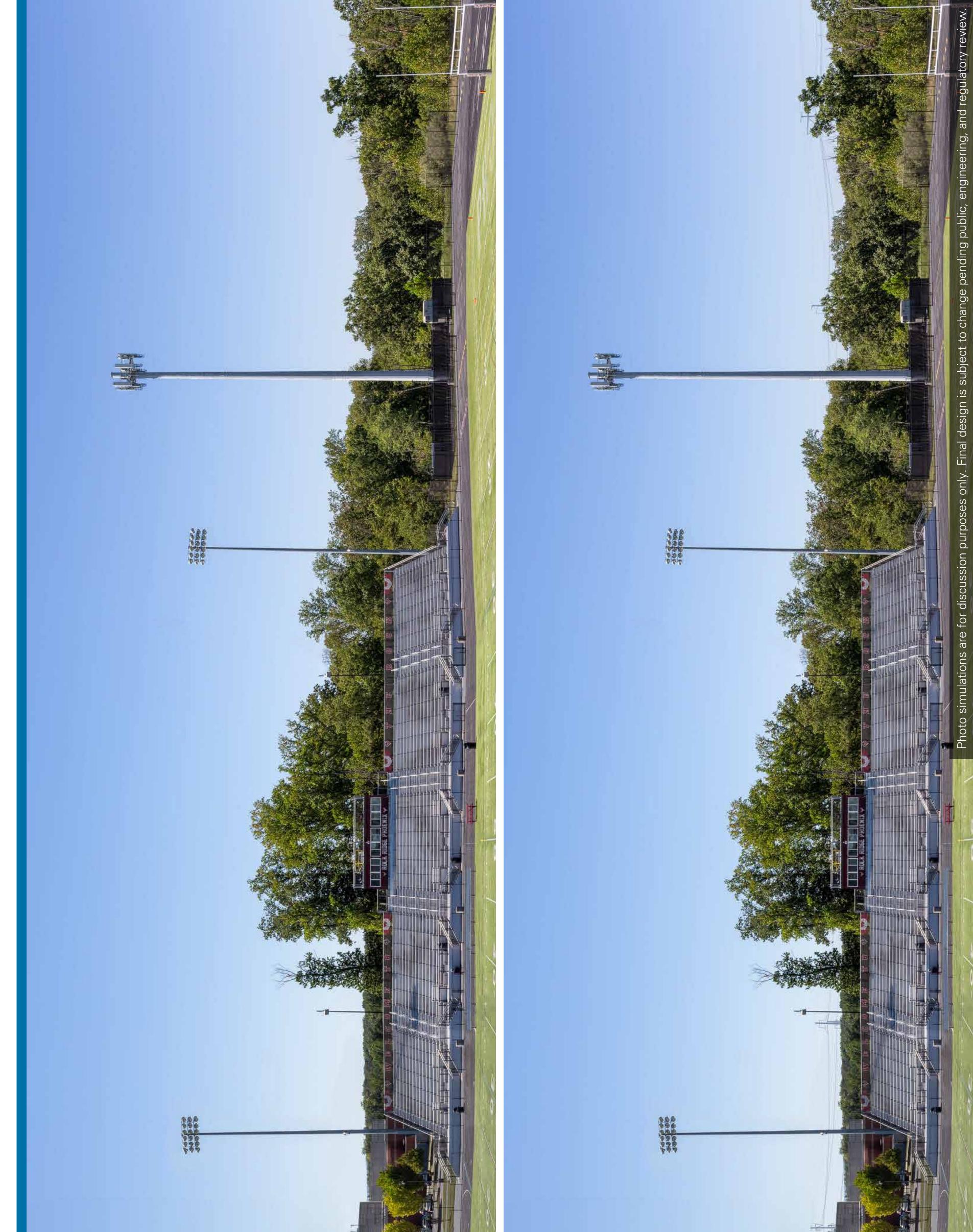






**EXISTING CONDITIONS** 

**PROPOSED CONDITIONS** 





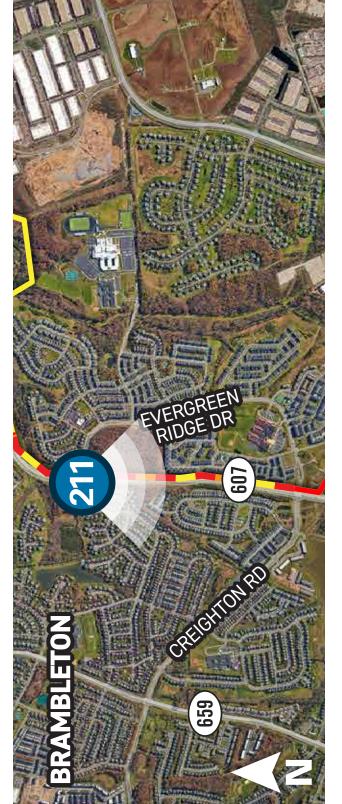
Date: 08/31/2023 Time: 12:47 pm Viewing Direction: West

Route 3



MOP Location









Route 5 Time: 10:25 am Viewing Direction: South Route 2 Route 1 **31** KOP Location

# SA BARS BARS

Transmission Line Project



purposes only. Final design is subject to change pending public, engineering, and regulatory review. U U









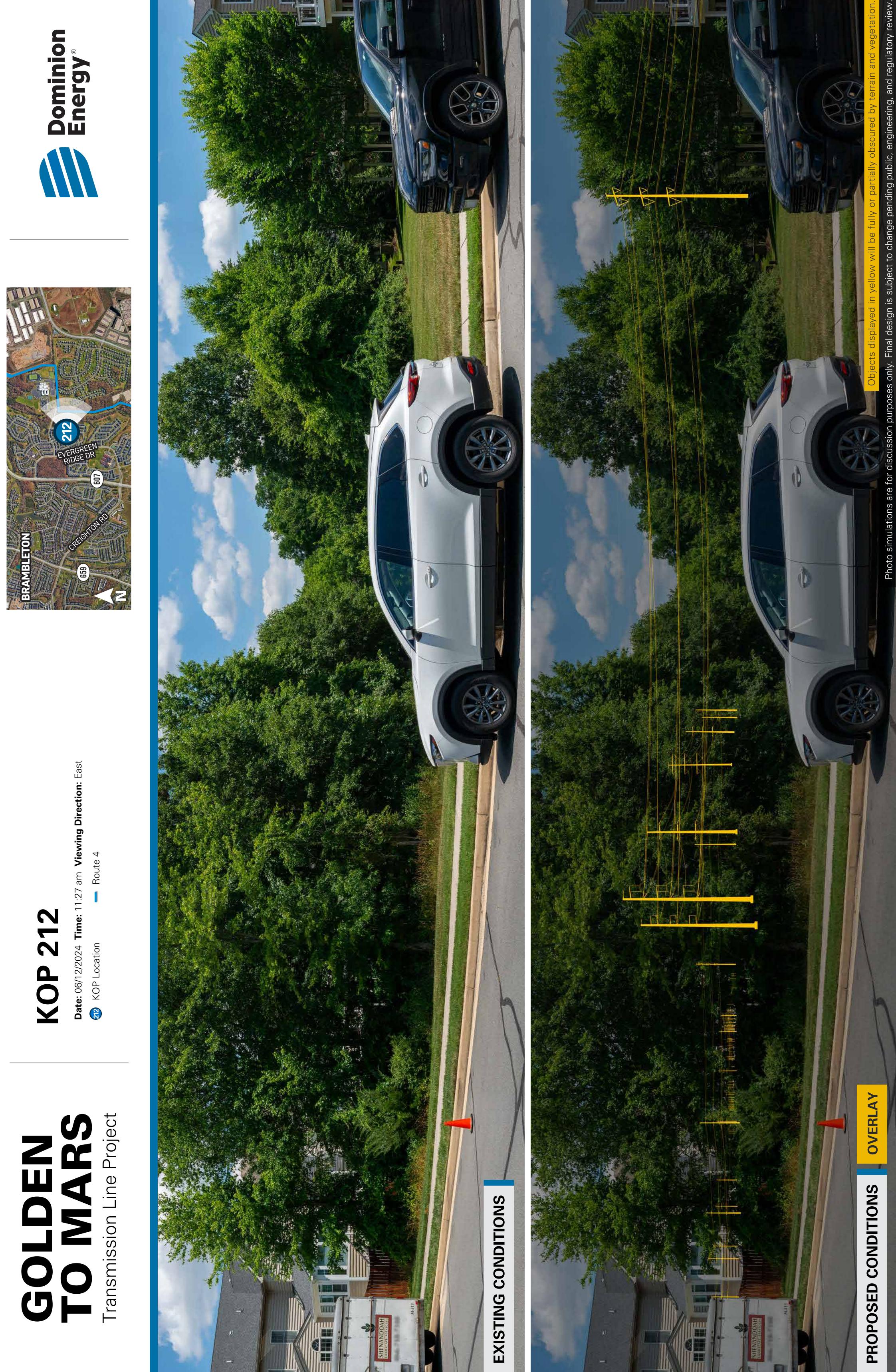




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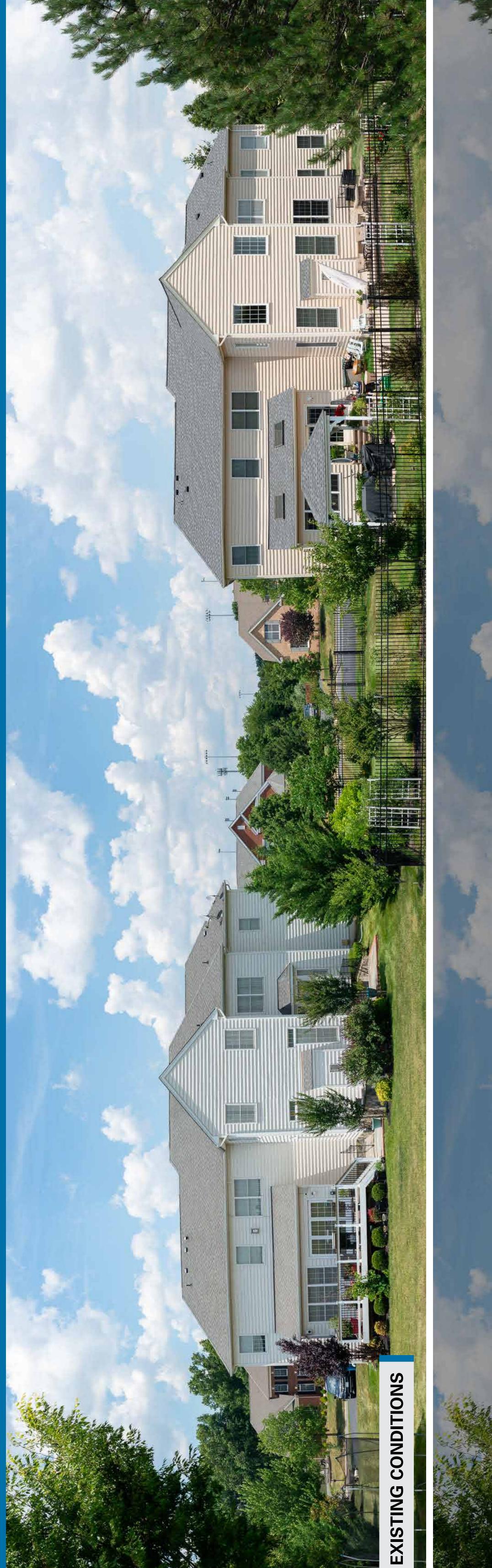












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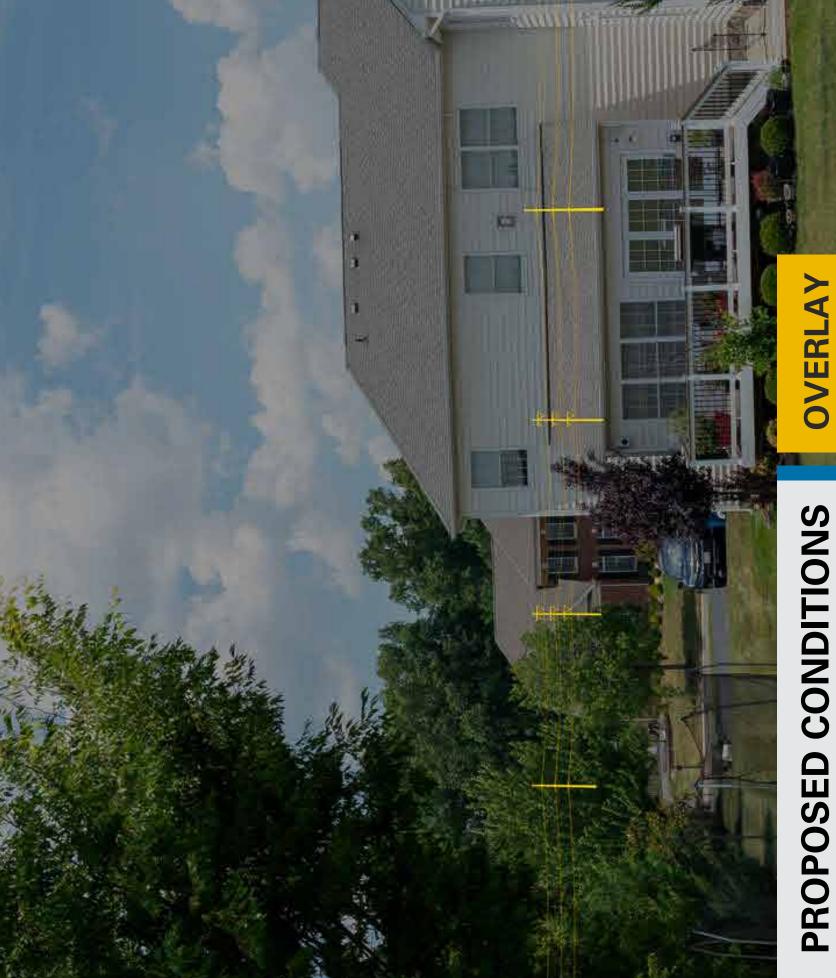


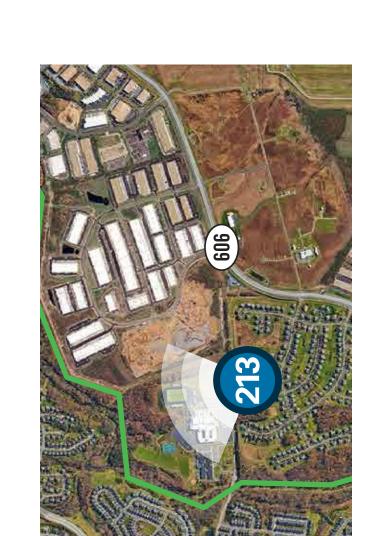
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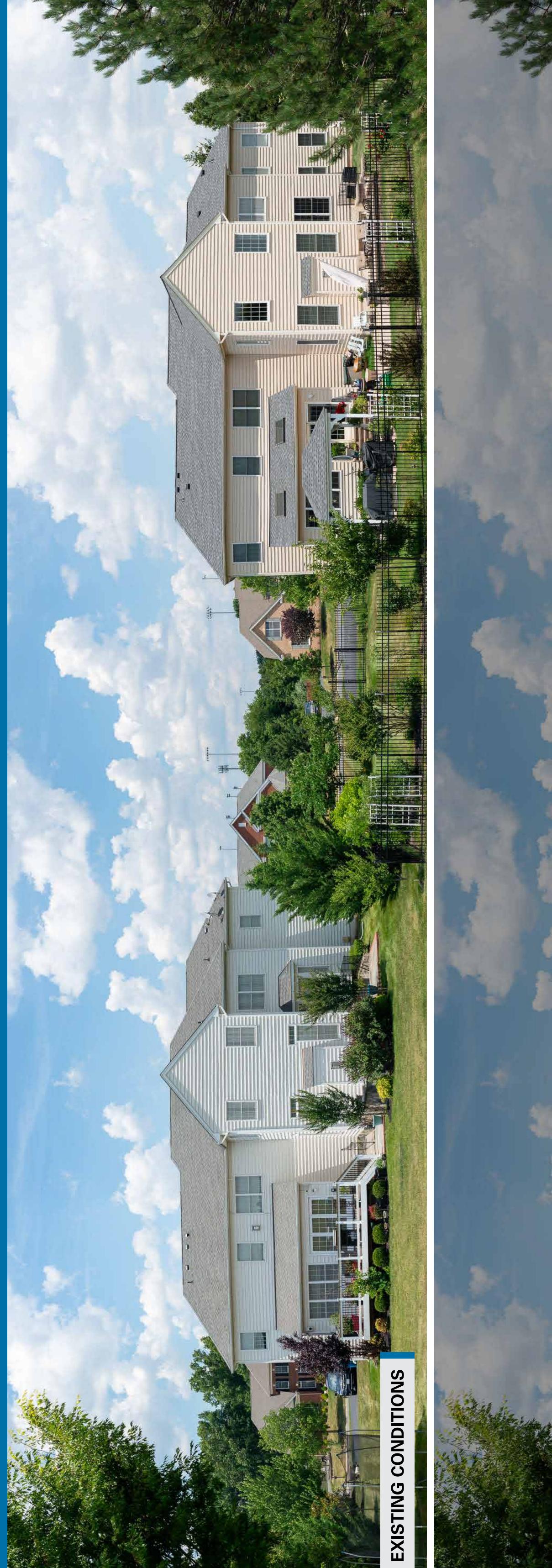












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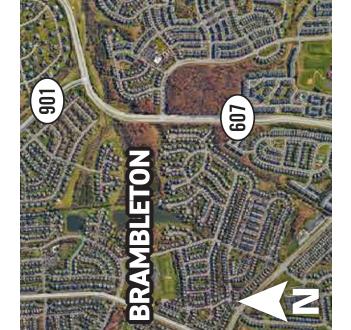
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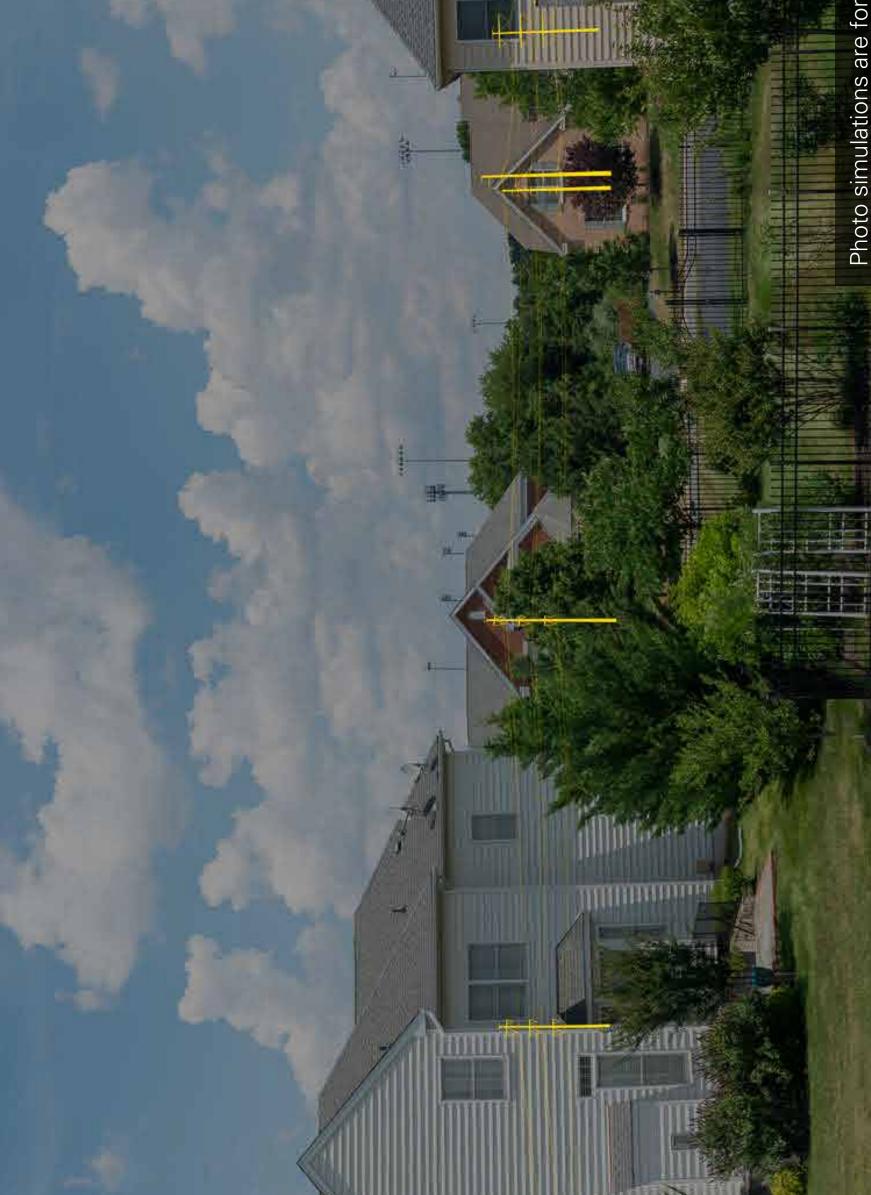
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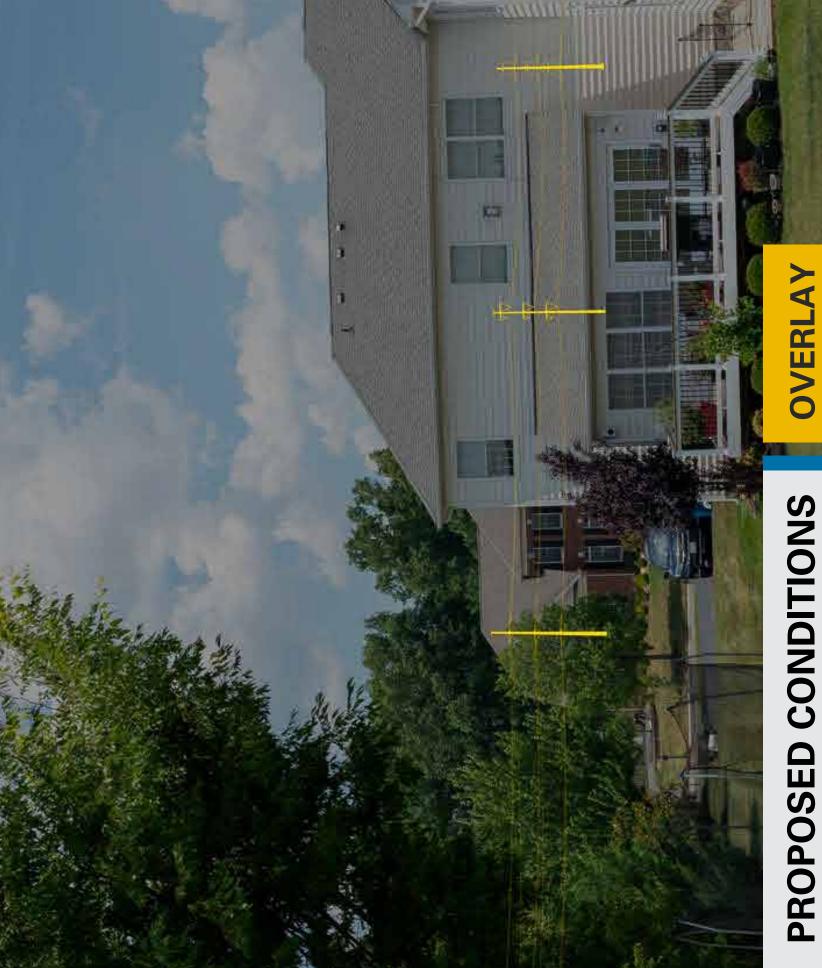


Time: 11:35 am Viewing Direction: Northwest Route 3 KOP Location

















1:35 am Viewing Direction: Northwest Route 4 KOP Location













Route 5 

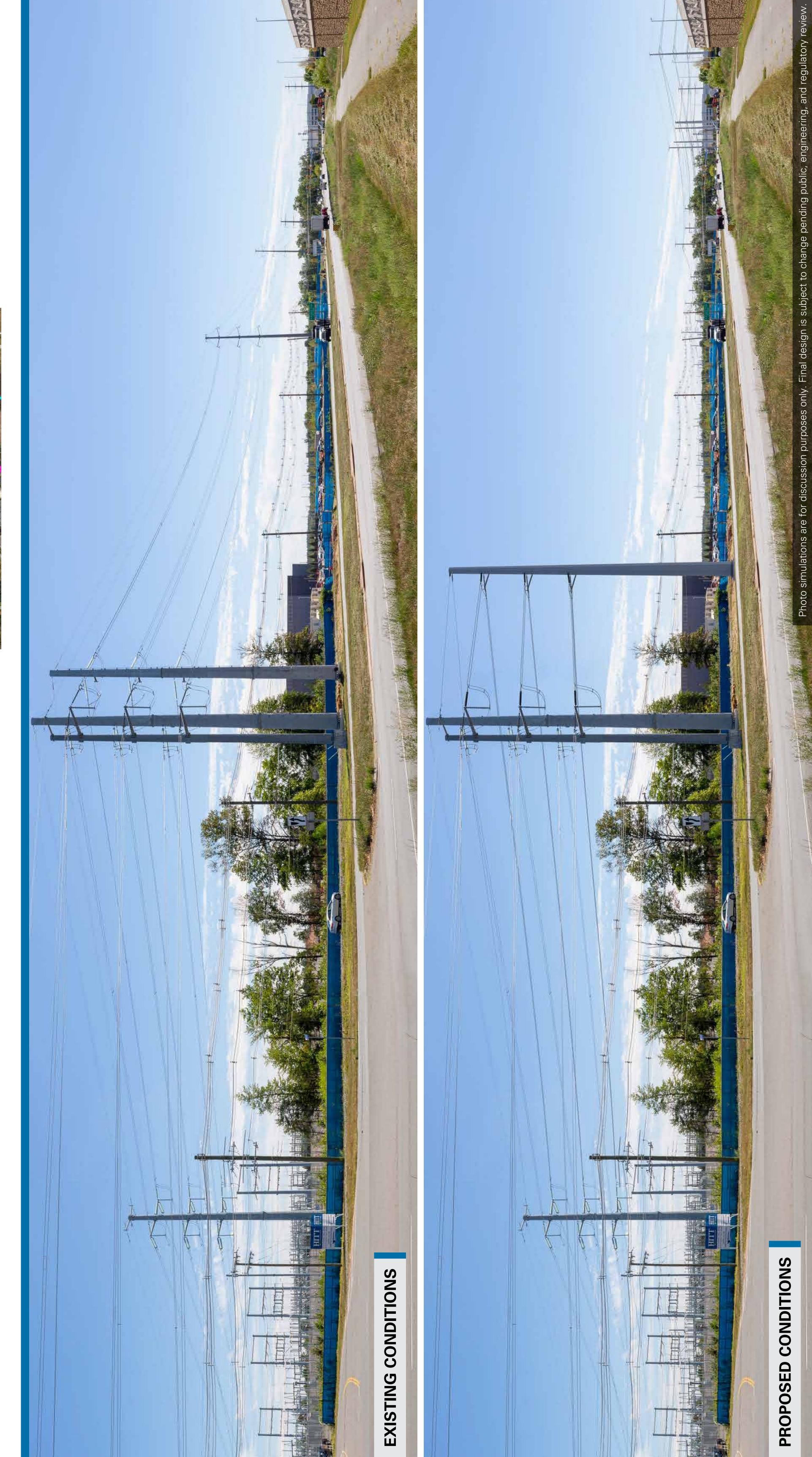


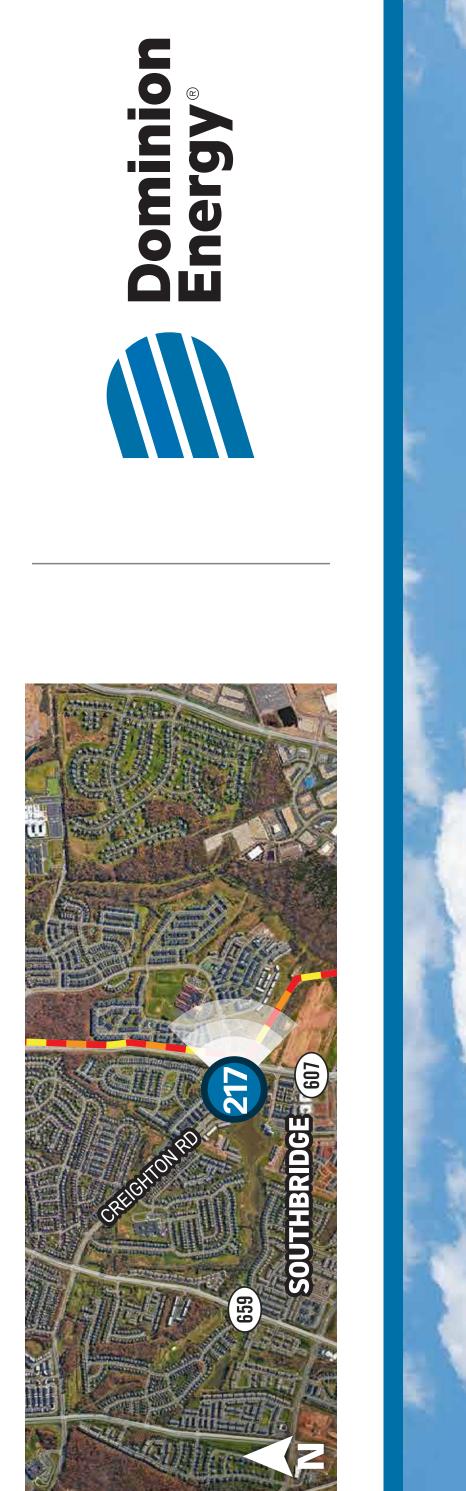


discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Photo simulations are for











**1 Time:** 12:13 pm Viewing Direction: East
In - Route 2 - Route 5







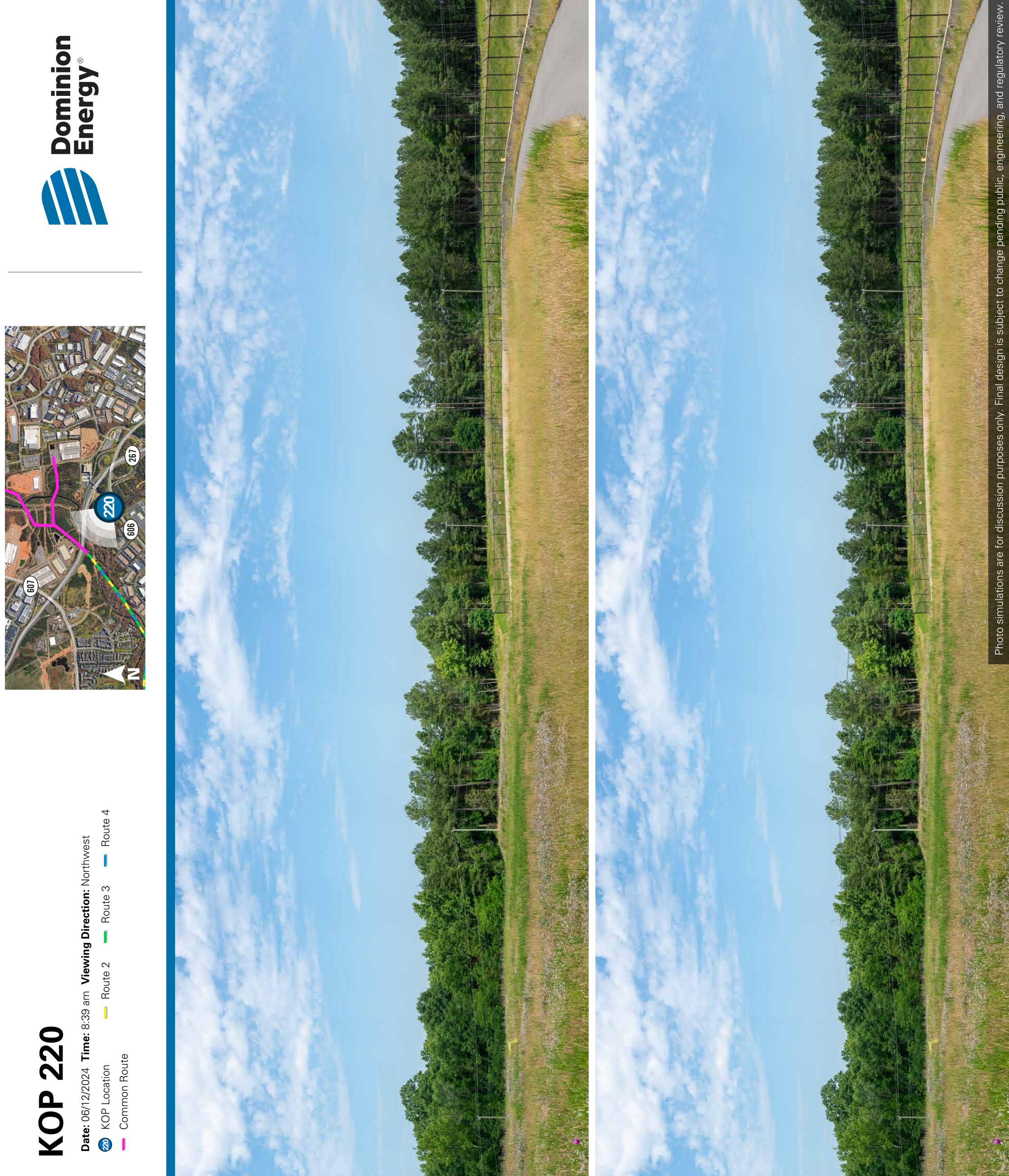


































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Date: 11/19/2024 Time: 11:30 am Viewing Direction: Northeast Route 4



KOP Location

### **EXISTING CONDITIONS**

**PROPOSED CONDITIONS** 









nding public, engineering, and regulatory review.



