Dominion®

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

Before the State Corporation Commission of Virginia

Surry-Skiffes Creek 500 kV Transmission Line

Skiffes Creek-Whealton 230 kV Transmission Line

Skiffes Creek 500kV-230kV-115 kV Switching Station

Application No. 257

Case No. PUE-2012-00029

Filed: June 11, 2012

Volume VI of VI

DOMINION VIRGINIA POWER

Surry-Skiffes Creek 500 kV Transmission Line,
Skiffes Creek-Whealton 230 kV Transmission Line, and
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

APPENDIX H

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternates

DOMINION VIRGINIA POWER

Surry-Skiffes Creek 500 kV Transmission Line
Skiffes Creek-Whealton 230 kV Transmission Line, and
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

APPENDIX H
Environmental Route Review:
Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Prepared by

NATURAL RESOURCE GROUP

May 1, 2012

DOMINION VIRGINIA POWER
Chickahominy to Lightfoot North and South Alternatives 500 kV Transmission Project

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DOMINION VIRGINIA POWER
Chickahominy-Skiffes Creek 500 kV Transmission Line
North and South Alternatives

1.0 INTRODUCTION

This report describes the environmental review and alternatives assessment conducted by Natural Resource Group, LLC (NRG) on behalf of Virginia Electric and Power Company (Dominion) for a Chickahominy-Skiffes Creek 500 kV Transmission Line in southeastern Virginia. Dominion considered plans to construct and operate a new, single circuit 500 kV electric transmission line between its existing Chickahominy Substation in Charles City County and the new Skiffes Creek Switching Station to be constructed near Williamsburg in James City County.

Three alternative routes initially were examined for the section of the Chickahominy-Skiffes Creek 500 kV Transmission Line between the Chickahominy Substation in Charles City County and the Lightfoot Junction in James City County. The first alternative, the Chickahominy Alternative, would consist of a route that would utilize an easement obtained by Dominion in the early 1970s that has not yet been cleared of vegetation or developed. The Chickahominy Alternative would begin at the existing Chickahominy Substation and extend for a distance of 24.9 miles through Charles City and James City Counties before intersecting with Dominion's existing transmission line corridor at Lightfoot Junction. The second and third alternatives, the Chickahominy to Lightfoot North and South Alternatives, largely would follow either the northern or southern sides of Dominion's existing transmission line corridor between the Chickahominy Substation and the Lightfoot Junction in Charles City, New Kent, and James City Counties. These latter two alternatives subsequently were determined not to be an electrically acceptable solution for the project because they would not address projected violations of mandatory North American Electric Reliability Corporation (NERC) Reliability Standards. Therefore, the Chickahominy to Lightfoot North and South Alternatives were rejected.

The following discussion presents the results of the environmental analysis that was conducted for the Chickahominy to Lightfoot North and South Alternatives. The routes of the two alternatives are presented in detail first. This is followed by an inventory of the existing conditions along the alternative routes. The final section of the report consists of an analysis of the resources along the Chickahominy to Lightfoot North and South Alternatives.

2.0 CHICKAHOMINY TO LIGHTFOOT NORTH AND SOUTH ALTERNATIVE ROUTES

The Chickahominy to Lightfoot North and South Alternatives would be collocated adjacent to and within the existing 200-foot-wide Dominion transmission line corridor between the Chickahominy Substation and Lightfoot Junction. Due to existing facilities in the right-of-way, the proposed 500 kV transmission line could not be constructed within the existing corridor for the first 21.4 miles between the Chickahominy and Toano Substations, but would instead need to be located adjacent to the existing corridor (see Figure 2). Because new development and other potential routing constraints vary along each side of the existing transmission line corridor, Dominion reviewed alternative routes that would utilize either the north or south side of the corridor in this area to determine which side offers the greatest environmental advantages and the least environmental and operational disadvantages (see Figure 2). From the Toano Substation to Lightfoot Junction (about 2.3 miles) the new transmission line would be constructed within the existing transmission line corridor under both the North and South Alternatives. The width of the additional right-of-way that would be required for the construction

of the of the new 500 kV line adjacent to the existing corridor between the Chickahominy and the Toano Substations depends on the adjacent structure type. The existing corridor currently contains a 230 kV line and 115 kV line on steel lattice structures (Lines #2124 and #2129) and a 115 line and 230 kV line on wood pole structures (Lines #92 and #2102). One hundred twenty five (125) feet of additional right-of-way would be required where the new structures would be adjacent to existing steel lattice structures and 115 feet of additional right-of-way would be needed where the new structures would be adjacent to existing wood structures.

Upon exiting the Chickahominy Substation, the existing wood pole structures are located on the south side and the steel lattice structures are positioned on the north side of the existing right-of-way for a distance of about 10 miles. Consequently, in this area the North Alternative would require an additional 125 feet of new right-of-way, and the South Alternative would require an additional 115 feet of new right-of-way. However, after crossing Mount Pleasant Road, the wood pole structures switch to the north side of the existing corridor and the steel lattice structures switch to the south side. As such, the width of the additional right-of-way required for each alternative would change accordingly. In any case, the centerline of the new 500 kV line would be placed 75 feet in from the outer edge of the widened right-of-way.

The South Alternative route would deviate from the existing corridor in one location for a distance of about 0.7 mile. Specifically, upon exiting the Chickahominy Substation, the South Alternative would turn to the south in order to avoid an existing Dominion natural gas pipeline compressor station, which is located directly adjacent to the south side of Dominion's transmission line corridor. The alternative would then turn back to the north to rejoin the existing corridor on the east side of the compressor station. Additionally, the North Alternative would need to cross over to the south side of the existing corridor for a distance of 1.2 miles to avoid the Cypress Springs Wetland Mitigation Bank, which is located directly adjacent to the northern boundary of the existing right-of-way between West Cool Hill Road and Adkins Road.

3.0 INVENTORY OF EXISTING CONDITIONS

NRG identified and mapped existing land use, environmental, visual, and cultural features within the vicinity of the project area. Data were collected, mapped, and plotted on U.S. Geological Survey (USGS) 7.5-minute series topographic quadrangles and recent (2011) high resolution digital aerial photography using ArcGIS software (v. 10). Information was obtained from publicly available Geographic Information System (GIS) databases, agency websites and databases, published documents such as county or municipal land use plans, and communication with agency staff, stakeholders, and elected officials. In those cases where GIS data were not available for a particular environmental resource or other feature, NRG obtained the best available hard-copy or on-line map and hand digitized the information needed to complete the study. Table 3-1 identifies the categories of environmental features considered in the study of the Chickahominy to Lightfoot North and South Alternatives. Descriptive information regarding these features within the study area is provided in subsequent sections.

TABLE 3-1

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Environmental Features Considered in the Study Area

Feature Type	Description
Land Use	
Land Ownership	• Government Lands • Private Lands
Recreational Areas	• National, State, County, or Municipal Parks in the Project Vicinity • Federal, State, County, or Municipal Managed Recreation Areas Crossed • Golf Courses • Recreation Trails (biking, hiking, birding, wildlife)
Airport Facilities	• Areas with Height Restrictions or Limitations in the Safety Overlay District
Existing Land Use and Land Cover	• Existing Subdivisions • Land Cover Types (e.g., Forest, Agricultural, Developed) • Residences, Churches, Schools, Cemeteries
Planned Developments	• Planned, Proposed or Conceptual Residential, Commercial, or Industrial Developments
Land Use Planning and Zoning	• Zoning Districts
Conservation Lands	• James City County Conservation Easements • Williamsburg Land Conservancy • Other Conservation Lands • Wetland Mitigation Banks
Environmental	
Surface Waters	• Wetlands • Waterbodies
Protected or Managed Areas	• Resource Protection Areas • Wildlife Management Areas
Protected Species	• Natural Heritage Resources • Threatened and Endangered Species • Bald Eagles
Vegetation	• Vegetation Characteristics
Visual	
Visually Sensitive Areas	• Viewsheds to and from Visually Sensitive Areas • Scenic Byways
Cultural Resources	
Cultural Resource Sites	• Archaeological Sites • Historical or Architectural Sites
Geological	
Mineral Resources	• Mines or Quarries
Engineering	
Length	• Length of Routes
Transportation Infrastructure Crossings	• Roads • Railroads
Greenfield Construction	• New corridor (i.e., not adjacent to existing corridor)
Existing Corridors	
Existing Electric Facilities	• Transmission or Distribution Lines
Other Utilities	• Pipelines
Transportation Infrastructure	• Roads or Railroads

3.1 LAND USE

3.1.1 Land Ownership

NRG quantified information on land ownership along the Chickahominy North and South Alternatives using publically available GIS databases and digital tract data obtained from Charles City County, New Kent County, and James City County. These data indicate that the majority of land crossed by all route sections is privately owned with smaller portions of state, and county land; existing rights-of-way; and land for which ownership is not listed. Figure 3 depicts landownership along each route segment. There is no federally owned land crossed by either route alternative. The paragraphs below describe the locations of non-privately owned lands along each route segment.

The Chickahominy to Lightfoot South Alternative crosses one state-owned parcel immediately south of where the alternatives cross Route 60. This parcel is managed by the Virginia Department of Forestry (VDOF) and associated with the Game Farm Marsh Wildlife Management Area (WMA) and adjacent Tree Farm. The North Alternative crosses two parcels owned by the City of Newport News, one associated with Diascund Reservoir located just north of Route 60 and one associated with Little Creek Reservoir, while the South Alternative only crosses Little Creek Reservoir land. These reservoirs are managed by the Newport News Water Works Department. The alternatives also cross one greenspace purchase parcel owned by James City County located southeast of Route 631 and north of Deer Lake.

3.1.2 Recreation Areas

NRG identified recreation areas through review of digital data sets and maps, USGS topographic quadrangles, and recent (2011) digital aerial photography. This review identified a variety of recreation areas either crossed or located within 0.25 mile of the alternative route sections. These areas are listed in Table 3.1.2-1, described below, and shown in Figure 4.

TABLE 3.1.2-1

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Recreation Areas within 0.25 mile of the Alternative Routes

Recreation Area	Chickahominy to Lightfoot North Alternative	Chickahominy to Lightfoot South Alternative
Plantation Loop of the Virginia Birding and Wildlife Coastal Trail	X	X
Crawfords State Forest	X [a]	X [a]
Game Farm Marsh WMA	X [a]	X
Diascund Creek Reservoir	X	X
Little Creek Reservoir	X	X

[a] Recreation area is not crossed but is within 0.25 mile of the corridor.

The Plantain Loop of the Virginia Birding and Wildlife Coastal Trail

This trail connects historic and natural areas along the James River. The only trail of its kind in the United States, the Virginia Birding and Wildlife Coastal Trail provides drivable routes through various habitats and wildlife viewing areas while providing links to walking and biking trails. The Coastal Trail was the first phase of the Virginia Birding and Wildlife Coastal Trail to be developed. The trail runs for over 50 miles primarily along Route 5 from Osborne Pike boat landing in Charles City to the Chickahominy Riverfront Park and then north to Interstate 64. Historic plantations, gardens, boating facilities, and a fish hatchery are among the recreation activities available along the trail (Virginia Department of Game and Inland Fisheries (VDGIF), 2011a). The North and South Alternatives cross the Plantain Loop at the following exiting road locations: Adkins Road, South Courthouse Road, and Route 60.

Crawfords State Forest

This state forest is located in New Kent County between Route 60 and the Chickahominy River. The forest contains 258 acres and is designated as a bird and wildlife sanctuary. Recreational opportunities within the forest include hiking, canoeing, and bird and wildlife watching (VDOF, 2011).

Game Farm Marsh WMA

Game Farm Marsh is a state WMA located on the northern shore of the Chickahominy Lake in New Kent County adjacent to the VDOF Tree Farm. The WMA's entire 429 acres are wetlands and can be accessed only by boat from boat ramps on Chickahominy Lake. Two creeks allow access into the interior of the eastern side of the property. Recreational opportunities within the Game Farm Marsh WMA include wildlife viewing and waterfowl hunting. There are no onsite facilities (VDGIF, 2011b).

Diascund Creek Reservoir

The Diascund Reservoir Park is operated jointly by the City of Newport News, James City County, and the VDGIF. This park is located just north of Route 60 along the New Kent County and James City County line. The reservoir covers 1,110 acres and recreational activities include boating and fishing. In order to preserve the health of the ecosystem, electric trolling motors are the only motors permitted on the reservoir. Facilities available at Diascund Reservoir include a boat ramp, pier, and parking lot (VDGIF, 2011c).

Little Creek Reservoir

This park is located in James City County south of Route 610 and northwest of Route 631. Recreational opportunities include boating, fishing, and hiking. Facilities available onsite include a boat ramp, fishing pier, picnic tables, grills, playground, nature trail, and boat rentals (VDGIF, 2011d).

3.1.3 Airport Facilities

Airports are important considerations in routing overhead electric transmission lines because of the potential for transmission line towers to affect airspace in and around these

facilities. A summary of the airports in the vicinity of the study area and the airspace regulations that could have an impact on the project is provided below.

3.1.3.1 Airports Near Project Area

Dominion reviewed the Federal Aviation Administration's (FAA) website to identify public use airports, airports operated by a federal agency or the U.S. Department of Defense (DOD), airports or heliports with at least one FAA-approved instrument approach procedure, and public use or military airports under construction (FAA, 2011) . Based on this review, there are three facilities located within 10 miles of the Chickahominy to Lightfoot North and South Alternatives (see Figure 5). Table 3.1.3-1 lists the airport or heliport name, airport identification, distance and direction from Dominion facility, use, and maximum runway length in the vicinity of the alternatives.

TABLE 3.1.3-1

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Airports and Heliports Located in the Vicinity of the Project

Transmission Line Section	Airport Name	Airport ID	Approximate Distance and Direction From Dominion Facility (nautical miles)	Use	Maximum Runway Length (feet)
Chickahominy to Lightfoot North and South Alternatives	New Kent County Airport	W96	4.2 N	Public	3,600
Chickahominy to Lightfoot North and South Alternatives	Richmond International Airport	RIC	7.6 NW	Public	9,003
Chickahominy to Lightfoot North and South Alternatives	Middle Peninsula Regional Airport	FYJ	8.7 NE	Public	5,000

3.1.3.2 Federal Aviation Regulations

The FAA is responsible for overseeing air transportation in the United States. The FAA focuses on air transportation safety, including the enforcement of safety standards for aircraft manufacturing, operation, and maintenance. The FAA also manages air traffic in the United States and evaluates physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. The prime objective of the FAA in conducting an obstruction evaluation is to ensure the safety of air navigation and the efficient utilization of navigable airspace by aircraft.