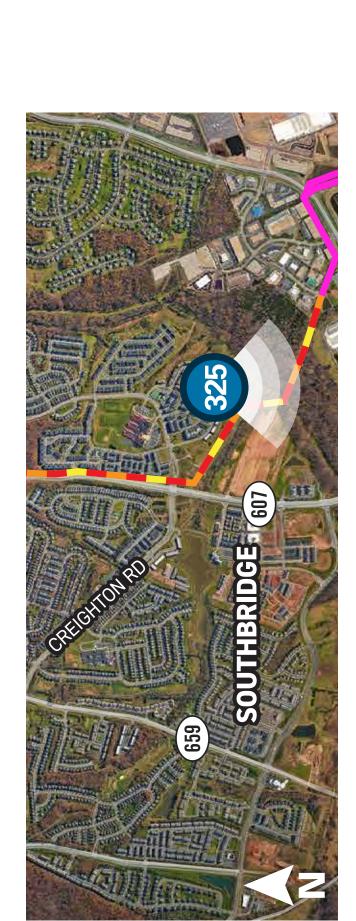
4 Time: 11:12 am Viewing Direction: South

Route 4



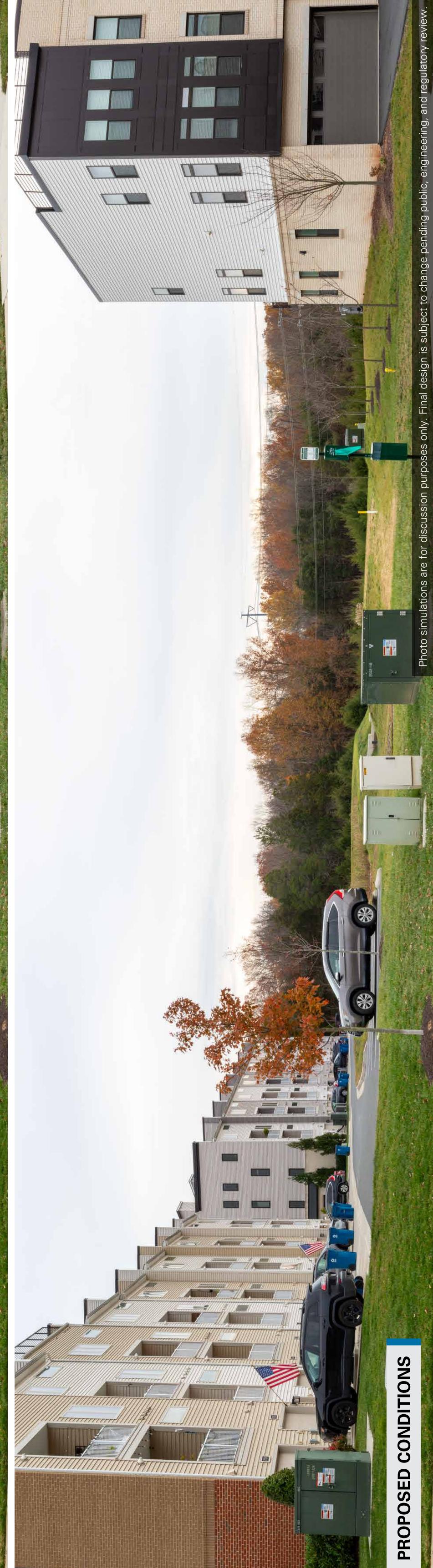
KOP Location **Date:** 11/19/202

## **EXISTING CONDITIONS**











Date: 11/19/2024 Time: 12:15 pm Viewing Direction: South
KOP Location
Route 1
Route 2
Route 5
Common Route



## **EXISTING CONDITIONS**

123

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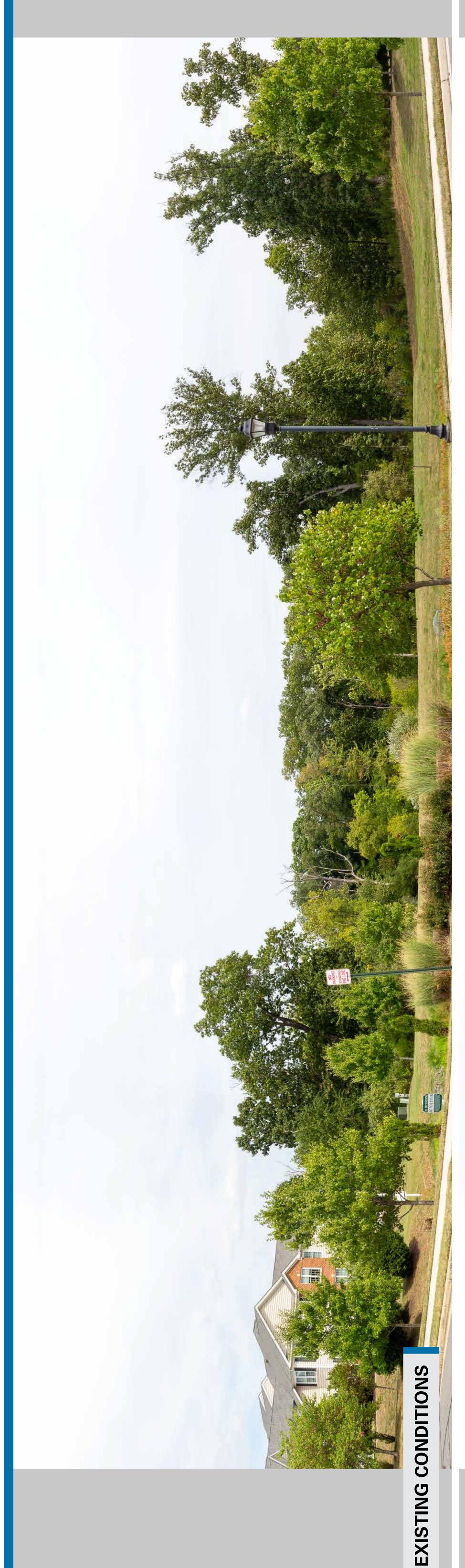


Date: 11/19/2024 Time: 10:09 pm Viewing Direction: West KOP Location – Route 5











discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.



Date: 08/30/2023 Time: 1:22 pm Viewing Direction: East

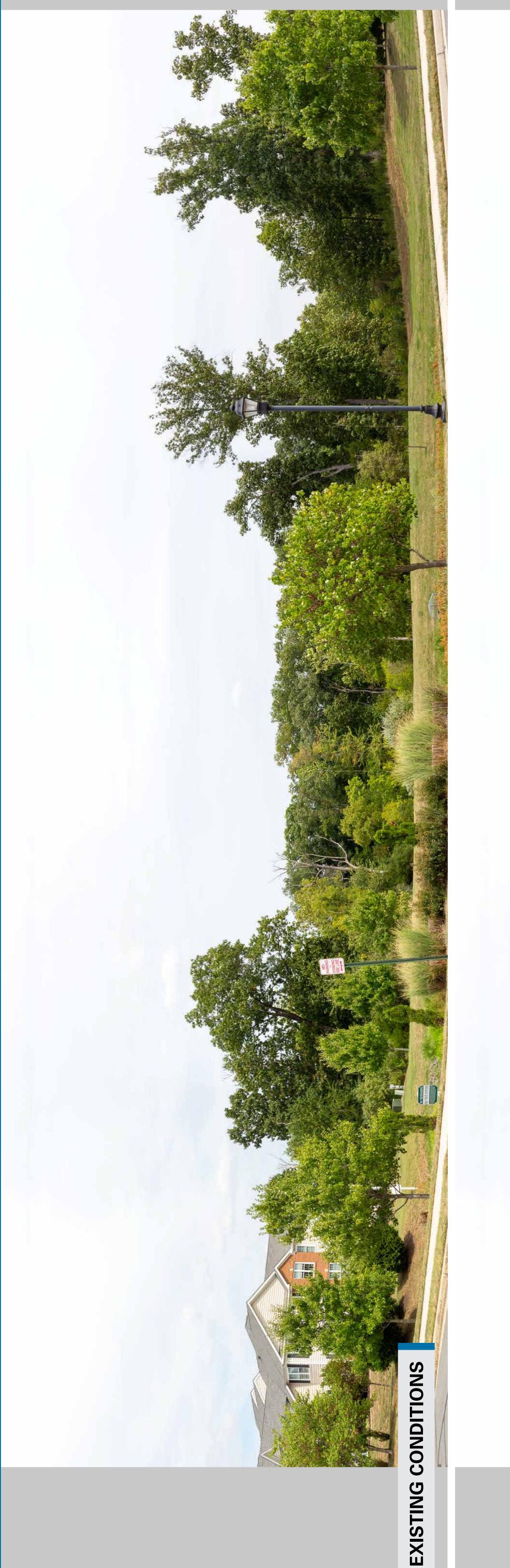
Route 3



KOP Location



**Energy** 







Date: 08/30/2023 Time: 1:22 pm Viewing Direction: East

Route 4

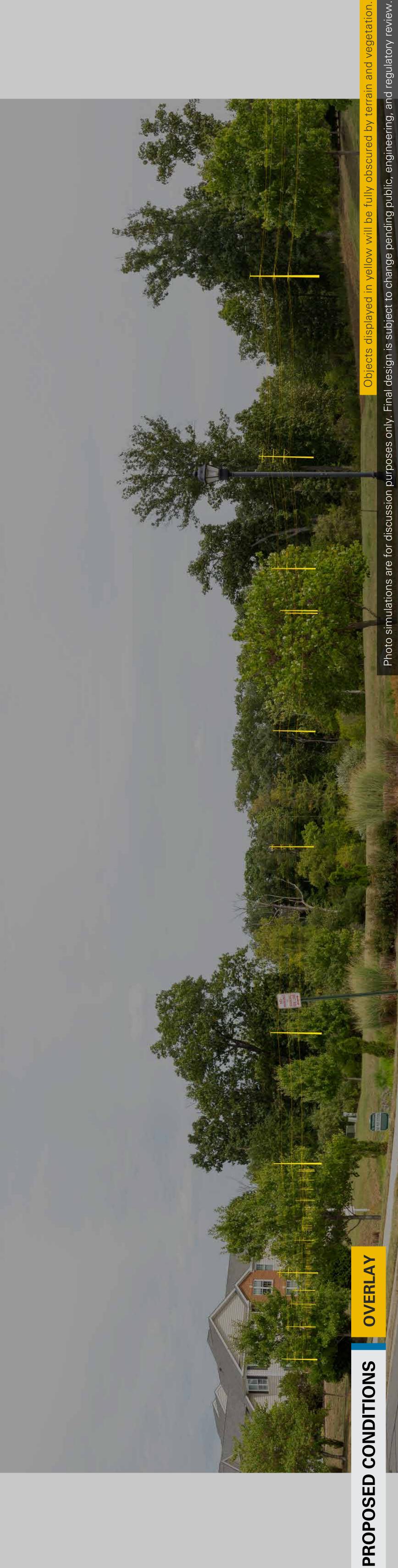


KOP Location









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Date: 08/30/2023 Time: 1:22 pm Viewing Direction: East KOP Location

Route 4





### APPENDIX H STAGE 1 PRE-APPLICATION ANALYSIS



### Golden–Mars 500-230 kV Electric Transmission Project

Pre-Application Report REDACTED PREPARED FOR



Dominion Energy Virginia

DATE 27 March 2025

REFERENCE 0642267



### Golden–Mars 500-230 kV Electric Transmission Project

Pre-Application Report 0642267

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### ACRONYMS AND ABBREVIATIONS

3DThree dimensionalAFAuto FocusCMOSComplementary Metal Oxide SemiconductorDCAData Center AlleyERMEnvironmental Resources ManagementESRIEnvironmental Systems Research InstituteFAAFederal Aviation AdministrationGNSSGlobal Navigation Satellite SystemJPEGJoint Photographic Experts Group formatKOPKey Observation PointkVKilovoltLLCLimited Liability CompanyNHLNational Historic LandmarkNPSNational Park ServicePBRPhysically Based RenderingPDFPortable Document FormatPJMPJM Interconnection, L.L.C.
CMOSComplementary Metal Oxide SemiconductorDCAData Center AlleyERMEnvironmental Resources ManagementESRIEnvironmental Systems Research InstituteFAAFederal Aviation AdministrationGNSSGlobal Navigation Satellite SystemJPEGJoint Photographic Experts Group formatKOPKey Observation PointkVKilovoltLLCLimited Liability CompanyNHLNational Historic LandmarkNPSNational Register of Historic PlacesPBRPhysically Based RenderingPDFPortable Document Format
DCAData Center AlleyERMEnvironmental Resources ManagementESRIEnvironmental Systems Research InstituteFAAFederal Aviation AdministrationGNSSGlobal Navigation Satellite SystemJPEGJoint Photographic Experts Group formatKOPKey Observation PointkVKilovoltLLCLimited Liability CompanyNHLNational Historic LandmarkNPSNational Park ServiceNRHPNational Register of Historic PlacesPBRPhysically Based RenderingPDFPortable Document Format
ERMEnvironmental Resources ManagementESRIEnvironmental Systems Research InstituteFAAFederal Aviation AdministrationGNSSGlobal Navigation Satellite SystemJPEGJoint Photographic Experts Group formatKOPKey Observation PointkVKilovoltLLCLimited Liability CompanyNHLNational Historic LandmarkNPSNational Register of Historic PlacesPBRPhysically Based RenderingPDFPortable Document Format
ESRIEnvironmental Systems Research InstituteFAAFederal Aviation AdministrationGNSSGlobal Navigation Satellite SystemJPEGJoint Photographic Experts Group formatKOPKey Observation PointkVKilovoltLLCLimited Liability CompanyNHLNational Historic LandmarkNPSNational Park ServiceNRHPNational Register of Historic PlacesPBRPhysically Based RenderingPDFPortable Document Format
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NPSNational Park ServiceNRHPNational Register of Historic PlacesPBRPhysically Based RenderingPDFPortable Document Format
NRHPNational Register of Historic PlacesPBRPhysically Based RenderingPDFPortable Document Format
PBR     Physically Based Rendering       PDF     Portable Document Format
PDF Portable Document Format
PJM PJM Interconnection, L.L.C.
Rt. Route
ROW Right-Of-Way
SCC State Corporation Commission
SLR Single-Lens Reflex
UTM Universal Transverse Mercator
VCRIS Virginia Cultural Resource Information System
VDHR Virginia Department of Historic Resources
W&OD Washington & Old Dominion



### EXECUTIVE SUMMARY

This report presents the findings of a pre-application analysis completed by Environmental Resources Management, Inc. (ERM) on behalf of Virginia Electric and Power Company (herein referred to as Dominion Energy Virginia, Dominion, or the Company) for the third and final component of PJM Interconnection, L.L.C.'s (PJM) Data Center Alley (DCA) Local solution: the new 500-230 kilovolt (kV) Golden–Mars Lines located in Loudoun County, Virginia (Project). The Project, along with the Company's Mars–Wishing Star Project approved in Case No. PUR-2022-00183 and the Aspen–Golden 500-230 kV Project approved in Case No. PUR-2024-00032, will complete a 500 kV transmission loop in the Northern Virginia area surrounding DCA, which generally includes areas near Washington Dulles International Airport (Dulles Airport). These three projects are needed to provide electrical capacity to the Eastern Loudoun Load Area, while also mitigating identified North American Electric Reliability Corporation Reliability Standards violations and maintaining reliable service for overall load growth in the Project area and region.

For this Project, the Company is proposing to construct and operate:

- A new approximately 8.3-mile overhead 500 kV single circuit transmission line and a new overhead 230 kV single circuit transmission line almost entirely on new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the future 500-230 kV Golden Substation and continue to the future 500-230 kV Mars Substation in a 5-2 configuration (Golden–Mars Lines);<sup>1 2</sup>
- A new approximately 0.6-mile overhead double-circuit 230 kV transmission line on one set of double circuit structures by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation (Lockridge 230 kV Loop);
- A new approximately 1.9-mile overhead double circuit 230 kV transmission line on one set of double circuit monopole structures from the future Mars Substation to the existing Sojourner Substation (Sojourner 230 kV Loop); and
- Minor substation-related work at the future Golden and Mars Substations.

This pre-application analysis assesses and compares potential impacts on previously recorded historic and archaeological resources in relation to five route alternatives under consideration for the Golden–Mars Lines as well as routes proposed for the Lockridge and Sojourner Loops. ERM conducted the analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts to historic resources. The pre-application analysis is a required study for transmission line projects regulated by the State Corporation Commission (SCC). The study was completed in accordance with the Virginia Department of Historic Resources'

<sup>&</sup>lt;sup>1</sup> The Golden Substation was approved by the SCC for construction and operation as part of the Aspen-Golden 500-230 kV Projects in Case No. PUR-2024-00032, and the Mars Substation was approved by the SCC for construction and operation as part of the approved Mars–Wishing Star Project in Case No. PUR\_2022-00183. Construction of the future Golden and Mars Substations is not a part of this Project. <sup>2</sup> A "5-2 configuration" means that the conductors will be vertically or horizontally aligned such that one position of the structure will have a 500 kV circuit and one position will have a 230 kV circuit.



### (VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008) (Guidelines).

Seventeen known archaeological sites are within or adjacent to the right-of-way for the routes under consideration. Of these, 11 sites are considered unevaluated for listing in the National Register of Historic Places (NRHP) and six have been determined not eligible for listing in the NRHP. For the Golden-Mars Lines, 12 archaeological sites are located within or adjacent to the right-of-way for Route 1, 11 are within or adjacent to Route 2, eight are within or adjacent to Route 3, seven are within or adjacent to Route 4, and 11 are within or adjacent to Route 5. One archaeological site each is located within the right-of-way for the Lockridge Loop and Sojourner Loop. The archaeological sites along each route and their current NRHP status are summarized in Table 1. The sites could be impacted by construction traffic, clearing within the right-of-way, or installation of transmission structures. A confident evaluation of the nature of archaeological deposits at each site and impacts on the sites from prior land use activities would require a field survey.

Five previously recorded aboveground historic resources meeting criteria specified in the Guidelines fall within study tiers defined by the VDHR for identifying aboveground historic resources along and near transmission line routes (Table 2). Because the Golden-Mars alternative routes use a common alignment where they pass near these resources, impacts would be identical regardless of the route selected. ERM recommends that each Golden-Mars alternative route would have a minimal impact on those five associated resources. The Lockridge Loop and Sojourner Loop would each have no impact on a single (different in each case) resource.

While this report addresses potential impacts on resources meeting the criteria for study inclusion in the Guidelines, our comparison of routes is limited to the Golden-Mars Lines since only one route is under consideration in the case of the Lockridge and Sojourner Loops. Because the findings for the historic resources are identical for the Golden-Mars alternatives, the routes must be differentiated based on potential impacts to archaeological sites. Considering this, Route 4 appears to present the least impact on known archaeological resources because there are seven previously recorded archaeological sites adjacent to or within its right-of-way compared to 12 for Route 1, 11 for Route 2, eight for Route 3, and 11 for Route 5. As shown in the study, however, many of these sites are previously disturbed and unlikely to contain intact cultural deposits or features and some sites are presumed destroyed.



## TABLE 1 EXECUTIVE SUMMARY OF NATIONAL REGISTER STATUS OF CONSIDERED ARCHAEOLOGICAL RESOURCES IN THE STUDY AREA OF THE ROUTE ALTERNATIVES

				Alternat	Alternative Routes		
Cancidanad		Golden-N	Golden-Mars 500-230 kV Lines	kV Lines		Lockridge 230 kV Loop	Sojourner 230 kV Loop
Resource	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge Loop	Sojourner Loop
44LD0111	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible		
44LD0170	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible		
44LD0330					Unevaluated		
44LD0332	Unevaluated	Unevaluated					
44LD0333	Unevaluated	Unevaluated					
44LD0334		Unevaluated					
44LD0335		Unevaluated	Unevaluated				
44LD0472	Unevaluated	Unevaluated	Unevaluated	Unevaluated	Unevaluated		
44LD0945	Unevaluated	Unevaluated	Unevaluated	Unevaluated	Unevaluated		
44LD1244	Unevaluated				Unevaluated		
44LD1311	Unevaluated				Unevaluated		
44LD1737							Not Eligible
44LD1742	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible		
44LD1909	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible		
44LD1916						Not Eligible	
44LD1922	Unevaluated				Unevaluated		
44LD1978	Unevaluated	Unevaluated	Unevaluated	Unevaluated	Unevaluated		
Source: VDHR 2024							

Source: VDHR 2024



## TABLE 2 EXECUTIVE SUMMARY OF PROJECT IMPACTS TO CONSIDERED ABOVEGROUND HISTORIC RESOURCES IN THE STUDY AREA OF THE ROUTE ALTERNATIVES

					Alternative Routes	Routes	
		Golden-M	ars 500-230 kV Lines	0 kV Lines		Lockridge 230 kV Loop	Sojourner 230 kV Loop
<b>Considered Resource</b>	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge Loop	Sojourner Loop
053-0008	Minimal	Minimal	Minimal	Minimal	Minimal		None
053-0276	Minimal	Minimal	Minimal	Minimal	Minimal		
053-0968	Minimal	Minimal	Minimal	Minimal	Minimal		
053-6406	Minimal	Minimal	Minimal	Minimal	Minimal		
053-6416	Minimal	Minimal	Minimal	Minimal	Minimal	None	
						-	

Source: VDHR 2024



### 1. INTRODUCTION

This report presents the findings of a pre-application analysis completed by Environmental Resources Management, Inc. (ERM) on behalf of Virginia Electric and Power Company (herein referred to as Dominion Energy Virginia, Dominion, or the Company) for the third and final component of the PJM's DCA Local solution: the new 500-230 kV Golden–Mars Lines located in Loudoun County, Virginia (Project). The Project, along with the Company's Mars–Wishing Star Project approved in Case No. PUR-2022-00183 and the Aspen–Golden 500-230 kV Project approved in Case No. PUR-2024-00032, will complete a 500 kV transmission loop in the Northern Virginia area surrounding DCA, which generally includes areas near Dulles Airport. For this Project, the Company is proposing to construct and operate:

- A new approximately 8.3-mile overhead 500 kV single circuit transmission line and a new overhead 230 kV single circuit transmission line almost entirely on new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the future 500-230 kV Golden Substation and continue to the future 500-230 kV Mars Substation in a 5-2 configuration (Golden–Mars Lines);<sup>3 4</sup>
- A new approximately 0.6-mile overhead double-circuit 230 kV transmission line on one set of double circuit structures by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation (Lockridge 230 kV Loop);
- A new approximately 1.9-mile overhead double circuit 230 kV transmission line on one set of double circuit monopole structures from the future Mars Substation to the existing Sojourner Substation (Sojourner 230 kV Loop); and
- Minor substation-related work at the future Golden and Mars Substations.

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

### 1.1 OVERVIEW

Through extensive public outreach, agency consultation, desktop study, and field investigation, ERM identified the following routes for the Project (Figure 1):

of the structure will have a 500 kV circuit and one position will have a 230 kV circuit.

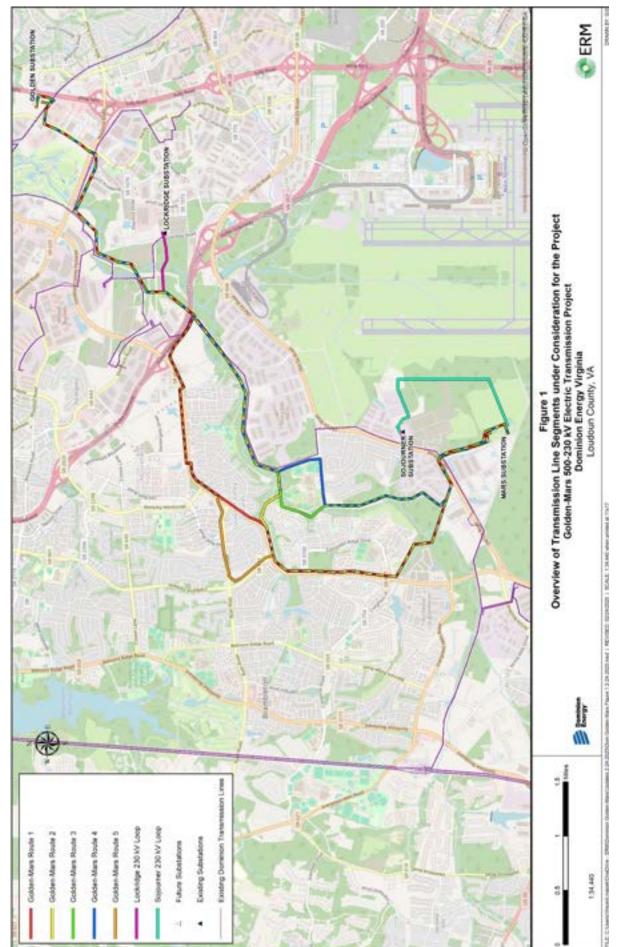


<sup>&</sup>lt;sup>3</sup> The Golden Substation was approved by the SCC for construction and operation as part of the Aspen-Golden 500-230 kV Projects in Case No. PUR-2024-00032, and the Mars Substation was approved by the SCC for construction and operation as part of the approved Mars–Wishing Star Project in Case No. PUR\_2022-00183. Construction of the future Golden and Mars Substations is not a part of this Project. <sup>4</sup> A "5-2 configuration" means that the conductors will be vertically or horizontally aligned such that one position

- Five route alternatives for the Golden–Mars Lines;
- One route for the Lockridge 230 kV Loop; and
- One route for the Sojourner 230 kV Loop.



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





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### 1.1.1 GOLDEN-MARS 500-230 KV LINES

The Golden–Mars route alternatives are identical in the northern portion of the study area, where they mostly follow existing 230 kV transmission line rights-of-way between Golden Substation and the Dulles Greenway (Greenway). South of the Greenway, the routes diverge, generally following either Loudoun County Parkway or Broad Run (and existing Lines #2218 and #2095). The routes merge near the southern end of the study area into a common alignment from about Old Ox Road to the future Mars Substation.

For the portion of Routes 1–5 north of the Greenway, the Project would generally use three-pole or two-pole H-frame structures in a 150-foot-wide right-of-way. South of the Greenway, the Project would generally use double circuit monopole or two-pole structures in a 100-foot right-of-way.

### 1.1.1.1 ROUTE 1

Route 1 is approximately 9.4 miles long. The route originates at Golden Substation, exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest, where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. This segment of the route alignment from the Golden Substation to the Dulles Greenway is the same for all Golden-Mars route alternatives.

South of the Greenway, the route turns northwest, paralleling the south side of the Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side and parallels the south and west side of the parkway (as the road turns south) from Gleedsville Manor Drive south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carter School Road before terminating at Mars Substation.

### 1.1.1.2 ROUTE 2

Route 2 is approximately 9.3 miles long. Route 2 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west and crosses Broad Run three times before reaching Loudoun County Parkway. The route continues south and parallels the west side of Loudoun County Parkway past Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carter School Road before terminating at Mars Substation.

### 1.1.1.3 ROUTE 3

Route 3 is approximately 8.3 miles long. Route 3 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues



southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before turning south and crossing Loudoun Reserve Drive. The route continues south through Broad Run Stream Valley Park and across Overland Road. The route then turns east and parallels the north side of Old Ox Road then turns south along Carter School Road before terminating at Mars Substation.

### 1.1.1.4 ROUTE 4

Route 4 is approximately 8.3 miles long. Route 4 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns south and continues to parallel existing transmission lines before turning west along Loudoun Reserve Drive. The route then turns south through Broad Run Stream Valley Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carter School Road before terminating at Mars Substation.

### 1.1.1.5 ROUTE 5

Route 5 is approximately 9.8 miles long. Route 5 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side, and parallels the south and west side of Loudoun County Parkway (as the road turns south) past Gleedsville Manor Drive, then turns west to parallel the north side of Ryan Road. Near Claiborne Parkway, the route turns south to rejoin Loudoun County Parkway and continues south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carter School Road before terminating at Mars Substation.

### 1.1.2 LOCKRIDGE 230 KV LOOP

The Lockridge 230 kV Loop is approximately 0.6 mile long. The route originates approximately 0.3 mile north of the Dulles Greenway and 0.2 mile east of Shellhorn Road, where it ties into the Golden–Mars Lines (within the segment shared by Routes 1–5). The route travels east from the Golden–Mars Lines and crosses Broad Run and Lockridge Road before terminating at Lockridge Substation. Because the route is entirely on property owned by SDC Ashburn I Limited Liability Company (LLC) and was developed in coordination with the landowner, ERM and Dominion did not consider any alternative routes between the Lockridge Substation and the Golden–Mars Lines.

### 1.1.3 SOJOURNER 230 KV LOOP

The Sojourner 230 kV Loop is approximately 1.9 miles long. The route originates at Sojourner Substation between Beaver Meadow Road and Digital Dulles Drive. The route travels east before turning south to parallel the western perimeter of Dulles Airport. The route then turns west, terminating at the future Golden Substation. Because the route is entirely on Digital Dulles



property and was developed in coordination with the developers of Digital Dulles, ERM and Dominion did not consider any route alternatives between the Sojourner and Mars Substations.

### 1.2 MANAGEMENT RECOMMENDATIONS

Seventeen known archaeological sites are within or adjacent to the right-of-way for the routes. Of these, 11 are considered unevaluated for listing in the National Register of Historic Places (NRHP) and six have been determined not eligible for listing in the NRHP. For the Golden-Mars Lines, 12 archaeological sites are within the right-of-way or adjacent to Route 1, 11 are within or adjacent to Route 2, eight are within or adjacent to Route 3, seven are within or adjacent to Route 4, and 11 are within or adjacent to Route 5. One archaeological site within the right-of-way for both the Lockridge Loop and Sojourner Loop.

Five previously recorded historic resources meeting criteria specified in the Guidelines fall within study tiers defined by the VDHR for identifying aboveground historic sites along and near transmission line routes. Because the Golden-Mars alternative routes share common alignments where they cross or pass near these resources, Project impacts would be identical regardless of the route selected by the SCC. The Lockridge Loop and the Sojourner Loop each pass near one resource also with the study tiers for the Golden-Mars alternative routes. ERM recommends that installation of transmission infrastructure Golden-Mars Routes 1 through 5 would result in the same minimal impact on the five resources within the study tiers. The Lockridge Loop and Sojourner Loop would each have no impact on a single resource within their respective study tiers.

While this report addresses potential impacts on all the resources meeting the criteria for inclusion in the Guidelines, our comparison is limited to the Golden-Mars routes because only one route is under consideration for the Lockridge and Sojourner Loops. Because the findings for the historic resources are identical for the Golden-Mars alternatives, the routes may be differentiated based on potential impacts to archaeological sites. Considering this, Route 4 appears to present the least impact on known archaeological resources because there are seven previously recorded archaeological sites adjacent or within its right-of-way compared to 12 for Route 1, 11 for Route 2, eight for Route 3, and 11 for Route 5. As shown in the study, however, many of these sites are previously disturbed and unlikely to contain intact cultural deposits or features and some sites are presumed destroyed.



### 2. RECORDS REVIEW

### 2.1 DATA COLLECTION APPROACH

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

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

Information on the considered resources in each study tier was collected from the Virginia Cultural Resource Information System (VCRIS).

In addition to the VCRIS, ERM collected information from the History of Loudoun County, Virginia (2024), Loudoun Preservation Society (2024), Loudoun County Heritage Commission (2024), Loudoun County Preservation and Conservation Commission (2024), and the Loudoun County African American Historic Resources Survey (EHT Traceries 2024) to identify locally significant resources within a 1.0-mile radius of each route.

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

### 2.2 ARCHAEOLOGICAL RESOURCES

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

Of the 17 archaeological sites identified adjacent to or within the rights-of-way for the alternative routes, 11 are considered unevaluated for listing in the NRHP and six have been determined not eligible for listing in the NRHP. For the Golden-Mars route alternatives, 12, 11, eight, seven, and 11 sites, respectively, are in the rights-of-way of or adjacent to Routes 1, 2, 3, 4, and 5. One archaeological site each is within the right-of-way for both the Lockridge Loop and Sojourner Loop.



# FIGURE 2 LOCATIONS OF ARCHAEOLOGICAL SITES WITHIN THE RIGHT-OF-WAY FOR EACH ROUTE ALTERNATIVE (REDACTED)



### TABLE 3 ARCHAEOLOGICAL RESOURCES WITHIN THE RIGHT-OF-WAY FOR EACH ROUTE

Route Alternative	Greenfield or Existing/ Expanded ROW?	Site Number	Description	NRHP Status
	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0332	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0333	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
Coldon Marc	Greenfield	44LD0945	Historic (20 <sup>th</sup> century) dwelling, multiple	Unevaluated
Golden-Mars Route 1	Greenfield	44LD1244	Historic (18 <sup>th</sup> century) farmstead	Unevaluated
	Greenfield	44LD1311	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) dwelling, single	Unevaluated
	Greenfield	44LD1742	Historic (20 <sup>th</sup> century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 <sup>th</sup> century) dwelling, single	Not Eligible
	Greenfield	44LD1922	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) dwelling	Unevaluated
	Greenfield	44LD1978	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) artifact scatter	Unevaluated
	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0332	Prehistoric (unknown) camp, temporary	Unevaluated
Golden-Mars Route 2	Greenfield	44LD0333	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0334	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0335	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated



Route Alternative	Greenfield or Existing/ Expanded ROW?	Site Number	Description	NRHP Status
	Greenfield	44LD0945	Historic (20 <sup>th</sup> century) dwelling, multiple	Unevaluated
	Greenfield	44LD1742	Historic (20 <sup>th</sup> century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 <sup>th</sup> century) dwelling, single	Not Eligible
	Greenfield	44LD1978	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) artifact scatter	Unevaluated
	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0335	Prehistoric (unknown) camp, temporary	Unevaluated
Coldon Marc	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
Golden-Mars Route 3	Greenfield	44LD0945	Historic (20 <sup>th</sup> century) dwelling, multiple	Unevaluated
	Greenfield	44LD1742	Historic (20 <sup>th</sup> century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 <sup>th</sup> century) dwelling, single	Not Eligible
	Greenfield	44LD1978	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) artifact scatter	Unevaluated
	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
Golden-Mars Route 4	Greenfield	44LD0945	Historic (20 <sup>th</sup> century) dwelling, multiple	Unevaluated
	Greenfield	44LD1742	Historic (20 <sup>th</sup> century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 <sup>th</sup> century) dwelling, single	Not Eligible
	Greenfield	44LD1978	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) artifact scatter	Unevaluated



Route Alternative	Greenfield or Existing/ Expanded ROW?	Site Number	Description	NRHP Status
	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0330	Prehistoric (Pre-Contact) camp, temporary	Unevaluated
Golden-Mars Route 5	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
	Greenfield	44LD0945	Historic (20 <sup>th</sup> century) dwelling, multiple	Unevaluated
	Greenfield	44LD1244	Historic (18 <sup>th</sup> century) farmstead	Unevaluated
	Greenfield	44LD1311	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) dwelling, single	Unevaluated
	Greenfield	44LD1742	Historic (20 <sup>th</sup> century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 <sup>th</sup> century) dwelling, single	Not Eligible
	Greenfield	44LD1922	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) dwelling	Unevaluated
	Greenfield	44LD1978	Historic (19 <sup>th</sup> and 20 <sup>th</sup> century) artifact scatter	Unevaluated
Lockridge Loop	Greenfield	44LD1916	Prehistoric (unknown) lithic scatter	Not Eligible
Sojourner Loop	Existing/Expanded ROW	44LD1737	Historic (20 <sup>th</sup> century) farmstead	Not Eligible

Source: VDHR 2024 ROW = right-of-way

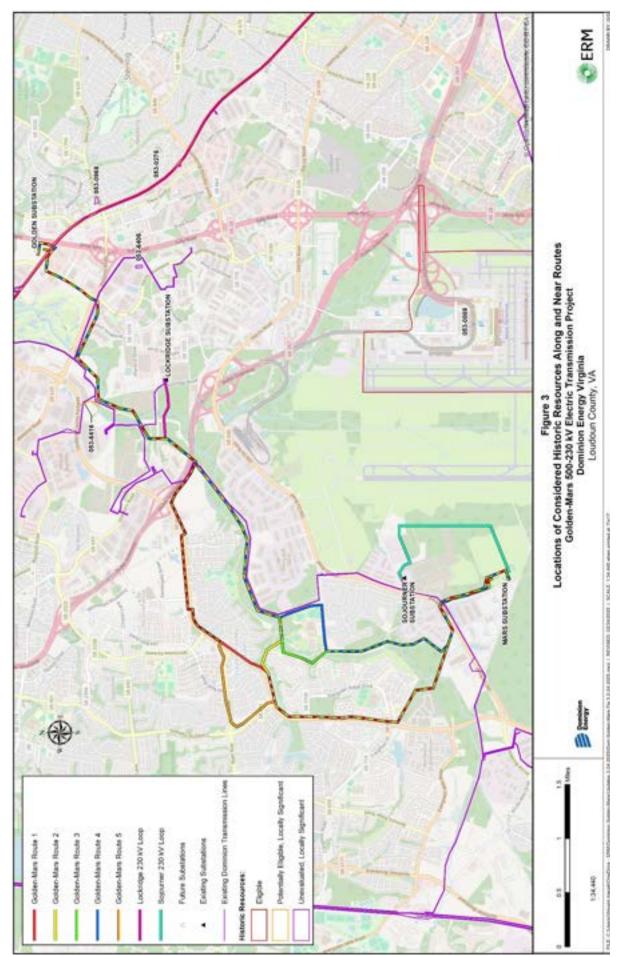
A confident evaluation of the nature of archaeological deposits at each site and impacts on the sites from prior land use activities would require a field survey.

### 2.3 HISTORIC RESOURCES

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



## FIGURE 3 LOCATIONS OF CONSIDERED HISTORIC RESOURCES ALONG AND NEAR ROUTES



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

Because the Golden-Mars alternative routes use common alignments where they pass aboveground resources, impacts would be the same for the Project regardless of the Golden-Mars alternative selected by the SCC. The nature of the impacts, while estimated in this study with the assistance of photo simulations, would depend on the final Project design in which the exact placement and height of transmission structures are determined. The purpose of the simulations and associated assessments in this report are to provide data on likely impacts.

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

### 2.3.1 GOLDEN-MARS LINES

### 2.3.1.1 ROUTE 1

The considered resources that lie within the VDHR tiers for Route 1 are presented in Table 4 and depicted in the map provided as Attachment 1, Sheet 1. ERM identified five aboveground historic resources within the VDHR tiers for Route 1. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
	National Register – Eligible	053-0008	Dulles International Airport Historic District
0.0 to 0.5	Locally Significant	053-6406	Tippet's Hill Cemetery
		053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

### TABLE 4 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 1

Source: VDHR 2024

ROW = right-of-way



### 2.3.1.2 ROUTE 2

The considered resources that lie within the VDHR tiers for Route 2 are presented in Table 5 and depicted in the map provided as Attachment 1, Sheet 2. ERM identified five aboveground historic resources within the VDHR tiers for Route 2. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

### TABLE 5HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 2

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
	National Register – Eligible	053-0008	Dulles International Airport Historic District
0.0 to 0.5		053-6406	Tippet's Hill Cemetery
	Locally Significant	053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024 ROW = right-of-way

now light of way

### 2.3.1.3 GOLDEN-MARS ROUTE 3

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

### TABLE 6 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 3

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
	National Register – Eligible	053-0008	Dulles International Airport Historic District
0.0 to 0.5		053-6406	Tippet's Hill Cemetery
	Locally Significant	053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024

ROW = right-of-way

### 2.3.1.4 GOLDEN-MARS ROUTE 4

The considered resources that lie within the VDHR tiers for Route 4 are presented in Table 7 and depicted in the map provided as Attachment 1, Sheet 4. ERM identified five aboveground historic



resources within the VDHR tiers for Route 4. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

### TABLE 7 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 4

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
	National Register – Eligible	053-0008	Dulles International Airport Historic District
0.0 to 0.5		053-6406	Tippet's Hill Cemetery
	Locally Significant	053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024

ROW = right-of-way

### 2.3.1.5 GOLDEN-MARS ROUTE 5

The considered resources that lie within the VDHR tiers for Route 5 are presented in Table 8 and depicted in the map provided as Attachment 1, Sheet 5. ERM identified five aboveground historic resources within the VDHR tiers for Route 5. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

### TABLE 8HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 5

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District
		053-6406	Tippet's Hill Cemetery
	Locally Significant	053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024

ROW = right-of-way

### 2.3.2 LOCKRIDGE LOOP

The considered resource that lies within the VDHR tiers for the Lockridge Loop is presented in Table 9 and depicted in the map provided as Attachment 1, Sheet 6. ERM identified one aboveground historic resource within the VDHR tiers for the Lockridge Loop. The considered resource was subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.



### TABLE 9 HISTORIC RESOURCES IN VDHR TIERS FOR LOCKRIDGE LOOP

Buffer (miles)	<b>Resource Category</b>	Resource Number	Description
0.5 to 1.0	Locally Significant	053-6416	Ox Road Trace

Source: VDHR 2024

### 2.3.3 SOJOURNER LOOP

The considered resource that lies within the VDHR tiers for the Sojourner Loop are presented in Table 10 and depicted in the map provided as Attachment 1, Sheet 7. ERM identified one aboveground historic resource within the VDHR tiers for the Lockridge Loop. The considered resource was subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

### TABLE 10 HISTORIC RESOURCES IN VDHR TIERS FOR THE SOJOURNER LOOP

Buffer (miles)	<b>Resource Category</b>	Resource Number	Description
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District

Source: VDHR 2024

### 2.4 PREVIOUS SURVEYS

Portions of the Project have previously been surveyed for cultural resources, among 86 studies reported within 1 mile of the Project. Thirty-one of the surveys intersect at least one of the routes under consideration. Large portions of the routes have been subject to previous survey coverage. Information on these previous surveys—including VDHR survey number, report title, report authors, and report date—is provided in Table 11. The extent of the previous survey coverage is depicted on maps provided in Attachment 2.

### TABLE 11 CULTURAL RESOURCE SURVEYS WITHIN 1 MILE OF THE PROJECT

VDHR Survey Number	Title	Author	Date
FX-108	Cultural Resource Inventory and Phase I Archaeological Survey of Route 28 (Sully Road) from I-66 to Route 7, Fairfax and Loudoun Counties, Virginia	Joseph E. Granger and Calvert W. McIlhany	1987
FX-262	Phase I Archaeological Survey Park and Ride Lots-Dulles Airport Area, Fairfax and Loudoun Counties, Virginia	Thomas J. Chadderdon	1994
FX-456	Phase I Archeological Investigations for the NOAA Property Adjacent to the Fourth Runway, Washington Dulles International Airport, Fairfax and Loudoun Counties, Virginia	Charles E. Goode, Katherine L. Farnham, Lynn D. Jones, and Donna J. Seifert	2005
LD-004	The Grumman Site (44LD20): An Archaic Surface Site in Loudoun County, Virginia	Jerry Hastings	1970



VDHR Survey Number	Title	Author	Date
LD-037	Report on Cultural Resources Survey for the Proposed Dulles Toll Road Extension	John H. Haynes	1988
LD-047	Report on Phase I Cultural Resources Survey for the U. S. Postal Service Dulles Facility, Loudoun County, Virginia	John Haynes	1989
LD-053	Historic and Archaeological Survey Report Washington Dulles International Airport, Loudoun and Fairfax Counties, Virginia	Parsons Management Consultants	1989
LD-062	Dulles Toll Road Extension: Phase I Archaeological Survey Report for the Selected Alignment	John H. Haynes, Jr.	1990
LD-072	Phase I Cultural Resource Survey Route 637, Loudoun County, Virginia	Philip Pendleton	1993
LD-087	Phase I Survey of The Broadlands Development, Loudoun County, Virginia	Michael D. Petraglia and John Bedell	1994
LD-102	Phase I Archeological Investigations of The Circa 30 Acre Greenway Corporate Park Parcel, Loudoun County, Virginia	William M. Gardner and Kimberly A. Snyder	2000
LD-111	Phase I Archeological Investigations of the Circa 130 Acre Dulles Parkway Center Parcel, Loudoun County, Virginia	William M. Gardner and Michael Clem	2000
LD-113	A Phase I Archaeological Survey of the Proposed Cub Run Wastewater Pumpover Construction Corridor in Loudoun County, Virginia	Clarence R. Geier, James R. Cromwell, Elaine S. Harlow, and Bruce A. Hunter	1989
LD-115	Phase I Archeological Investigation of the Proposed Runway Construction Zone Dulles International Airport, Loudoun County, Virginia	Benjamin R. Fischler	1999
LD-118	Phase I Archaeological Investigation of the National Oceanographic and Atmospheric Administration Facility Relocation in Loudoun County, Virginia	Thomas N. Gannon	2001
LD-125	A Phase I Archeological Study of the Route 659 Watermain Improvements, the Off Site Sanitary Sewer Northern Tributary Construction, Route 772 Watermain Improvements, and Route 772 Roadway Construction Associated with the Proposed Brambleton Community	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	1999
LD-141	Phase I Cultural Resources Investigations Of 218 Acres on the 352 Acre Loudoun County Sanitation Authority Tract, Loudoun County, Virginia	Alain C. Outlaw, Timothy E. Morgan, and Mary B. Clemons	2001
LD-144	Phase I Archaeological Survey of the Washington Dulles International Airport Portion of the Proposed W-132, Route 606 Water Main, Route 50 to Dulles Trade Center II	Martin T. Fuess and Bryan T. Butina	2003



VDHR Survey Number	Title	Author	Date
LD-156	Archaeological Identification Survey of the Proposed Davis Drive Extension (Route 625) Project Corridor, Associated with the Route 28 PPTA Project, Loudoun County, Virginia	Elizabeth J. Monroe	2004
LD-161	Phase I Archeological Investigations for Runway 4, Washington Dulles International Airport, Fairfax and Loudoun Counties, Virginia	Charles E. Goode, James W. Embrey, Katherine L. Farnham, Lynn D. Jones, and Donna J. Seifert	2004
LD-170	Archaeological Identification Survey of the Proposed Pacific Boulevard to Cedar Green Project Area, Proposed Route 28 Corridor Improvements PPTA Project, Loudoun County, Virginia	Courtney J. Birkett and Elizabeth J. Monroe	2005
LD-171	Phase I Archaeological Survey of the Proposed Broad Run Technology Park Development (SPEX 2004-0027), Sterling, Loudoun County, Virginia	William Hoffman and Thomas Bodor	2005
LD-177	Phase I Archeological Investigations of the Ca. 29 Acre Cockerille Farm Property, Loudoun County, Virginia	Christine Jirikowic, Paw Jorgensen, and Gwen J. Hurst	2004
LD-182	Cultural Resources Survey, Proposed Connector of Pacific Boulevard, Loudoun County, Virginia	Heidi Luchsinger, Bill Hall, and Loretta Lautzenheiser	2006
LD-188	A Phase I Investigation of the Circa 41 Acre Graham-Flynn Assemblage Along Belmont Ridge Road, Loudoun County, Virginia	Joan M. Walker, Joseph Blondino, David Carroll, and Gwen Hurst	2003
LD-191	Cultural Resource Survey of the Proposed 230 kV Brambleton-Greenway Transmission Line, Loudoun County, Virginia	Todd Butler, Edward Moore, and Megan Rupnik	2006
LD-198	An Archaeological Survey of the Proposed Pacific Boulevard Project, Loudoun County, Virginia	Elizabeth J. Monroe	2009
LD-216	Phase I Archeological Investigations of the 340 Acre Minalter Property, Loudoun County, Virginia	Christine Jirikowic and Stephanie Taleff Sperling	2006
LD-218	Addendum: Cultural Resource Survey of the Proposed 230 kV Brambleton-Greenway Transmission Line, Loudoun County, Virginia	Edward Moore	2007
LD-221	Cultural Resources Survey, Proposed Connector of Pacific Boulevard, Loudoun County, Virginia	Dennis Gosser, Bill Hall, and Loretta Lautzenheiser	2007
LD-222	Cultural Resources Survey Proposed Connector of Pacific Boulevard, Loudoun County, Virginia, Addendum: Stormwater Ponds	Loretta Lautzenheiser	2007



VDHR Survey Number	Title	Author	Date
LD-230	A Phase I Investigation of the Circa 420 Acre A.S. Ray Property Along Broad Run, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, John Mullen, and Gwen J. Hurst	2001
LD-240	Cultural Resource Survey of the Ashburn Cellular Tower Site, Loudoun County, Virginia	Heather M. Dollins, Kristen Bloss, and Sean P. Maroney	2007
LD-241	Cultural Resource Survey of Dulles Cellular Tower Site, Loudoun County, Virginia	Heather M. Dollins, Kristin Bloss, and Sean P. Maroney	2007
LD-248	A Phase I Archeological Study of Circa 565 Acres to be Developed as Phase One of the Proposed Brambleton Planned Community, Loudoun County, Virginia	William M. Gardner, Michael Clem, and Gwen J. Hurst	1999
LD-249	A Phase I Archeological Study of Circa 119 Acres Proposed for Development as a Wetlands Mitigation Area, Loudoun County, Virginia	William M. Gardner, Michael Clem, and Gwen J. Hurst	1999
LD-250	A Phase I Archeological Study of Circa 1300 Acres Proposed for Development as part of the Brambleton Planned Community, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2001
LD-253	Phase I Investigation of the Circa 29 Acre Brambleton Buchanan Property, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2002
LD-268	Cultural Resource Survey of the Atlantic Boulevard Extension Project, Proposed Route 28 Corridor Improvements PPTA Project, Loudoun County, Virginia	Elizabeth J. Monroe and Elizabeth M. André	2009
LD-274	A Phase I Archeological Investigation of a Circa 42 Acre Property on Shellhorn Road, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2002
LD-310	Addendum Report: Phase IB/II Archaeological Survey, Dulles Corridor Metrorail Project-Phase 2, Fairfax and Loudoun Counties, Virginia	Frank G. Mikolic and Daniel Wagner	2011
LD-322	Cultural Resources Survey of the Belfort Park Road Network Project, Loudoun County, Virginia	Elizabeth J. Monroe and Mary Ruffin Hanbury	2012
LD-323	Cultural Resources Survey for the Dulles Loop- Route 606 Project, Loudoun County, Virginia	Charles Goode and Sarah Traum	2012
LD-331	Phase I Architectural and Archaeological Survey of the Proposed Waxpool Transmission Line Right-of-Way Expansion Area, Loudoun County, Virginia	David Dutton, Arthur P. Striker, and Danielle A. Worthing	2013
LD-332	Phase I Cultural Resources Survey of the Approximately 350-Acre DuPont-Fabros Development Tract, Loudoun County, Virginia	Amy Humphreys, Dawn Frost, and Carol Tyrer	2011



VDHR Survey Number	Title	Author	Date
LD-333	Supplemental Cultural Resources Survey for the Dulles Loop-Route 606 Project, Loudoun County, Virginia	Charles Goode and Sarah Traum	2013
LD-334	Cultural Resources Survey Environmental Assessment for the Proposed Dulles Air Cargo, Passenger, and Metro Access Highway, Loudoun County, Virginia	J. Eric Deetz, Jeroen van den Hurk, Lindsay Flood, D. Allen Poyner, Amanda Keeny, and Susan E. Bamann	2013
LD-335	Phase I Architectural and Archaeological Survey of the Proposed Waxpool Route D Transmission Line Right-of-Way, Loudoun County, Virginia	David Dutton, Arthur P. Striker, and Danielle A. Worthing	2013
LD-349	A Phase I Cultural Resources Survey for the Proposed VB/VB Loop Replacement for Class Location Change, Loudoun County, Virginia	Aimee J. Leithoff and Ellen Brady	2014
LD-362	Horsepen Run Parallel Sewer and BRIPPI Phase V Alignments, Loudoun County: Phase I Archeological Investigation	Jeremy Smith and Andrés Garzón-Oechsle	2014
LD-365	Phase I Archeological Investigations of the 82.9 Acre Property at 43461 Old Ox Road, Loudoun County, Virginia	Brian Buchanan	2005
LD-366	Phase I Archeological Investigations of the 42.33 Acre Sterling Park Business Center Property, Loudoun County, Virginia	Brian Buchanan	2006
LD-370	Phase I Archeological Investigations of the 25.62 Acre Cedar Green Property, Loudoun County, Virginia	Boyd Sipe	2005
LD-390	Cultural Resources Survey, Proposed Waxpool Road Intersection Project, Loudoun County, Virginia	Elizabeth E. Bell and Mary Ruffin Hanbury	2013
LD-392	Results of a Phase I Archeological Investigation of the Circa 88.8 Acre Beaumeade Corporate Park, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2002
LD-400	Phase I Cultural Resource Survey of the ±1.9 Kilometer (1.2 Mile) DuPont Transmission Line Relocation Project Right-of-Way, Loudoun County, Virginia	David H. Dutton and Cara H. Metz	2016
LD-404	Roundtable Property, Loudoun County, Virginia: Phase I Cultural Resources Investigation	Jeremy Smith and Anna Maas	2016
LD-407	Supplemental Archaeological Survey of Approximately 35 Acres, Dulles Loop-Route 606 Project, Loudoun County, Virginia	Elizabeth E. Bell	2015
LD-408	Archaeological Evaluation of Sie 44LD1726 and Supplemental Survey of Approximately 9.5 Acres, Dulles Loop-Route 606 Project, Loudoun County, Virginia	Elizabeth E. Bell, Elizabeth J. Monroe, and Jessica Bittner	2016



VDHR Survey Number	Title	Author	Date
LD-409	Phase I Archeological Investigations of the Circa 450 Acre Loudoun County Reserve Property, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen Hurst	2001
LD-412	Phase I Archeological Survey of the Proposed Presidential Golf Course, Dulles, Loudoun County, Virginia	Karl Franz and Thomas Bodor	2005
LD-413	Supplemental Phase I Archeological Survey of the Proposed Presidential Golf Course, Dulles, Loudoun County, Virginia	Karl Franz and Thomas Bodor	2006
LD-414	Phase I Cultural Resource Survey of the Belfort Project Area, Loudoun County, Virginia	Mike Klein, Heather Dollins, Marco A. González, and Kerri S. Barile	2014
LD-420	Phase I and Phase II Archeological Investigations for Western Lands Area, Washington Dulles International Airport, Loudoun County, Virginia	Henry Ward, Esther Read, Rob Wanner, and Jane Seiter	2016
LD-449	DLR Waxpool Property-I Cultural Resources Investigation, Loudoun County, Virginia	Daniel Baicy	2015
LD-450	DLR Waxpool Property-Archeological Delineation of the Tippets Hill Cemetery, Loudoun County Virginia	Jeremy Smith	2015
LD-466	Phase I Archeological Survey for the Proposed Columbia Gas Transmission-Line VB & VB Loop Line Replacement Project, Loudoun County, Virginia	Michael B. Hornum, Amanda Melton, and Kevin Clark	2018
LD-480	Washington Dulles Gateway (AKA Antigone) Property, Loudoun County, Virginia, Phase I Cultural Resources Investigation	Thomas Cuthbertson and Jeremy Smith	2018
LD-487	Highpoint-Phase I Cultural Resources Investigation, Loudoun County, Virginia	Daniel Baicy and Thomas Cuthbertson	2016 (Revised 2019)
LD-498	Report on the Cultural Resources Survey: Dulles Toll Road Extension Alignment P	John H. Haynes	1988
LD-532	Phase I Archaeological Survey of the Goupda Property East of Arcola, Loudoun County, Virginia	Michael Clem and Nora Sheehan	2006
LD-536	Lockridge Road/Randolph Drive Intersection Improvements, Loudoun County, Virginia: Phase I Archaeological Survey Technical Report	Jean M. Cascardi, Karen Hutchins-Keim, and Jason Shellenhamer	2020
LD-537	Phase I Cultural Resources Survey of the ±5.21-Hectare (±12.9-Acre) Evergreen 230 kV Transmission Line Loop Project, Loudoun County, Virginia	David H. Dutton and Robert J. Taylor	2020



VDHR Survey Number	Title	Author	Date
LD-538	Management Summary for Phase I Archaeological Survey of Dulles Solar Project Washington Dulles International Airport, Loudoun County, Virginia	Rob Wanner, Joseph Clemens, and Henry Ward	2021
LD-549	Phase I Cultural Resources Investigation, Westwind Drive Extension, Loudoun County, Virginia	Daniel Baicy and Jeremy Smith	2021
LD-561	Phase I Cultural Resource Survey of the DTC 230kV Line Loop Project, Loudoun County, Virginia	Robert J. Taylor and David H. Dutton	2023
LD-566	Phase I Archaeological Survey of the Wil-Jac Property (GPIN 045-27-9612), Loudoun County, Virginia	Luke Donohue and Dan Dilks, Jr.	2022
LD-568	Phase I Archaeological Identification Survey for Prentice Drive/Lockridge Road - Phase II West, Loudoun County, Virginia	Jean M. Cascardi, J. Andrew Ross, and Jerry Warner	2022
LD-573	Digital Sterling Premier-Phase I Cultural Resources Investigation, Loudoun County, Virginia	Edward McMullen and Jeremy Smith	2021
LD-581	Metro 606-Phase I Cultural Resources Investigation, Loudoun County, Virginia	Daniel Baicy, Kathleen Jockel Schnieder, and Edward McMullen	2021 (Revised 2022)
LD-584	Phase I Archaeological Identification Survey for the Prentice Drive/Lockridge Road West-Phase I, Loudoun County, Virginia	Jean M. Cascardi, J. Andrew Ross, and Jerry S. Warner	2022
LD-587	Supplemental Phase I Archaeological Survey of the Dulles Western Solar Development, Washington Dulles International Airport, Loudoun County, Virginia	Rob Wanner, Ben Fischler, and Henry Ward	2022
LD-589	A Phase I Archeological Survey of the Proposed Crown Cell Tower Site Located at 202 Lane Court in Sterling, Loudoun County, Virginia	Ryun Papson and Phillip J. Hill	2006
LD-602	Phase I Cultural Resources Survey, Vantage Data Center Project (VA2), Loudoun County, Virginia	Craig Chartier, Price Laird, Larissa A. Thomas, and Jeffrey L. Holland	2023
LD-623	Phase I Cultural Resource Survey of the ±16.11 Hectares (±39.82 Acre) Dulles 28 Project Area, Loudoun County, Virginia	Hope Smith and Lauren Gryctko	2021
LD-625	Phase I Archeological Investigations of 44LD27 and 44LD143, Loudoun County, Virginia	William M. Gardner and Michael Clem	2000

Source: VDHR 2024

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



### 3. STAGE 1 PRE-APPLICATION ANALYSIS FINDINGS

### 3.1 METHODS OF ANALYSIS

Fieldwork for the pre-application analysis was conducted by Haley Hoffman and Emma Jennings under the direction of Secretary of the Interior Qualified architectural historian, Mary Beth Derrick between April 17 and 18, 2024. The fieldwork involved photographing five resources requiring visual assessment according to the Guidelines and examining potential line-of-sight views from each resource toward the alternative routes. For resources where property owner approval was granted for historic resource documentation, photographs were taken toward the alternative route(s) from the property at the most prominent view of the landscape. When permission to access such locations was not available, photographs were taken from the public right-of-way (typically a road) nearest to the resource facing toward the applicable route(s).

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

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

The following camera and tripod configuration was used:

 Camera body: Nikon z6ii professional specification digital Single Lens Reflex (SLR) (full frame complementary metal oxide semiconductor [CMOS] sensor)



- Camera lens: Nikkor Auto Focus (AF)50mm f1.8 prime
- Tripod: Ulanzi Zero F38 Quick Release Travel Tripod 3131 with Level
- Panoramic head: Nodal Ninja 6 with Nadir Adapter

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

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

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

One resource, the Dulles International Airport Historic District (053-008), could not be accessed due to airport security restrictions; thus, ERM's architectural historians could not obtain panoramic photos from the district. The simulations related to this resource were completed through 3D rendering. An existing conditions 3D model of the study area, including terrain, vegetation, and structures, was created from Google Earth data. The 3D model was georeferenced and compiled with aerial imagery and available lidar data to create a polymodal from RGB colored point cloud information to ensure spatial accuracy. Structures, vegetation clusters, and skylines were cross referenced with lidar data and reference imagery to ensure accurate representation of scale and



placement within the 3D rendering. Atmospheric data were imported into the 3D model to develop a sun and atmospheric system that matches the location specific reference data. Based on computer aided design, GIS, and power line systems computer-aided design data provided by the Company, a 3D model of the Project was constructed. All information was imported into the 3D existing conditions model using the same georeference and projection and then validated for accuracy. 3D materials and associated specular reflectance information were applied to the proposed 3D information. Easement right-of-way expansion was created by deleting 3D trees from the existing conditions model that fall within this expansion. After all the information was property aligned, atmospherics checked, and materials applied, the 3D information was then rendered using highly accurate raytraced render engines. Finally, photo editing software was used to color correct the final images and export them out in a PDF format.

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

Dominion proposes to construct the Golden–Mars Lines within almost entirely new right-of-way varying between 100 and 150 feet wide in a 5-2 configuration. The Golden–Mars Lines will use a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or two-pole H-frame structures (150-foot-wide right-of-way). The Golden–Mars Lines generally will use an H-frame configuration in areas with fewer constraints and a monopole configuration in areas where the right-of-way needs to narrow as much as possible. Dominion will construct the Lockridge 230 kV Loop and Sojourner 230 kV Loop within new 100-foot-wide rights-of-way, using primarily dulled galvanized steel double circuit monopoles.

The distance (span) between transmission structures depends on the type of structure used (monopole or H-frame), as well as topography, ground elevation, and nearby constraints such as bridge or highway on-ramp crossings. For the Golden–Mars Lines, the average span distance for both the monopole and H-frame configuration will be 600 feet, with structure heights ranging from 110 to 185 feet (average of 155 feet).

The average span distance for the Lockridge 230 kV Loop would be 440 feet with structure heights ranging from 55 to 120 feet (average of 104 feet). The average span distance for the Sojourner 230 kV Loop would be 520 feet with structure heights ranging from 50 to 120 feet (average of 104 feet).

### 3.3 ASSESSMENT OF POTENTIAL IMPACTS

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

- **None**–Project is not visible from the resource.
- Minimal-Viewsheds have existing transmission lines, there would be only a minor change in height, and/or other views are partially obscured by topography or vegetation.
- Moderate-Viewsheds have more expansive views of the transmission line, more dramatic changes in height are proposed, and/or the overall visibility of the Project would be greater.



Severe-Existing viewshed contains no transmission line, the view to the Project would be relatively unobstructed, the new transmission line would introduce a significant change to the setting of historic properties, and/or a dramatic change in the height of an existing transmission line would take place in close proximity to historic properties.

### 3.4 HISTORIC RESOURCE DESCRIPTIONS

### 3.4.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District, 053-0008, is in the southwest quadrant of the intersection of Sully Road/Route 28 and Dulles Greenway (Toll Road)/Route 267. 053-0008 encompasses 1,300 acres which occupies portions of the Dulles Airport. The resource includes terminals, runways, and associated buildings. The area surrounding the district is occupied by residential, commercial, and light industrial development in all directions. However, forested and agricultural land lies just outside of the district to the south and west. Due to airport security restrictions, ERM's architectural historians were not able to obtain photos of the historic district at the time of the survey. Consequently, aerial imagery is used for the purposes of this report (Attachment 4, Figure 1).

053-0008 was surveyed in 1978 by the Federal Aviation Administration (FAA) when it was first recommended eligible for listing in the NRHP under Criteria A, B, and C. The assessment also referenced Criteria Consideration G for exceptional buildings less than 50 years old. The resource was surveyed in 1988 by Parsons Management Group (FAA 1978; Parsons Management Consultants 1988) and again by Robert Taylor in 2023 for Dutton + Associates, LLC. 053-0008 represents the first airport designed exclusively for jet travel (Taylor 2023). It was designed by the renowned architect, Eero Saarinen, as one of his most significant works. The design revolved around carefully controlling experiences and perceptions for travelers as they navigated through the airport from entry to boarding. The Dulles Airport opened in 1962. VDHR noted as of 1989 that the district included the following contributing components: 13 structures, 18 mobile lounges, the landscaping plan, and approach road.

The Dulles International Airport Historic District was determined eligible for the NRHP in 1989 by VDHR staff. The district lies within the half mile tier for the Golden-Mars Routes 1, 2, 3, 4, and 5, and the Sojourner Loop.

### 3.4.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The W&OD Railroad Historic District, 053-0276, encompasses 547.45 acres within Arlington, Fairfax, and Loudoun Counties and City of Falls Church, though this report only addresses the portion of the resource within the study tiers for this Project (Attachment 4, Figure 2). The historic district includes six contributing resources (053-0276-0001, -0002, -0003, -0004, -0005, and -0006); however, only 053-0276-0001 (Washington & Old Dominion Railroad) is within the boundaries of the Golden-Mars Lines. The park is owned by the Northern Virginia Regional Park Authority. A trail, called the W&OD Trail, built on the former railroad bed, travels through the urban heartland and countryside of Northern Virginia, running from Shirlington in Arlington County to Purcellville in Loudoun County. This 45-mile long and 100-foot-wide corridor features a hard-



surfaced pedestrian and bicycle trail as well as an adjacent 33-mile bluestone-surfaced bike path between Purcellville and Vienna. For the current Project in 2024, ERM observed portions of the trail and alignment near Pacific Boulevard and on the pedestrian bridge above Sully Road in Sterling, and it appeared to be in good condition.

Built as the Alexandria, Loudoun, and Hampshire Railroad in 1855, the resource was one of the region's major commercial and transportation arteries during the mid to late nineteenth century. The founders hoped to recapture Alexandria's past glory as a world trade center by constructing a rail line from the west over the Allegheny mountains to Alexandria's fading seaport. In 1858, a portion of the line was completed to Leesburg, 38 miles away from Alexandria, with passenger cars arriving in 1860. The Southern Railway purchased the line in 1900, merging it with its own rail network. By 1911, the line transitioned from steam to electric, making it Virginia's largest interurban system to date. As one of the nation's largest steam-to-electric conversion projects, it included 72 route miles, 17 of which were double tracked. Passenger and freight traffic declined with the advent of the automobile in the 1940s and 1950s (Ross 1999).

Although it never reached its goal as a trunk line from the Shenandoah Valley to Alexandria, it served as a local carrier facilitating local development. The line was crucial during the Civil War and Spanish American War, and it also enabled the development of the early Washington, D.C. suburbs of Falls Church and Dunn Loring. The railroad carried vacationers to the Blue Ridge Mountains and hauled agricultural products from the surrounding countryside to Washington, D.C. In its final years, it transported materials used in the construction of Dulles Airport and the Capital Beltway before its demise in 1968 (Neville 2000; Shiflett 2022). The railroad was abandoned in 1968, and the right-of-way purchased by Virginia Electric and Power Company to construct transmission lines. The tracks were removed in the 1970s. In 1982, the Northern Virginia Regional Park Authority purchased 45 miles of the rail bed for use as a public park (Shiflett 2022).

In 1999, Helen P. Ross surveyed the W&OD Railroad and its features, noting that the alignment, grading, bridges, culverts, six stone arches, and six depots and freight stations remained intact. The surveyor noted many of the original features such as the rolling stock, rails, ballast, fencing, repair shops, station houses, water stations, and woodsheds were no longer extant (Ross 1999).

In 2000, Ashley M. Neville prepared an NRHP nomination form for the historic district (Neville 2000). Subsequent surveys of portions of the historic district occurred in 2006, 2008, 2010, 2012, 2013, 2014, 2016, 2018, and 2022 (Andre 2008; CCR, Inc. 2006; DeChard 2022; Derrick 2018; Dovetail CRG 2008, 2010; Hanbury 2012, 2013; Jacobe 2014; Schlupp 2016; Traum 2014).

VDHR determined 053-0276 eligible for the NRHP under Criterion A for its contribution to the broad patterns of Northern Virginia history in the areas of transportation and commerce. VDHR determined 053-0276-0001 eligible for the NRHP in 1999. The railroad is historically significant as one of the major commercial and transportation arteries of the Northern Virginia area from the mid-nineteenth century through the mid-twentieth century. 053-0276 lies within the right-of-way study tier for Golden-Mars Routes 1, 2, 3, 4, and 5.



### 3.4.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church, 053-0968, is located at 1001 Ruritan Circle, situated on the south side of the road, north of Church Street (Attachment 4, Figure 3). A large parking lot is located to the east of the church, while other commercial properties are to the north and west. The surrounding environment is developed and contains dense suburbs of residential dwellings to the northeast, east, and south.

The resource was most recently surveyed by Elizabeth Andre in 2008. 053-0968 includes a onestory, circa 1873 Gothic Revival church and a circa 1870 shed. The church was described as a frame building clad in board and batten, with a square tower capped by a pyramidal roof with an open belfry (Andre 2008). Pointed arch windows and a pointed arch transom over the front door were also visible, along with a one-story, side-gabled, brick-veneer addition located on the east elevation. The church was in good condition. The circa 1870 shed was described as a one-story, standing seam metal, gabled-roof masonry shed located northwest of the church. Weatherboard siding covered the peaks of the gables, and a louvered cupola was centered on the roof (Andre 2008). The shed was also in good condition.

ERM visited the resource in 2024 and noted major changes since the 2008 survey. First, the 2008 survey fails to mention a two-story, 18-room wing education center that was added to the east elevation in 1966 (Gunderman 2018). This wing has a brick exterior and a side-gabled, asphalt shingle roof. In addition, according to aerial views, the original church was demolished in 2018 (Loudoun County Virginia Online Mapping System 2024). A much larger structure was built in 2019, but the education center remains, attached to its southeast corner. The current church is called the Debre Haile Kidus Raguel Cathedral, and is an Ethiopian Orthodox Church. It displays architectural stylistic elements consistent with that tradition. It is a front-gabled structure that features a dome and a square tower with a domed roof. An arcade of pointed and rounded arches spans the façade on either side of the tower, which contains the double-door entrance and vestibule. The outbuilding mentioned in the 2008 survey is no longer extant, but a circa 1990 garage is located on the parcel.