The regulations that govern objects that may affect the navigable airspace are codified in the Code of Federal Regulations (CFR) at 14 CFR Part 77 (Part 77). On July 21, 2010, the FAA amended Part 77. Following are the major changes in the final rule:

1. The final rule provides for an FAA Determination of Hazard or Determination of No Hazard to become effective 40 days after the date of issuance.

2. The final rule stipulates that a Determination of No Hazard to air navigation will expire 18 months after the effective date of the determination, or on the date the

proposed construction or alteration is abandoned. Also, the final rule specifies that a Determination of Hazard to Air Navigation does not expire.

3. The final rule expands the requirements for notice to be sent to the FAA for proposed construction or alteration of structures on or near private use airports that have an instrument approach procedure.

A summary of the final rule as it relates to the project is provided below. A copy of the final rule is included in Appendix H-2.

Civil Airport Imaginary Surfaces

Civil imaginary surfaces have been established with relation to each airport and to each runway. The imaginary surfaces were developed to prevent existing or proposed objects from extending from the ground into navigable airspace. Following is a description of the civil imaginary surfaces:

- **Horizontal surface:** A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by lines tangent to those arcs.

- **Conical surface:** A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

- **Primary surface:** A surface longitudinally centered on a runway. The primary surface extends 200 feet beyond the end of each runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

- **Approach Surface:** A surface longitudinally centered on the extended runway centerline and extending outward and upward form each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end (e.g., precision instrument approach, visual approach, etc.).

- **Transitional Surface:** These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface that project through and beyond the limits of the conical surface extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

In addition to the civil airport imaginary surfaces, there are imaginary surfaces associated with terminal instrument procedures (TERPS). TERPS are procedures for instrument approach and departure of aircraft to and from civil and military airports. TERPS are used for airport obstruction analysis to protect airspace by establishing restrictions on the height

of buildings, antennas, trees, and other objects as necessary to protect the airspace needed for aircraft during preparation for and completion of the landing or departure phases of flight.

FAA Notice Requirements and Timing

Based on the runway categories and dimensional standards described above, a notice must be filed with the FAA if:

- Any construction or alteration is more than 200 feet above ground level (AGL) at its site.
- Any construction or alteration exceeds an imaginary surface extending outward and upward at the following slope:
  - 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport;
  - 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway that is no more than 3,200 feet in actual length; and
  - 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway that is more than 3,200 feet in actual length.
- If requested by the FAA.

Construction or alteration of any structure that meets the notification requirements set forth above must submit a FAA Form 7460-1, Notice of Proposed Construction or Alteration (Notice) to the FAA Regional office having jurisdiction over the area within which the construction or alteration will be located or submitted electronically via the FAA website. The information that needs to be provided with the Notice includes the coordinates, site elevation, and structure height above ground level for each pole/structure and the height of construction equipment, such as cranes.

For the Chickahominy to Lightfoot North and South Alternatives, the new transmission line structures would range between 115 and 125 feet in height. The construction equipment (e.g., cranes) that would be used to install the transmission lines would have a maximum height of 150 feet. The maximum height of 150 feet was used to determine if the project would exceed the notification thresholds described above and in Section 4.2.2. Table 3.1.3-2 identifies the airport that would trigger a notification to the FAA for the new facilities.

TABLE 3.1.3-2

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Project Section Where FAA Notification is Required

Project Section	Nearest Airport	Airport ID	Approximate Distance and Direction From Dominion Facility (nautical miles)	Use
Chickahominy to Lightfoot – North and South Alternatives	Middle Peninsula Regional Airport	FYJ	8.7 NE	Public

3.1.3.3 State and Local Regulations

Commonwealth of Virginia Aviation Regulations

Section 5.1-25.1 of the Code of Virginia (Va. Code) establishes that it is unlawful for a person to erect any structure which penetrates into or through any licensed airport's clear zone, approach zone, imaginary surface, obstruction clearance surface, obstruction clearance zone, or surface or zone as described in regulations of the Virginia Department of Aviation (VDOA) or the FAA, without first securing a permit for its erection from the Board of Aviation. However, it also states that this requirement does not apply to any structure to be erected in a county, city or town which has an ordinance regulating the height of such structures to prevent the penetration of zones and surfaces provided for in Part 77 and Rule 19 of the VDOA.

Local Airport Regulations

The Va. Code, in Sections 15.2-2280, 15.2-2282, 15.2-2293, and 15.2-2294, gives local jurisdictions the power to establish and regulate zoning districts, make airspace subject to their zoning ordinance, and establish airport safety zoning. There are no zoning regulations applicable to the Chickahominy to Lightfoot North and South Alternatives.

3.1.4 Existing Land Use and Land Cover

Land use and land cover along the Chickahominy to Lightfoot North and South Alternatives was identified using the most currently available (2006) National Land Cover Dataset (NLCD) from the Multi-Resolution Land Characterization consortium. Existing land use for the Chickahominy to Lightfoot North and South Alternatives is depicted in Figure 6 and quantified in Table 4-1. The existing subdivisions crossed by the route are depicted in Figure 7 and listed in Table 3.1.4-1.

The Virginia State Corporation Commission (SCC) requires that the number of dwellings within 500 feet of a route be considered. NRG identified buildings (including dwellings) through review of various digital data sets and maps, USGS topographic quadrangles, and recent (2011) aerial photography. Features found within 500 feet of the alternative segment corridors include churches and cemeteries, as well as other public, residential, commercial, and industrial buildings.

There is one church and one cemetery located within 500 feet of the Chickahominy to Lightfoot North Alternative. St. John's Church Cemetery is located just west of Forge Road in James City County. The church is located approximately 360 feet from the North Alternative and the cemetery is not visible on 2011 aerial photographs, but for the purposes of this review the cemetery is assumed to be within 500 feet of the Chickahominy to Lightfoot North Alternative. There are 473 buildings located within 500 feet of the corridor along the Chickahominy to Lightfoot North Alternative and 438 buildings located within 500 feet of the corridor along the Chickahominy to Lightfoot South Alternative. These buildings are primarily agricultural facilities and rural residences scattered along the alternatives. As noted in Table 3.1.4-1., there are four existing subdivisions crossed by these alternatives; all four are located along the eastern half of the alternative routes.

TABLE 3.1.4-1

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Existing Subdivisions Crossed

Subdivision Name	Location	North Alternative	South Alternative
King's Corner	James City County	X	X
Sheldon Lumber Company	James City County	X	
Lake Toano Estates	James City County	X	X
Colonial Heritage Estates	James City County	X	X

3.1.5 Planned Development

NRG obtained information on planned future developments through consultations with county and city planning officials, the Chambers of Commerce and other stakeholders, and through publically available information. There are no planned future developments located along the Chickahominy to Lightfoot North and South Alternatives.

Charles City County and New Kent Counties have designated development centers in their Comprehensive Plans. The objective of these development centers is to promote areas of existing high public and private investment. These areas constitute zones for general development. Portions of the two alternatives routes cross two of these development centers, Roxbury Development Center and Lanexa Development Area, and the North Alternative crosses a small segment of the Providence Forge Development Area.

The Roxbury Development Center is located on both sides of Route 106 and is considered to be the industrial center of the county. The development center is located near major transportation routes and the county supports the future development of business parks, industrial parks, and commercial business in this area. The Lanexa Development Area is located on either side of Route 60 south of Diascund Creek Reservoir. There currently are no specific plans for commercial or residential development in the portions of these development centers crossed by the alternative routes (Charles City County 2009). The Providence Forge Development Area is located on either side of Route 60 and either side of Route 155 with the majority of the area being north of Route 60. According to the maps included in the Village Visions: New Kent County Providence Forge Village, the development area is primarily located north of the alternatives (New Kent County 2003 and 2006). These development areas are depicted in Figure 8.

3.1.6 Land Use Planning and Zoning

The Va. Code requires every governing body within the state to adopt a Comprehensive Plan that provides guidance for land use planning decisions within the territory of its jurisdiction. The plan identifies and describes the location, character, and extent of existing, proposed, or anticipated land uses, and identifies facilities (e.g., roads, housing, utilities, libraries, etc.) needed to serve current and future residents. Zoning is a tool used by land managers to implement the objectives of the Comprehensive Plan by defining standards for development and permissible uses within different land use categories. Comprehensive Plans are updated every 5 years to make adjustments for actual or projected changes in land use conditions or needs. Zoning ordinances may be modified by land managers or governing bodies or through requests

from residents or businesses to change zoning designations or approve new uses. Charles City County, New Kent County, James City County have all adopted Comprehensive Plans and zoning ordinances for their respective jurisdictions. NRG obtained GIS datasets for these zoning districts from each of the counties crossed by the route alternatives. Zoning categories vary across these districts. NRG analyzed the original zoning categories and standardized them into 12 categories that could be applied across all three districts for the purposes of this review. Appendix H-3 shows how the original zoning categories were renamed in this standardization process. Figure 9 depicts the zoning categories crossed by each route section.

The Chickahominy to Lightfoot North and South Alternatives start on a small segment of industrially zoned land before crossing approximately 5.6 miles of agriculturally zoned land. The routes then cross a small commercial area and another small industrial area between segments of agriculturally zoned land. The routes continue across land zoned for recreation associated with the Game Farm Marsh WMA, then cross Route 60 and continue along approximately 12 miles of agricultural land before coming to Little Creek Reservoir. The routes then cross two segments of special public use land mixed with single-family residential and rural residential areas. The routes cross a final plot of agricultural land and a plot of mixed use land before reaching their terminus at Lightfoot Junction.

The Chesapeake Bay Preservation Act (CBPA) (Chapter 25, Title 10.0 of the Va. Code establishes a program to protect and improve the quality of water of the Chesapeake Bay. The focus of the CBPA is to protect sensitive land areas that are adjacent to tributaries of the Chesapeake Bay, which if improperly developed can contribute to water quality degradation of the bay and its tributaries. As protected under the CBPA, Resource Protection Areas (RPAs) are sensitive lands at or near the shoreline that have an intrinsic water quality value due to the ecological and biological processes they perform. RPA components include tidal wetlands, tidal shores, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or tributary streams and a minimum 100-foot buffer landward of the other RPA components. James City County and Charles City County have incorporated the CBPA into their zoning ordinances to implement requirements for protecting and improving water quality in RPAs.

Activities or facilities permitted in RPAs (with county approval) include water dependent facilities (such as docks), the redevelopment of already developed areas, and other specific uses. RPAs in the study area are generally located along the major waterways identified in Section 3.2.2 below and their tributaries. In James City County, all lands that are not within a designated RPA are designated Resource Management Areas (RMAs). RMAs are land types that, if improperly developed, have a potential to significantly degrade water quality or to damage the protective features of the RPA. RMAs are required to be contiguous to the entire inland boundary of the RPA. Right-of-ways and development are not limited in RMAs as long as a proposal meets the requirements of the underlying zoning of the land and conforms to the requirements outlined in the Counties' CBPA Overlay Zoning Ordinances. In Charles City County RMAs are limited to those areas adjoining to any RPA where there is an overlap of soils delineated as highly erodible and soils delineated as highly permeable, those areas adjacent to any RPA delineated as a 100-year floodplain and an area 25 feet in width landward and adjoining to the entire inland boundary of the RPA (Charles City County, 2003 and James City County, 1990).

Construction of electric transmission lines is conditionally exempt from the CBPA provided it complies with applicable regulations; therefore, the project is not subject to restrictions in RPAs or RMAs.

NRG reviewed county zoning ordinances and comprehensive plans for Charles City County, New Kent County, and James City County to identify any potential conflicts with zoning and the alternative route segments. As indicated below, several of the counties crossed by the alternative route sections require a special use permit for certain utilities. However, according to Va. Code § 56-46.1, SCC approval of transmission lines 138 kV and above preempts local zoning ordinances and special use permitting.

In Charles City County, central utility systems with rights-of-way greater than or equal to 30 feet are considered permitted uses in most zoning districts subject to a special use permit. These utility systems must also comply with county environmental and site plan ordinances and regulations. Two zoning districts, multi-family residential and planned use, do not approve utility systems with rights-of-way greater or equal to 30 feet (Charles City County, 2006). The Chickahominy to Lightfoot North and South Alternatives cross any Charles City County land zoned as multi-family or planned use.

In New Kent County, public utilities, including transmission lines, are permitted but require conditional use permits in all zoning districts. In addition, a utility easement that is constructed in a flood prone area must be elevated, when possible, and constructed in a manner to minimize any impairments during a flood event (New Kent County, 2009).

In James City County electrical transmission lines with a capacity of 69 kV or greater are permitted by special use permit in most zoning districts. They are permitted without special use permits in the industrial zoning district. In the planned development district, expansions and extensions of utilities are permitted if they service the planned development, and in planned unit development districts there is no mention of utility rights-of-way. James City County has a floodplain overlay district that regulates land uses in floodplain areas. In these districts utility facilities and structures must be built in a way that eliminates the chance of damage during a 100-year flood event (James City County, No Date). James City County also has a Greenspace Program in effect where the county purchases lands for sale and they become part of the county's conservation easement areas.

3.1.7 Conservation Easements

The Virginia Open-Space Land Act provides for the creation of open-space easements by public bodies as a means of preserving open space or significant natural, cultural, and recreational resources on public or private lands. Most easements created under the act are held by the Virginia Outdoors Foundation (VOF), but any state agency is authorized to create and hold an open-space easement. The Virginia Conservation Easement Act similarly provides for the creation of conservation easements on public or private lands but under the auspices of charitable organizations (such as conservation trusts) rather than public agencies. The Virginia Agricultural and Forestal Districts Act provides for the creation of conservation districts which are to conserve, protect, and encourage the development and improvement of a locality's agricultural and forestal land for the production of food and other products while also conserving and protecting land as valued natural and ecological resources. In all three cases, easements and conservation districts are designed to preserve and protect open space or other resources

in perpetuity. Easements negotiated with private landowners allow the lands to remain in private ownership but with protections imposed to limit or restrict land uses on the property.

NRG identified six areas along the Chickahominy North and South Alternatives that are protected through conservation easements and districts managed by entities other than the VOF based on information obtained from the Virginia Department of Conservation and Recreation (VDCR), Virginia Department of Historic Resources (VDHR), and reviewing available County Agricultural and Forestal Districts (AFD) data. These areas are shown on Figure 10. The Chickahominy to Lightfoot North and South Alternatives cross two AFD conservation districts under private ownership in New Kent County. Big Swamp AFD is located on multiple privately owned parcels on either side of Route 60 just east of Route 155. The alternatives cross three parcels associated with this AFD. Diascund Creek AFD is located on multiple privately owned parcels between Route 60 and Interstate 64 west of Diascund Creek Reservoir with scattered parcels north of Interstate 64.

The Chickahominy to Lightfoot North and South Alternatives cross four conservation easements under private ownership in James City County. This includes a 120-acre James City County conservation easement located adjacent to Forge Road and a 101-acre James City County conservation easement located to the southeast of Chickahominy Road. This also includes two AFD conservation districts, Mill Creek AFD and Cranston's Pond AFD. Mill Creek AFD is located on multiple privately owned parcels the majority of which are located between Skiffes Creek and Interstate 64, east of Diascund Creek and west of Little Creek Reservoir. Cranston's Pond AFD is located on multiple parcels just east of Little Creek Reservoir near Lightfoot Junction.

3.1.8 Other Conservation Lands

NRG obtained information on other conservation lands through review of a digital Conservation Lands dataset obtained from the VDCR. The dataset identifies "lands of conservation and recreational interest" in Virginia, including federally, state-, local-, and privately owned lands. NRG's review of the dataset identified two conservation lands in addition to those discussed above under conservation easements: Game Farm Marsh is under jurisdiction of the VDGIF and Diascund Creek Reservoir is under jurisdiction of James City County. These conservation lands are considered areas of recreational interest and are discussed in more detail in Section 3.1.2.

3.2 NATURAL RESOURCES

3.2.1 Wetlands

For the purposes of this environmental review, NRG identified wetlands within the study area using data provided by the Williamsburg Environmental Group, Inc. (WEG). Due to the preliminary nature of this review, the field methods outlined in the Interim Regional Supplement to the U.S. Army Corps of Engineers (COE) Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region were not applied to determine the limits of wetlands and other water features onsite. Instead, WEG employed several offsite resources including the USGS 7.5 minute topographic quadrangle maps, the National Wetland Inventory Online Maps administered by the U.S. Fish and Wildlife Service (FWS), the Natural Resources Conservation

Service Web Soil Survey, Digital Orthophoto Quarter Quads flown in March of 1994, and 2005 aerial photography.

Wetland complexes in the study area are found in association with most major rivers, creeks and their tributaries including Possum Run, Bradley Run, Potato Run, Jones Run, Chickahominy River, Yarmouth Creek, Big Swamp, Lacey Creek, Diascund Creek, Mill Creek, and Little Creek. WEG's Offsite Wetland and Waters Analysis (December, 2011) data indicate a large forested wetland complex is located along the Charles City and New Kent County line adjacent to the banks of the Chickahominy River and its tributaries in association with the Chickahominy River floodplain. The majority of the wetlands in the study area are characterized as palustrine emergent/palustrine scrub shrub, followed in order of prevalence by palustrine forested wetlands and tidal wetlands. The majority of wetlands in the study area outfall to the Chickahominy River and are regulated by the COE under Section 404 of the Clean Water Act (CWA).

The Cypress Springs Wetland Mitigation Bank is located along the northern boundary of, and in places extends into, the existing Chickahominy to Lightfoot transmission corridor between West Cool Hill Road and Adkins Road. The route parallels the mitigation bank for a distance of 1.2 miles. The bank is one of several mitigation banks established in Virginia for the purpose of selling compensatory mitigation credits to those who need to offset environmental impacts required by Section 404 of the CWA. The Cypress Springs Wetland Mitigation Bank parcel is approximately 236.9 acres in size and contains 46.56 wetland mitigation acre-credits, all of which have been purchased. The last transaction involving the bank was in August 2007. Based on the permit number (NAP-2003-1748), the bank appears to have been permitted in 2003 by the COE Norfolk District.

3.2.2 Waterbodies

NRG identified and mapped waterbodies in the study area using publicly available GIS databases, USGS topographic maps, and recent (2011) digital aerial photography.

The alternative routes cross the Diascund Reservoir in New Kent County and Little Creek Reservoir in James City County.

Diascund Reservoir is 1,110-acre water supply reservoir for the City of Newport News situated along the New Kent and James City County line. The reservoir provides a scenic area for anglers and supports a variety of recreational fish species. The existing transmission corridor between Chickahominy and Lightfoot crosses the southernmost portion of Diascund Reservoir at its confluence with an unnamed tributary approximately 0.7-mile northwest of the Lanexa Substation. Construction of the Chickahominy to Lightfoot North or South Alternatives would require new crossings of Diascund Reservoir within the acquired additional right-of-way.

Little Creek Reservoir was constructed in 1981 and is owned by the City of Newport News. The watershed is relatively small, and pumping water from the Chickahominy Reservoir primarily regulates the reservoir. On occasion, water is also pumped in from Diascund Reservoir. Water from Little Creek is then pumped to the terminal reservoirs of the Newport News water supply system. The existing Chickahominy to Lightfoot corridor crosses Little Creek Reservoir two times approximately 4.0 and 4.6 linear miles northwest of Lightfoot Substation. Construction of the Chickahominy to Lightfoot North or South Alternatives would

require reconfigured crossings of Little Creek Reservoir; however, no additional right-of-way would be required for these crossings.

In addition to public water supply reservoirs, scattered lakes and ponds, the alternative routes cross several stream systems, including: Possum Run, Bradley Run, Potato Run, Jones Run, Chickahominy River, Yarmouth Creek, Big Swamp, Lacey Creek, Diascund Creek, Mill Creek, Little Creek and their associated tributaries.

The Chickahominy River meanders throughout much of the area in the vicinity of the Chickahominy to Lightfoot North and South Alternatives before outfalling to the James River. The majority of waterbodies and their tributaries crossed by the alternative routes flow south to the Chickahominy River and/or directly to the James River including:

Possum Run, Bradley Run, Potato Run, Jones Run, Yarmouth Creek, Big Swamp, Lacey Creek, Diascund Creek, Mill Creek, Little Creek and their associated tributaries.

3.2.3 Virginia Department of Conservation and Recreation Natural Heritage Resources Screening

In order to further identify areas of ecological significance within the study area, NRG obtained a copy of the VDCR Natural Heritage Resources (NHR) screening dataset. There are three separate components to the NHR Screening Coverage:

1) Conservation Sites represent key areas of the landscape and are worthy of protection and stewardship action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant or animal or significant natural community or geological feature. Sites are designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. For rare aquatic species, the VDCR defines Stream Conservation Units (SCUs), which identify stream reaches that contain aquatic natural heritage resources, including upstream and downstream buffer and tributaries associated with this reach.

2) General Location Areas for NHR represent the approximate locations of documented natural heritage resource occurrences that were not incorporated into Conservation Sites, either because they are poor quality, their location was not precisely identified, or they have not been reverified in over 20 years. These approximate locations, marked with a one-mile-diameter circle, are included in the Screening Coverage because they indicate areas with relatively high potential for natural heritage resource occurrences to be redocumented. Depending on the apparent suitability of local habitat, the VDCR may recommend biological surveys when reviewing projects that intersect these locations. Some general location areas are not circular polygons. For these records a review of recent aerial photography in conjunction with known habitat needs for the element identified potential habitat might exist within the limits documented in the original occurrence.

3) Karst Screening Areas represent regions of karst topography that harbor significant cave communities and natural heritage resources. In most cases karst areas involve a series of hydrologically connected caves and cavities that span a large area. Each significant karst feature is buffered with a 3-kilometerradius. These regions are in the process of being re-evaluated and delineated as more detailed Conservation Sites.

The VDCR data identified three Conservation Sites, one of which is identified as having state-listed species present. Conservation sites are given a biodiversity significance ranking of 1 to 5 based on rarity, quality, and number of natural heritage resources they contain. Two of the three sites in the study area are ranked B2 (Very High priority) and one is ranked B3 (High priority) The VDCR data did not identify any Karst Screening Areas in proximity to the project.

Nance's Shop Bog is a Conservation Site identified as an area of moist to wet seepages dominated by herbaceous vegetation located east of Barnetts Road in Charles City County. The NHR ranks this location as B3 - High priority conservation area. The Chickahominy to Lightfoot North and South Alternatives cross Nance's Shop Bog approximately 1.2 miles east of the Chickahominy Substation.

The Chickahominy River – Shipyard Creek – Diascund Creek SCU is located in New Kent and James City Counties and consists of riparian reaches that provide habitat for one or more rare aquatic plants or animals. The NHR ranks this area as B2 - Very High priority conservation land. The Chickahominy to Lightfoot North and South Alternatives cross the Chickahominy River – Shipyard Creek – Diascund Creek SCU approximately 0.5 miles east of the Lanexa Substation.

Diascund Creek-Wilcox Neck is a Conservation Site located in James City County and New Kent County consisting of tidal freshwater bald cypress forest/woodland with areas of tidal freshwater marshes and unvegetated flats. The NHR ranks this area as B2 -Very High priority conservation land. The Chickahominy to Lightfoot North and South Alternatives cross Diascund Creek-Wilcox Neck Conservation Site approximately 0.5 miles southeast of the Lanexa Substation.

3.2.4 Protected Species

Digital data was obtained from the VDCR's NHR Program and from the VDGIF to identify locations within the study area that potentially support protected species. NRG also conducted county queries of the VDCR NHR web site, the VDGIF Virginia Fish and Wildlife Information Service web site, and reviewed the FWS, Virginia Field Office county lists. Species occurrences reported by the FWS were evaluated against the VDGIF's digital *EnviroReview Listed SppObs* data, and the VDCR's Element Occurrence Representations (EOReps) datasets. A summary of the findings is provided in Sections 3.2.4.1 and 3.2.4.3 below.

The VDCR's EOReps are plants, animals, and exemplary natural communities which are tracked by the Virginia NHR Program due to their rarity. An element occurrence is the location of a single extant habitat containing one or more individual elements. EOReps are mapped representations of element occurrences in Virginia. Each occurrence is represented by a polygon indicating its known location. The polygons are intended to indicate the full known

aerial extent of the occurrence, modified to account for the locational uncertainty of the source data. The VDGIF's Species Observation (Spp Obs) dataset includes all verified species documentations maintained by VDGIF.

The VDGIF Anadromous Fish Use dataset identified the Chickahominy River and Diascund Creek as confirmed anadromous fish waters. Construction of the Chickahominy to Lightfoot North and South Alternatives would require two crossings of the Chickahominy River approximately 5.4 and 6.2 linear miles east of the Chickahominy Substation in locations identified by the VDGIF as confirmed anadromous fish waters for the blueback herring (*Alosa aestivalis*) and striped bass (*Morone saxatilis*). The Chickahominy River crossings would range from approximately 100 to 150 feet long depending on the selected alignment, and would likely be spanned.

Construction of the Chickahominy to Lightfoot North and South Alternatives would also require crossing of Diascund Creek approximately 1.1 linear miles east of the Lightfoot Substation in a location identified by the VDGIF as confirmed anadromous fish waters for the blueback herring, striped bass, and yellow perch (*Perca flavescens*). The Diascund Creek crossing would be approximately 600 feet long, and the towers would likely be sited in a manner to avoid impacts on the Chickahominy River in this location.

The VDGIF provides general guidance for the protection of anadromous fish and other wildlife resources via Time of Year Restrictions (TOYR), focusing on times of year during which certain species may be most sensitive to human activities such as construction and land clearing. According to VDGIF, general guidance does not constitute a list of best management practices to protect imperiled or sensitive wildlife species or their habitats; nor is adherence to these restrictions essential for every project. The recommendations should be considered as guidance for project planning and scheduling of construction activities that may impact the identified wildlife species.

According to the March 7, 2012 VDGIF TOYR Table, crossings of the Chickahominy River and Diascund Creek may be subject to construction timing restriction beginning February 15 and ending June 30 if any in-water work is proposed. Project specific restrictions, if any would be evaluated during permitting, and modification or waiver of these time-of-year standards is typically considered on a case-by-case basis.

The VDGIF data did not identify any waterbird colonies within 1,000 feet of the alternative routes. The nearest documented waterbird colony is located approximately 1,800 feet south of the Chickahominy to Lightfoot South Alternative, approximately 7 miles east of the Chickahominy Substation. The colony consisted of great blue heron (*Ardea herodias*) and was documented in 1993. No other waterbird colonies were documented in proximity to the alternatives.

3.2.4.1 Federally and State-Listed Species

Species occurrences reported by the FWS Virginia Field Office county lists were evaluated against the VDGIF's digital EnviroReview Listed SppObs data, and the EOReps datasets, which display species occurrences at the local level. A summary of the federally and state-listed species documented within the counties and independent cities crossed by the project is presented in Table 3.2.4-1. In addition, the locations of documented species that are crossed by the right-of-way are described in further detail below.

The FWS county lists identify three federally listed species protected under the federal Endangered Species Act (ESA), including the sensitive joint-vetch (*Aeschynomene virginica*), swamp pink (*Helonias bullata*), and the small whorled pogonia (*Isotria medeoloides*). According to FWS, the sensitive joint-vetch and the small whorled pogonia have been documented in Charles City County, James City County, and New Kent County. Swamp pink has been documented in Charles City County and New Kent County.

The VDCR NHR web site identified several state-listed species protected under Section 6 of the ESA including narrow-leaved spatterdock (*Nuphar sagittifolia*), New Jersey rush (*Juncus caesariensis*), peregrine falcon (*Falco peregrinus*), Mabee's Salamander (*Ambystoma mabeei*) and the bald eagle (*Haliaeetus leucocephalus*). According to the VDCR, narrow-leaved spatterdock has been documented in Charles City County, James City County, and New Kent County. New Jersey Rush has been documented in Charles City County and James City County. The peregrine falcon has been documented in Charles City County.

The FWS county list also identify several species of concern (SOC) and one candidate species within the project counties including winter quillwort (*Isoetes hyemalis*), Virginia least trillium (*Trillium pusillum* var. virginianum), the rare skipper (*Problema bulenta*) and the Atlantic sturgeon (*Acipenser oxyrinchus*). Winter quillwort has been documented in Charles City County and New Kent County. Winter quillwort and the rare skipper have been documented in James City County and New Kent County. The Atlantic sturgeon is a candidate species for federal listing that has been identified in Charles City County and James City County. Candidate species include any species being considered by the Secretary for listing as an endangered or a threatened species, but not yet the subject of a proposed rule. The Atlantic sturgeon will be listed as both federally and state-endangered in April of 2012.

Federally and state-listed species occurrences are described in Table 3.2.4-1 below. Federal SOC and non-listed species are described in Section 3.2.4.2 of this document.