The Guilford Baptist Church was determined to be a contributing element of the Guildford Historic District (053-6237) by Marc Holma with the VDHR in 2009, but it was not formally evaluated as an individual resource. Although the nineteenth-century portion of the building is no longer extant, ERM considered the Guilford Baptist Church locally significant for the purposes of this Project due to its religious association with the early local community, albeit represented only by the surviving 1960s addition that was once connected to the original sanctuary. 053-0968 is located within the 1-mile study tier for Golden-Mars Lines Routes 1, 2, 3, 4, and 5.

### 3.4.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery (also Tippet Hill and Tippet's Hill), 053-6406, is a locally significant African American resource within Loudoun County. The resource represents an active African American cemetery located off Vantage Data Plaza in Sterling, Virginia, between Pacific Boulevard and Sully Road (Attachment 4, Figure 4). The boundary of the resource defined in VCRIS covers approximately 0.95 acre.



Tippet's Hill Cemetery (053-6406) was previously recorded in 2015 by John Mullen of Thunderbird Archaeology. Mullen described the cemetery as having 115 grave markers of varying styles, with the earliest reported interment dating to 1863 (Mullen 2015). The survey delineated the boundaries of the cemetery, but no details on the findings were provided.

The online cemetery database, Find A Grave, lists 134 memorials within the cemetery (Find A Grave 2023). The oldest grave listed in Find A Grave is Philip J. Coleman, a Confederate soldier who died on July 23, 1863, of wounds sustained in battle on June 9, probably at the Battle of Manassas Gap. However, no photograph of this burial is included with the listing, and no marker for this grave was found by Mullen. The most recent burial recorded in Find A Grave was in 2023. Coleman is the only reported burial dating to the nineteenth century and, as a private in the Confederate army in 1863, he was white. The next oldest graves are members of the African American Johnson, Nokes, and Ewing families from the first three decades of the twentieth century. It is possible that the attribution of Coleman's grave to this cemetery is an error.

According to a historical marker placed at the entrance to the cemetery, the "burying ground" originally served as the slave cemetery for the Tippet's Hill Plantation and markers in the cemetery date to the 1700s. However, no markers or graves of that age have been recorded in previous surveys. The cemetery was turned over to the residents of the Nokes Mountain community in the early 1900s. The Nokes Mountain community was first established in 1901 by George Washington Nokes, who was the first African American landowner in eastern Loudoun County. The location of his home is also a locally significant African American site, 053-5223, at the corner of Nokes Boulevard and Atlantic Boulevard. The community had a small schoolhouse in the 1920s along with Tippet's Hill Cemetery. Beyond George Washington Nokes, the Ewings family was another early African American family that owned land in the community; they operated a large dairy farm. The Nokes Mountain community did not have a church until 1962, when First Baptist was organized (Lee 2004). According to the historical marker, Tippet's Hill Cemetery is still administered by the descendants of Clarence L. Nokes, Sr. (1890–1985), who was one of its longtime caretakers.

The marker at the cemetery was placed in accordance with an agreement that was part of an application by a developer in 2018 to construct data centers on properties surrounding the cemetery. The applicant also agreed to fence off the cemetery during construction, suspend construction during funerals, pave an existing gravel road onto the property from Moran Road, provide four parking spaces, improve pedestrian paths in the cemetery, and remove and replace dead and diseased trees within a 25-foot buffer around the cemetery (Greene 2018). ERM was not able to survey the cemetery in 2024 due to the vegetation surrounding the resource, but no significant changes were visible from the public right-of-way or aerial imagery.

053-6406 has not been formally evaluated by the VDHR. ERM has categorized the resource as locally significant for the purposes of this Project due to its association with the African American community. 053-6406 lies within the half-mile study tier for Golden-Mars Routes 1, 2, 3, 4, and 5.

### 3.4.5 053-6416, OX ROAD TRACE

The Ox Road Trace, 053-6416, includes 0.33-acre ford and road trace that runs northwestsoutheast on the south side of Loudoun County Parkway, west of Waxpool Road (Attachment 4,



Figure 5). The road trace leads to the Broad Run Ford. Approximately 500 feet (of 930 feet) of the road has been paved as a current access road associated with an adjacent data center and additional development in the area (Taylor 2021, 2023).

The road trace was constructed starting in circa 1728 and completed circa 1740 by Robert "King" Carter's son, Charles Carter to provide a way from Frying Pan Mine in Loudoun County to Copper Mine Landing on the Occoquan (History of Loudoun County, Virginia 2024). The transportation improvement served the tobacco industry until it became a secondary road to the Leesburg Turnpike circa 1820. The resource was most recently surveyed in 2023 by Robert Taylor, who noted that the road trace was cleared of surrounding vegetation and used as an access road for the data center complex. The ford was still evident but lined by riprap. ERM visited the resource in 2024 and noted no changes since the previous survey.

The road trace was determined to be potentially eligible for listing on the NRHP by the VDHR in 2016. Although many sections of the road have been improved and updated, previous surveyors believe that the sections that remain convey the "historic form and configuration" of the road trace and should therefore continue to be considered potentially eligible for listing on the NRHP. ERM included the resource as locally significant due to its association with the early history of the community. 053-6416 is within the half-mile tier for Golden-Mars Routes 1 through 5 and the one-mile tier for Lockridge Loop.

# 3.5 HISTORIC FINDINGS FOR GOLDEN-MARS LINES

# 3.5.1 HISTORIC FINDINGS FOR ROUTE 1

# 3.5.1.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 1 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 1). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 2). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east



of the KOP). Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

# 3.5.1.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 1 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 3). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 1 would be visible from the intersection of the route and the resource (Attachment 5, Figure 4). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 5). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

# 3.5.1.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 1 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 6). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 7). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

# 3.5.1.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 1 in an area where the route uses a greenfield alignment (Attachment 5, Figure 8). The route also intersects Dominion's



existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 9). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

## 3.5.1.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 1 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 10). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 11 and 12). As shown from the simulations, a transmission line along Route 1 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

# 3.5.2 HISTORIC FINDINGS FOR ROUTE 2

# 3.5.2.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile to the south of Route 2 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 13). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.



Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 14). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which t is within the half-mile study tier for the route. Mature vegetation and distance between the district and the transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

# 3.5.2.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 2 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 15). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two simulations were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 2 would be visible from the intersection of the route and the resource (Attachment 5, Figure 16). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 17). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

# 3.5.2.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 2 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 18). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 19). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing



Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

# 3.5.2.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 2 in an area where the route uses a greenfield alignment (Attachment 5, Figure 20). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 21). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

# 3.5.2.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 2 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 22). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 23 and 24). As shown from the simulations, a transmission line along Route 2 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-6416, Ox Road Trace.



# 3.5.3 HISTORIC FINDINGS FOR ROUTE 3

# 3.5.3.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 3 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 25). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 26). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

# 3.5.3.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 3 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 27). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 3 would be visible from the intersection of the route and the resource (Attachment 5, Figure 28). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 5). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines.



Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

# 3.5.3.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 3 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 30). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 31). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

# 3.5.3.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 3 in an area where the route uses a greenfield alignment (Attachment 5, Figure 32). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 33). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

# 3.5.3.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 3 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 34). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 35 and 36). As shown from the simulations, a transmission line along Route 3 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route.



Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

# 3.5.4 HISTORIC FINDINGS FOR ROUTE 4

# 3.5.4.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 4 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 37). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 38). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

# 3.5.4.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 4 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 39). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 4 would be visible from the intersection of the route and the resource (Attachment 5, Figure 40). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion



transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 41). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

# 3.5.4.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 4 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 42). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 43). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

#### 3.5.4.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 4 in an area where the route uses a greenfield alignment (Attachment 5, Figure 44). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 45). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.



# 3.5.4.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 4 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 46). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 47 and 48). As shown from the simulations, a transmission line along Route 4 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

# 3.5.5 HISTORIC FINDINGS FOR ROUTE 5

# 3.5.5.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 5 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 49). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 50). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 5 would have a **Minimal Impact** on the 053-0008, the Dulles International Airport Historic District.

# 3.5.5.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 5 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure



51). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 5 would be visible from the intersection of the route and the resource (Attachment 5, Figure 52). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 53). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

# 3.5.5.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 5 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 54). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 55). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

#### 3.5.5.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 5 in an area where the route uses a greenfield alignment (Attachment 5, Figure 56). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 57). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however,



would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

# 3.5.5.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 5 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 58). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 59 and 60). As shown from the simulations, a transmission line along Route 5 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

# 3.6 HISTORIC FINDINGS FOR LOCKRIDGE LOOP

# 3.6.1 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 0.59 mile north of the proposed Lockridge Loop in an area where the route uses a greenfield alignment (Attachment 5, Figure 61). The surrounding area is wooded, with pockets of commercial and data center developments. The Lockridge Loop connects to the Golden-Mars Lines in this area.

One simulation was prepared for the resource at KOP 014 (Attachment 5, Figure 62). As shown in the simulation, the Lockridge Loop would not be visible from the resource due to distance and intervening vegetation. Thus, ERM recommends that the Lockridge Loop would have **No Impact** on 053-6416, Ox Road Trace.

# 3.7 HISTORIC FINDINGS FOR SOJOURNER LOOP

# 3.7.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.41 mile south of Sojourner Loop in an area where the route uses a greenfield alignment to the point where it connects to the planned Mars Substation, part of the approved Mars-Wishing Star Project (Attachment 5, Figure



63). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. The Sojourner Loop connects to the Golden-Mars Lines in this area.

No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport. Given the absence of accessible viewpoints from the resource, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 64). As shown in the simulation, the Sojourner Loop would not be visible from the resource boundary due to intervening vegetation. Thus, ERM recommends that the Sojourner Loop would have **No Impact** on 053-0008, the Dulles International Airport Historic District.

# 3.8 ARCHAEOLOGY FINDINGS

There are 17 previously recorded archaeological sites adjacent to or within the right-of-way for the route alternatives (Table 12). Five of the previously recorded sites have been evaluated as not eligible for the NRHP and the remaining 12 sites are currently unevaluated for NRHP eligibility.



# TABLE 12 ARCHAEOLOGICAL RESOURCES WITHIN THE RIGHT-OF-WAY FOR THE ROUTE **ALTERNATIVES**

	Alternative Routes							
	G	olden-Ma	ars 500-2	230 kV Lir	Lockridge 230 kV Loop	Sojourner 230 kV Loop		
Considered Resource	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge Loop	Sojourner Loop	
44LD0111	x	Х	x	х	x			
44LD0170	x	х	x	х	x			
44LD0330					х			
44LD0332	х	х						
44LD0333	х	х						
44LD0334		х						
44LD0335		Х	х					
44LD0472	х	Х	x	х	х			
44LD0945	х	х	х	х	х			
44LD1244	х				х			
44LD1311	х				х			
44LD1737							Х	
44LD1742	x	Х	Х	х	х			
44LD1909	x	Х	Х	х	х			
44LD1916						Х		
44LD1922	х				х			
44LD1978	х	х	X	Х	х			

"X" indicates that the resource is within the right-of-way or directly adjacent to the route.



The sites that would be impacted by each route are described below. The descriptions include information on the eligibility of each site for listing in the NRHP as well as an assessment of each site's condition based on desktop review. A confident evaluation of the nature of archaeological deposits at each site and impacts from prior land use activities would require a field survey to verify the desktop analysis.

# 3.8.1 GOLDEN-MARS LINES

# 3.8.1.1 ROUTE 1

Twelve previously recorded archaeological sites were identified within or adjacent to Route 1: 44LD0111, 44LD0170, 44LD0332, 44LD0333, 44LD0472, 44LD0945, 44LD1244, 44LD1311, 44LD1742, 44LD1909, 44LD1922, and 44LD1978.

44LD0111 is a prehistoric (Early Archaic) temporary camp previously assessed as not eligible for listing in the NRHP due to impacts from land clearing and commercial development. The Route 1 right-of-way partially intersects approximately 300 feet within the eastern site boundary, with most of 44LD0111 to the north and west within developed lands in the Company's Buttermilk Substation, the right-of-way of existing Lines #2152/#2170, and a Digital Loudoun data center. The site was first investigated in 1979, but efforts in 2015 to find the site again were unsuccessful. The authors of a subsequent 2016 study speculated that either the site location was incorrectly plotted in 1979, or the site had been destroyed (Smith and Maas 2016). ERM's review of aerial photography indicates the site was disturbed (and likely destroyed) by construction of the existing transmission line in 2006, the excavation of borrow pits in 2008, and construction of the data center and substation between 2016 and 2019.

Site 44LD0170 is a prehistoric temporary camp site with an unspecified temporal affiliation. Approximately 300 feet of the Route 1 crosses the site's northern boundary. Initially recorded in 1981, the site was the subject of additional Phase I investigations in 2012, 2013, and 2014. After the 2012 survey, VDHR concluded that the site is not eligible for listing in the NRHP due to low artifact density. The final survey in 2014 failed to find the site again and current aerial imagery indicates the area has since been developed, indicating that 44LD0170 has been destroyed (Monroe 2014). ERM's review of aerial photography indicates that the site was cultivated or fallow through 2016. An electric distribution line was built across the site in that year, and most of the site was cleared and graveled for a contractor yard or parking area in 2019. The site is nearly completely covered by the parking area and adjacent road.

Site 44LD0332 is an unknown prehistoric temporary camp site disturbed by previous land clearing and the installation of a paved walking trail. Approximately 200 feet of the Route 1 right-of-way intersects the northwestern boundary of the site, which has not been assessed for NRHP eligibility. The original site form for 44LD0332 records a light lithic scatter lacking in diagnostic artifacts or intact cultural features (Rust and Wilson 1981a). ERM's review of aerial photography indicates the site area was cultivated through the mid-1990s, then fallow through the mid-2000s, then disturbed by construction of Loudoun County Parkway and an adjacent walking path from 2006 to 2007. Due to the previous ground disturbance, it is unlikely that any intact cultural remains are present at the site.



Site 44LD0333 is an unknown prehistoric temporary camp site that has been disturbed by previous land clearing and the installation of a paved walking trail. The Route 1 right-of-way crosses more than 100 feet within the northern half of the site, which has not been assessed for NRHP eligibility. The original archaeology site form for 44LD0333 recorded a light lithic scatter lacking in diagnostic artifacts or intact cultural features (Rust and Wilson 1981b). Review of aerial photography by ERM indicates the site area was cultivated through the mid-1990s, then fallow through the mid-2000s, then disturbed by construction of a Loudoun County Parkway and an adjacent walking path from 2006 to 2007. Due to previous ground disturbance, it is unlikely that any intact cultural remains are present at the site.

44LD0472 is a prehistoric (Late Archaic) lithic scatter previously disturbed by road grading, whose eligibility for listing in the NRHP is undetermined (Haynes 1990). The site's western boundary is directly adjacent to the Route 1 right-of-way. Based on ERM's review of aerial photography, 44LD0472 is within a small area which has been forested since at least 1949. Although adjacent areas have been cultivated and/or disturbed by road construction and/or utility installations, ERM found no direct evidence of previous disturbance at the site on examined aerial photography. The site condition is therefore unknown.

44LD0945 is a historic (twentieth century) multiple-dwelling site previously disturbed by surrounding commercial development and roadside grading, although the eligibility of the site for listing in the NRHP is undetermined. Most of the site is within the Route 1 right-of-way. A previous Phase I survey recorded a historic artifact scatter they associated with two structures east of the site dating from the 1960s that were demolished by 1994 (Goode 2002). Review of aerial photography by ERM indicates that the area within the site boundary was cultivated or fallow farmland from at least 1949 to 2004. In 2002, an electric distribution line was built across the southern edge of the site and in 2006 the site was disturbed by grading and commercial development. The site today is partially covered by a parking lot and partially covered by a paved walking trail and Old Ox Road. There is little potential of intact deposits at the site from the previous impacts.

44LD1244 is a historic (eighteenth century) farmstead site whose eligibility for listing in the NRHP is categorized in VCRIS as unevaluated; however, the history of cultural resource investigations indicates the site was previously determined or treated as eligible. More than 100 feet of Route 1 crosses the site's northern boundary. A 2019 Phase III mitigation investigation found many diagnostic artifacts and intact cultural features associated with the farmstead within the central portion of the site area (Smith 2020).<sup>5</sup> ERM's review of aerial photography indicates that the Route 1 right-of-way is due north of the part of the site covered by the Phase III investigation, in a partially cleared forested area next to the Dulles Greenway. While this area may have been impacted by previous road and utility construction, there is no conclusive evidence of previous disturbance on examined photography. Therefore, intact deposits and features could exist in the portion of the site crossed by the route.

<sup>&</sup>lt;sup>5</sup> Completion of a Phase III-level investigation at the site implies it was considered or treated as eligible for listing in the NRHP.



44LD1311 is a historic (nineteenth and twentieth century) dwelling site whose eligibility for listing in the NRHP has not been assessed. The Route 1 right-of-way crosses less than 100 feet of the southern boundary of the site. A 2025 Phase I recorded 44LD1311 as a historic domestic artifact scatter, partially destroyed by previous ground disturbance activities (Thunderbird Archeology 2005). ERM's review of USGS topographic quadrangles found two structures at the site on a map dating from 1951 and one structure on a map dating from 1966. Aerial photography dating from 1949 to 1994 shows multiple farm structures at the site, but all buildings are gone on photography from 2002. The eastern approximately one-third of the site was paved over by a road in 2020.

44LD1742 is a historic (early twentieth century) schoolhouse site (Carter Schoolhouse) previously evaluated as not eligible for listing in the NRHP. The site is entirely within the Route 1 right-of-way in a forested area east of Carters Schoolhouse Road. Previous Phase I and Phase II investigations at 44LD1742 in 2016 recorded the ruined foundation of a one-room schoolhouse with modern dumping obscuring much of the archaeological remains (Ward et al. 2016). The site is located on in a forested area. ERM's review of USGS topographic quadrangles found the school depicted on maps from 1951 and 1966 but not on maps from 1994. The school is visible on aerial photography dating from 1949 to 1980.

44LD1909 is a historic (twentieth century) single dwelling site previously determined not eligible for listing in the NRHP. Less than 50 feet of Route 1 crosses the southernmost portion of the site. A 2020 Phase I survey recorded a light historic artifact scatter lacking intact cultural deposits or features and with little research value (Smith and Gryctko 2021). ERM's review of historic USGS topographic quadrangles indicates that the dwelling once present at the site was built in the first half of the twentieth century sometime after 1908 and prior to 1952. The dwelling and an outbuilding are visible on aerial photography of the site dating from the early 1960s to 2015. Both buildings appear to have been demolished between 2015 and 2016. The site is area is currently forested, with a concrete pad and debris visible through the foliage on 2024 aerial photography.

44LD1922 is a late nineteenth to early twentieth-century single dwelling site, characterized by structural ruins and a scatter of domestic and architectural artifacts, whose NRHP eligibility has not been assessed, although it was recommended not eligible by a previous investigator. The site is directly adjacent to the Route 1 right-of-way in a forested area bordered to the east and north by roads and to the west by a residential development. The investigators for a 2021 Phase I survey concluded that between 25 and 49 percent of the site was destroyed (Nubgaard 2021). ERM's review of USGS topographic quadrangles documented one or more structures at the site on maps dating from 1915 to 1994. Aerial photography dating from 1949 to 1991 similarly show a farmhouse and outbuildings at the site. The buildings were removed from the site by 2022. Other than removal of the buildings, there is no indication of previous disturbance at the site in examined images.

44LD1978 is a historic (twentieth century) artifact scatter disturbed by previous land clearing activities and construction of an access road, which bisects the site. According to the VCRIS, the site's eligibility for listing in the NRHP is undetermined, although a 2022 Phase I survey interpreted the site as a secondary deposit of domestic refuse not eligible for listing in the NRHP (Jockel 2022). Route 1 intersects the northwest corner of the site, which is forested other than the



access road. ERM's review of aerial photography suggests that the access road occupies what was once a small, tree-lined drainage passing through a cultivated field in production from at least 1949 to the early 1990s. At that time, the field began reverting to forest, with the access road cleared in 2006.

# 3.8.1.2 ROUTE 2

ERM identified 11 previously recorded archaeological resources mapped within the Golden-Mars Route 2 right-of-way. Of these, seven sites—44LD0111, 44LD0170, 44LD0333, 44LD0472, 44LD0945, 44LD1742, 44LD1909, and 44LD1978—are along segments of Route 2 that share a common alignment with Route 1. Impacts on these sites would be the same as described above for Route 1. The Route 2 right-of-of-way intersects a ninth site, 44LD0332, also crossed by Route 1 but along a different alignment. As noted above, ERM concluded based on the results of a previous survey and review of site conditions via aerial photography, that due to previous ground disturbance, intact cultural remains are unlikely to be present at the site.

44LD0334 is an unknown prehistoric temporary camp site that has been previously disturbed by land clearing and is currently unevaluated for NRHP eligibility. More than 100 feet of Route 2 bisects the northeastern portion of the site. A 2003 survey recorded a light surface lithic scatter described as largely destroyed (Richards 2003). ERM's review of aerial photography indicates the site area was cultivated from at least 1949 to the mid-1990s and fallow from then until through 2008. The Loudoun Valley Estates II residential development was built between 2010 and 2012 on the parcel containing the site, with the resource in a cleared area on the periphery of the development maintained as mowed grassland. Based on the results of the previous study and observed impacts, it is unlikely that intact cultural deposits are present at the site.

44LD0335 is a prehistoric temporary camp whose eligibility for listing in the NRHP is undetermined. Approximately 200 feet of Route 2 bisects the site, which occupies a forested area along Broad Run. When first recorded in 1981, the site consisted of a surface scatter of nondiagnostic lithic artifacts. A 2004 Phase I survey found one lithic artifact on the site surface. The 2004 investigators additionally noted that construction of the Broad Run Interceptor through the area appeared to have disturbed the site (Bodor and Hoffman 2004). ERM's review of aerial photography indicates that the site area was cultivated or fallow from at least 1949 through the 1980s, then reforested through the 1990s, remaining as such today. Based on the previous surveys, it is unlikely that intact cultural deposits are present at the site.

#### 3.8.1.3 ROUTE 3

ERM identified eight previously recorded archaeological resources mapped within the Golden-Mars Route 3 right-of-way. Of these, seven sites—44LD0111, 44LD0170, 44LD0472, 44LD0945, 44LD1742, 44LD1909, and 44LD1978—are along segments of Route 3 that share common alignments with Routes 1 and/or 2. Impacts on these sites would be the same as described above Routes 1 and 2. The Route 3 right-of-of-way also intersects 44LD0335, but along a different alignment than Route 2. As noted above, ERM concluded based on the results of a previous survey and review of site conditions via aerial photography, it is unlikely that intact cultural deposits are present at the site.



## 3.8.1.4 ROUTE 4

ERM identified seven previously recorded archaeological resources mapped within the Golden-Mars Route 4 right-of-way: 44LD0111, 44LD0170, 44LD0472, 44LD0945, 44LD1742, 44LD1909, and 44LD1978. All seven sites are along segments of Route 4 that share common alignments with Routes 1, 2, and/or 3. Impacts would be the same as described above for the other routes.

## 3.8.1.5 ROUTE 5

ERM identified 11 previously recorded archaeological resources mapped within the Golden-Mars Route 5 right-of-way. Of these, ten sites—44LD0111, 44LD0170, 44LD0472, 44LD0945, 44LD1244, 44LD1311, 44LD1742, 44LD1909, 44LD1922, and 44LD1978—are along segments of Route 5 that share common alignments with Routes 1, 2, 3, and/or 4. Impacts would be the same as described above for the other routes.

Site 44LD0330 is a prehistoric temporary campsite with an unspecified temporal affiliation whose eligibility for listing in the NRHP has not been assessed. Approximately 205 feet of Route 5 bisects the center of the site, which was recorded in 1981 and has not been subject to further survey (Rust 1981). Based on current aerial imagery, the site is beneath and was likely destroyed by construction of a road.

# 3.8.2 LOCKRIDGE LOOP

ERM identified one previously recorded archeological resource within the Lockridge Loop.

Site 44LD1916 is a prehistoric lithic scatter with an unspecified temporal affiliation that has been determined not eligible for listing in the NRHP. Approximately 300 feet of the route crosses the site's southern boundary. A 2018 Phase I survey recorded the site as a light lithic scatter lacking in diagnostic artifacts or intact cultural features (Cascardi et al. 2020). ERM's review of aerial photography indicates that the site was pasture or agricultural land from at least 1949 through the 1970s. Since then, the site has reforested and remains woodland.

# 3.8.3 SOJOURNER LOOP

One previously recorded archaeological site was identified within the Sojourner Loop: 44LD1737.

44LD1737 is a historic (twentieth century) farmstead site that has been evaluated as ineligible for listing in the NRHP. Approximately 200 feet of the route intersects the southern portion of the site. The VDHR evaluation notes indicate that the site consisted of a historic farmhouse and barn, with evidence that the house was burned and the remains removed from the site. No additional cultural features were identified. The VDHR investigators concluded the site lacked the subsurface integrity to be considered significant (Wanner 2016). The Company's Sojourner Substation was built over the site.



# 4. CONCLUSION AND RECOMMENDATIONS

The pre-application analysis gathered information on archaeological and historic architectural resources that qualify for consideration according to the VDHR Guidelines for transmission line projects.

Seventeen known archaeological sites are adjacent to or located in the right-of-way of the transmission line routes reviewed in this study. An assessment of the condition and research potential of those sites is contingent upon archaeological field investigations, which will be conducted at relevant sites once a preferred route is selected by the SCC. Potential impacts to sites along the preferred route will be assessed as part of the field survey.

Five aboveground historic resources fall within the VDHR study tiers for the routes under consideration. A comparison of the number of resources impacted and the degree of impact of each route is presented in Table 13. The specific resources affected by each route are covered in the subsections that follow.

	Number of Considered Resources in Each Impact Category							
Route Alternative	None	Minimal	Moderate	Severe	Totals			
Golden-Mars Route 1		5			5			
Golden-Mars Route 2		5			5			
Golden-Mars Route 3		5			5			
Golden-Mars Route 4		5			5			
Golden-Mars Route 5		5			5			
Lockridge Loop	1				1			
Sojourner Loop	1				1			

# TABLE 13COMPARISON OF PROJECT IMPACTS ON HISTORIC RESOURCES IN THE STUDYAREAS OF THE ALTERNATIVE ROUTES

Final assessments of Project impacts will be dependent on the completion of identification-phase archaeological and historic structure surveys along the Golden-Mars route selected by the SCC followed by review of survey results by VDHR and other consulting parties. For any resources where the agencies concur in a finding of moderate or severe impact, the Company will propose treatments to avoid, minimize, or mitigate those impacts. Treatment options for archaeological sites could include selective structure placement to avoid direct impacts on sites, minor route adjustments to avoid crossing sites, or archaeological data recovery. Treatment options for aboveground historic resources could include detailed site documentation, historic research, and historic preservation studies; preparation of digital media or museum-type exhibits on sites for public interpretation; installation of historic markers or signs; installation of vegetative screening; or contributions to historical preservation organizations or specific preservation projects. Additional mitigations could be identified through consultation with VDHR and other consulting parties.



# 4.1 GOLDEN-MARS LINES

# 4.1.1 ROUTE 1

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 1 (Table 14). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).

# TABLE 14 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 1

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
	National Register Properties (listed)	-	-	-
0.5 to 1.0	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
0.0 to 0.5	Locally Significant (National Register—Unevaluated)	053-6406	Tippet's Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

Source: VDHR 2024

ROW = right-of-way

# 4.1.2 ROUTE 2

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 2 (Table 15). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).



Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
	National Register Properties (listed)	-	-	-
0.5 to 1.0	Locally Significant (National Register–Unevaluated)	053-0968	Guilford Baptist Church	Minimal
	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
0.0 to 0.5	Locally Significant (National Register–Unevaluated)	053-6406	Tippet's Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

#### TABLE 15 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 2

Source: VDHR 2024

ROW = right-of-way

# 4.1.3 ROUTE 3

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 3 (Table 16). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).



Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
	National Register Properties (listed)		-	-
0.5 to 1.0	Locally Significant (National Register–Unevaluated)	053-0968	Guilford Baptist Church	Minimal
	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
0.0 to 0.5	Locally Significant (National Register–Unevaluated)	053-6406	Tippet's Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

#### TABLE 16 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 3

Source: VDHR 2024

ROW = right-of-way

## 4.1.4 ROUTE 4

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 4 (Table 17). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).



Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
	National Register Properties (listed)		-	-
0.5 to 1.0	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register—Unevaluated)	053-6406	Tippet's Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

#### TABLE 17 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 4

Source: VDHR 2024

ROW = right-of-way

## 4.1.5 ROUTE 5

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 5 (Table 18). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).



Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
	National Register Properties (listed)	-	-	-
0.5 to 1.0	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register—Unevaluated)	053-6406	Tippet's Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

#### TABLE 18 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 5

Source: VDHR 2024

ROW = right-of-way

# 4.2 LOCKRIDGE LOOP

One previously recorded historic resource meets the criteria specified in the Guidelines within the VDHR study tiers for the Lockridge Loop (Table 19). The route would have no impact on one resource (053-6406).

# TABLE 19IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR THELOCKRIDGE LOOP

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
	National Register Properties (listed)	-	-	-
0.5 to 1.0	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	None
0.0 to 0.5	National Register—Eligible	-	-	-
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	-	-	-

Source: VDHR 2024

ROW = right-of-way



# 4.3 SOJOURNER LOOP

One previously recorded historic resource meets the criteria specified in the Guidelines within the VDHR study tiers for the Sojourner Loop (Table 20). The route would have no impact on one resource (053-0008).

TABLE 20	IMPACTS ON	HISTORIC	RESOURCES	IN THE	VDHR	STUDY	TIERS FOR THE	
SOJOURNE	R LOOP							

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	None
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	-	-	-

Source: VDHR 2024

ROW = right-of-way

# 4.4 FUTURE INVESTIGATIONS

The next stage of assessing impacts on historic resources will be to conduct an identificationphase field survey to identify and assess resources along the Lockridge and Sojourner Loops and the Golden-Mars route selected by the SCC. Survey will be conducted in accordance with the following guidelines:

- Guidelines for Assessing Impacts of Proposed Electrical Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (VDHR 2008);
- Guidelines for Conducting Historic Resources Survey in Virginia (VDHR 2017);
- National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation (National Park Service [NPS] 1995).

The survey teams will be led by individuals meeting the Secretary of the Interior's professional qualifications standards for archaeology and architectural history, respectively. Teams will traverse the length of the Project corridor, revisiting previously recorded archaeological and historic architectural resources and documenting additional as-of-yet unrecorded resources in the survey area defined in the Guidelines for the Project design. The archaeological survey will adhere to VDHR survey standards (VDHR 2017) and will entail systematic coverage of the approved route. All material culture, including artifacts and features, that could be 50 years old or older will be recorded.

Sites will be delineated within the proposed right-of-way and investigations will include subsurface testing sufficient to inform recommendations of potential eligibility for the NRHP under Criterion D.



Each site will be fully documented with appropriate mapping, digital photography, and artifact collection/analysis. Site forms will be prepared for VCRIS submittal along with full descriptions in the technical report.

The historic architectural survey will likewise adhere to VDHR standards. While the NPS Bulletin 15 (NPS 1995) defines a historic property as a resource that is 50 years or older, for the purposes of this Project, survey will include those 45 years or older to accommodate the length of time needed to complete the permitting phase for the Project. Furthermore, the survey will also record those resources that may have reached significance prior to the 50 (45) year age in accordance with NPS guidance if they are integral parts of districts or have merit to be considered eligible for the NRHP on their own. Digital photographs will be taken to record resources' overall appearance and details. Sketch maps will be drawn depicting the relationship of dwellings to outbuildings and associated landscape features. Additional information on the structures' appearance and integrity will be recorded to assist in making recommendations of NRHP eligibility. Historic maps, aerial photographs, and tax assessor data will be consulted to assist in dating the resources.

Resources identified in the field effort will be reported to the VDHR, VCRIS numbers will be obtained, and shapefiles and database information will be provided. Sufficient information will be collected to make recommendations for each identified historic resource regarding eligibility for listing on the NRHP and to assess Project impacts.



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2016 VCRIS Archaeological Site Record, 44LD1737. On file, Virginia Department of Historic Resources, Richmond, Virginia.

### Wanner, Rob, Ben Fischler, and Henry Ward

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### Wanner, Rob, Jospeh Clemens, and Henry Ward

2021 Management Summary for Phase I Archaeological Survey of Dulles Solar Project Washington Dulles International Airport, Loudoun County, Virginia. Prepared by EAC/A. Prepared for Dominion Energy.

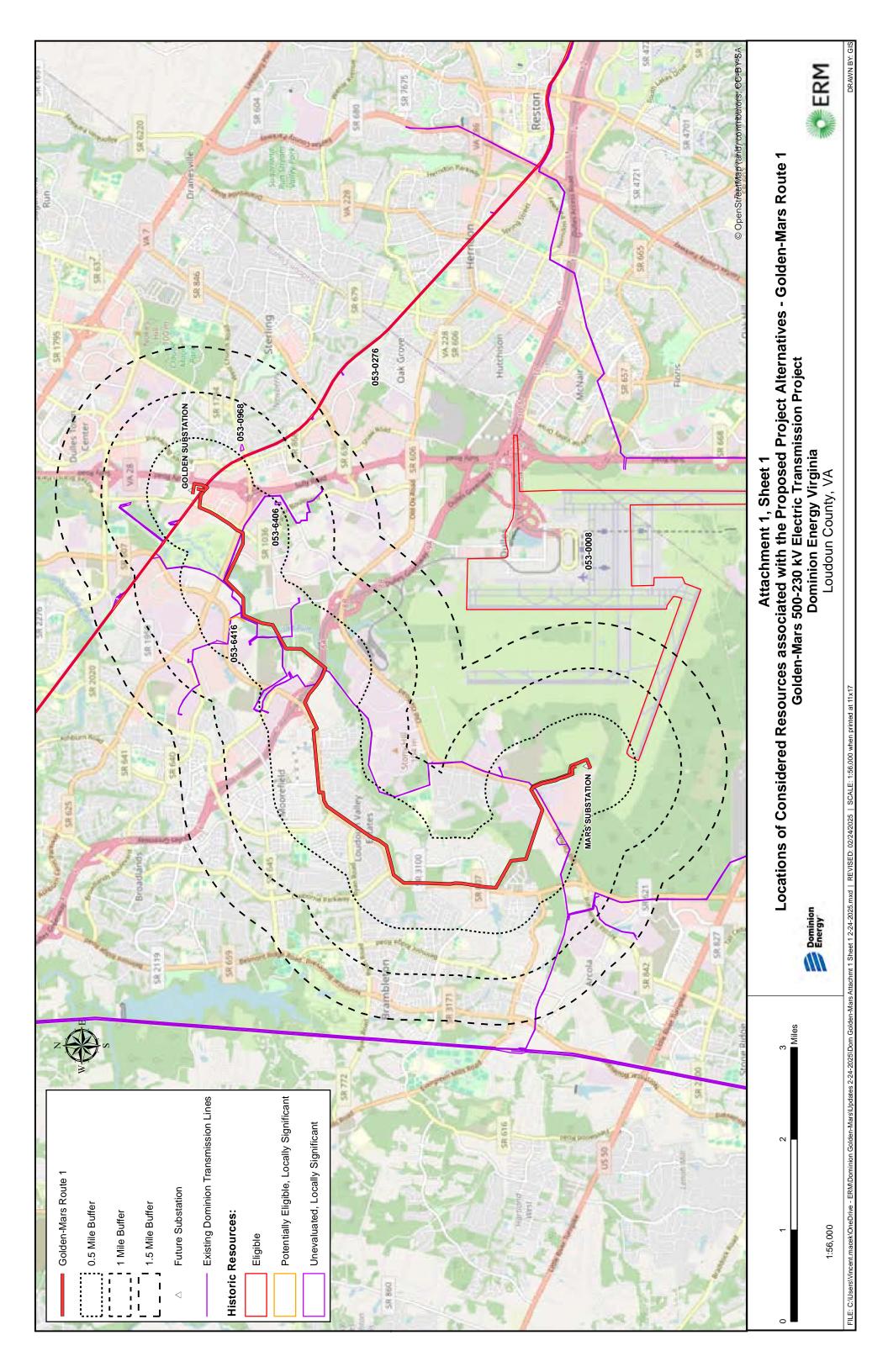
### Ward, Henry, Esther Read, Rob Wanner, and Jane Seiter

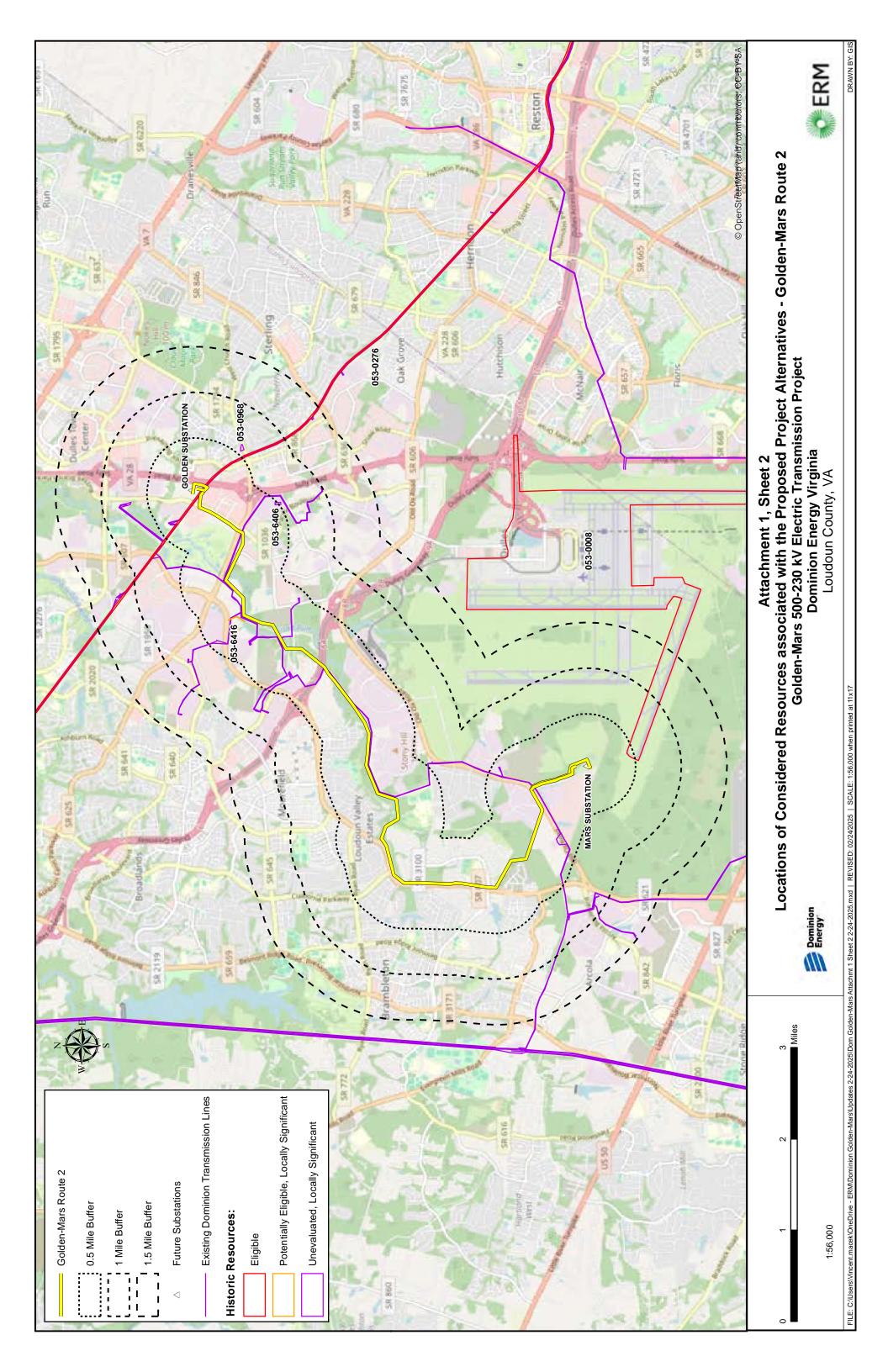
2016 Phase I and Phase II Archeological Investigations for Western Lands Area, Washington Dulles International Airport, Loudoun County, Virginia. Prepared by EAC/A, Inc. for the Metropolitan Washington Airports Authority. Baltimore, Maryland.

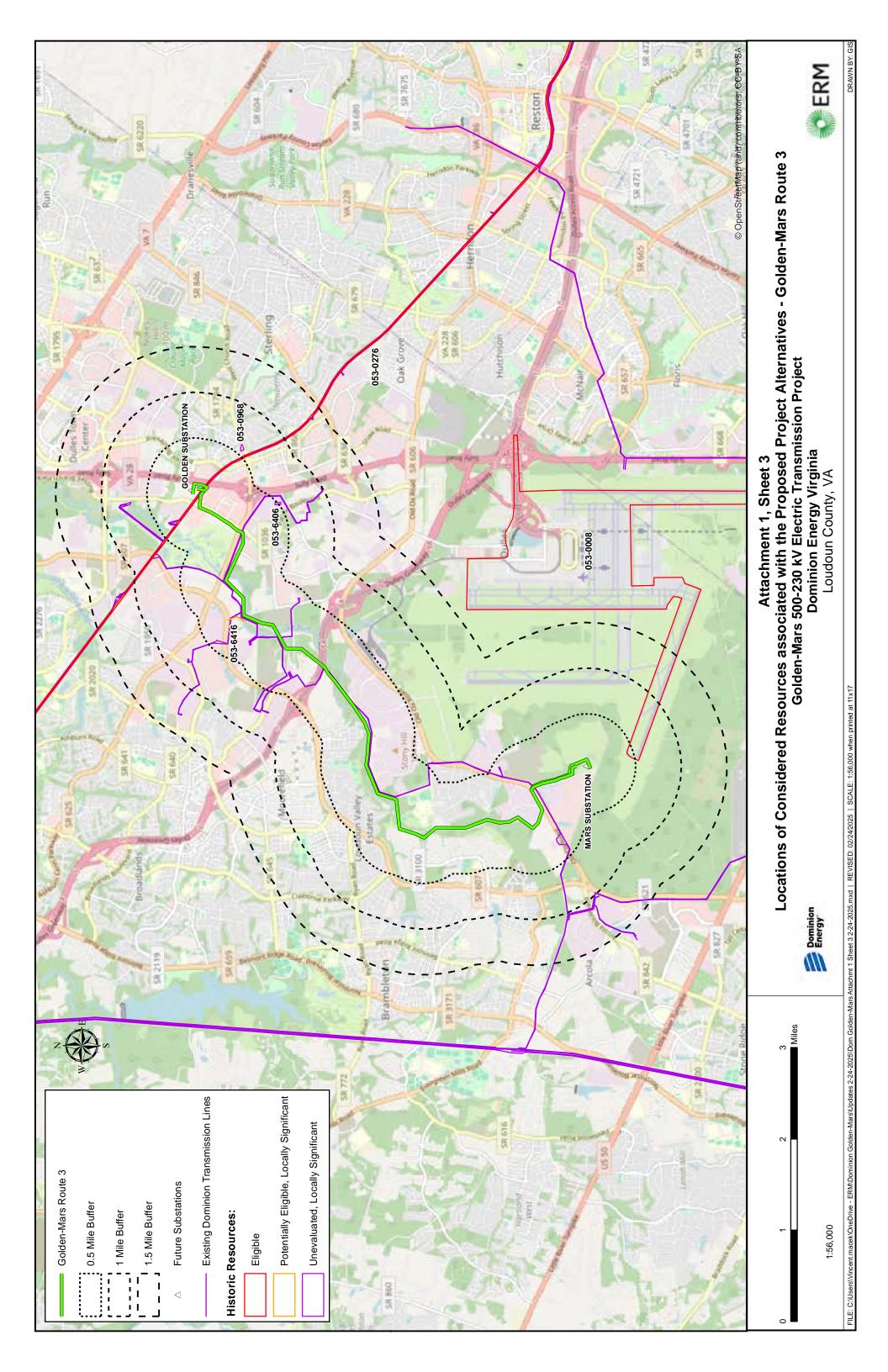


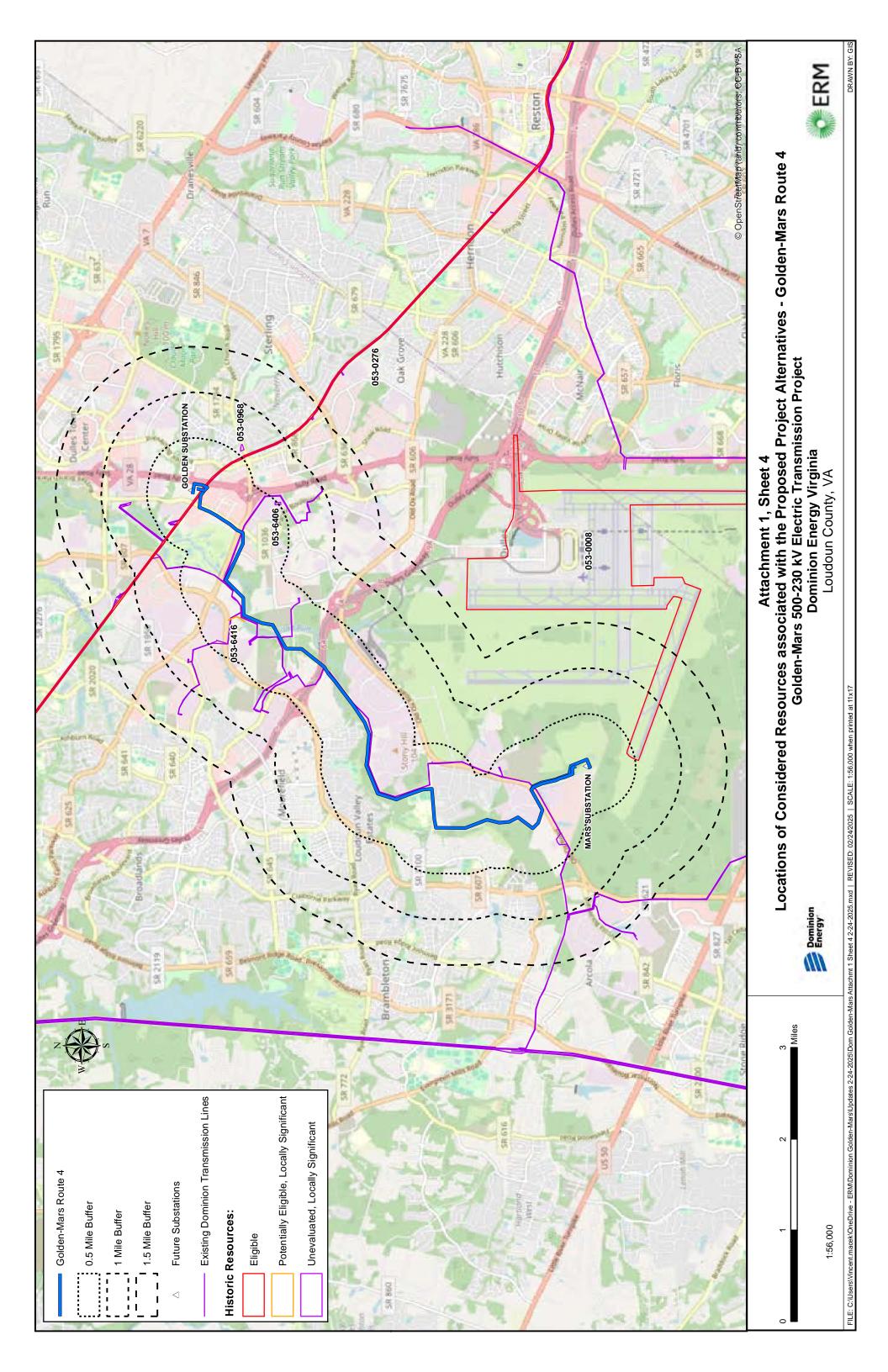


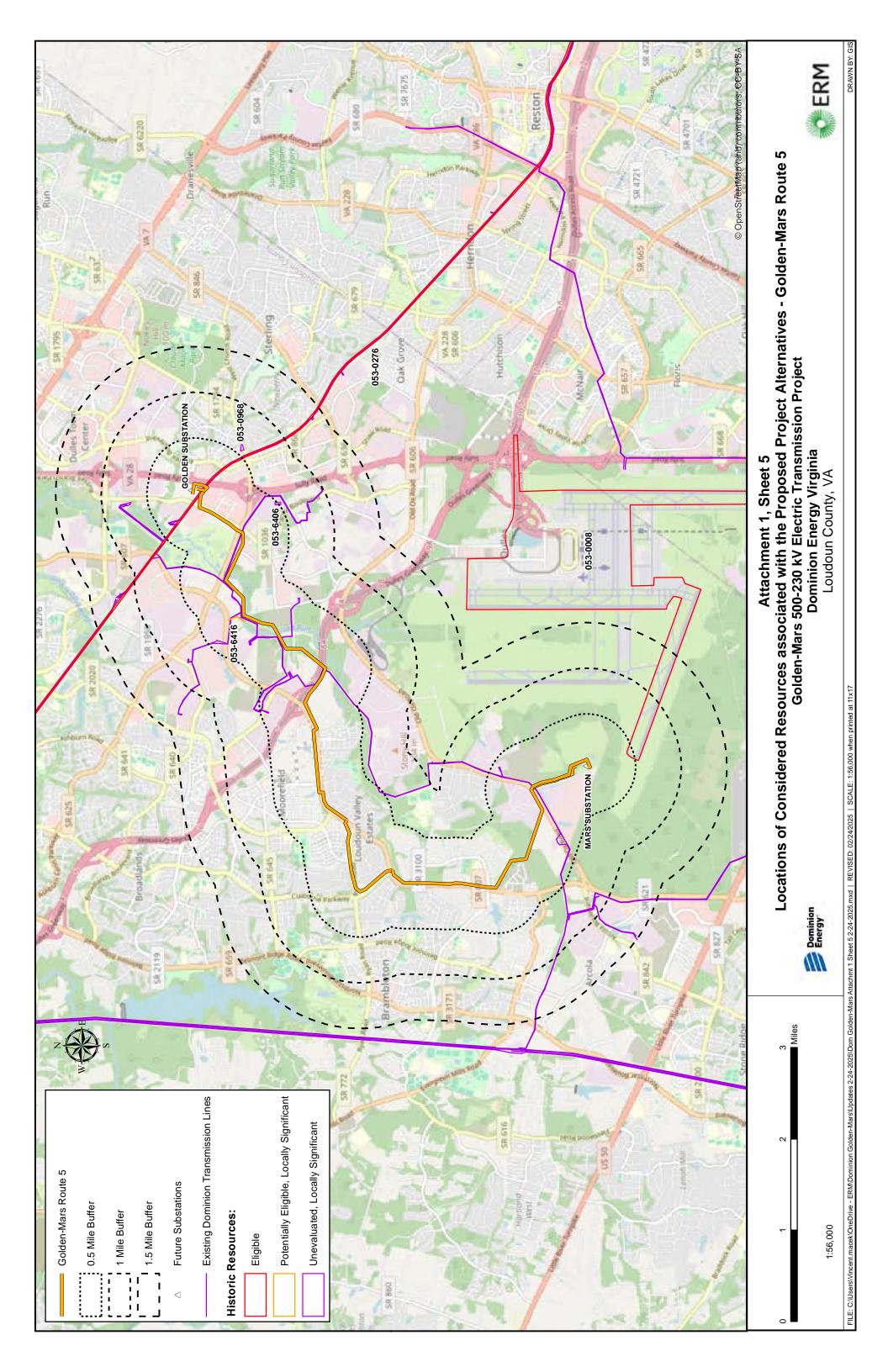
## ATTACHMENT 1 LOCATIONS OF CONSIDERED HISTORIC RESOURCES ASSOCIATED WITH PROPOSED PROJECT ALTERNATIVES