TABLE 3.2.4-1

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Federally and State-Listed Species Occurrence in Vicinity of Project

Common Name	Scientific Name	Federal Status	State Status	Global Rank	Habitat	County Documented	Occurrence Documented in ROW?
Federally Listed Species							
Plants							
Small Whorled Pogonia	*Isotria medeoloides*	LT	LE	G2	Acidic soils, in dry to mesic second-growth, deciduous or deciduous-coniferous forests	Charles City County, James City County, New Kent County	No
Swamp Pink	*Helonias bullata*	LT	LE	G3	Restricted to forested wetlands that are groundwater influenced and are perennially water-saturated with a low frequency of inundation	Charles City County, James City County	No
Sensitive Joint-vetch	*Aeschynomene virginica*	LT	LT	G2	Fresh to slightly brackish tidal river shores and estuarine-river marsh borders	Charles City County, James City County, New Kent County	No
State-Listed Species							
Plants							
Narrow-leaved Spatterdock	*Nuphar sagittifolia*	SOC	LT	G2	Primarily coastal-plain blackwater streams or tidal estuaries, occasionally in lakes or brownwater streams	Charles City County, James City County, New Kent County	Yes
New Jersey Rush	*Juncus caesariensis*	SOC	LT	G2G3	Very acidic, sphagnous, extremely wet spring or seep areas with a stable source of flowing water, but without standing water	Charles City County, James City County	Yes
Animals							
Peregrine Falcon	*Falco peregrinus*	none	LT	G4	Various open situations from tundra, moorlands, steppe, and seacoasts, especially where there are suitable nesting cliffs, to mountains, open forested regions, and human population centers. When not breeding, occurs in areas where prey concentrate, including farmlands, marshes, lakeshores, river mouths, tidal flats, dunes and beaches, broad river valleys, cities, and airports.	Charles City County	No

TABLE 3.2.4-1 (cont'd)

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Federally and State-Listed Species Occurrence in Vicinity of Project

Common Name	Scientific Name	Federal Status	State Status	Global Rank	Habitat	County Documented	Occurrence Documented in ROW?
Mabee's Salamander	*Ambystoma mabeei*	none	LT	G4	Breeds in fish-free vernal ponds in large clear-cut areas and in ephemeral sinkhole ponds up to 1.5 m deep	James City County	No
Bald Eagle	*Haliaeetus leucocephalus*	none	LT	G5	Habitat includes areas close to coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources, including fish, waterfowl, and wading birds.	Charles City County, James City County, New Kent County	No

Federal/State Status:
LE – Listed as endangered.
LT – Listed as threatened.
SOC – Species of Concern

Global Rank:
G2 – Six to 20 documented occurrences, or few remaining individuals globally. Very rare and imperiled.
G3 – Twenty-one to 100 documented occurrences. Either very rare and local throughout its range or found locally in a restricted range.
G4 – Common and apparently secure globally, though it may be rare in parts of its range, especially at the periphery.
G5 – Very common and demonstrably secure, though it may be rare in parts of its range, especially at the periphery.

The VDCR EOReps dataset identified two isolated occurrences of the New Jersey rush along the Chickahominy to Lightfoot North and South Alternatives. These elemental occurrences are associated with the Nance's Shop Bog Conservation Site. These species occurrences were observed in 2006 and are located approximately 1.3 miles east of the Chickahominy Substation in Charles City County.

3.2.4.2 Bald Eagle Management

The bald eagle is no longer listed under the federal ESA, but is a state-listed threatened species in Virginia under the Virginia Endangered Species Act and protected under the Va. Code (§29.1-521) and VDGIF regulations (4 VAC 15-30-10). The bald eagle is also protected under the federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The Bald Eagle Protection Guidelines for Virginia (2000) provide management practices for avoiding impacts on bald eagles for primary management zones (defined as the area 750 feet in radius around an occupied nest), secondary management zones (defined as the area 750 feet to 1,320 feet in radius around an occupied nest), nest/nest tree removal, abandoned nests, and Eagle Concentration Areas (locations, usually shorelines, that support a high density of non-breeding

bald eagles).[1] The guidelines exclude power lines within primary management zones and provide seasonal restrictions (December 15–July 15) for construction within secondary management zones. An eagle nest and the tree/structure in which it is located cannot be removed as long as any portion of the nest remains in the tree/structure.

The "VAEagles" website identified the presence of two nests in proximity to the project corridor. Nest NK1001 intersects the Chickahominy to Lanexa Existing Corridor and South Alternative within the Primary Management Zone approximately 5.8 linear miles east of Chickahominy Substation in New Kent County. Nest NK1103 intersects the existing Lanexa to Lightfoot corridor within the Primary Management Zone approximately 0.9 miles east of Lanexa Substation in New Kent County; see Figure 12 in Appendix H-1). The presence of bald eagle nests is considered a significant constraint for routing.

3.2.4.3 Federally Listed Species of Concern and Other Documented Occurrences

In addition to federally listed SOC reported by the FWS Virginia Field Office county and independent city lists, the VDCR EOReps dataset documented occurrences of "non-listed" species (species not listed at the Federal or State level) with the project corridor. These species were not reported by the FWS Virginia Field Office lists because they are not federally or state-listed species. Personal communication with the VDCR indicated that these species are taken into consideration based on Global Rank. NatureServe, an international network of Natural Heritage Programs, assigns a Global Rank based on rarity and conservation status. Species ranked "G1" (global rank 1/critically imperiled) or "G2" (global rank 2/imperiled) are most at risk. Forest certification systems, such as the Sustainable Forestry Initiative, protect all "G1" and "G2" species and natural communities, even if they are not listed and protected under the ESA. According to the VDCR EOReps data, the winter quillwort (*Isoetes hyemalis*) was the only reported non-listed species ranked G2. A summary of the federally listed SOC and the VDCR reported non-listed species is included in Table 3.2.4-2. SOC and non-listed species typically are not afforded the same level of protection as federally and state-listed endangered and threatened species. The locations of documented species that are crossed by the right-of-way are described in further detail below.

The VDCR EOReps dataset identified one SOC occurrence within the project corridor. An areal occurrence of winter quillwort was documented within the Chickahominy to Lightfoot North Alternative. The species was observed in 1992 in association with the Chickahominy River – Shipyard Creek – Diascund Creek SCU approximately 5.3 linear miles east of the Chickahominy Substation in Charles City and New Kent Counties.

[1] Based on informal discussion with the VDGIF, NRG understands that the Virginia Bald Eagle Protection Guidelines are currently being revised and updated, and that the management zones are expected to be modified to comport with the 2007 National Bald Eagle Management Guidelines.

TABLE 3.2.4-2

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

Species of Concern and Non-Listed Species Occurrence in Vicinity of Project

Common Name	Scientific Name	Federal Status	State Status	Global Rank	Habitat	County Documented	Occurrence Documented in ROW?
Other (Not Listed)							
Plants							
Winter Quillwort	*Isoetes hyemalis*	SOC	none	G2G3	Most commonly in shallow, running water in creeks, sloughs, and along densely shaded river shores in deciduous and mixed swamp forests	Charles City County, New Kent County	Yes
Mountain Camellia	*Stewartia ovata*	none	none	G4	Understory of hardwood forests, often near streams	James City County	No
Virginia Least Trillium	*Trillium pusillum var. virginianum*	SOC	none	G3T2	Low, alluvial woodlands	Charles City County, New Kent County, James City County,	No
Animals							
Rare Skipper	*Problema bulenta*	SOC	none	G3G3	Wetlands along tidal rivers	New Kent County, James City County	No

Federal/State Status:
SOC – Species of Concern

Global Rank:
G2 – Six to 20 documented occurrences, or few remaining individuals globally. Very rare and imperiled.
G3 – Twenty-one to 100 documented occurrences. Either very rare and local throughout its range or found locally in a restricted range.
G4 – Common and apparently secure globally, though it may be rare in parts of its range, especially at the periphery.

T# – Rank of subspecies or variety.

3.2.5 Vegetation

The existing portion of the project corridor consists primarily of Dominion's maintained right-of-way. The character of the existing right-of-way is not anticipated to change as a result of the project. The Chickahominy to Lightfoot North/South Alternatives span a portion of Virginia's Coastal Plain characterized by broad uplands gently dissected by streams. With regard to the North/South right-of-way widening areas, approximately 90% consist of forested uplands and wetlands. The remaining 10% appears to have been cleared for agricultural purposes.

The upland forests that originally covered much of the Virginia Coastal Plain have been extensively cleared or altered, so that it is now difficult to determine which species and natural communities were prevalent. Likewise, much of the contemporary forest located within the Chickahominy to Lightfoot North/South Alternatives consists of successional or silvicultural stands of loblolly pine (*Pinus taeda*), and secondary pine-hardwood forests that have developed after repeated cutting or agricultural abandonment. The most mature remnant stands on mesic

uplands are characterized by associations of American beech (*Fagus grandifolia*), oaks (*Quercus* spp.), and American holly (*Ilex opaca var. opaca*). Patches of drier oak-dominated forest and steep bluffs with dense forests of chestnut oak (*Quercus prinus*), beech, and mountain-laurel (*Kalmia latifolia*) are also fairly common in this region.

The diversity of wetlands in this region spans a range of freshwater to saline, lunar-tidal estuaries; tidal and palustrine swamps; non-riverine, groundwater-saturated flats; seasonally flooded ponds and depressions; seepage slope wetlands; and various tidal and non-tidal aquatic habitats. Extensive saturated peatlands of the Embayed Region support fire-suppressed, but still locally extensive stands of Atlantic white-cedar (*Chamaecyparis thyoides*) and pocosin vegetation dominated by pond pine (*Pinus serotina*) and evergreen shrubs.

3.3 VISUAL CHARACTERISTICS

NRG identified visually sensitive areas in the study area through review of recent (2009) digital aerial photography and during a series of field reviews. Visually sensitive areas were defined as areas of an undeveloped or rural character; places where an electric transmission line would be out of character with the surrounding visual characteristics of the landscape; or individual sites possessing unique scenic qualities or view sheds. Examples of visually sensitive areas include residential or recreational areas; historic, traditional, or rural landscapes; open space; natural features; biking or hiking trails; scenic byways; and individual sites such as historic sites or buildings.

The area crossed by the Chickahominy to Lightfoot North and South Alternatives, while primarily forested, is developed along the major roadways and contains areas of residential development and pockets of commercial and light industrial development. As such its visual characteristics consist of a mix of wooded areas with rolling terrain and shorter, closer views, interspersed with areas of development, particularly in the eastern areas near Little Creek Reservoir. With the exception of State Route (SR) 60 (Pocahontas Trail), most of the major roads traversing the study area take potential viewers from the southern part of the area to the north towards New Kent. These roads include SR 609 (Barnetts Road), SR 155 (Courthouse Road), and SR 603 (Diascund Road).

While the Chickahominy River is present in this area, there are no views of it from these two alternative routes. There are, however, water views in this area associated with crossings of Upper Diascund Creek and two crossings of the Little Creek Reservoir.

3.4 CULTURAL RESOURCES CONDITIONS

Dominion retained, Inc. (CRI) to conduct a cultural resources literature review for the study area. This review area included a 1.5 mile buffer of each project component for historic and architectural resources and for archaeological sites. To satisfy the VDHR 2008 *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia*, CRI's review also considered National Historic Landmark (NHL) properties located within a 1.5-mile radius of the centerline; National Register of Historic Places (NRHP)-listed properties, NHL, battlefields, and historic landscapes within a 1.0 mile radius of the centerline; NRHP-eligible and -listed properties, NHL, battlefields,

and historic landscapes within a 0.5 mile radius of the centerline; and architectural resources and archaeological sites located within the right-of-way for each project component.

CRI examined site files maintained by the VDHR and NPS to identify previously recorded archaeological, historical, and architectural sites within the 1.5 mile literature review area, including sites listed in or eligible for listing in the NRHP. The NPS' *Update to the Civil War Sites Advisory Commission's Report on the Nation's Civil War Battlefields* (2009) and Final Comprehensive Management Plan and Environmental Assessment for the Captain John Smith Chesapeake National Historic Trail (NHT) (February 2011) were also reviewed as well as local historical information, historic maps, and Google Earth 2011 aerial photography.

Additionally, CRI conducted field assessments of known NRHP-eligible or -listed architectural resources in accordance with the VDHR guidelines. Digital photographs were taken from public right-of-way of each architectural resource and existing setting to accurately represent the viewshed. For the previously recorded archaeological sites under consideration, high resolution aerial imagery was examined to assess the current land condition and the spatial relation between the sites and any existing transmission line facilities.

Limited areas of the study area have been subjected to survey for battlefield assessment by the American Battlefield Protection Program (ABPP) of the NPS, historic and architectural resources, or archaeological resources. NRG obtained site information, digitized site locations, and previous survey information using data provided by CRI. CRI's literature review identified 1114 previously identified archaeological resources, 885 previously identified historic and architectural resources and 154 previous investigations within 1.5 mile of the Chickahominy to Lightfoot North and South Alternatives. An overview of these resources is provided in the following sections. Additionally, a summary of the cultural resources considered by the VDHR is provided by resource category for each component. Unevaluated archaeological and architecture sites are treated by the VDHR as potentially eligible for listing in the NRHP.

3.4.1 Archaeological Sites

CRI identified 1114 archaeological sites located within the 1.5 mile literature review area. Of these, 203 sites are characterized as prehistoric, 688 sites are characterized as historic, 115 sites contains both prehistoric and historic components, and the temporal affiliation of the remaining 108 sites is not reported. Sites with prehistoric components are characterized as camps; shell middens; earthworks; resource processing/extraction sites; funerary sites; and indeterminate sites. Historic period sites consist of farmsteads and associated features, dwellings and other structures; cemeteries and churches; historic trash pits or trash scatters; transportation features; dams and ditches; education sites; commercial sites; shipwrecks; and military bases, camps, battlefields, or earthworks. Of these 1114 sites, 1 is listed in the Virginia Landmarks Register (VLR) (44WB0005) and 6 are listed on both the VLR and the NRHP (44YO0060, 44YO0007, 44JC0014, 44JC0015, 44JC0050, and 44NK0072). These eight VLR and/NRHP-listed sites are not located within the potential right-of-way for the Chickahominy to Lightfoot North and South Alternatives.

Of the 1114 archaeological sites located within a 1.5 mile of the literature review area 9 sites occur within the potential right-of-way for the north alternative and 2 sites occur within the potential right-of-way for the south alternative with 1 of these sites crossing both the north and

south alternatives (44NK0097). Eight sites have not been evaluated (44CC0301, 44CC0319, 44NK0097, 44NK0171, 44NK0172, 44JC0642, 44JC0644, and 44JC0816). The VDHR determined one site (44NK0173) eligible and one site not eligible (44JC0643) for listing in the NRHP.