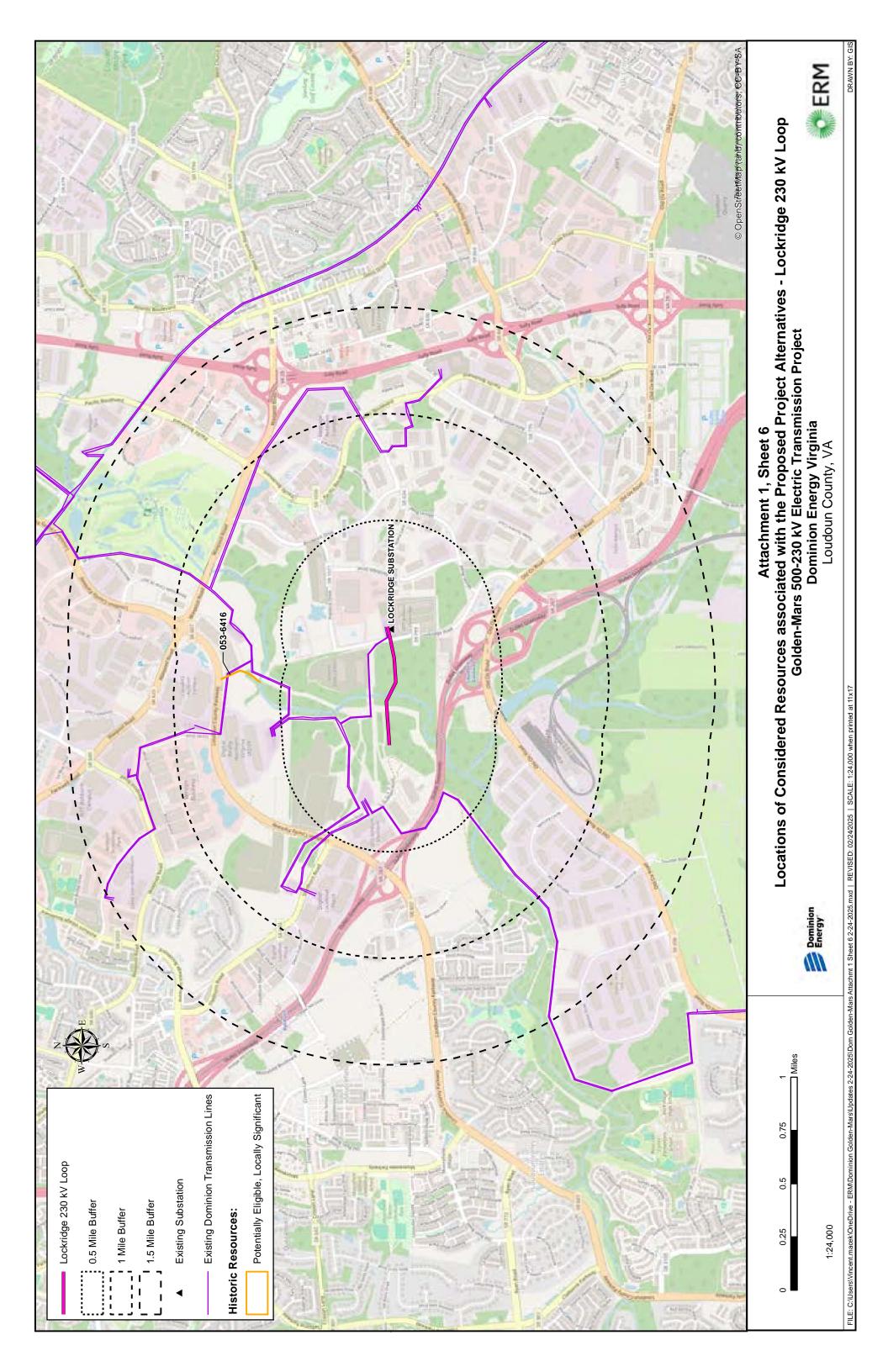


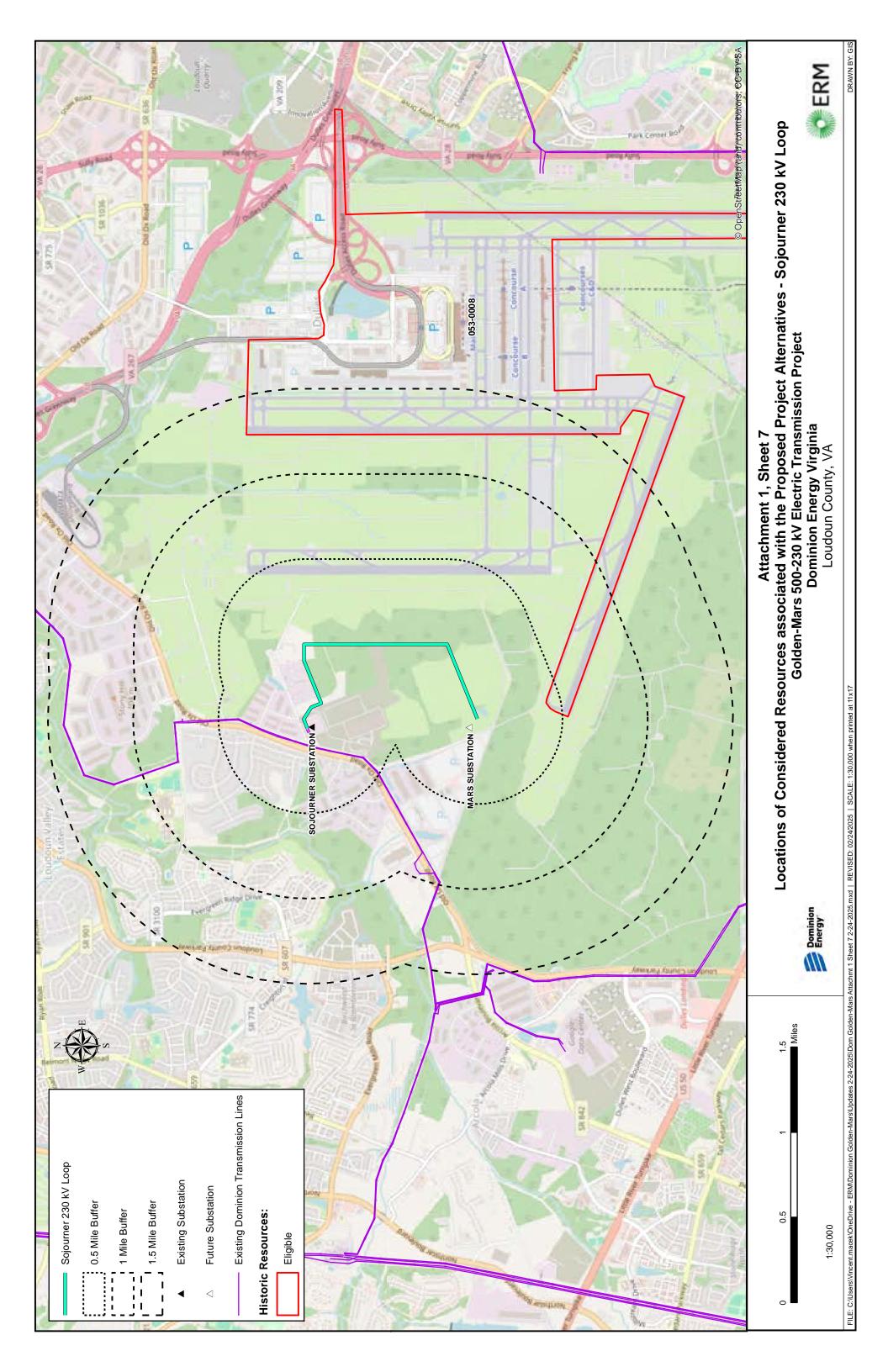






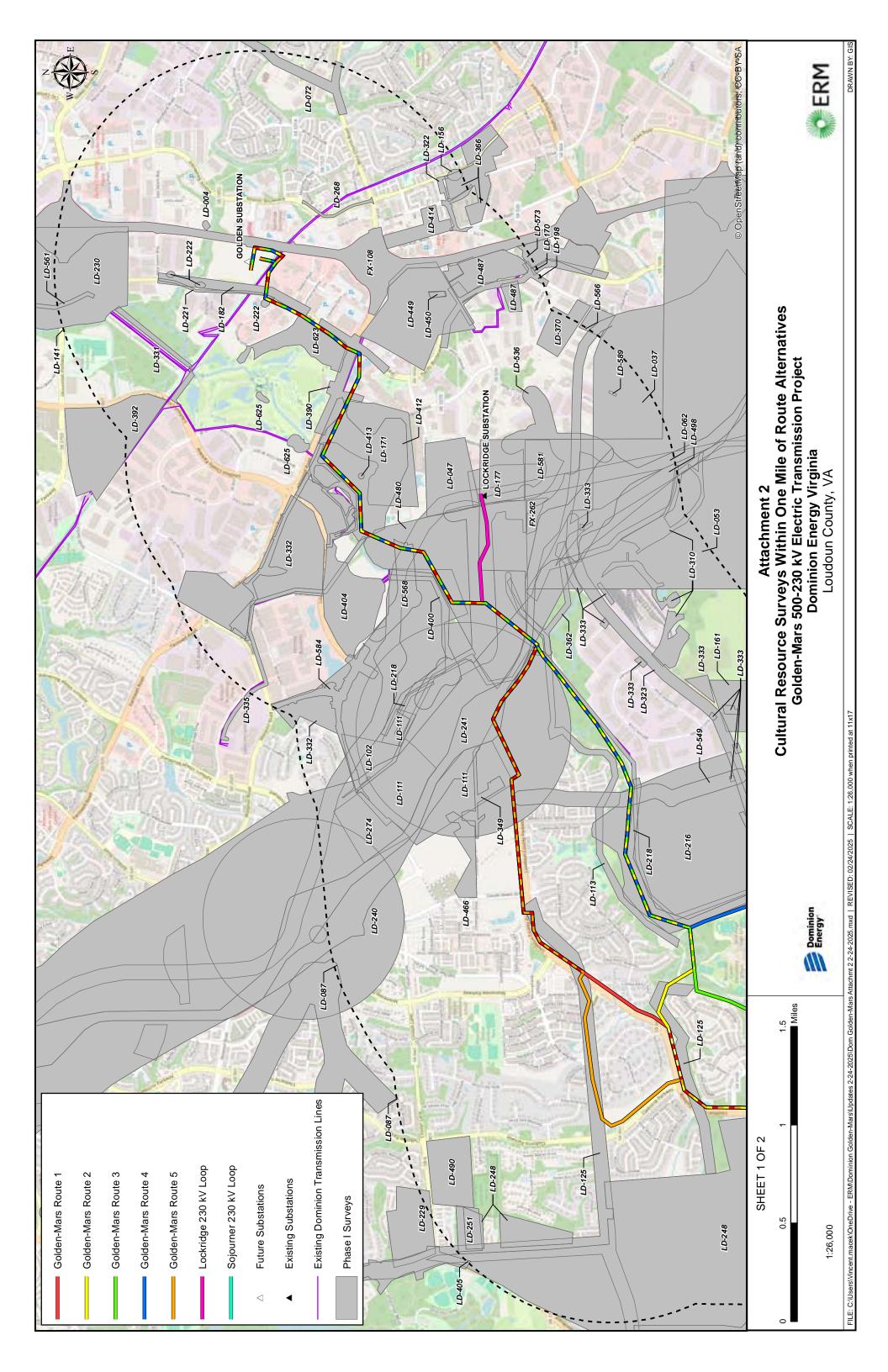


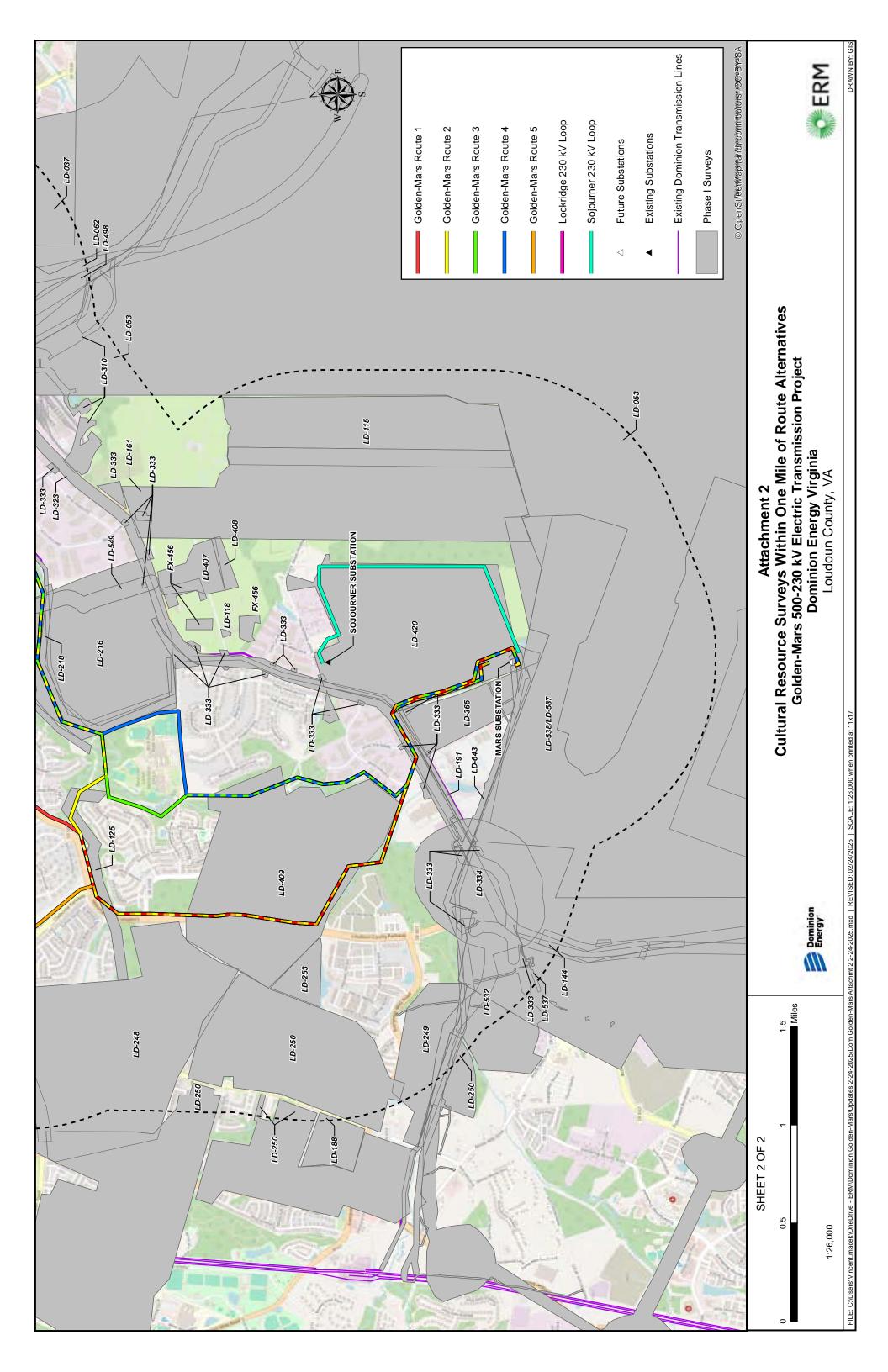






# ATTACHMENT 2 CULTURAL RESOURCES SURVEY WITHIN 1 MILE OF PROJECT

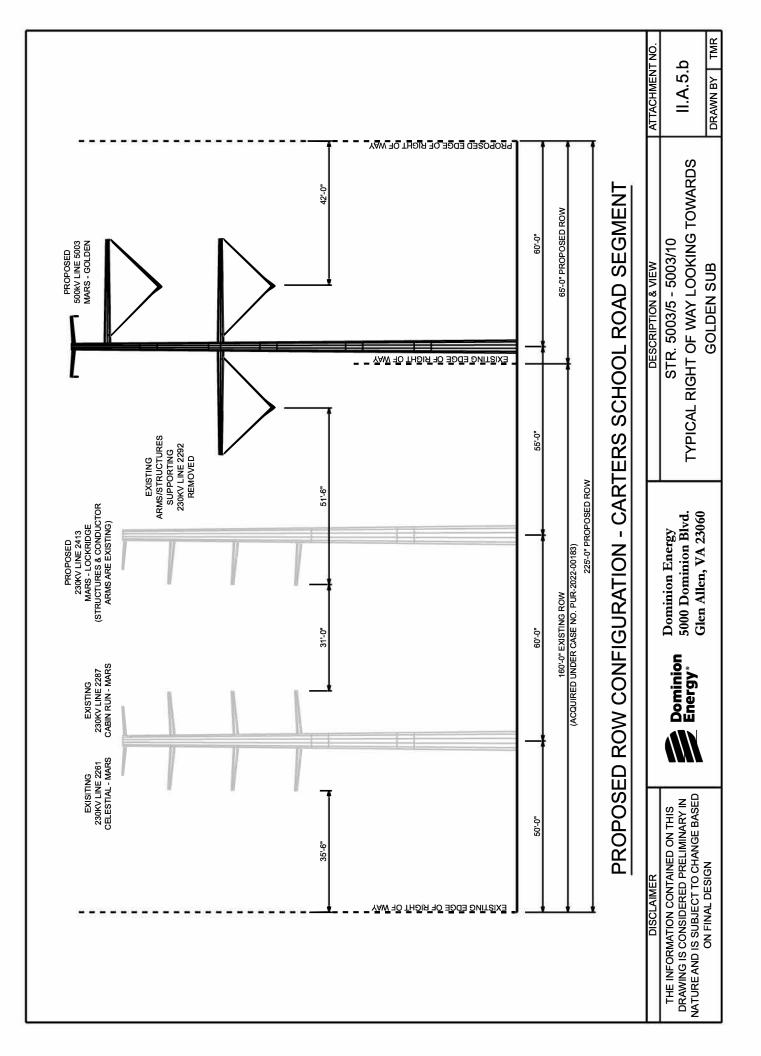


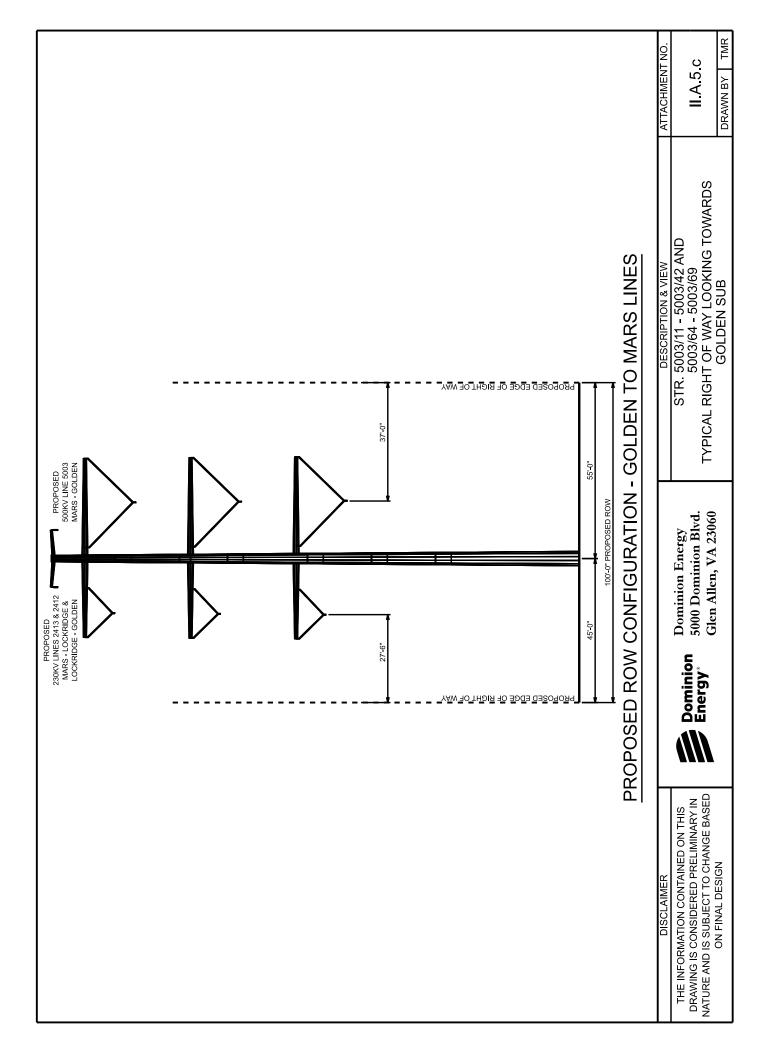


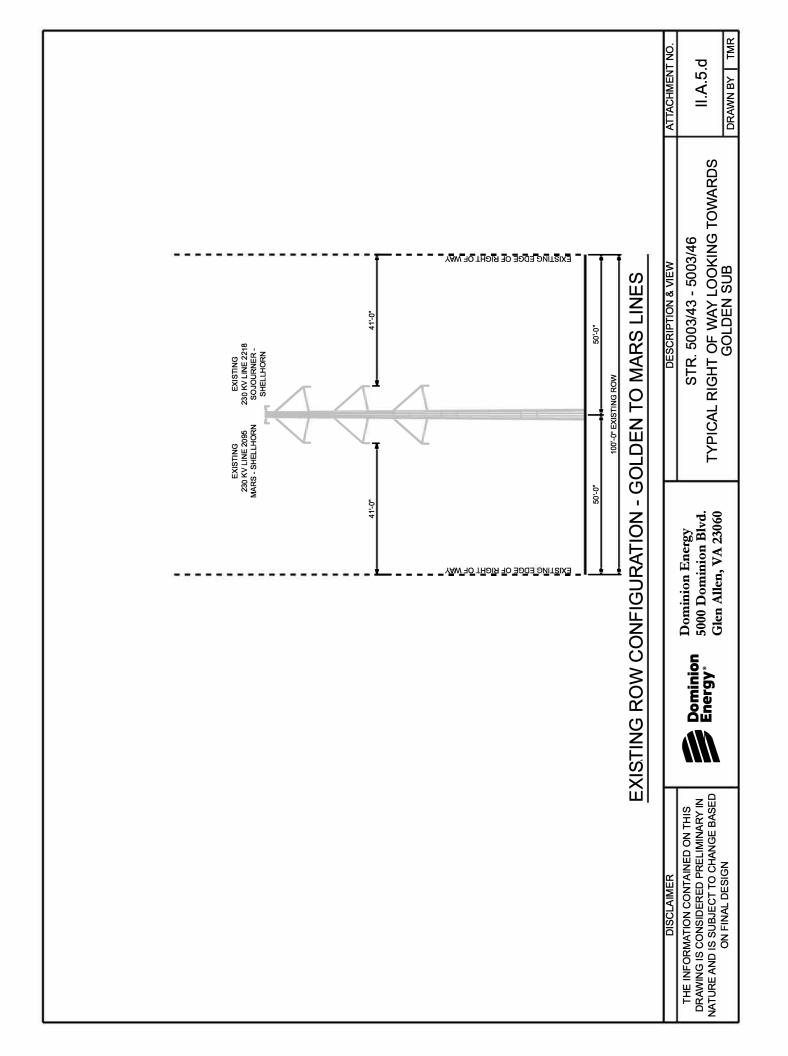


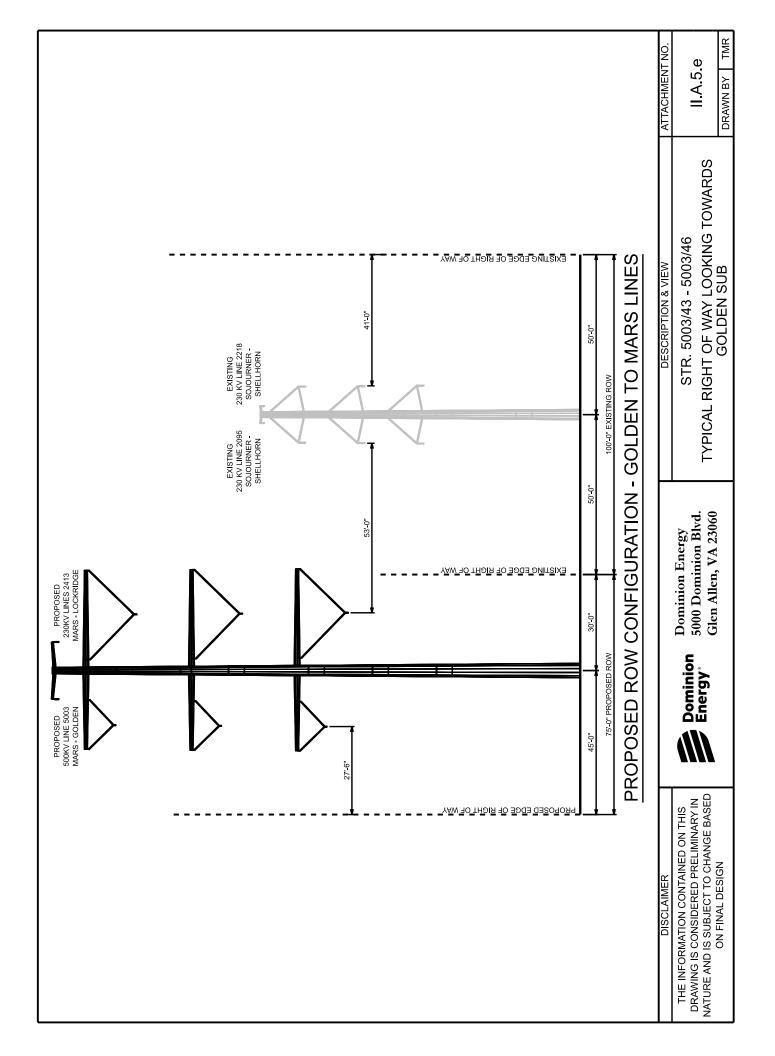
# ATTACHMENT 3 TYPICAL DESIGN AND LAYOUT

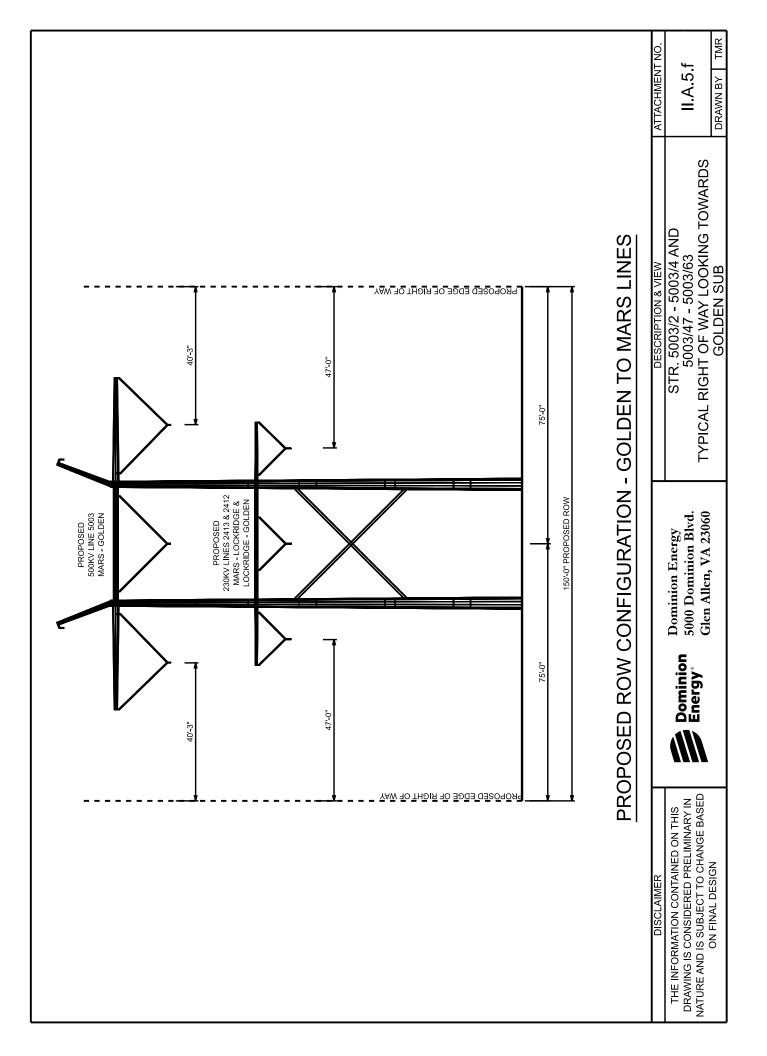
EXISTING 230KV LINE 2292 MARS - SOJOURNER		R R R R	דבספב סי אפאנ סי שאי		EXISTING ROW CONFIGURATION - CARTERS SCHOOL ROAD SEGMENT	DESCRIPTION & VIEW     ATTACHMENT NO.       STR. 5003/5 - 5003/10     ATTACHMENT NO.       TYPICAL RIGHT OF WAY LOOKING TOWARDS     II.A.5.a       GOLDEN SUB     DRAWN BY TMR
EXISTING EXISITING EXIST 230KV LINE 2287 230KV LINE 2095 230KV I CABIN RUN - MARS - SHELLHORN MARS - S		31, Q		60' - σ 160' - ο'EXISTING ROW (ACQUIRED UNDER CASE NO. PUR-2022-00183 )	CONFIGURATION - CAR	DominionDominion EnergyDominion5000Dominion Blvd.Energy*Glen Allen, VA 23060
EXISITING 230KV LINE 2261 230K CELESTIAL - MARS CABIN		gi q	YAW 40 TH 회서 40 36d3 2	200	EXISTING ROW	DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

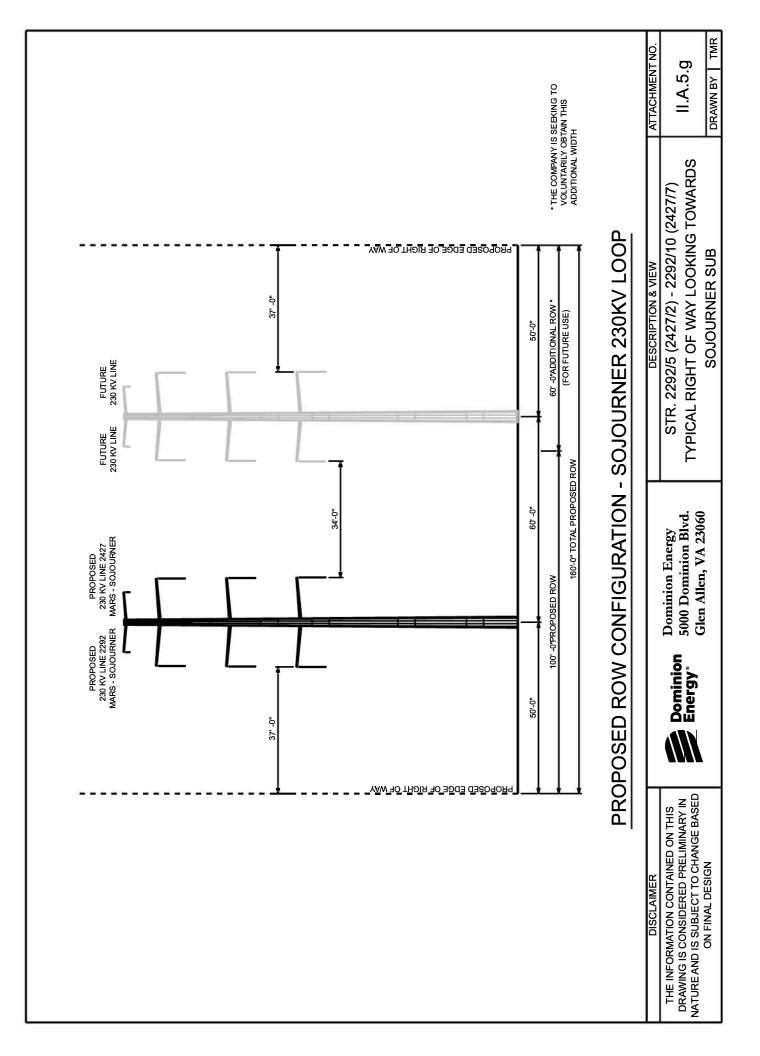












20 KV LINE 28 -0-		25-0" 25-0" - THE COMPANY IS SEEKING TO CFOR FUTURE USE - VOLUNTARILY OBTAIN THIS	230KV LO	DESCRIPTION & VIEW     DESCRIPTION & VIEW       STR. 2292/10 (2427/7) - 2292/17 (2427/14)     ATTACHMENT NO.       TYPICAL RIGHT OF WAY LOOKING TOWARDS     II.A.5.h       SOJOURNER SUB     DRAWN BY TMR
PROPOSED 230 KV LINE 2427 MARS - SOJOURNER		60-0" 60-0" 100-0" PROPOSED ROW		Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060
PROPOSED 230 KV LINE 2292 MARS - SOJOURNER 37-0"		50'-0" 100'-0" PRO	PROPOSED ROW CON	Energy <sup>®</sup>
<u>+</u>	YĀW <sup>™</sup> TŪ THOTA TO EDGE GEGORO	<u> </u>		DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

	- SOJOURNER 230KV LOOP	DESCRIPTION & VIEW     ATTACHMENT NO.       STR. 2292/17 (2427/14) - 2292/22 (2427/19)     ATTACHMENT NO.       TYPICAL RIGHT OF WAY LOOKING TOWARDS     II.A.5.i       SOJOURNER SUB     DRAWN BY
PROPOSED 200KUINE 2427 MARS - SOJUNNER MARS -	PROPOSED ROW CONFIGURATION - SOJOURNER 230KV LOOP	<b>Dominion</b> Dominion Energy Energy <sup>®</sup> Glen Allen, VA 23060
F F PROPOSED EDGE OF RIGHT OF WAY	PRO	DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

PROPOSED EDGE_OF_NGV	PROPOSED ROW CONFIGURATION - LOCKRIDGE 230KV LOOP	DESCRIPTION & VIEW     ATTACHMENT NO.       STR. 2413/49 (2412/7) - 2413/54 (2412/2)     ATTACHMENT NO.       TYPICAL RIGHT OF WAY LOOKING TOWARDS     II.A.5.j       LOCKRIDGE SUB     DRAWN BY     TMR
SED ROPOSED NE 2412 230 KU LINE 2413 - GOLDEN MARS - LOCKRIDGE MARS - LOCKRIDGE 	NFIGURATION	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060
37-0"	POSED ROW CC	Dominion 5 Energy <sup>5</sup>
₩ ► ► ► ► ► ► ► ► ► ► ► ► ►	PRC	DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN



# ATTACHMENT 4 HISTORIC RESOURCE PHOTOS

# FIGURE 1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT, AERIAL VIEW



# FIGURE 2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT, VIEW TO THE NORTHWEST



FIGURE 3 053-0968, GUILFORD BAPTIST CHURCH, VIEW TO THE SOUTH



# FIGURE 4 053-6406, TIPPET'S HILL CEMETERY (UNABLE TO ACCESS), VIEW TO THE NORTH



### FIGURE 5 053-6416, OX ROAD TRACE, VIEW TO THE NORTHEAST



# ATTACHMENT 5 PHOTO SIMULATIONS



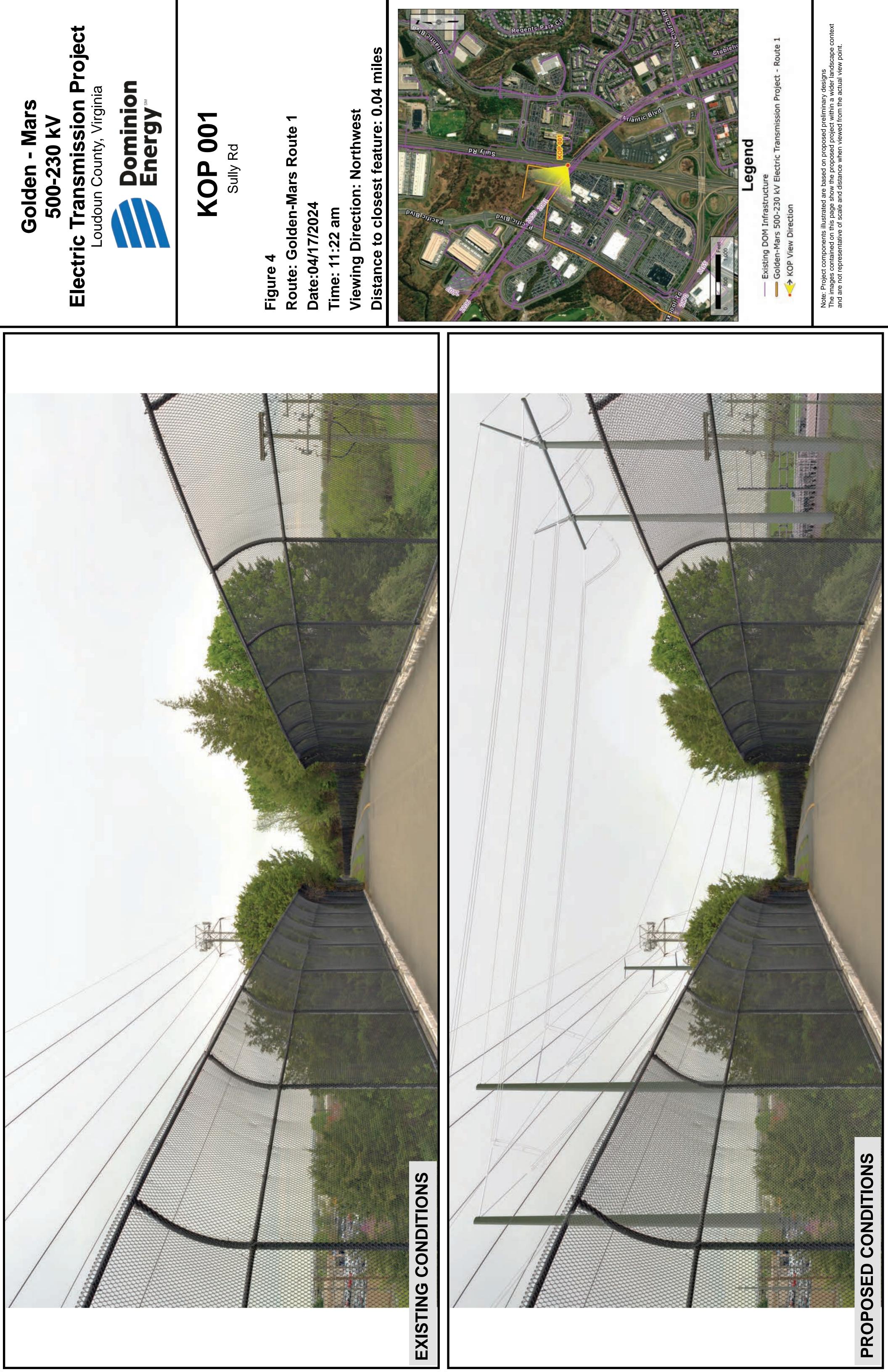
Figure 1. Aerial photograph depicting land use and photo view for 053-0008.



# INFRASTRUCTURE ROJECT YELLOW: PARTIALLY OR FULLY HIDDEN P



Figure 3. Aerial photograph depicting land use and photo view for 053-0276.



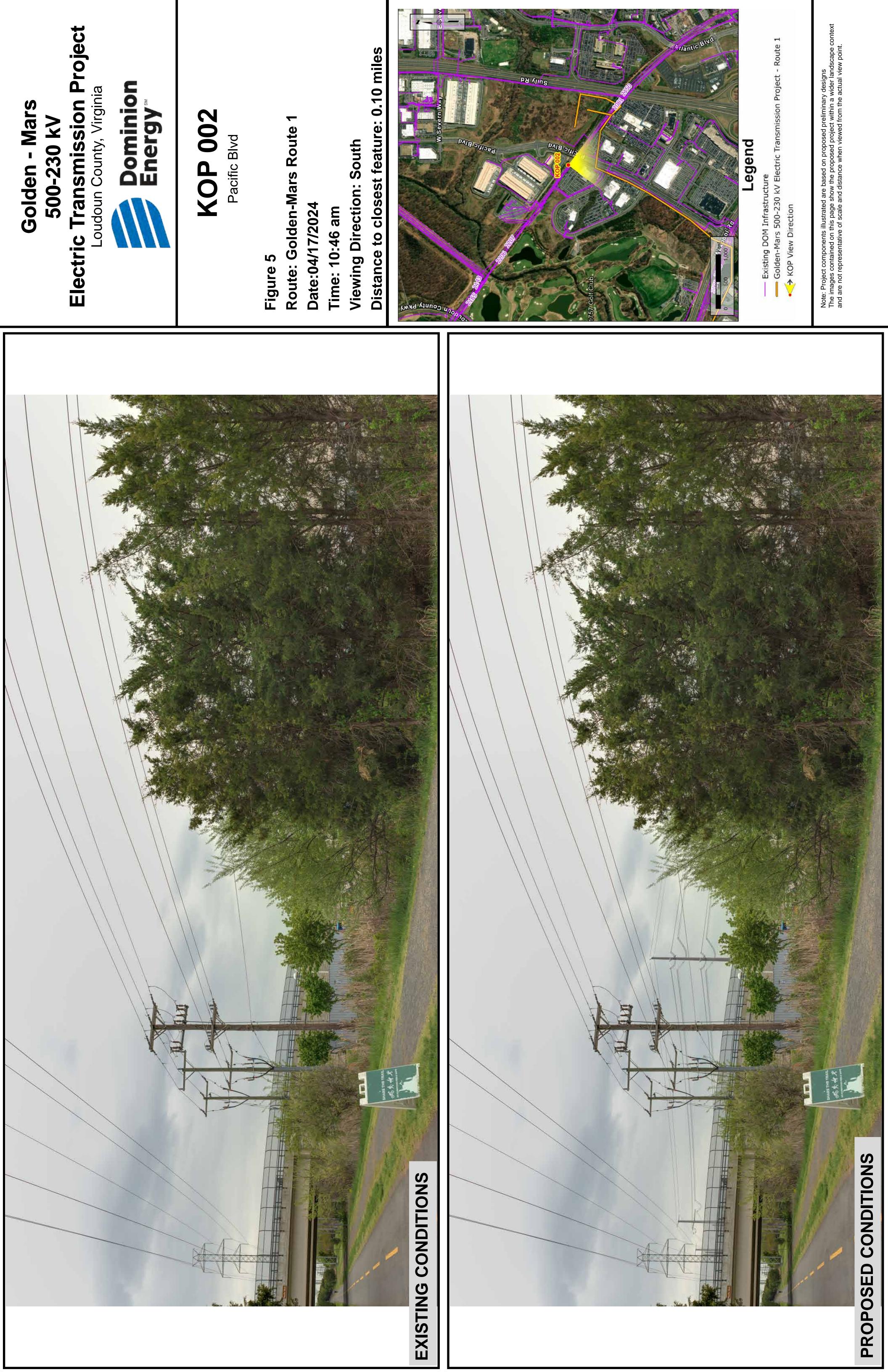




Figure 6. Aerial photograph depicting land use and photo view for 053-0968.



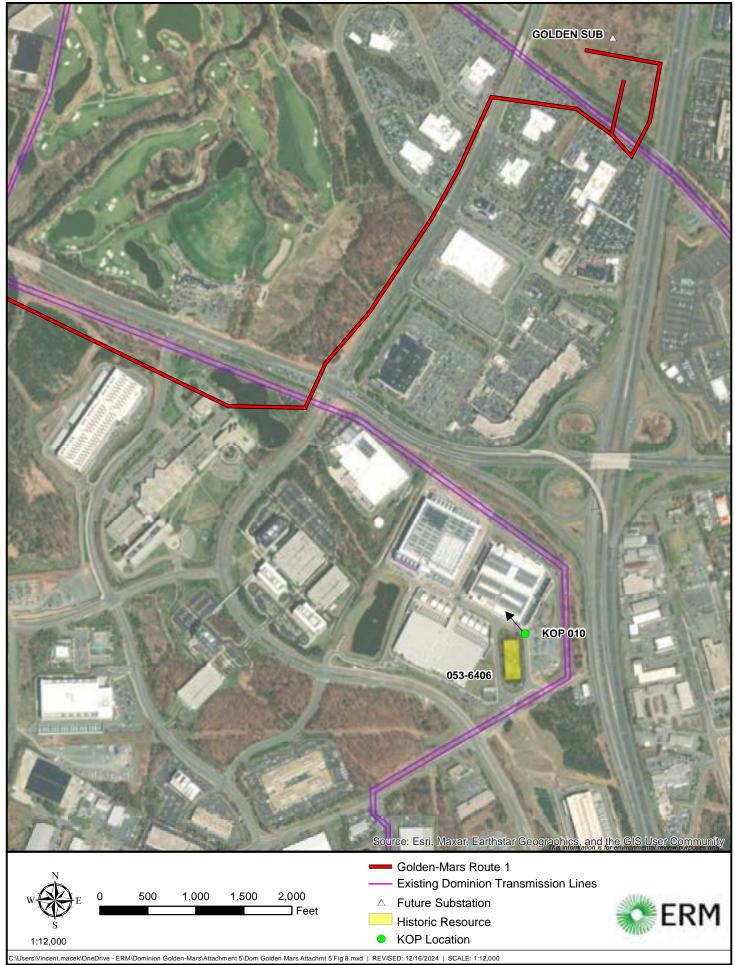


Figure 8. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars 500-230 kV Electric Transmission Project Loudoun County, Virginia Dannon Beergy	Kor of o         Nantage Data Plz         Vantage Data Plz         Figure 9         Route: Golden-Mars Route 1         Date: 04/18/2024         Time: 12:10 pm         Viewing Direction: Northwest         Distance to closest feature: 0.48 miles	A region of the proposed profit in a wider lands and distance when viewed from the actual view point.





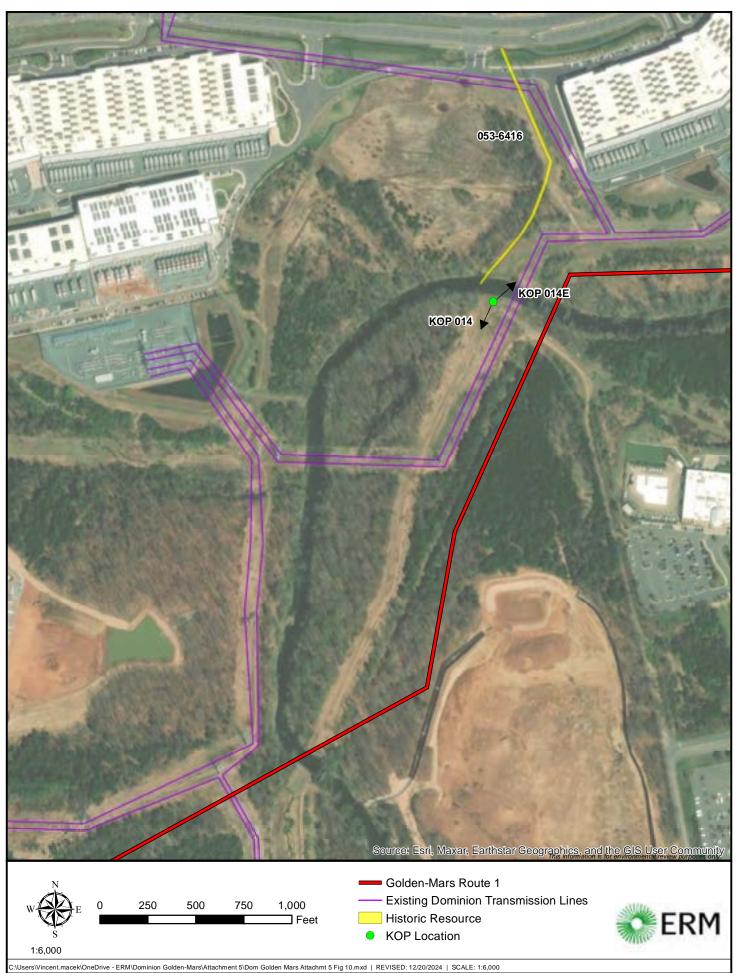
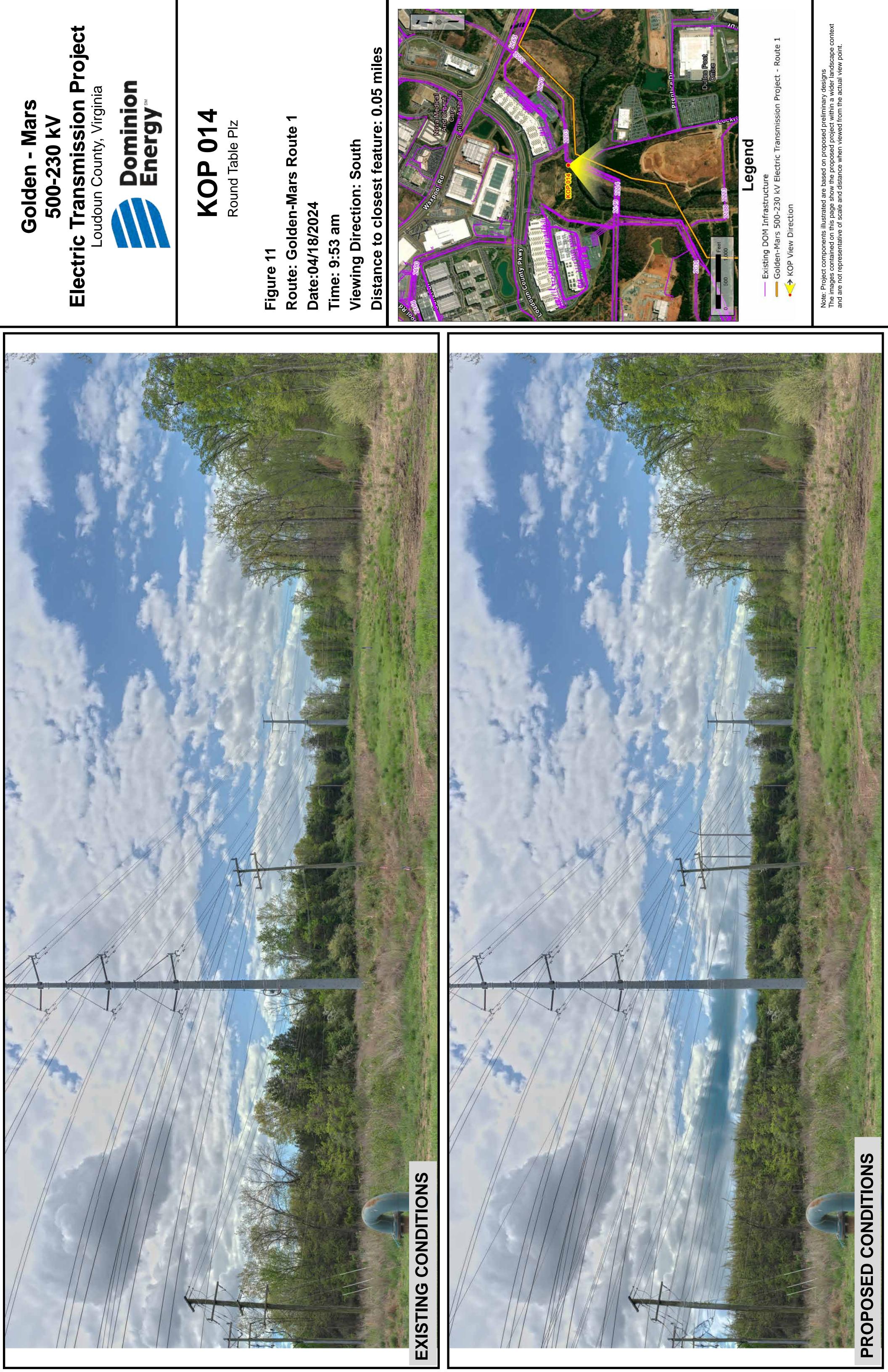


Figure 10. Aerial photograph depicting land use and photo view for 053-6416.



Golden - Mars 500-230 kV Electric Transmission Project Loudoun County, Virginia Dannon Progentia	KOP 014E Round Table PIz	Figure 12 Route: Golden-Mars Route 1 Date:04/18/2024 Time: 9:53 am Viewing Direction: South Distance to closest feature: 0.05 miles	2100 210 21		000       500       500       500         Contracture       Eggend       500       500         Colden-Mars 500-230 kV Electric Transmission Project - Route 1       1         Colden View Direction       500       500       500	Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





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# **PROPOSED CONDITIONS**



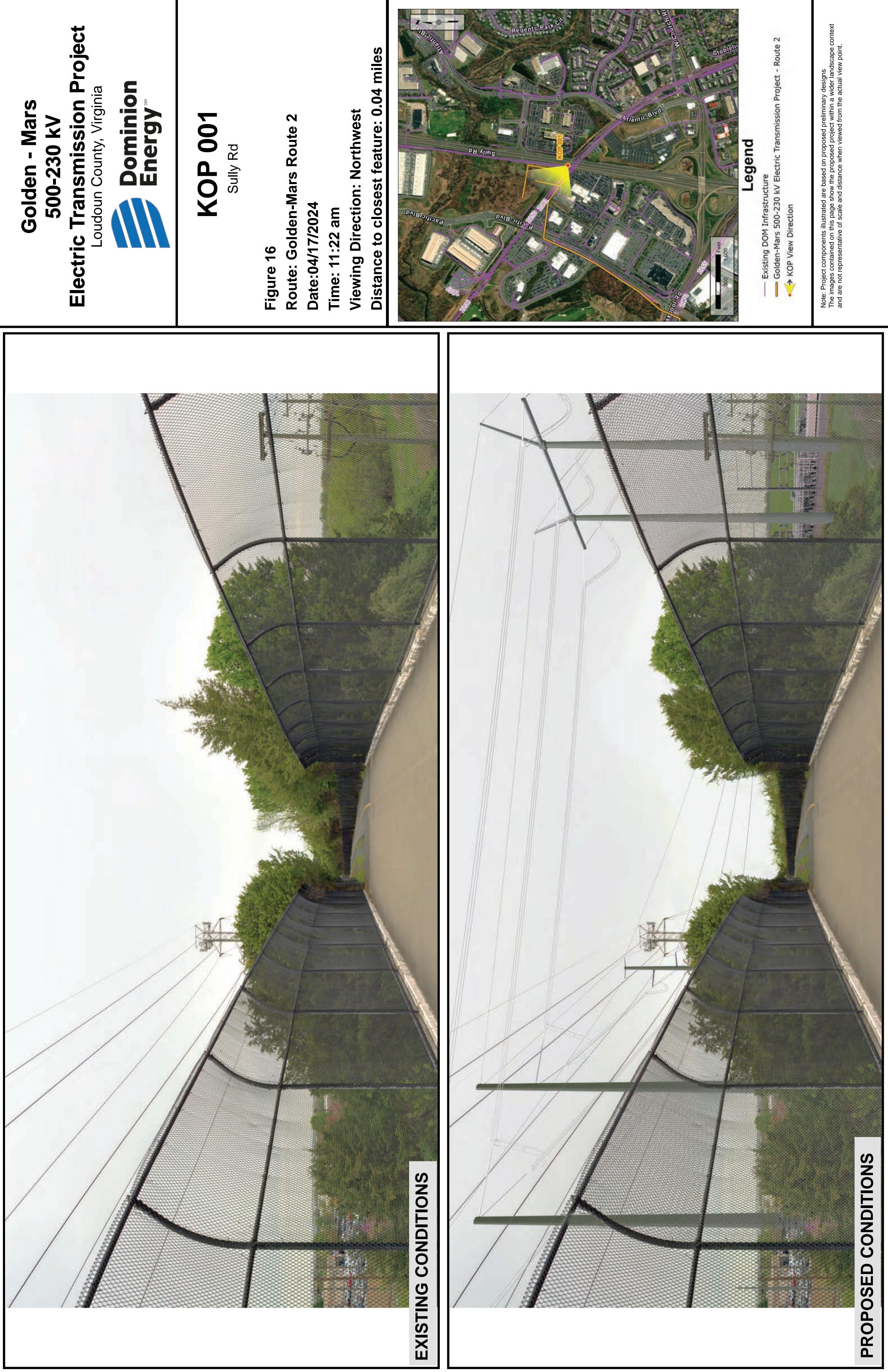
Figure 13. Aerial photograph depicting land use and photo view for 053-0008.



## INFRASTRUCTURE ROJECT YELLOW: PARTIALLY OR FULLY HIDDEN P



Figure 15. Aerial photograph depicting land use and photo view for 053-0276.





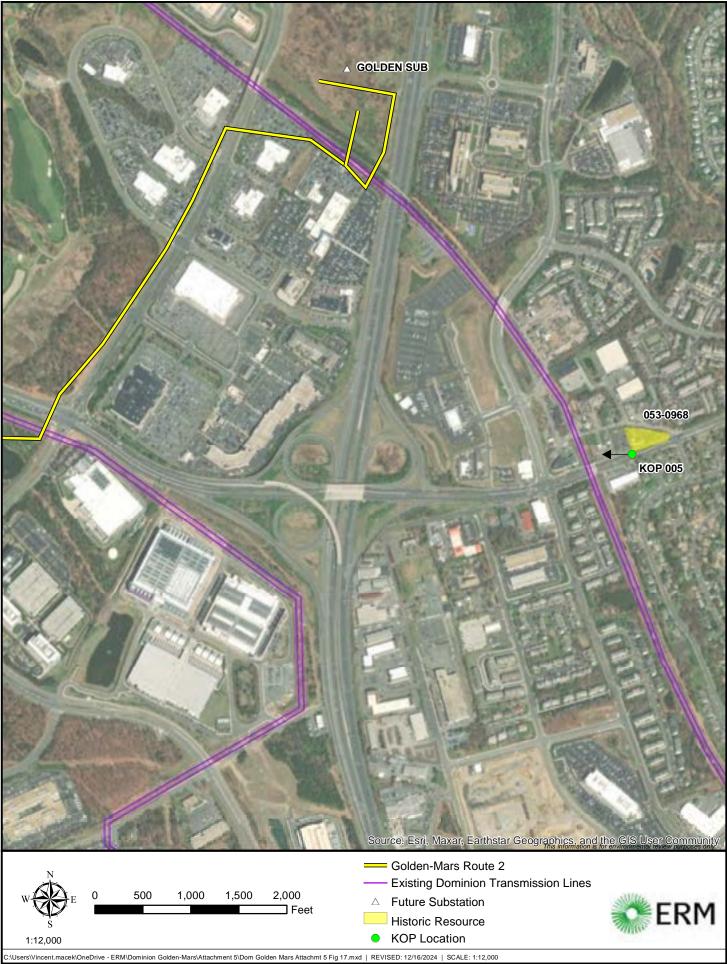


Figure 18. Aerial photograph depicting land use and photo view for 053-0968.



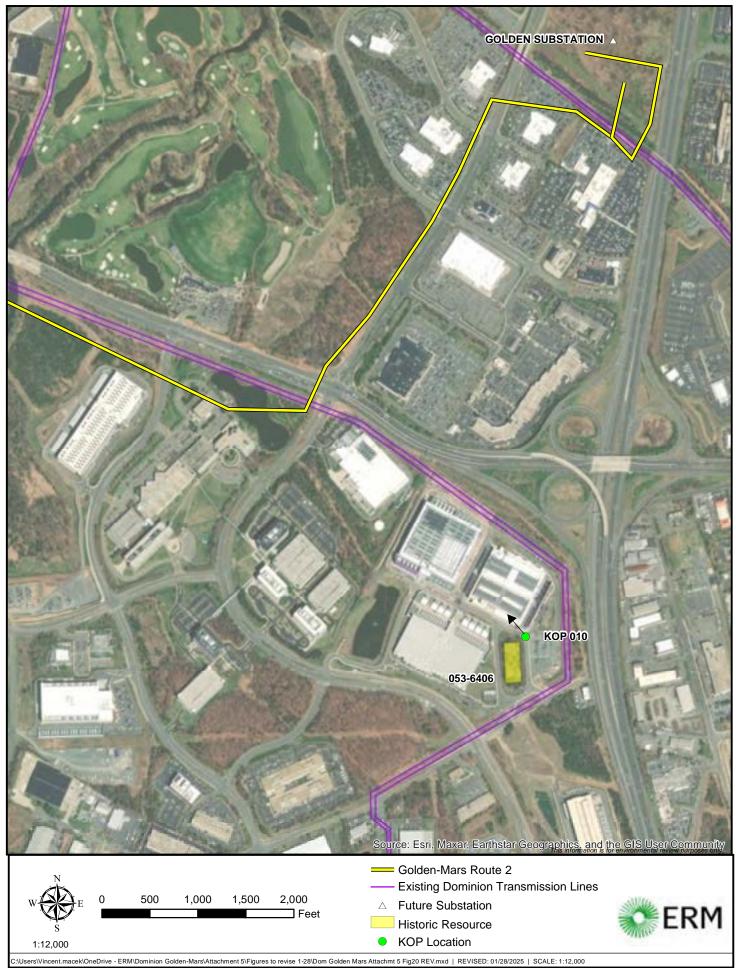


Figure 20. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars 500-230 kV 500-230 kV Electric Transmission Project Loudoun County, Virginia Loudoun County, Virginia	KOP O10         Variage Data Plz         Ine 21         Ine 21	this page show the proposed project within a wide of scale and distance when viewed from the actu





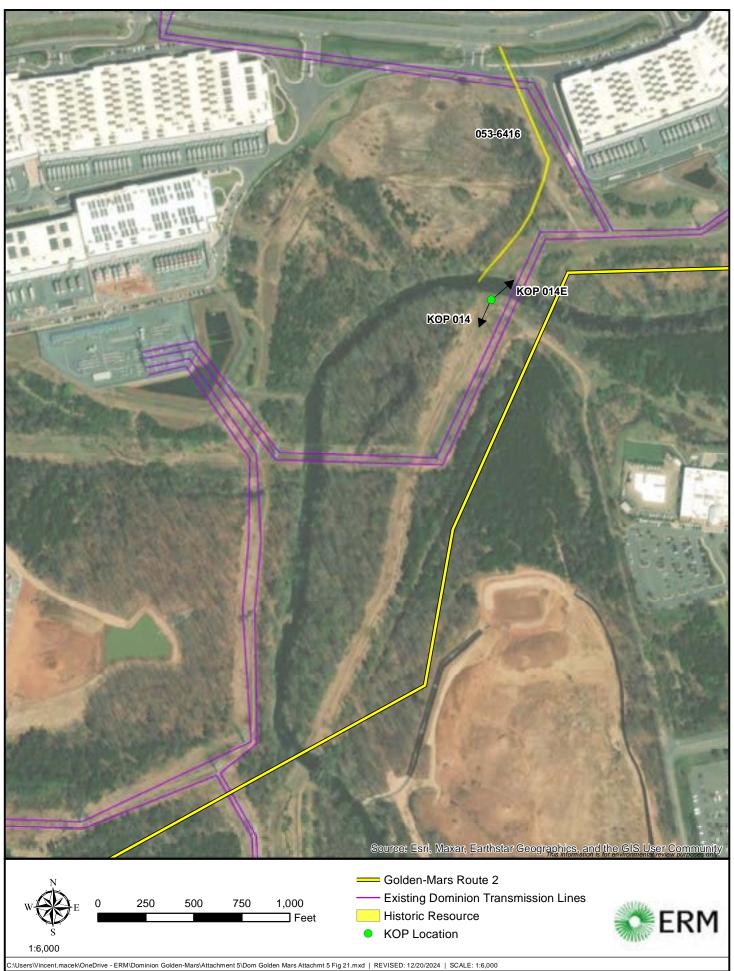
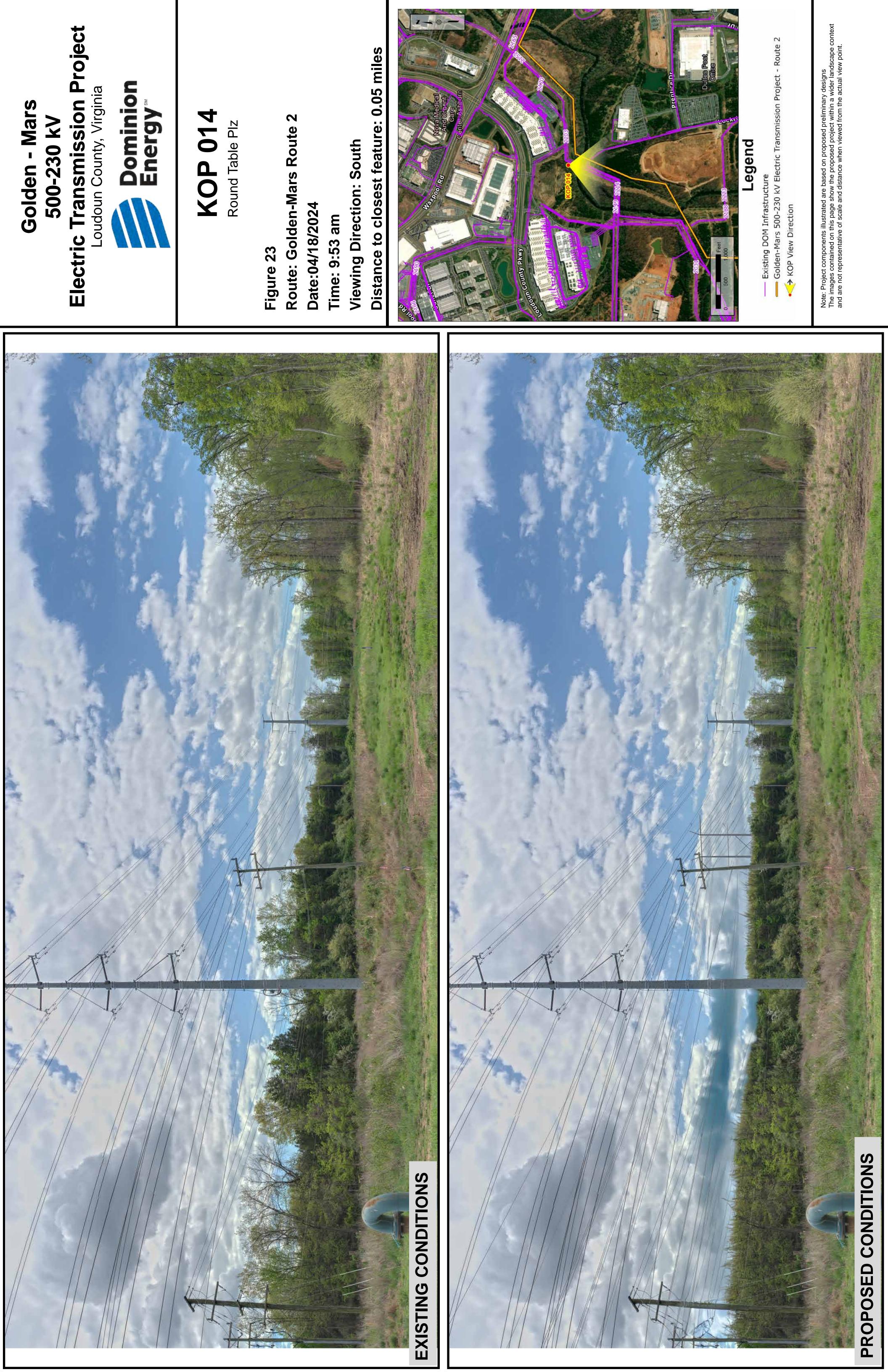


Figure 22. Aerial photograph depicting land use and photo view for 053-6416.



Golden - Mars 500-230 kV Electric Transmission Project Loudoun County, Virginia Daning Breegy	KOP 014E Round Table PIz	Figure 24 Route: Golden-Mars Route 2 Date:04/18/2024 Time: 9:53 am	Viewing Direction: South Distance to closest feature: 0.05 miles	Reperted of the second se	Provide the set of	Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





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# **PROPOSED CONDITIONS**



Figure 25. Aerial photograph depicting land use and photo view for 053-0008.



## INFRASTRUCTURE ROJECT YELLOW: PARTIALLY OR FULLY HIDDEN P



Figure 27. Aerial photograph depicting land use and photo view for 053-0276.

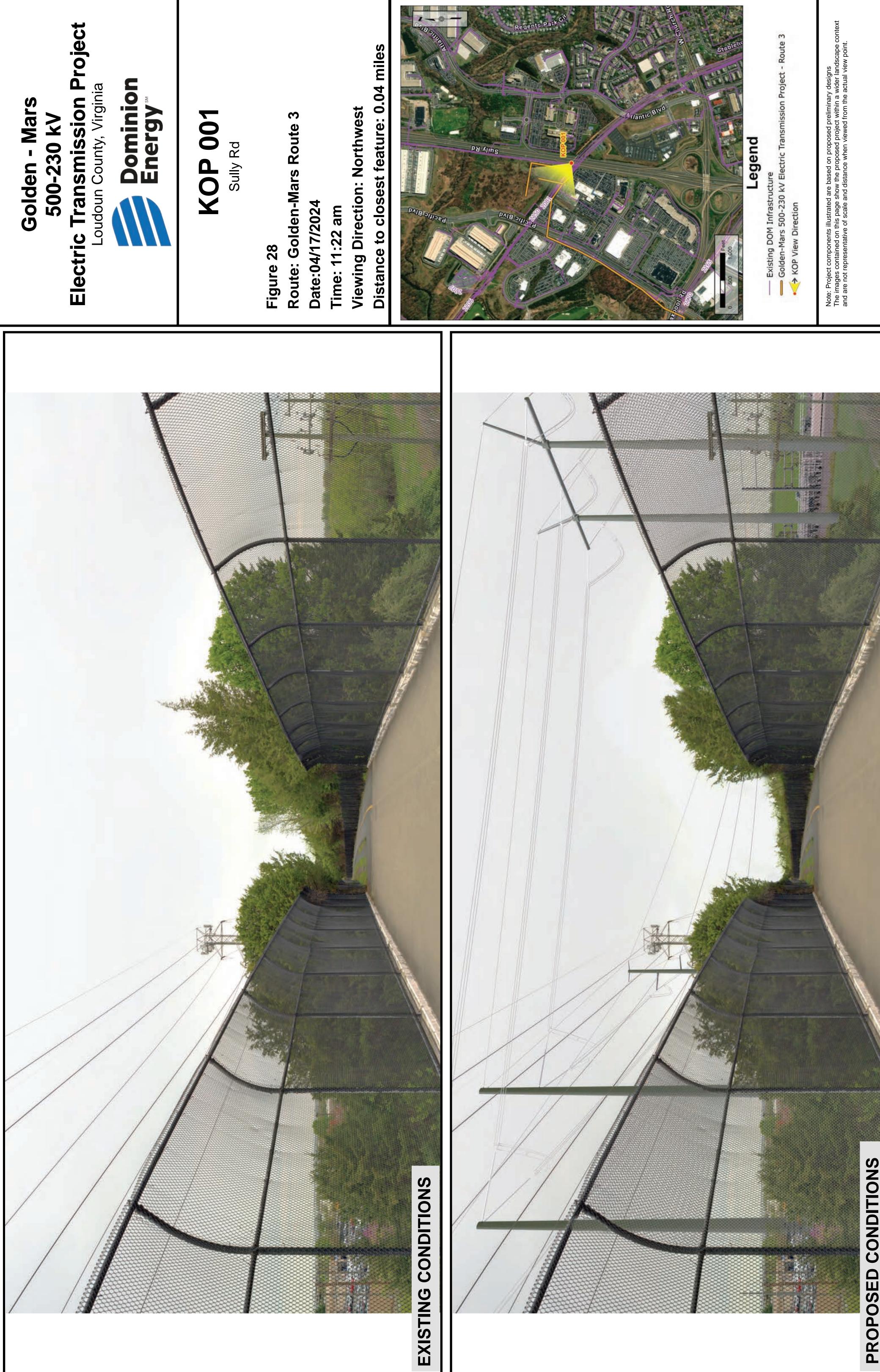






Figure 30. Aerial photograph depicting land use and photo view for 053-0968.





Figure 32. Aerial photograph depicting land use and photo view for 053-6406.

<b>Solden - Mars</b> <b>Solo-230 kV</b> <b>Electric Transmission Project</b> <b>Loudoun County, Virginia</b> <b>Condour County, Virginia</b> <b>Condour County, Virginia</b> <b>Condour County, Virginia</b> <b>Condour Condon Condour</b> <b>Condon County Virginia</b> <b>Condon County Virginia</b>
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Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





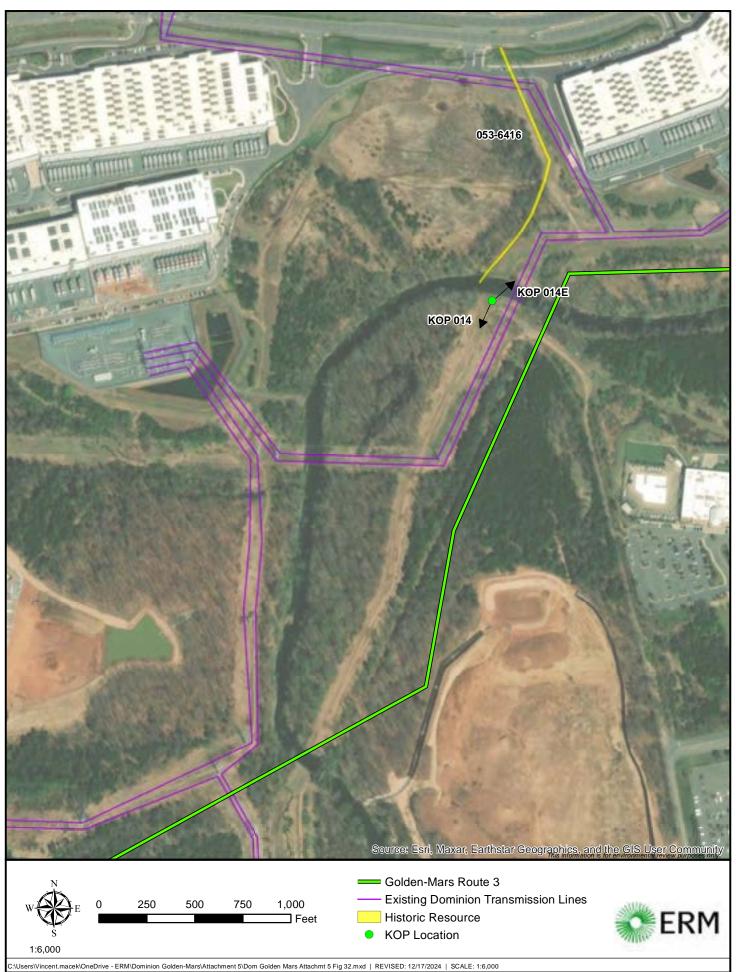
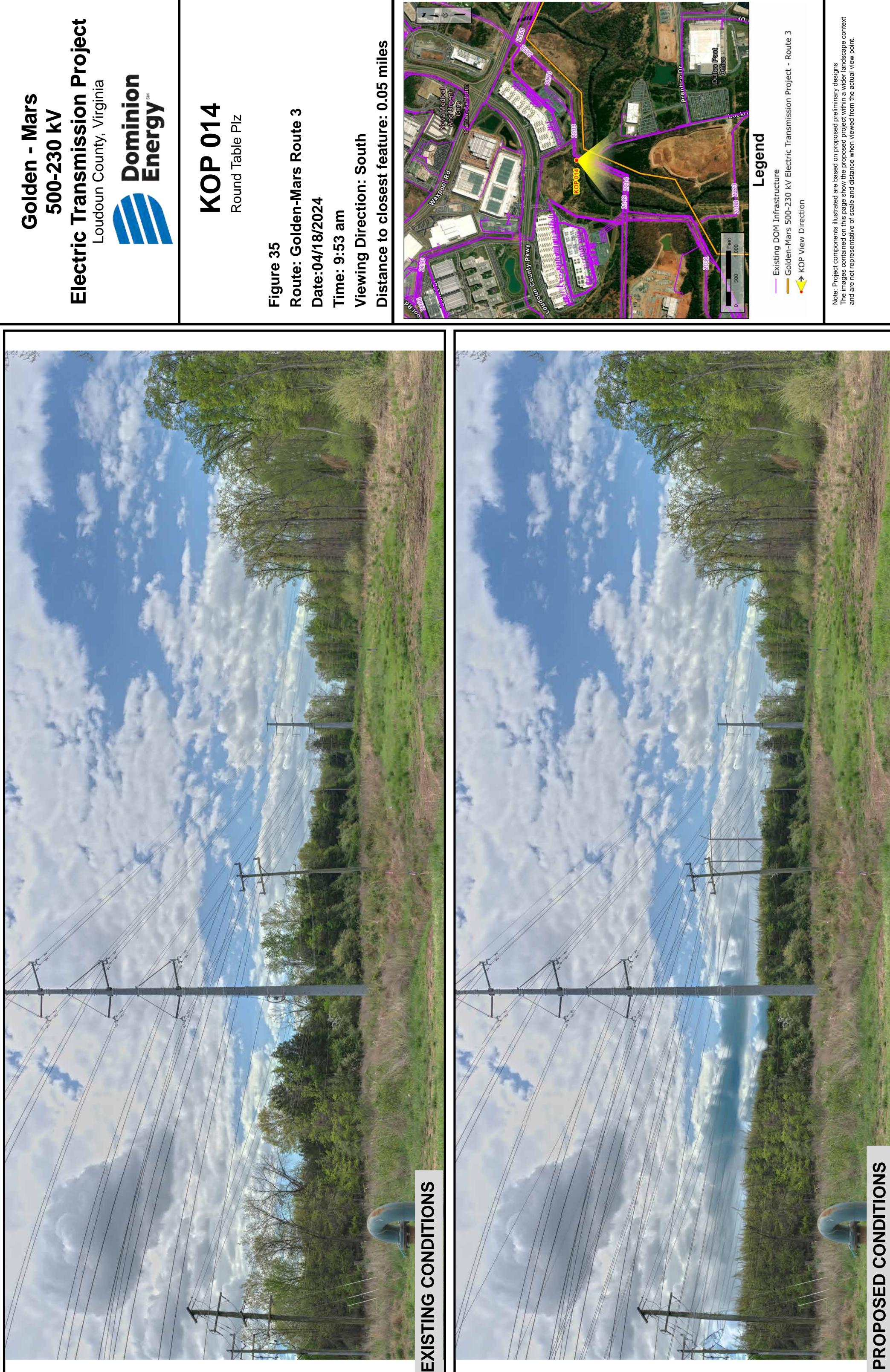


Figure 34. Aerial photograph depicting land use and photo view for 053-6416.



Golden - Mars 500-230 kV 500-230 kV Electric Transmission Project Loudoun County, Virginia Loudoun County, Virginia	KOP 014E Round Table Plz	ure 36 ute: Gol :e:04/18	Lime: 9:53 am Viewing Direction: South Distance to closest feature: 0.05 miles	ALL OR OLO IL	• Contraction of the second secon	Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





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# **PROPOSED CONDITIONS**



Figure 37. Aerial photograph depicting land use and photo view for 053-0008.



## INFRASTRUCTURE ROJECT YELLOW: PARTIALLY OR FULLY HIDDEN P

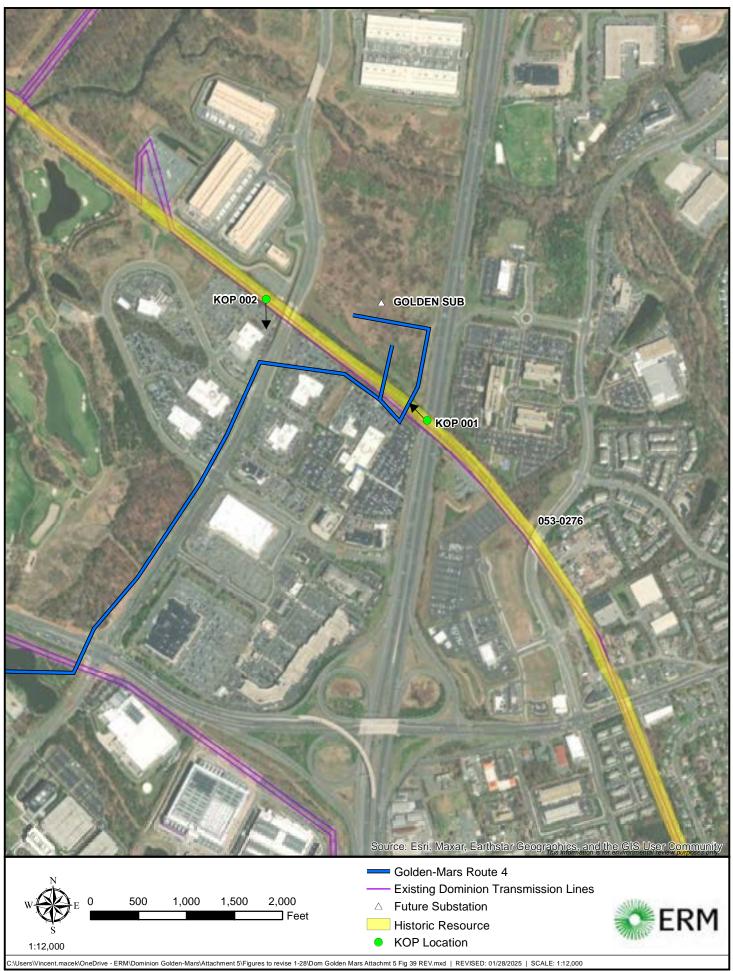
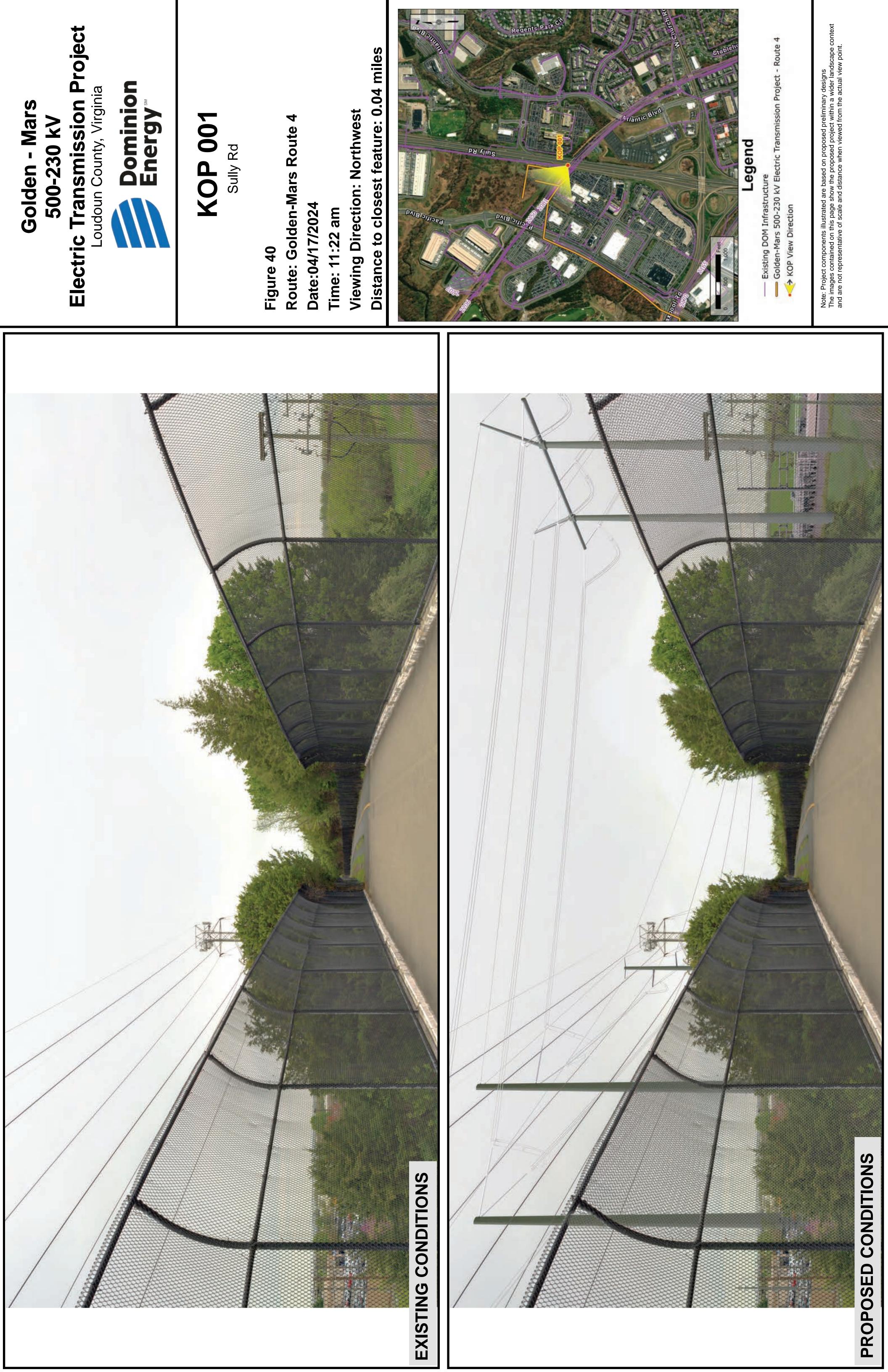


Figure 39. Aerial photograph depicting land use and photo view for 053-0276.





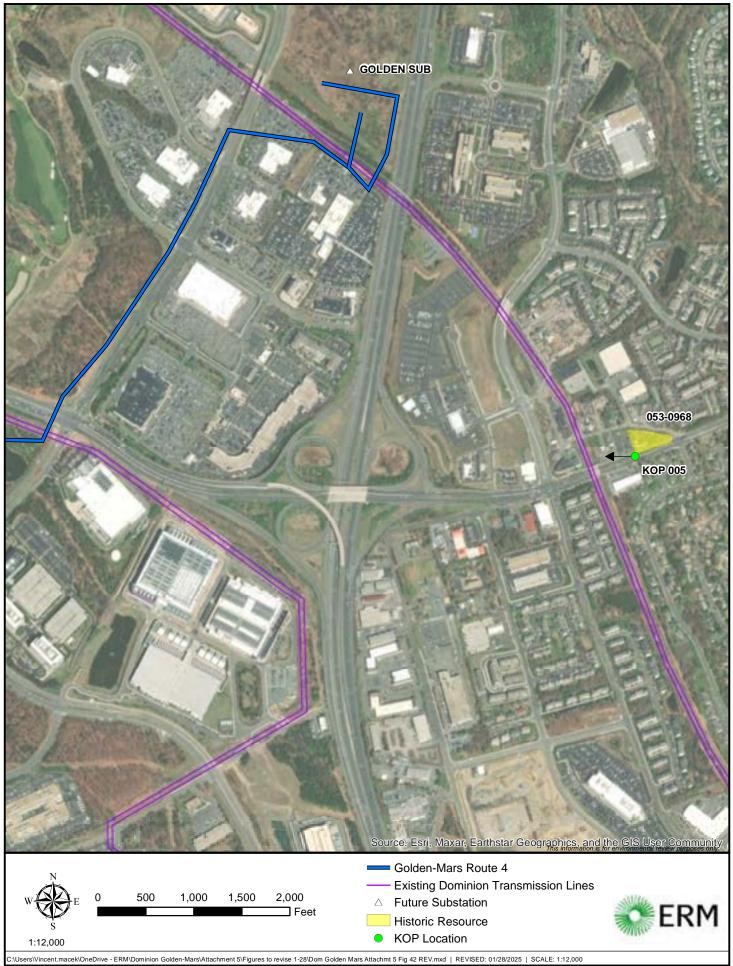


Figure 42. Aerial photograph depicting land use and photo view for 053-0968.