Crossings of archaeological sites were considered a constraint in this study due to the potential for an electric transmission line to impact archaeological deposits in these areas (for example, due to transmission structure placement or tree clearing within a site).

3.4.2 Historic and Architectural Sites

CRI identified 885 historic or architectural sites located within the 1.5 mile literature review area. Many of these are found within the City of Williamsburg. The sites include houses, farms, battlefields (Civil War era) and other military sites, cemeteries, churches, commercial buildings, railroad buildings, and bridges. One site is listed in the NRHP; 2 sites are listed in the VLR; 31 sites are listed in both the NRHP and the VLR, and 7 of these 31 sites are also within NHLs.

Twenty-three additional sites are considered eligible for listing in the NRHP. These sites have not been evaluated but are treated as eligible by the VDHR. Of the remaining 828 sites, 150 are determined not eligible for listing in the NRHP and 678 have not been evaluated and are therefore considered potentially eligible.

Of the 885 historic and architectural sites, 35 are located within 1.5 mile of the Chickahominy to Lightfoot North and South Alternatives and are considered by VDHR. Since their initial recordation, two sites, Hogge House & Woodworks (099-5003) and Waller Mill Road House (099-5178), have been demolished and therefore are not considered as architectural sites in this analysis. Four of the 35 sites contain archaeological sites or districts listed in the NRHP or VLR, including Bryan Manor Plantation (44YO0007/099-0065), Bruton Parish Poorhouse (44YO0060/099-0070), Burwell's Mill/Whittaker's Mill Archaeology Site (099-5275), and Capitol Landing Site (44WB0005/137-0056).

Four historic and architectural sites are located along the Chickahominy to Lightfoot North and South Alternatives: Mt. Stirling (018-0015); Spring Hill (063-0080); Windsor Castle (047-0021); and Saint Mary's Church Battlefield (018-5004). Three of these sites, Mt. Stirling, Spring Hill, and Windsor Castle, are listed in the VLR and the NRHP. Saint Mary's Church Battlefield is considered eligible for listing in the NRHP. St. Mary's Church Battlefield is located within the right-of-way and 0.5 mile, 1.0 mile, and 1.5 mile of the Chickahominy to Lightfoot North and South Alternatives. With the exception of Windsor Castle which occurs within 1.0 mile and 1.5 mile, Mt. Stirling and Spring Hill occur within 0.5 mile and 1.0 mile of these alternatives.

Crossings of the historic and architectural sites, particularly the listed and eligible properties, battlefields, NHLs, and NHTs were considered constraints in this study due to the potential for an electric transmission line to impact the integrity of a site. Impacts on sites could include direct effects associated with tower placement or tree clearing or indirect effects associated with viewsheds to and from sites.

3.4.3 Summary of Existing Survey Data Performed Under Section 106 or Section 110 of the National Historic Preservation Act

The VDHR files document 154 recorded cultural resource investigations within 1.5 mi of the Chickahominy to Lightfoot North and South Alternatives. Just over half (87) of these investigations were undertaken as part of the local/state or federal review between 1990 and 2011. Thirteen of these 87 studies included treatment plans, archaeological data recovery, and other specialized studies. The remainder of the investigations that were formally reviewed include archaeological inventory and evaluation; architecture reconnaissance and intensive level survey, and cultural landscape inventories for highway expansion, housing and commercial development, pipeline projects, and public lands projects.

Under the authority of the American Battlefield Protection Program Act of 1996, the Department of Interior is directed to provide updates to the Civil War Sites Advisory Commission (CWSAC) on the status of nationally significant Civil War battlefields. In Virginia, the ABPP conducted a field assessment of several battlefields to identify the historic extent of the battle (study area), the areas of fighting on the battlefield (core area located within the study area), and potential National Register boundaries. The results of this study were presented to the CWSAC in 2009. The study areas of four battlefields, St. Mary's Church, Williamsburg, Yorktown, and Big Bethel, are crossed by the north and south alternatives.

3.5 GEOLOGICAL CONSTRAINTS

The Chickahominy North and South Alternatives fall entirely within the Coastal Plain geologic province. This province is characterized by its terraced landscape which extends from the province boundary near Richmond east to the Atlantic Ocean. Quaternary and late Tertiary sand, silt, clay and gravel deposits cover the majority of the province. The western portion of the province, known as the upland sub-province, has an elevation range of 60 to 250 feet. The sub-province's physiography is classified by wide upland regions with minor slopes and areas with stream erosion and steeper slopes. The eastern portion of the province, known as the lowland sub-province, has an elevation range of 0 to 60 feet. This sub-province's physiography is classified by flat lowland regions with little relief (Virginia Division of Mineral Resources 1993 and William and Mary Department of Geology, 2011).

3.5.1 Mineral Resources

NRG identified mineral resource areas through review of publically available datasets, USGS topographic quadrangles, and recent (2011) digital aerial photographs. There are five mineral resources identified in the vicinity of the Chickahominy North and South Alternatives. Of these, only two are located within the alternative study corridors.

Along the Chickahominy to Lightfoot North and South Alternatives there are three sand pits and two gravel pits. The first two sand pits are located approximately 0.3 miles north of the corridor in Charles City County north of Chambers Road and west of Barnett's Road. According to 2011 aerial photography the area is now vegetated and the pits may be inactive. The next sand pit is located within the corridor south of West Cool Hill Road and east of Barnett's Road in Charles City County. This land is also owned by USA Waste of Virginia and appears to be part of the same landfill mentioned above. The two gravel pits are located just west of where the

alternatives crosses Route 155 in New Kent County. One pit is located within the corridor and the other is located approximately 0.2 mile north of the corridor. These gravel pits are both owned by the Parker JR & Co Construction Company. According to 2011 aerial photography, the pit located within the corridor is now vegetated and may be inactive.

4.0 ANALYSIS OF ALTERNATIVES – CHICKAHOMINY SUBSTATION TO LIGHTFOOT JUNCTION

As presented in Section 2.1.2, two alternative routes to the existing undeveloped easement between Chickahominy Substation and Lightfoot Junction were identified and considered for use in this project. Dominion reviewed the potential use of its existing transmission line corridor that extends from the Chickahominy Substation to Toano Substation and on to Lightfoot Junction (i.e., the Chickahominy to Lightfoot North and South Alternatives) and compared the use of each of those routes with the use of the Chickahominy Alternative. Review of Dominion's existing transmission corridor from a reliability perspective indicated that in the section between Chickahominy Substation and the Toano Substation, the existing transmission line circuits and supporting structures (Line #s 2124 and 2129 and Lines #s 92 and 2102) would have to remain operational. Consequently, use of this section of corridor to support a new 500 kV line would be limited to building the new 500 kV line adjacent to the existing lines (on either the north or the south side), which would require the use of new right-of-way easement adjacent to the existing easement. The width of new easement would be either 115 feet or 125 feet, depending on which type of existing structures to which the new line would be adjacent. Refer to section 2.1.2 for a more detailed description of additional easement requirements for these alternatives.

The existing transmission lines in the common alternative route section from the Toano Substation to Lightfoot Junction can accommodate the replacement of one set of 230 kV and 115 kV double circuit transmission line towers with the new 500 kV line. Consequently this section of the North and South Alternatives could be constructed entirely within the existing cleared corridor without the need for additional right-of-way easement.

Environmental conditions along each of the three alternative routes were identified, mapped and reviewed as discussed in Section 3.0. Refer to Table 3-1 for a list of environmental features considered during the evaluation process. To further evaluate and consider the environmental advantages and disadvantages of each route, the environmental features potentially affected by each route alternative were quantified for comparison purposes. A quantified environmental features comparison table for the two alternative routes considered for a Chickahominy to Lightfoot Junction section of this transmission line project is presented in Table 4-1.

TABLE 4-1

Chickahominy-Skiffes Creek 500 kV Transmission Project
Skiffes Creek-Whealton 230 kV Transmission Line Project
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

Chickahominy to Lightfoot Junction 500 kV Transmission Line
North and South Alternatives
Environmental Features Comparison [a]

Environmental Features	Unit	Chickahominy to Lightfoot North Alternative	Chickahominy to Lightfoot South Alternative
Route Length	Miles	23.7	23.5
Charles City County	Miles	5.5	5.4
James City County	Miles	8.3	8.2
New Kent County	Miles	9.9	9.9
Land Use Features/Constraints			
Land Ownership (total)	Miles	23.7	23.5
Local Government Land	Miles	0.95	1.21
Private Land [b]	Miles	21.54	21.33
State Land	Miles	0.31	0.41
Roads Rights-of-Way Crossed	Miles	0.48	0.04
Additional ROW Required	Acres	310.0	312.0
Private Parcels Crossed			
Charles City County	Number	24	26
James City County	Number	63	49
New Kent County	Number	60	63
Recreational Areas			
State, County or Municipal Managed Recreation Areas Crossed	number (miles)	2 (0.78)	3 (0.96)
Golf Courses Crossed	number (miles)	0	0
Trails Crossed			
Birding & Wildlife Trails	Number	3	3
Existing Land Use			
Developed, Open Space	Miles	2.44	1.71
Agriculture	Miles	3.04	3.00
Forested Land	Miles	11.93	15.08
Developed, High intensity	Miles	0.02	0
Developed, Low/Medium intensity	Miles	0.19	0.16
Open Marshland	Miles	5.71	3.23
Open Water	Miles	0.41	0.36
Zoning			
Districts Crossed			
Single Family Residential	Miles	0.68	0.37
Multi-Family Residential	Miles	0	0
Rural Residential	Miles	0.43	0.43
Agricultural	Miles	19.53	19.39
Commercial	Miles	0.33	0.14
Industrial	Miles	0.45	0.45
Special Public Interest Areas	Miles	0.77	0.77
Historic Places	Miles	0	0

TABLE 4-1 (cont'd)

Chickahominy-Skiffes Creek 500 kV Transmission Project
Skiffes Creek-Whealton 230 kV Transmission Line Project
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

Chickahominy to Lightfoot Junction 500 kV Transmission Line
North and South Alternatives
Environmental Features Comparison Table [a]

Environmental Features	Unit	Chickahominy to Lightfoot North Alternative		Chickahominy to Lightfoot South Alternative	
Recreational Areas	Miles	0.31		0.31	
Planned Development	Miles	0		0	
Mixed Use	Miles	0.91		0.91	
Residential Subdivisions					
Existing Subdivisions Crossed	Number	4		3	
	(miles)	(1.44)		(1.24)	
Planned Subdivisions Crossed	number	0		0	
	(miles)	(0)		(0)	
Other Land Use Constraints					
		North	South	North	South
Residences within 500 feet [c]	Number	305	168	208	230
Residences within 200 feet [c]	Number	142	28	25	100
Residences within 100 feet [c]	Number	58	18	19	45
Structures within ROW [c]	Number	46		43	
Houses within ROW	Number	15		17	
Out Buildings	Number	30		26	
Commercial Buildings	Number	1 [d]		0	
Cemeteries within 500 feet	Number	1		0	
Churches within 500 feet	Number	1		0	
Schools within 500 feet	Number	0		0	
Multi-unit residential structures					
Multi-unit structures within 500 feet	Number	0		0	
Multi-unit structures within 200 feet	Number	0		0	
Conservation Lands					
James City County Conservation Easements Crossed	(number)	3		2	
	miles	(0.54)		(0.59)	
State Conservation Lands Crossed	(number)	0		1	
	miles	0		0.08	
Agricultural and Forest District Crossed	Number	4		4	
	(miles)	(3.50)		(3.51)	
Wetland Mitigation Banks Crossed	feet	0		0	
Environmental Features/Constraints					
Surface Waters					
Surface Water Area in ROW (Total)[e]	miles	0.51		0.16	
(Total Surface Water Area Affected)	(acres)	(19.40)		(14.82)	
Waters - (freshwater streams)	miles	0.05		0.04	
	(acres)	(2.08)		(1.80)	
Waters - Open (lakes and ponds)	miles	0.46		0.12	
	(acres)	(14.99)		(10.69)	

TABLE 4-1 (cont'd)

Chickahominy-Skiffes Creek 500 kV Transmission Project
Skiffes Creek-Whealton 230 kV Transmission Line Project
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

Chickahominy to Lightfoot Junction 500 kV Transmission Line
North and South Alternatives
Environmental Features Comparison Table [a]

Environmental Features	Unit	Chickahominy to Lightfoot North Alternative	Chickahominy to Lightfoot South Alternative
Waters - Tidal	miles	0	0
	(acres)	(2.33)	(2.33)
Wetlands			
Wetlands Crossed in ROW (Total)[e]	miles	3.60	4.37
(Total Wetland Area Affected)	(acres)	(184.07)	(190.86)
Palustrine Emergent/Palustrine Scrub Shrub Wetlands	miles	0.63	0.47
	(acres)	(126.79)	(123.94)
Forested Wetlands	miles	2.97	3.90
	(acres)	(57.28)	(66.92)
Tidal Wetlands	miles	0	0
	(acres)	(0)	(0)
Perennial Waterbodies Crossed (total)	number	31	24
Less than 300 feet in width	number	30	24
Between 300 and 600 feet in width	number	0	0
Greater than 600 feet in width	number	1	0
Section 10 Navigable	number	1	1
Forest Land to be Cleared within ROW	acres	170.73	209.18
Protected or Managed Lands			
Resource Protection Areas Crossed [f]	miles	6.08	6.34
Wildlife Management Areas	miles	0	0.08
Sensitive Species and Habitat			
Bald Eagle nests within 750 feet (Center for Biology, 2011 data)	number	1	2
Bald Eagle nests within 1,320 feet (Center for Biology, 2011 data)	number	1	0
Natural Heritage Resources			
Biodiversity Rank			
B1 – Outstanding	number	0	0
	(miles)	(0)	(0)
B2 – Very high	number	2	2
	(miles)	(1.70)	(1.76)
B3 – High	number	1	1
	(miles)	(0.35)	(0.44)
B4 – Moderate	number	0	0
	(miles)	(0)	(0)
B5 – General Interest/Open Space	number	0	0
	(miles)	(0)	(0)
No Rank	number	0	0
	(miles)	(0)	(0)

TABLE 4-1 (cont'd)

Chickahominy-Skiffes Creek 500 kV Transmission Project
Skiffes Creek-Whealton 230 kV Transmission Line Project
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

Chickahominy to Lightfoot Junction 500 kV Transmission Line
North and South Alternatives
Environmental Features Comparison Table [a]

Environmental Features	Unit	Chickahominy to Lightfoot North Alternative	Chickahominy to Lightfoot South Alternative
Cultural Resource Features/Constraints			
Archaeological Sites Within ROW	number	10	10
National Register-Eligible and -Listed Properties, Battlefields, Historic Landscapes, and National Historic Landmarks within ROW	number	1	1
National Register-Eligible and -Listed Properties, Battlefields, Historic Landscapes, and National Historic Landmarks within 0.5 mile	number	3	3
National Register-Listed Properties, Battlefields, Historic Landscapes, and National Historic Landmarks between 0.5 and 1.0 mile	number	4	4
National Historic Landmarks between 1.0 and 1.5 miles	number	0	0
Visual Features/Constraints			
Scenic Byways Crossed	number	0	0
Geological Constraints			
Mines or Quarries Crossed	Number	2	2
Engineering Features/Constraints			
Length (total)	miles	23.75	23.55
Roads Crossed	total	31	28
U.S. or State Highways	number	4	4
County or Local Roads	number	27	24
Active Railroads Crossed	number	2	2
Existing Electric Facilities Crossed	number		
Routing Opportunities			
Collocation Segments (total) [f]			
Existing right-of-way	miles	2.33	2.33
Greenfield	miles	0	0.66
Collocated	miles	21.42	20.56

[a] The numbers in this table have been rounded for presentation purposes. Sums do not always equal the total of addends due to rounding error or spatial discrepancies in data sets used to identify constraints.
[b] Total includes a small amount of unknown land ownership that is assumed to be private land.
[c] Distances of buildings from the centerline and within the right-of-way were determined based on aerial photography and are subject to field verification.
[d] Associated with one commercial structure are two petroleum storage tanks within the new right-of-way boundaries.
[e] These numbers are based on a desktop wetland assessment completed by Williamsburg Environmental Group.
[f] Within about 60 feet of the existing electric facility, pipeline, railroad, or road.