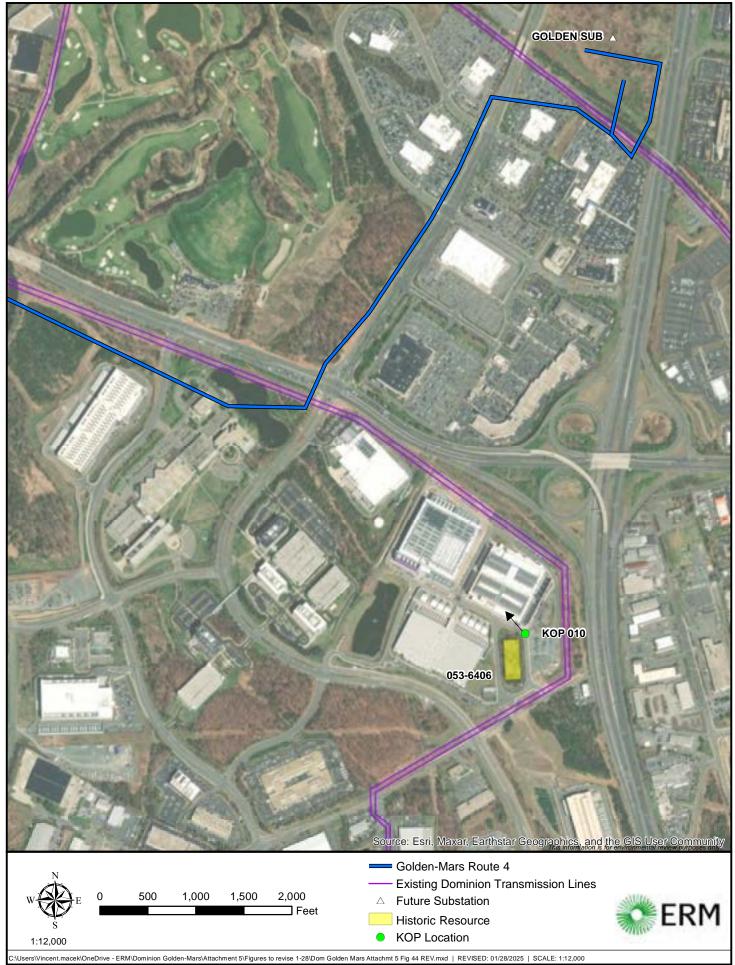


Figure 44. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars 500-230 kV Electric Transmission Project Loudoun County, Virginia Dana County, Virginia	<b>KO</b> Nantage vantage e 45 e: Golden-Mars e: Golden-Mars i 12:10 pm : 12:10 pm i 12:10 pm	<b>FIGHOLE TO CLOSGEST FEBRUICE: U.48 FIGHOLE TO CLOSTER STORUCE: U.48 </b>





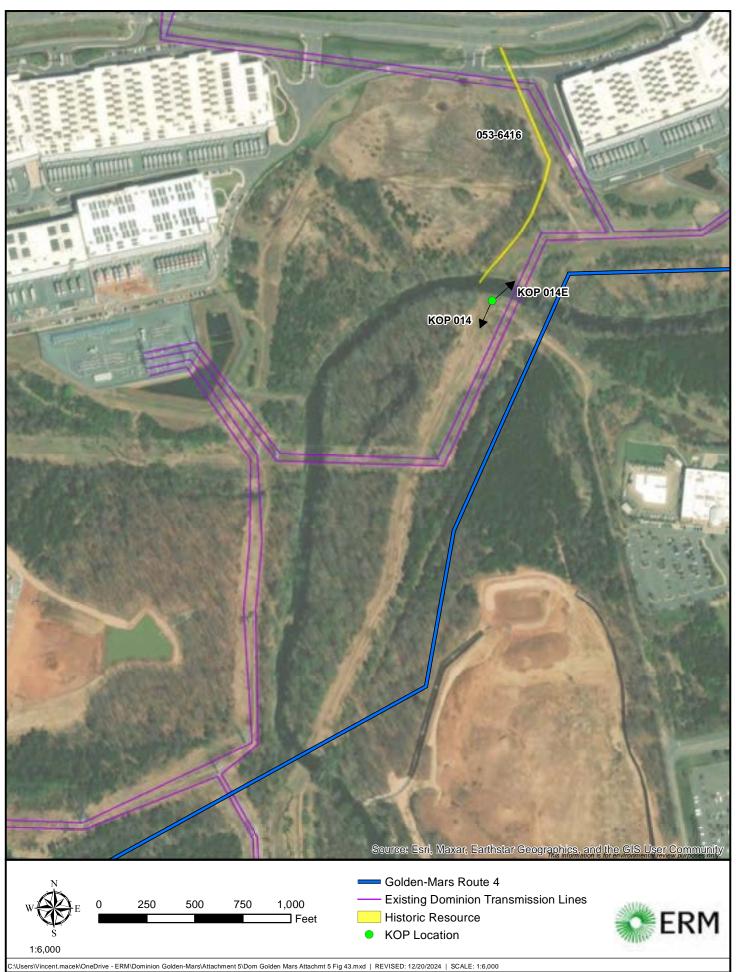
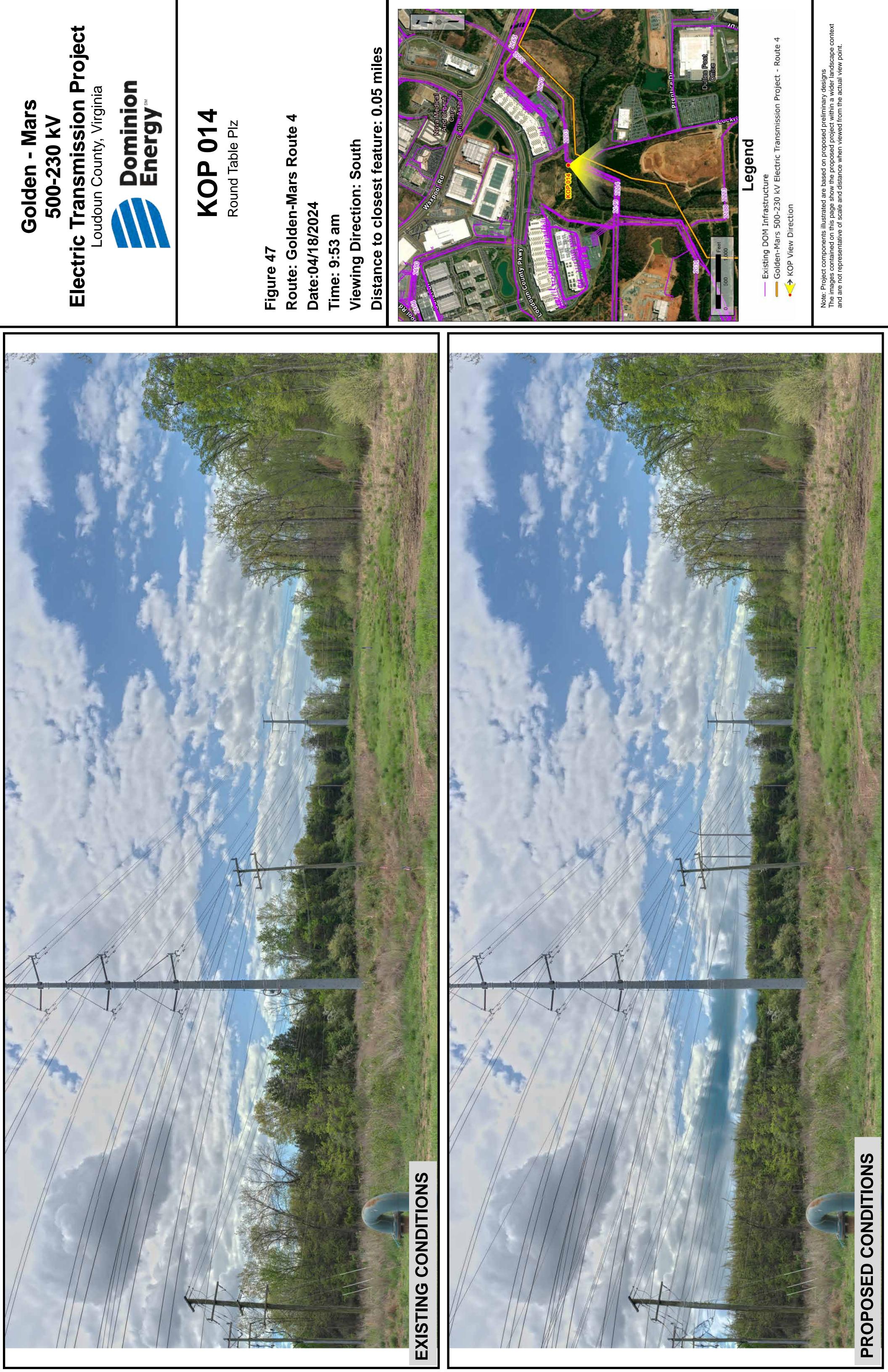


Figure 46. Aerial photograph depicting land use and photo view for 053-6416.



Golden - Mars 500-230 kV Electric Transmission Project Loudoun County, Virginia Danning Breegy	KOP 014E Round Table PIz	Figure 48 Route: Golden-Mars Route 4 Date:04/18/2024 Time: 9:53 am Viewing Direction: South Distance to closest feature: 0.05 miles	The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





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# **PROPOSED CONDITIONS**



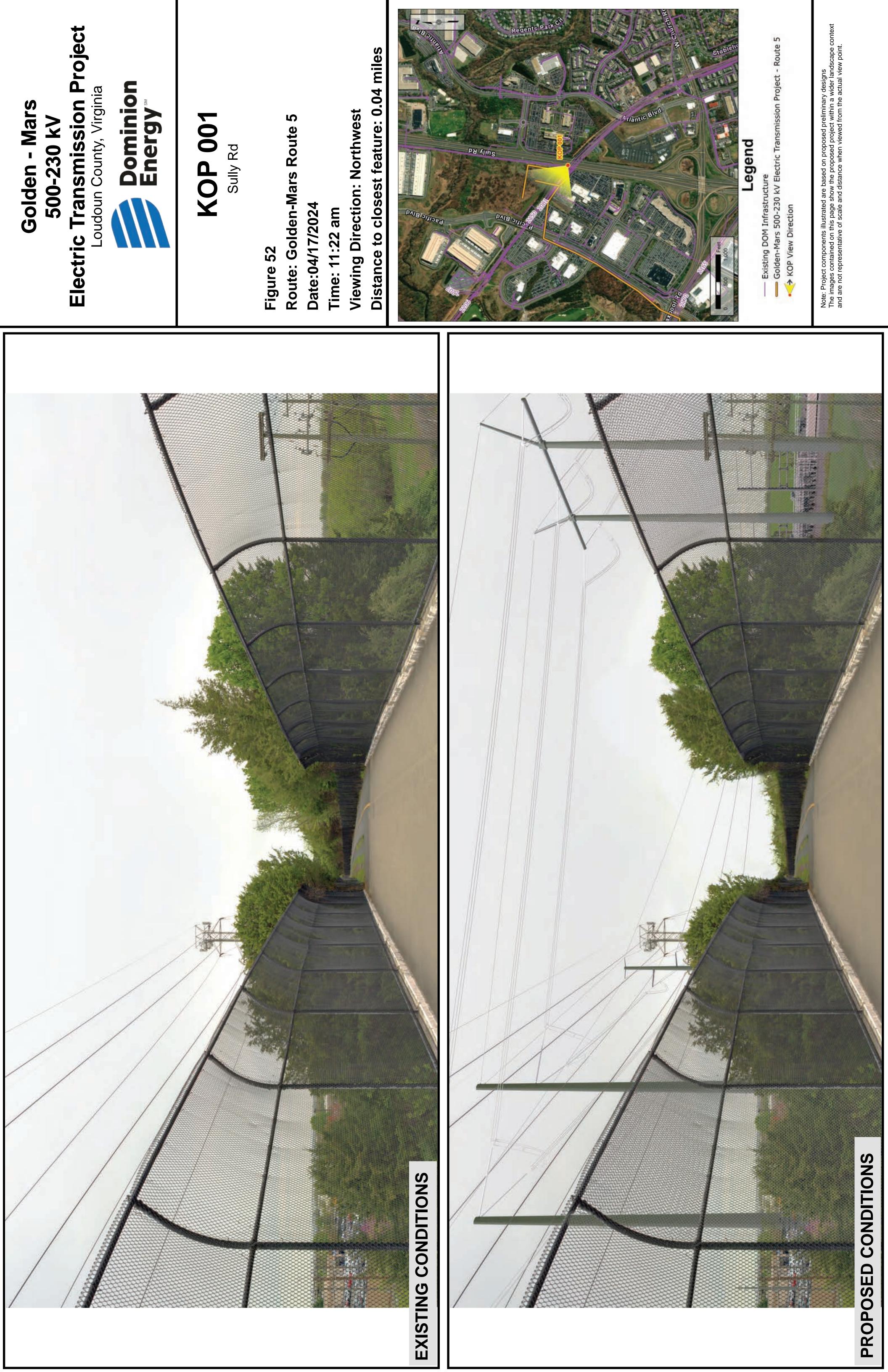
Figure 49. Aerial photograph depicting land use and photo view for 053-0008.



## INFRASTRUCTURE ROJECT YELLOW: PARTIALLY OR FULLY HIDDEN P



Figure 51. Aerial photograph depicting land use and photo view for 053-0276.





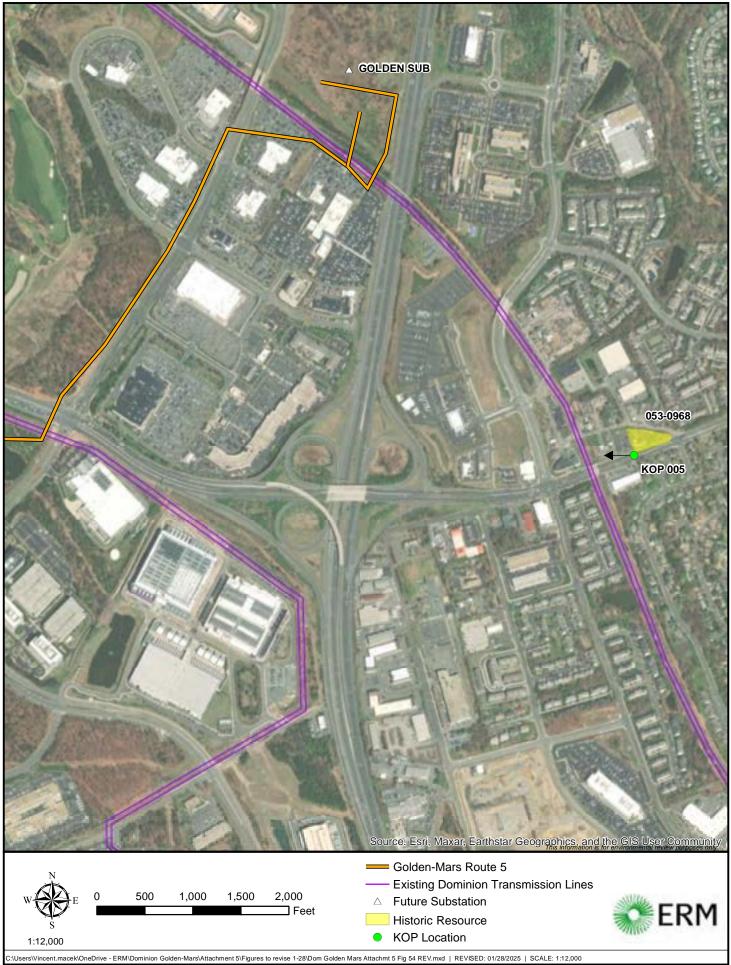


Figure 54. Aerial photograph depicting land use and photo view for 053-0968.



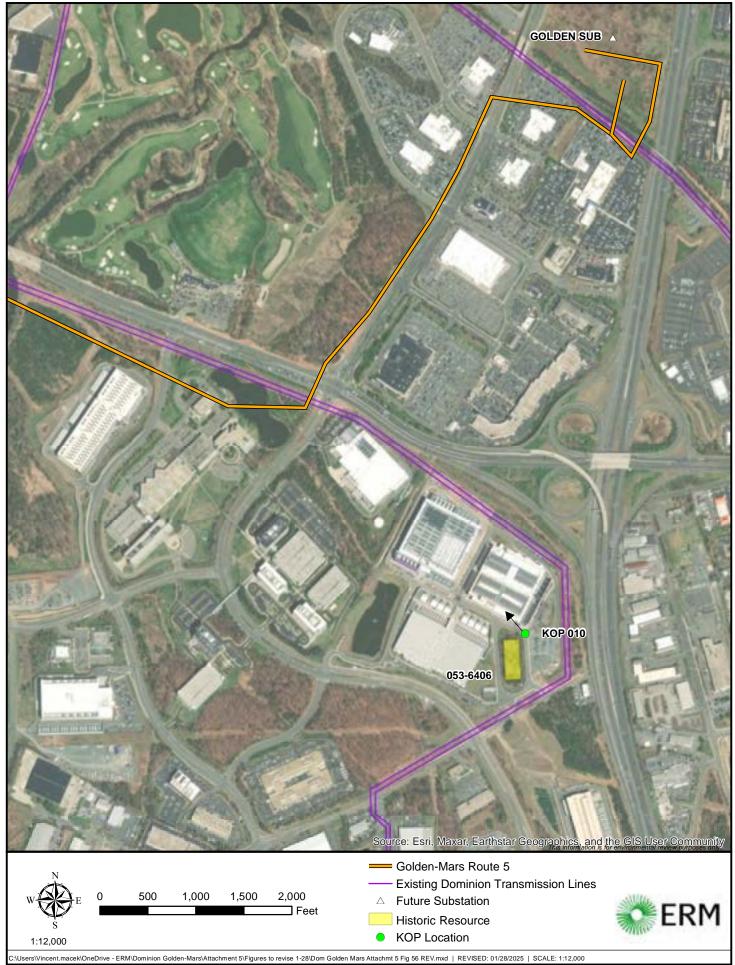


Figure 56. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars 500-230 kV 500-230 kV Electric Transmission Project Loudoun County, Virginia Loudoun County, Virginia	





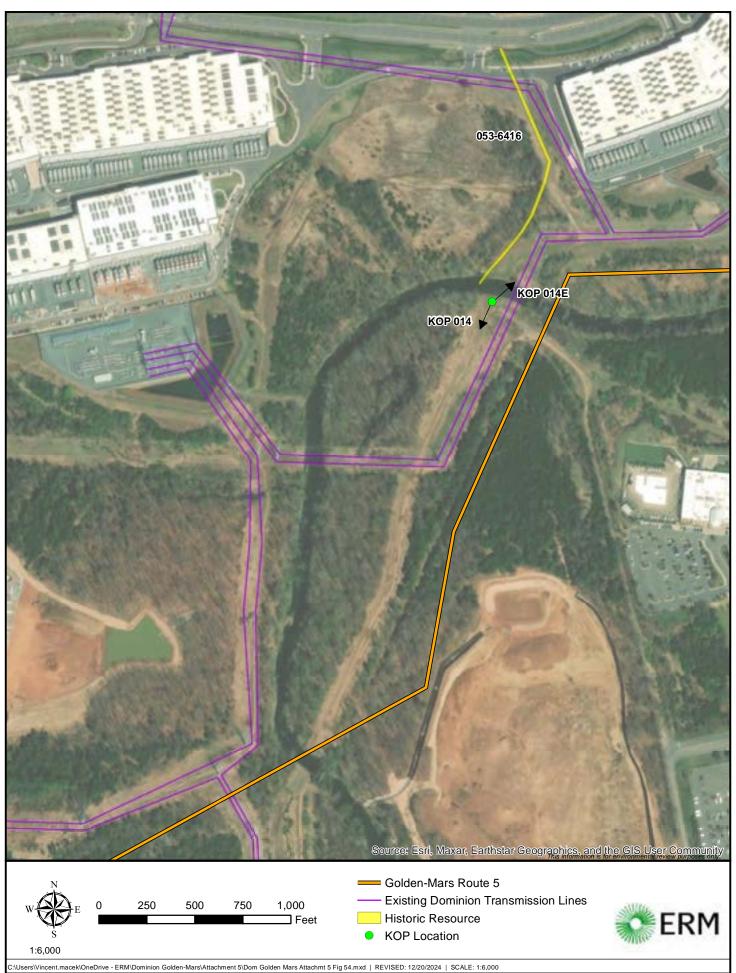
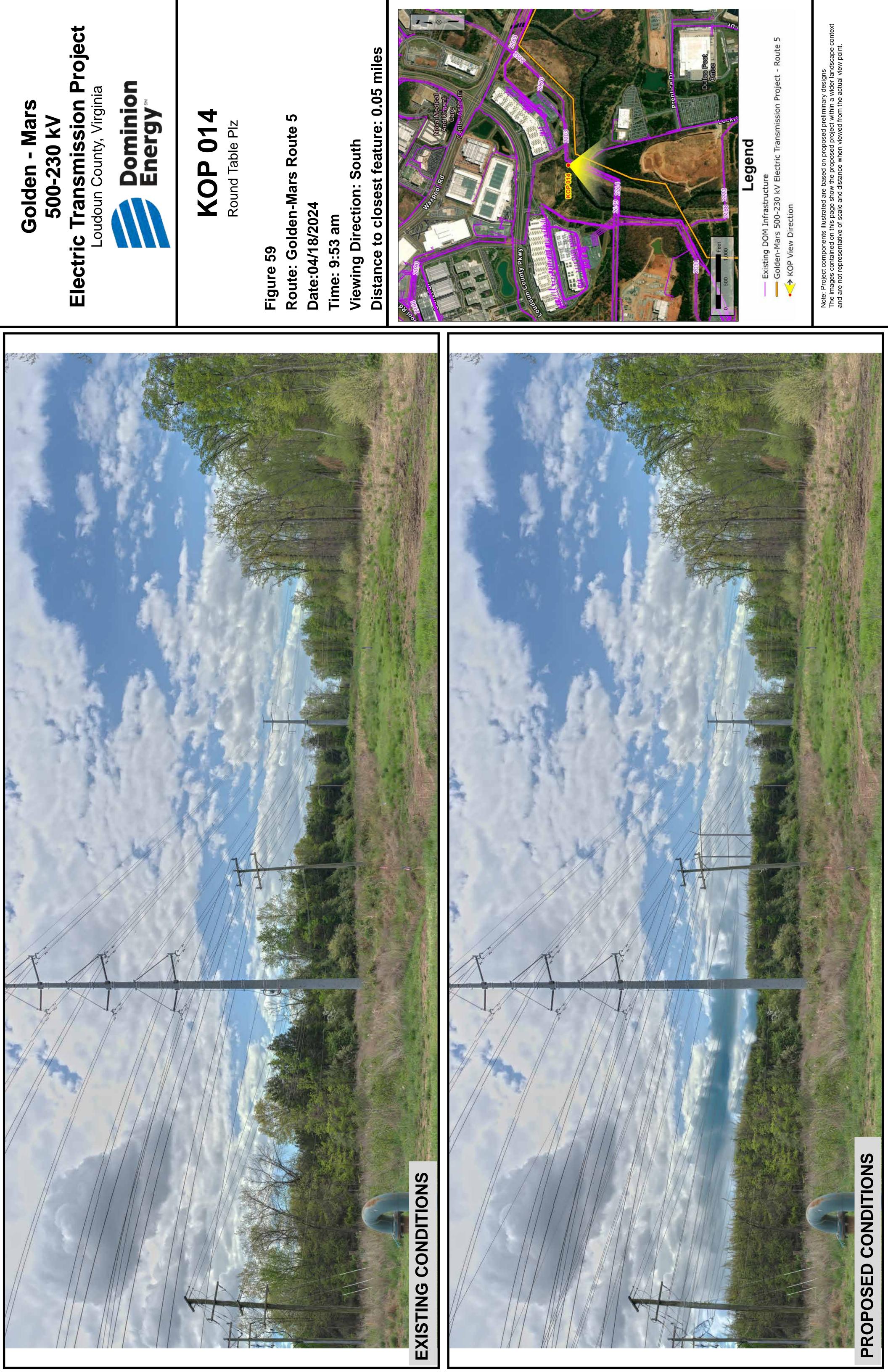


Figure 58. Aerial photograph depicting land use and photo view for 053-6416.



Golden - Mars 500-230 kV Electric Transmission Project Loudoun County, Virginia Daninon Breegy	KOP 014E Round Table PIz	Figure 60 Route: Golden-Mars Route 5 Date:04/18/2024 Time: 9:53 am	Viewing Direction: South Distance to closest feature: 0.05 miles	• Constant of the second s	Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.





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# **PROPOSED CONDITIONS**

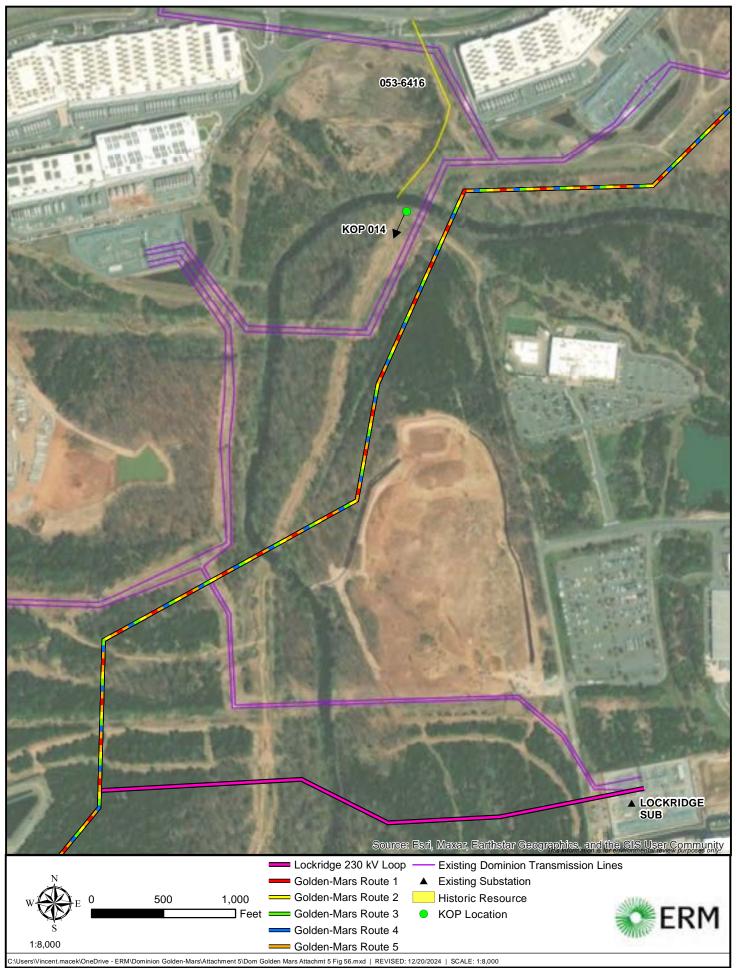
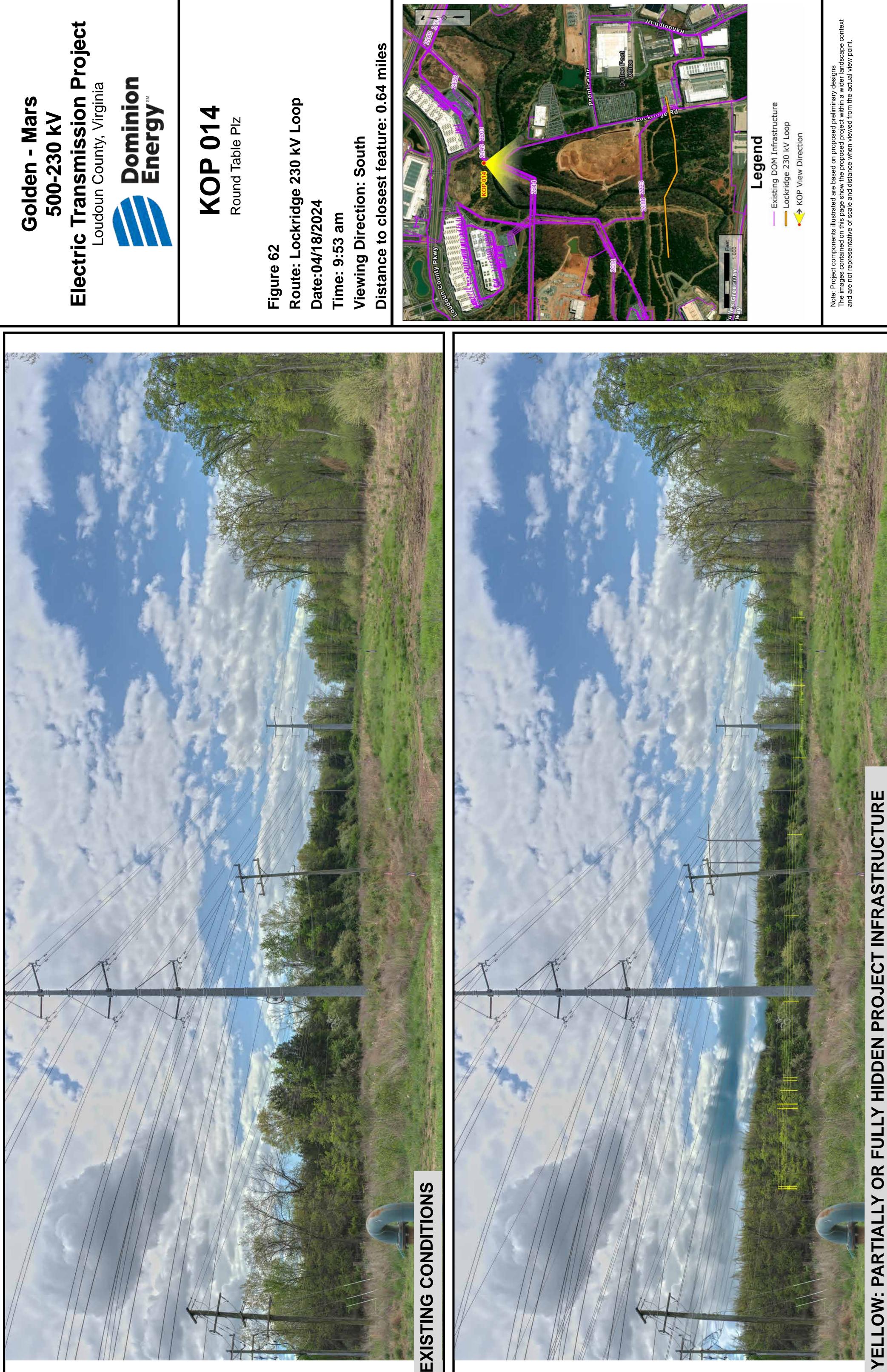


Figure 61. Aerial photograph depicting land use and photo view for 053-6416.



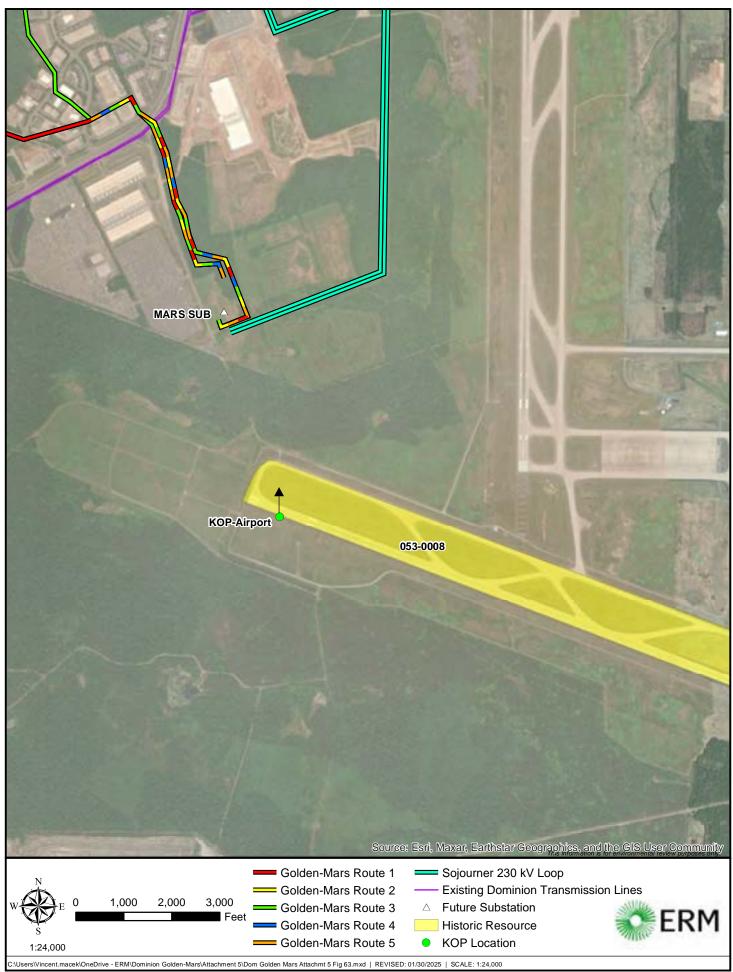


Figure 63. Aerial photograph depicting land use and photo view for 053-0008.



## INFRASTRUCTURE ROJECT YELLOW: PARTIALLY OR FULLY HIDDEN P



### ERM HAS OVER 160 OFFICES ACROSS THE FOLLOWING COUNTRIES AND TERRITORIES WORLDWIDE

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Ghana	South Africa			
Guyana	South Korea			
Hong Kong	Spain			
India	Switzerland			
Indonesia	Taiwan			
Ireland	Tanzania			
Italy	Thailand			
Japan	UAE			
Kazakhstan	UK			
Kenya	US			
Malaysia	Vietnam			
Mexico				
Mozambique				