The locations of both routes are described below, together with a discussion and comparison of each routes environmental advantages and disadvantages.

4.1 CHICKAHOMINY TO LIGHTFOOT NORTH AND SOUTH ALTERNATIVES

Because both the North and South alternative routes of the Chickahominy to Lightfoot Junction existing corridor follow the same general alignment, they are discussed here together and abbreviated as the 'North Alternative' and the 'South Alternative'. Dominion's existing transmission line corridor originates at the Chickahominy Substation in Charles City County and proceeds 14.1 miles east to the Lanexa Substation in New Kent County, predominantly crossing lightly developed forested and agricultural lands. Starting at the Chickahominy Substation the route proceeds approximately 7.2 miles in a northeasterly direction, crossing Barnetts Road (SR 609), the Chickahominy River, and Courthouse Road (SR 155). The route then pivots to the northeast for 2.8 miles, crossing Highway 60 and Mount Pleasant Road. The route next turns to the southeast and continues for 4.1 miles, crossing Evergreen Road and Highway 60 for a second time before reaching Lanexa Substation. The route then continues southeast for 4.6 miles, crossing Diascund Creek, Diascund Road, and Ivy Hill Road. The route next turns to the southeast for 2.9 miles, crossing the Chesapeake and Ohio Railroad, Forge Road (SR 610), Little Creek Reservoir, and Chickahominy Road (SR631), and reaches the Toano Substation. As described above, if this section of the corridor is used, the proposed project would require additional right-of-way easement either on the north side of the existing corridor (generally 125 feet) or the south side of the existing corridor (generally 115 feet).

From the Toano Substation to Lightfoot Junction, the proposed facilities would be built entirely within the existing right-of-way easement and no additional easement would be required. This common section of the Chickahominy to Lightfoot North and South alternatives proceeds south for 2.3 miles along the western boundary of the Colonial Heritage Golf Club to the Lightfoot Junction. This segment of the route predominantly traverses a mixture of forested lands interspersed with increasingly denser sections of single and grouped residential development.

The majority of land crossed by the North and South Alternatives is private land (91 percent). Both alternative routes cross a small amount of City of Newport News-owned land associated with the Little Creek Reservoir Park. This crossing is located along a portion of the route between Lanexa and Toano Substations and would require additional easement. The crossing would require approximately 12.93 acres of new easement along the North Alternative and 15.23 acres along the South Alternative. The North and South Alternatives cross another small portion (about 138 and 82 feet respectively) of City of Newport News-owned land associated with Diascund Creek Reservoir. These crossing would require about 0.47 acres of new easement for either the North or South Alternatives. The North and South Alternatives cross approximately 0.15 mile of a James City County greenspace purchase parcel. This parcel is located along the common route south of Toano and no additional easement would be required. The North and South Alternatives both cross a state-owned parcel, portions of which are associated with the Game Farm WMA. Only the South Alternative would cross a small portion of the WMA in an area that would require new easement. The crossing is about 441 feet long and would require about 1.3 acres of new easement.

The North and South Alternatives cross a total of four recreation areas. The Plantain Loop of the Virginia Coastal Birding and Wildlife Coastal Trail is crossed in three locations by

the North and South Alternatives. The Alternatives would not affect access to the trail. The crossing locations are along existing developed roadways (Adkins Road, South Courthouse Road, and Route 60) and minimal visual impacts would be expected from the construction of either alternative. Game Farm Marsh WMA is crossed by the South Alternative and as mentioned above approximately 1.3 acres of new easement would be required on this WMA. The alternative crosses the WMA on the northern edge of the property. Construction would not affect access to the WMA as it is only accessible by water through Chickahominy Lake. The proposed crossing of Chickahominy River, within the vicinity of Game Farm Marsh WMA has not been designated as a state scenic river but has been identified as worthy of future study. A small portion of the Diascund Creek Reservoir is crossed by the North and South Alternatives and as mentioned above would require approximately 0.47 acres of new easement. Construction would not affect access to the reservoir as access is restricted to one boat ramp located off Route 603 approximately 2 miles from the alternative crossing location. Little Creek Reservoir is crossed by the North and South Alternatives along the northeastern portion of the reservoir. As discussed above the crossings would require approximately 12.93 acres of new easement along the North Alternative and 15.23 acres along the South Alternative. Construction would not affect access to the reservoir as access is limited to one boat ramp located off of Lakeview Drive over one mile from the alternatives' crossing locations. Once construction is complete visual impacts may occur at these recreation areas. Visual impacts are discussed in more detail in Section 3.3.

While much of the land crossed by these two alternatives is forested (11.93 miles or 50 percent and 15.08 miles or 64 percent for the North and South Alternative routes, respectively), most of the right-of-way is already cleared and additional clearing would only be required on new easement areas located between Chickahominy and Toano Substations. Tree clearing for the North and South alternative routes in this area would be about 170.73 acres and 209.18 acres, respectively.

Both of these routes are located primarily within a zoned agricultural district with small (0.25- to 0.50-mile-long) sections of commercial and light industrially-zoned areas also crossed. Single residences occur throughout the area in low concentrations and tend to be clustered along the main roads crossed by the routes, starting with the crossing of SR 60 (Pocahontas Trail) and becoming denser as the routes progress to the south towards Lightfoot Junction. Four subdivisions are crossed by the North Alternative for a total length of 1.4 miles. Four subdivisions are crossed by the South Alternative for a total length of 1.2 miles. These include the King's Corner, Sheldon Lumber Company, Lake Toano Estates, and the Colonial Heritage Estates Subdivisions. King's Corner, Sheldon Lumber Company, and Lake Toano Estates fall within the portion of the alternatives between Lanexa and Toano Substations where additional right-of-way will be required. Any structures located within this additional right-of-way would have to be removed if either alternative were selected. The Colonial Heritage Estates subdivision falls within the portion of the alternatives between Toano and Lightfoot Junction where no additional right-of-way will be needed.

Along the North Alternative, there are about 473 houses located within 500 feet of the centerline of this alternative, about 170 houses within 200 feet and 76 located within 100 feet. Along the South Alternative on the opposite side of the existing corridor, there are 438 houses located within 500 feet of the centerline of this alternative, about 125 houses within 200 feet and 64 houses located within 100 feet.

Because additional easement would be needed on either the north or the south sides of the existing corridor, some structures, including houses, would have to be relocated. Along the North Alternative, 46 structures currently exist within the existing right-of-way and expanded easement area, including 15 houses and 1 commercial building. Along the South Alternative, 43 structures are currently located within the existing right-of-way and expanded easement area, including 17 houses and 26 outbuildings. All buildings within the new right-of-way for either the North or South Alternative would have to be removed if either alternative were selected.

The North and South Alternatives cross a total of 4.04 miles and 4.18 miles of conservation lands managed by various governing bodies, respectively (see Table 4-1). Dominion consulted with the VOF regarding their conservation easements in the project vicinity. VOF indicated that they have no concerns about the project crossing easements as there are no VOF managed easements within the project vicinity. They also indicated that properties are placed under VOF easements throughout the year and additional easements may be identified as the project moves forward. Dominion will continue to consult with VOF regarding any potential new easements in the project area.

Wetland areas occur frequently along each of these alternatives. Approximately 3.60 and 4.37 miles of wetland habitat would be crossed by the North and South Alternatives, respectively (see Table 4-1). While wetlands within those portions of the existing corridor have already been disturbed by clearing during initial construction of the existing transmission lines, additional wetlands would be disturbed in the new easement areas. Those wetlands within the previously cleared right-of-way, however, could be re-disturbed during mobilization, material laydown and construction.

The majority of wetlands that would be disturbed along these alternatives occur within the existing corridor and consist of shrub-shrub (PSS) wetlands (65 to 69 percent). Only about 31 to 35 percent of the total wetlands affected by either the North or South Alternatives would be forested. All wetland soils would be protected from rutting and mixing caused by construction equipment by installing timber matting in cleared wetlands prior to construction.

Thirty one perennial streams, rivers and lakes would be crossed by the North Alternative and 24 would be crossed by the South Alternative (see Table 4-1). These crossings consist primarily of smaller waterbodies less than 300 feet in width but also include one waterbody crossing greater that 600 feet wide. This area is located just west of South Courthouse Road and consists of a disturbed network of interconnected dredged areas and associated spoil piles. All waterbodies crossed by these alternatives would be adjacent to or replacing existing transmission line crossings.

Section 10 of the Rivers and Harbors Act of 1899 indicates navigable waters are those waters that are subject to the ebb and flow of the tide and/or presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. Diascund Creek is considered to be a Section 10 navigable waterbody and the crossing of Diascund Creek may require a permit from and/or coordination with the COE.

Protected or managed lands along these alternative routes consist of about 6.08 miles of RPAs that would be crossed along the North Alternative, 6.34 miles of RPAs that would be crossed along the South Alternative, and about 0.08 mile (441 feet) of state-owned WMA

(discussed above) along the South Alternative. RPA lands along this route are associated with the tidal lands along the Chickahominy River; however, construction of electric transmission lines is conditionally exempt from the CBPA provided it complies with applicable regulations; therefore, the project is not subject to restrictions in RPAs or RMAs

The Chickahominy to Lightfoot North and South Alternatives cross three areas that support habitat with a NHR biodiversity ranking of high (B3) and very high (B2). While all three of these areas are already crossed by the existing transmission line corridor, additional easement would be required on either the north or south sides, which would require additional forest clearing and disturbance. One area, referred to by the NHR habitat program as Nances Shop Bog (classified as B3), contains moist to wet seepages within herbaceous areas and has the potential to support high biological diversity. Additional clearing would be required in this area for either of the alternatives (North or South). The other two areas, Diascund Creek-Wilcox Neck and Chickahominy River - Shipyard Creek - Diascund Creek SCU, are both rated by the NHR as B-2 (potential for very high ecological diversity). Additional clearing would be required in these areas for either of the alternatives (North or South).

Along this route, and particularly near the Chickahominy River and Diascund Creek, are multiple eagle nests. Two nests occur close to the existing corridor and would be within the 750-foot buffer area around the nests. One nest is located about 212 feet from the edge of the South Alternative right-of-way edge and about 325 feet from the edge of the North Alternative right-of-way edge.

As described in Section 3.4.1, ten archaeological sites occur within the existing corridor of the Chickahominy to Lightfoot North and South Alternatives. One of these sites is eligible, one site is not eligible, and eight sites are unevaluated for listing in the NRHP. Five of these 10 sites also are located within the proposed additional right-of-way for the Chickahominy to Lanexa North Alternative, including 1 eligible site and 4 unevaluated sites. One of the 10 sites located within the additional right-of-way requires additional evaluation.

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DOMINION VIRGINIA POWER

Surry-Skiffes Creek 500 kV Transmission Line,
Skiffes Creek-Whealton 230 kV Transmission Line, and
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

Chickahominy-Lightfoot Junction 500 kV Transmission Line
North and South Alternatives

APPENDIX H-1

Figures 1-14

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Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Skiffes Creek - Whealton 230 kV Transmission Line

Skiffes Creek 500-230-115 kV Switching Station

Figure 2
Alternative Routes Considered

Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 3
Land Ownership in the Study Area

Chickahominy Substation
Lanexa Substation
Toano Substation
Lightfoot Substation

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Federal Land
- State Land
- County Land
- City Land
- Colonial Williamsburg
- Private
- Unknown (Assumed Private)
- Road ROW

N W NATURAL RESOURCE GROUP E S

0 0.5 1 2 Miles

1:110,000

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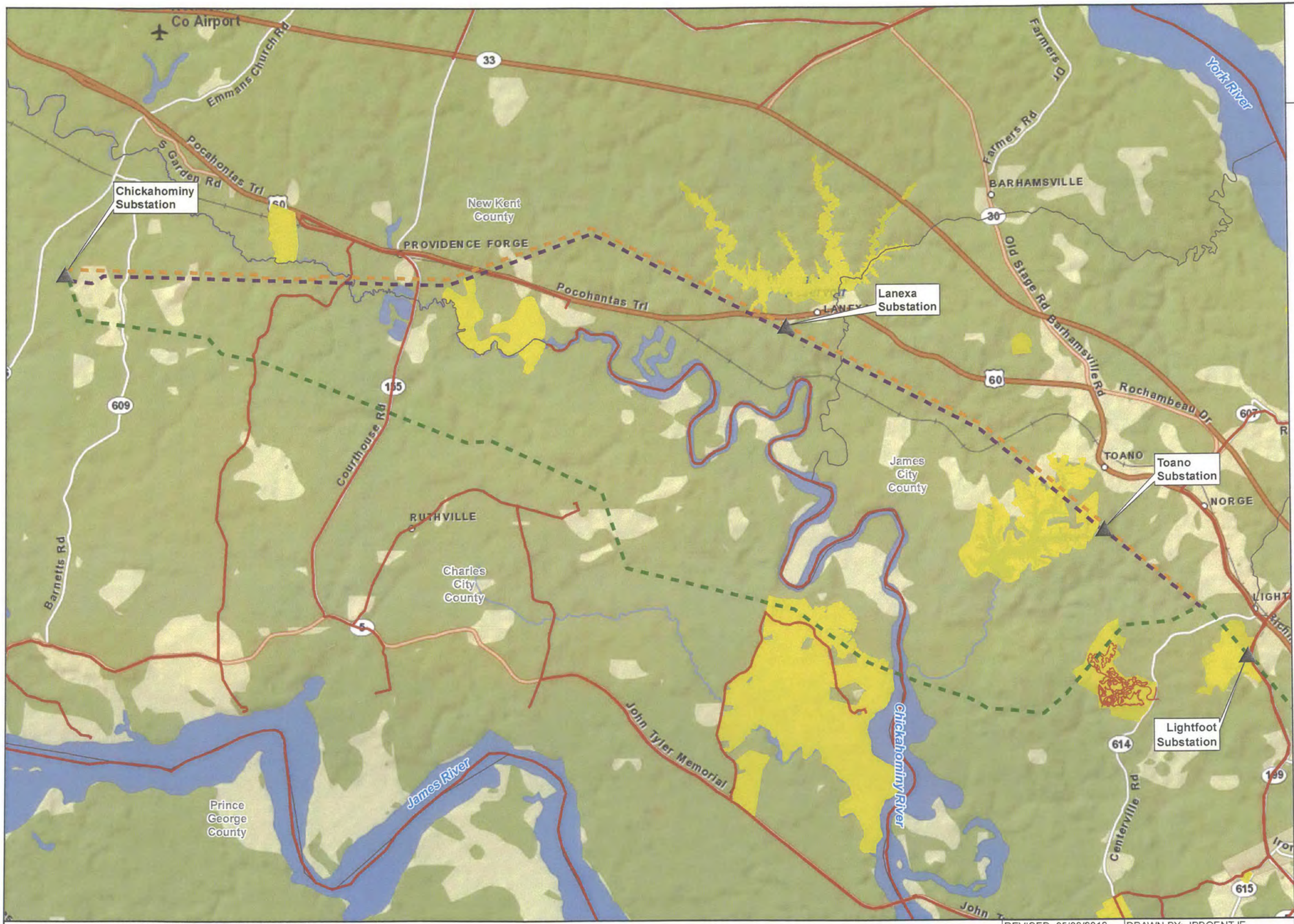
Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 4
Recreation Areas in the Study Area



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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 5
Airports Located in the Study Area

- Public Airport
- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative

0 0.5 1 2 Miles

1:110,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 6
Land Cover Types in the Study Area

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Agricultural Land
- Forested Land
- Developed, Open Space
- Developed, High Intensity
- Developed, Low Intensity
- Open Marshland
- Open Water

N W E S
NATURAL RESOURCE GROUP

0 0.5 1 2 Miles

1:110,000

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REVISED: 05/03/2012

DRAWN BY: JPBOENTJE

Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 7
Existing Subdivisions in the Study Area

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Existing Subdivision

N W NATURAL RESOURCE GROUP E S

0 0.5 1 2 Miles

1:110,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 8
Development Centers

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Development Center

Sheet 1 of 3

N W NATURAL RESOURCE GROUP E S

0 500 1,000 2,000 Feet

1:16,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 8
Development Centers

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Development Center

Sheet 2 of 3

N W NATURAL RESOURCE GROUP E S

0 500 1,000 2,000 Feet

1:16,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 8
Development Centers

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Development Center

Sheet 3 of 3

NATURAL RESOURCE GROUP

0 500 1,000 2,000 Feet

1:16,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 9
Zoning Districts in the Study Area

Chickahominy Substation
Lanexa Substation
Toano Substation
Lightfoot Substation
New Kent County
James City County
Charles City County
Prince George County
PROVIDENCE FORGE
LANEXA
BARHAMSVILLE
TOANO
NORGE
RUTHVILLE
Pocahontas Trl
Courthouse Rd
Barnetts Rd
Old Stage Rd
Farmers Rd
Centerville Rd
John Tyler Memorial Hwy
James River
Chickahominy River
York River
Diascund Creek Reservoir
Emmaus Church Rd
S Garden Rd
Co Airport
609
155
60
607
199

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Agricultural
- Commercial
- Industrial
- Multi-Family Residential
- Single-Family Residential
- Rural Residential
- Historic Areas
- Planned Development
- Recreational Areas
- Special Public Interest Areas
- Langley Flight Approach
- William and Mary District
- Mixed Use

N W NATURAL RESOURCE GROUP E S

0 0.5 1 2 Miles

1:110,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 10
Conservation Easements and Other Conservation Lands in the Study Area

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Conservation Easements
- Conservation Lands
- Agricultural/ Forestal District

N W E S
NATURAL RESOURCE GROUP

0 0.5 1 2 Miles

1:110,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 11

Department of Conservation and Recreation - Natural Heritage Resources Screen Map

Chickahominy Substation
Lanexa Substation
Toano Substation
Lightfoot Substation
Co Airport
Emmans Church Rd
33
Pocahontas Trl
S Garden Rd
60
New Kent County
PROVIDENCE FORGE
Diascund Cr Reservoir
LANEXA
Farmers Dr
Farmers Rd
York River
BARHAMSVILLE
30
Old Stage Rd
Barhamsville Rd
Rochambeau Dr
607
James City County
TOANO
NORGE
609
155
Courthouse Rd
RUTHVILLE
Barnetts Rd
Charles City County
5
John Tyler Memorial Hwy
James River
Chickahominy River
Prince George County
61
199
Centerville Rd
615

Existing Substation
Chickahominy Alternative
Chickahominy to Lightfoot North Alternative
Chickahominy to Lightfoot South Alternative
B1 - Outstanding
B2 - Very High
B3 - High
B4 - Moderate
B5 - General Interest/ Open Space
Not Ranked

N W NATURAL RESOURCE GROUP E S

0 0.5 1 2 Miles

1:110,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 12
Bald Eagle Nests in the Study Area

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Eagle Nest
- 750' Primary Nest Buffer
- 1320' Secondary Nest Buffer

N W NATURAL RESOURCE GROUP E S

0 0.5 1 2 Miles

1:110,000

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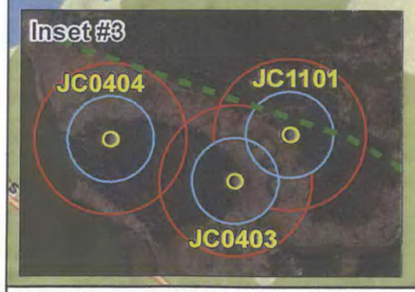

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 13
Historic and Architectural Sites in the Study Area

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Battlefield
- VLR and NHRP
- 0.5 Mile Buffer
- 1 Mile Buffer
- 1.5 Mile Buffer

VLR: Virginia Landmarks Register
NRHP: National Register of Historic Places

N W E S
NATURAL RESOURCE GROUP

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1:110,000

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Dominion

Chickahominy to Lightfoot Junction 500 kV Transmission Line Alternatives

Figure 14
Existing Corridors in the Study Area

- Existing Substation
- Chickahominy Alternative
- Chickahominy to Lightfoot North Alternative
- Chickahominy to Lightfoot South Alternative
- Transmission Line
- Pipeline
- Railroad

0 0.5 1 2 Miles

1:110,000

Chickahominy Substation
Lanexa Substation
Toano Substation
Lightfoot Substation
Co Airport
Emmans Church Rd
S Garden Rd
Pocahontas Trl
PROVIDENCE FORGE
New Kent County
Diascund Creek Reservoir
LANEXA
Farmers Dr
Farmers Rd
BARHAMSVILLE
York River
Old Stage Rd
Barhamsville Rd
Rochambeau Dr
James City County
TOANO
NORGE
LIGHT
Courthouse Rd
RUTHVILLE
Barnetts Rd
Charles City County
John Tyler Memorial Hwy
James River
Chickahominy River
Centerville Rd
Prince George County
33
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DOMINION VIRGINIA POWER

Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek-Whealton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station

Chickahominy-Lightfoot Junction 500 kV Transmission Line

NORTH AND SOUTH ALTERNATIVES

APPENDIX H-2

- Department of Transportation Federal Aviation Administration 14 CFR Part 77. July 21, 2010. Final Rule: Safe Efficient Use and Preservation of the Navigable Airspace.

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 77

[Docket No. FAA–2006–25002; Amendment No. 77–13]

RIN 2120–AH31

Safe, Efficient Use and Preservation of the Navigable Airspace

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This action amends the regulations governing objects that may affect the navigable airspace. These rules have not been revised in several decades, and the FAA has determined it is necessary to update the regulations, incorporate case law and legislative action, and simplify the rule language. These changes will improve safety and promote the efficient use of the National Airspace System.

DATES: This amendment becomes effective January 18, 2011.

FOR FURTHER INFORMATION CONTACT: For technical questions about this final rule contact Ellen Crum, Air Traffic Systems Operations, Airspace and Rules Group, AJR–33, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; telephone (202) 267–8783, facsimile (202) 267–9328. For legal questions about this final rule contact Lorelei Peter, Office of the Chief Counsel–Regulations Division, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; telephone (202) 267–3134, facsimile 202–267–7971.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The Administrator has broad authority to regulate the safe and efficient use of the navigable airspace (49 U.S.C. 40103(a)). The Administrator is also authorized to issue air traffic rules and regulations to govern the flight, navigation, protection, and identification of aircraft for the protection of persons and property on the ground, and for the efficient use of the navigable airspace (49 U.S.C. 40103(b)). The Administrator may also conduct investigations and prescribe regulations, standards, and procedures in carrying out the authority under this part (49 U.S.C. 40113). The Administrator is authorized to protect civil aircraft in air commerce (49 U.S.C. 44070(a)(5)).

Under § 44701(a)(5), the Administrator promotes safe flight of civil aircraft in air commerce by prescribing regulations and minimum standards for other practices, methods, and procedures necessary for safety in air commerce and national security. Also, § 44718 provides that under regulations issued by the Administrator, notice to the agency is required for any construction, alteration, establishment, or expansion of a structure or sanitary landfill, when the notice will promote safety in air commerce, and the efficient use and preservation of the navigable airspace and airport traffic capacity at public use airports. This statutory provision also provides that, under regulations issued by the Administrator, the agency determines whether such construction or alteration is an obstruction of the navigable airspace, or an interference with air navigation facilities and equipment or the navigable airspace. If a determination is made that the construction or alteration creates an obstruction or otherwise interferes, the agency then conducts an aeronautical study to determine adverse impacts on the safe and efficient use of the airspace, facilities, or equipment.

I. Background

A. Summary of the Notice of Proposed Rulemaking (NPRM)

On June 13, 2006, the FAA published an NPRM that proposed to amend the regulations governing objects that may affect the navigable airspace (71 FR 34028). The FAA proposed to: Establish notification requirements and obstruction standards for transmitting on certain frequencies; revise obstruction standards for civil airport imaginary surfaces to more closely align these standards with FAA airport design and instrument approach procedure (IAP) criteria; revise current definitions and include new definitions; require proponents to file with the FAA a notice of proposed construction or alteration for structures near private use airports that have an FAA-approved IAP; and increase the number of days in which a notice must be filed with the FAA before beginning construction or alteration. The comment period closed on September 11, 2006.

B. Summary of the Final Rule

The following is a discussion of the major changes contained in the final rule. The provisions of the final rule that were modified based on comments the FAA received are discussed in the "Discussion of the Final Rule" section. Most of the amendments implemented by the rule are intended to simplify the existing regulations.

This rule adds § 77.29 to incorporate the specific factors listed in P.L. 100–223 for consideration during an aeronautical study. The specific factors are listed in Appendix A to this preamble. Including this language in part 77 does not add or remove any of the factors currently considered in an aeronautical study.

This rule provides for an FAA Determination of Hazard or Determination of No Hazard to become effective 40 days after the date of issuance, unless a petition for discretionary review is received by the FAA within 30 days of issuance. In addition, the rule stipulates that a Determination of No Hazard to air navigation will expire 18 months after the effective date of the determination, or on the date the proposed construction or alteration is abandoned. Also, the rule specifies that a Determination of Hazard to Air Navigation does not expire.

This final rule adds information about the processing of petitions for discretionary review. It also excludes determinations for temporary structures and recommendations for marking and lighting from the discretionary review process. Because of the nature of temporary structures, it is not possible to apply the lengthy discretionary review process to these structures. Also, since marking and lighting recommendations are simply recommendations, there is a separate process for a waiver of, or deviation from, the recommendations.

This rule expands the requirements for notice to be sent to the FAA for proposed construction or alteration of structures on or near private use airports that have an IAP. Accordingly, if a private use airport has an FAA-approved IAP, then a construction sponsor must notify the FAA of a proposed construction or alteration that exceeds the notice criteria in § 77.17. This action will give the FAA enough time to adjust the IAP, if needed, and to inform those who use the IAP.

Also, IAPs at private use airports or heliports are not currently listed in any aeronautical publication. Sponsors of construction or alteration at or near a private use airport or heliport should consult the FAA Web site to determine whether an FAA-approved IAP is listed for that airport.[1] If the airport is listed on the Web site, the sponsor must file notice with the FAA.

Lastly, this rule incorporates minor edits to the regulatory text to distinguish

[1] *https://oeaaa.faa.gov.*

FAA surveillance systems from communication facilities.

C. Summary of Comments

The FAA received approximately 115 comments from individuals, aviation associations, industry spectrum users, airlines, and other aviation businesses. Many commenters, including the Air Transport Association, generally supported the NPRM. Commenters supported specific proposals concerning evaluating the aeronautical impact of proposed construction on IAPs at private use airports; evaluating antenna installations that might affect air traffic or navigation; and the update and reformat of the regulations. Comments that did not support the proposed rule, and suggested changes, are discussed more fully in the "Discussion of the Final Rule" section.

The FAA received substantive comments on the following general areas of the proposal:

- Frequency notification requirements
- Time requirement to file notice with the FAA
- Civil Airport Imaginary Surfaces [2]
- One Engine Inoperative Procedures (OEI)
- Definitions
- Miscellaneous

II. Discussion of the Final Rule

A. Frequency Notification

The FAA's primary focus during the obstruction evaluation process is safety and efficiency of the navigable airspace. It is critical for the agency to be notified of pending construction of physical objects that may affect the safety of aeronautical operations. (*See* 49 U.S.C. 44718.) In today's National Airspace System (NAS), however, electromagnetic transmissions can adversely affect on-board flight avionics, navigation, communication, and surveillance facilities. The FAA has extensive authority to prescribe regulations and minimum standards necessary for safety in air commerce. (*See* 49 U.S.C. § 44701(a)(5).) In addition, the FAA has broad authority to develop policy and plans for the use of the navigable airspace. (*See* 49 U.S.C. 40103.) The FAA relied on these authorities in proposing the notice requirements for broadcast transmissions in the specified bands. As stated in the proposal, broadcast transmission on certain frequencies can pose serious safety threats to avionics and ground based facilities. At the same time, the FAA recognizes the authority of the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission (FCC) to manage use of the radio spectrum.

The FAA concludes that its proposal to require notice for the proposed frequency bands was too broad. The proposed frequencies from the NPRM are listed in Appendix B to this preamble. The proposed frequencies in the shared (Federal and Non-Federal) bands are managed by an existing process involving several Federal agencies with an interest in spectrum use, which NTIA oversees under the Department of Commerce. It is not the FAA's intent to add a duplicative review and coordination process to that already stated above. In addition, the FAA has determined that some of the proposed frequencies originally listed and not in shared bands do not present concern. Therefore, the agency withdraws the proposed notice and obstruction standards on the shared frequency bands and those frequency bands that, historically, have not posed electromagnetic concerns,[3] when operating under typical specifications.

FM broadcast service transmissions operating in the 88.0–107.9 MHz frequency band pose the greatest concern to FAA navigation signals. The FAA, FCC and NTIA are collaborating on the best way to address this issue. A resolution of this issue is expected soon. Therefore, the proposals on FM broadcast service transmissions in the 88.0–107.9 MHz frequency band remain pending. The FAA will address the comments filed in this docket about the proposed frequency notice requirements and proposed EMI obstruction standards when a formal and collaborative decision is announced.

This rule does include evaluating electromagnetic effect (§§ 77.29 and 77.31), and it codifies the agency's current practices of studying the effects on aircraft navigation and communication facilities. These amendments in no way should be construed to affect the authority of NTIA and the FCC.

B. Time Requirement To File Notice With the FAA

Automation improvements to the FAA's obstruction evaluation program allow the public to file notices of proposed construction electronically, which facilitates the aeronautical study process and has reduced the overall processing time for these cases. The FAA proposed to require that notices of proposed construction or alterations must be filed with the FAA at least 60 days before construction starts or the application filing date for a construction permit, whichever is earliest. The current rule requires 30 days, which the FAA found inadequate for cases to be processed, particularly if additional information, via public comment period, was necessary to complete the study. At the time the FAA published the NPRM, the automation system was in the early stages, and the full benefits of the automation were not yet known. Commenters were split on their support of this proposal, depending on their interests. Comments from the aviation industry largely supported the extended time period. Comments filed by the building industry, however, opposed the extended time period, saying it was too long and would cause undue delay.

The FAA has seen great success with the automation system and concludes that requiring notice to be filed 60 days before construction or the permit application is not necessary. There are cases where circulating the proposal for public comment may be necessary and, consequently, these cases may require up to 45 days for processing. Therefore, the FAA adopts the requirement that notice must be filed with the FAA for proposed construction or alteration at least 45 days before either the date that construction begins, or the date of the construction permit application, whichever is earliest.

Because applications are required within 45 days of construction, the FAA, Department of Defense, and Department of Homeland Security should work together to conduct timely reviews. To that end, the FAA will respond to inquiries from applicants regarding the status of applications, the reason(s) for any delay, and the projected date of completion. As appropriate, the FAA will engage with other Federal Agencies such as the Department of Defense, the Department of Homeland Security, the Department of Energy, and the Department of Interior to expedite any further regulatory modifications and improvements to 14 CFR Part 77 to ensure there is a predictable, consistent, transparent, and timely application process for the wind industry.

Several commenters recommended separate notice requirements for reviewing a temporary structure that might be necessary under emergency-type circumstances. An example

[2] Civil airport imaginary surfaces are established surfaces based on the runway that are used to identify objects that may impact airport plans or aircraft departure/arrival procedures or routes. Section 77.19 describes five types of imaginary surfaces: horizontal, conical, primary, approach and transitional.

[3] 54–88 MHz; 150–216 MHz; 406–430 MHz; 931–940 MHz; 952–960 MHz; 1390–1400 MHz; 2500–2700 MHz; 3700–4200 MHz; 5000–5650 MHz; 5925–6225 MHz; 7450–8550 MHz; 14.2–14.4 GHz.

submitted in the comments was a construction crane that was necessary to replace air conditioning units on the roof of factories. The commenters contend that it is neither logical nor feasible to shut down a factory for 30 days while the FAA studies this temporary structure.

Situations like the one presented by these commenters are not uncommon. Regardless of whether the structure is temporary, it remains critical for the FAA to have notice of tall structures that can affect aeronautical operations. In most cases, the proponent of the structure contacts the FAA Obstruction Evaluation (OE) specialist and identifies the need for a quick review, for which the agency readily responds. While the FAA regrets any past delay in taking quick action on a particular case, the agency declines to set-up special procedures to address such cases. On the FAA's OE Web site,[4] the agency lists the contact information for the FAA specialist. If a sponsor is concerned with the time frame for the FAA's review, the agency encourages the sponsor to contact the FAA specialist directly.

C. Civil Airport Imaginary Surfaces

The NPRM proposed, for a visual runway used by small aircraft or restricted to day-only instrument operations, that the width of the imaginary approach surface expand uniformly to 1,250 ft. If the runway is a visual runway, used by other than small aircraft or for instrument night circling, the surface width expands uniformly from 1,500 ft. to 3,500 ft. If the runway is a non-precision instrument or precision instrument runway, the surface width expands uniformly to 4,000 ft. and 16,000 ft., respectively. Other changes include removing approach surface widths of 1,500 ft. and 2,000 ft., and increasing the width for some non-precision runways from 2,000 ft. to 4,000 ft. The NPRM also proposed expanding the width of the primary approach surface of a non-precision instrument runway or precision instrument runway from 500 feet to 1,000 ft.

Many commenters opposed the proposed expansion of the primary surface. They argued that the proposed expansion would require airport operators to remove existing structures that would fall within the proposed expanded surface, which would result in a financial burden to airport owners and managers. Southwest Airlines, on the other hand, supported the proposal and stated the ability to study and review more proposed structures is positive for airport safety.

Several comments stated that the imaginary surfaces in part 77 do not comport clearly with the surfaces used for obstacle clearance under the United States Standard for Terminal Instrument Procedures (TERPS) and, therefore, makes the part 77 surfaces useless as a project planning tool for airport development.

Similarly, another commenter argued that the Required Navigation Performance (RNP) lateral protection area is greater than the width of the primary surface and the RNP procedures TERPS surface is outside the part 77 imaginary surface. The commenter contends that an obstacle can adversely impact an RNP procedure, but not be characterized as an obstruction. This commenter recommends that the imaginary surfaces be expanded to include RNP procedures.

Several commenters specifically questioned whether current obstructions that fall within the newly expanded primary surface could impact an instrument procedure and result in the airport losing the instrument procedure. One airport authority was concerned about marking and lighting recommendations for existing structures that will now fall under the expanded primary surface.

The FAA proposed these changes to more closely align regulatory provisions in part 77 with TERPS criteria and airport design standards. The inconsistency between IAP criteria, airport design standards, and part 77 surfaces has been a source of confusion for both airport managers and the FAA. These specific proposals would not have altered the notice criteria. Instead, the proposals were meant to identify more proposed structures as obstructions that the FAA could study to determine if they would adversely affect the NAS.

However, since publication of the NPRM, the FAA has begun a coordinated effort to consolidate all agency requirements for the treatment of obstacles in the airport environment. Once completed, the new requirements will form the basis for revised civil airport imaginary surfaces. Thus, it would not be prudent to codify the proposals. Further, amending or expanding any of the civil airport imaginary surfaces at this time would not be in the best interest of the public. The FAA, therefore, withdraws all proposed modifications to the civil airport imaginary surfaces, including the chart format. The FAA will keep the civil airport imaginary surfaces rule as it is currently described in 14 CFR 77.25.

D. One Engine Inoperative Procedures

The NPRM specifically states that OEI procedures were not a part of the rulemaking. The NPRM further notes that the FAA has tasked the Airport Obstruction Standards Committee (AOSC) with examining this issue. Comments from the Air Transport Association, individual airlines, local airport authorities, and aviation organizations, asked the FAA to address OEI procedures. These comments have been forwarded to the AOSC for consideration. As appropriate, the FAA will advise the aviation industry and other interested persons, through the AOSC, of any policy changes.

E. Definitions

The NPRM proposed replacing the term "utility runway" with the phrase "runway used by small aircraft". In addition, the NPRM proposed amending the definitions for precision, non-precision, and visual runways, as these definitions were no longer up-to-date with industry practices. The term "utility runway" is not widely used in industry so the NPRM proposed replacing the term. In addition, the NPRM proposed amending the definitions for precision and non-precision runways to address approaches that use other than ground based navigational aids, such as flight management systems (FMS) and global navigation satellite systems (GNSS). Because of technological advances, the former definitions for precision and non-precision runways are no longer accurate.

By removing the term "utility runway", commenters stated the portions of the rule that include the term became confusing. They note that the runway classifications and corresponding widths for the primary and approach surfaces in the tables in § 77.19(d)(e) are difficult to understand.

Several commenters confused the proposed definitions for precision and non-precision instrument runways with the definitions for precision and non-precision instrument approach procedures.[5] One commenter suggested the non-precision runway definition should exclude a runway that has a developed instrument approach procedure with visibility minimums of

[4] *https://oeaaa.faa.gov.*

[5] The FAA proposed definitions for the terms "precision instrument runway" and "non-precision instrument runway" to be based on the use of visibility minimums, rather than approach procedure classification, given that visibility is the critical factor during the visual portion of the approach.

one statute mile. This commenter contends that many small, general aviation airports have published procedures with one mile visibility under the current obstruction criteria of a utility runway. The commenter also notes that if the FAA adopts the proposal to limit non-precision runways to procedures with visibility minimums of one statute mile, then these small airports would need to have the more demanding primary surfaces and approach criteria. The commenter further says this could result in financial hardship for these airports and the airports may need to double the designated airspace around the runway. Another commenter stated that the new definition for a non-precision runway conflicts with FAA Advisory Circular 150/5300–13, Airport Design.

Commenters also indicated that the new definition and associated surfaces would take runways that currently qualify as utility into the non-precision category. They say these modifications could result in unfunded economic burdens on outlying airports with IAPs to utility runways that experience lower traffic densities. Additionally, commenters noted that many of these airports are configured with minimal infrastructure and could face significant airport expansion to obtain IAP services if the runway is categorized as non-precison.

Several commenters also stated that the proposed definitions of precision and non-precision runways try to redefine the current precision and non-precision instrument procedures because satellite technology could, in the future, enable non-precision approaches to become precision approaches.

Although the FAA proposed to revise these definitions, on further review, the agency has determined it should not revise them at this time. The definitions were proposed to support implementing satellite-based navigation. However, as the satellite-based navigation program has evolved during development of this rulemaking, the agency has learned of unintended consequences of the proposed definitions. For example, changing the runway definition creates infrastructure requirements that may be needed as the technology evolves. The FAA believes a more measured approach is needed before making any changes to the definitions. Thus, the agency will not adopt the proposed revisions to the definitions in this final rule.

F. Extension to a Determination of No Hazard

The NPRM proposed a provision for which an extension to the expiration date for a Determination of No Hazard may be granted. Specifically, it proposed that for structures not subject to FCC review, a Determination of No Hazard can be extended for a maximum of 18 months, if necessary. If more than 18 months is necessary, then a new aeronautical study would be initiated. For structures that require an FCC construction permit, the NPRM proposed that a Determination of No Hazard can be extended for up to 12 months, provided the sponsor submits evidence that an application for a construction permit was filed within 6 months of the date of issuance. The NPRM also proposed that if the FCC extends the original FCC construction completion date, the sponsor must request an extension of the FAA's Determination of No Hazard.

Many commenters found that the two time periods (18 and 12 months) were confusing. The FAA's review of this matter concluded that it is not necessary to continue the distinction between structures subject to FCC review from structures that do not need this review, simply to extend the expiration date. Therefore, for simplification and standardization, the FAA amends the time period for extensions to determinations of structures to 18 months, regardless of whether an FCC construction permit is necessary.

In addition, the FAA unintentionally omitted a section of the current rule from the NPRM. That section states that if the FCC denies a construction permit, the final determination expires on the date of the denial. The FAA has reinserted that section in this final rule.

G. Effective Date

The effective date of this final rule is 180 days from the date the rule is published in the **Federal Register**. The FAA needs this time to amend the automation system it uses to evaluate obstructions, amend relevant FAA orders, train employees, and educate the public.

H. Miscellaneous

One commenter said the requirement to file notice should extend to structures that would penetrate an imaginary surface relative to a planned or proposed airport. Specifically, this commenter seeks to incorporate the imaginary surfaces for evaluating obstructions under § 77.19(a) in the notice requirements for structures that are on or around a planned airport.

Section 77.9 requires notice for construction on an existing airport or an airport under construction. This section specifies an imaginary surface extending from the runway (in increments of 20,000 feet, 10,000 ft., or 5,000 ft., depending on the length of the airport's runway or heliport) at a specific slope for which notice is required if it would penetrate one of the surfaces for either an existing airport or an airport under construction. The above referenced surfaces, for which the longest surface would extend approximately 3.78 miles from the end of the runway, do not apply to a planned airport for which construction has yet to begin.

The effect of this commenter's request would be to require notice for up to approximately 3.5 miles (for the longest runway) for any construction that penetrates the 100 to 1 surface for a planned or proposed airport.

This comment is outside the scope of the NPRM. The essence of this comment would be a new notice requirement for planned or proposed airports. To accommodate this comment without providing the public an opportunity to comment on its impact would violate the Administrative Procedure Act.

Notwithstanding the above scope issue, to apply the imaginary surface from the notice requirements to planned or proposed airports would be difficult to implement. A planned or proposed airport can be at varying stages of development, with runway(s) location and configuration undetermined, navigational aids not sited, and instrument approach and departure procedures yet to be developed. It would be impossible for the FAA to study (and apply the obstruction standards) with any degree of certainty, to a proposed structure when the above listed airport issues are not defined. In addition, airport development can be subject to environmental laws and lengthy processes with alternative plans that must be analyzed. The FAA cannot "reserve" airspace on such speculative plans. The agency does study the impact of structures that are identified as obstructions on planned or proposed airports that are on file with the FAA. As the details of a planned airport become part of the "plan on file" with the FAA or the Airport Layout Plan, on which the FAA can rely, the FAA includes those details during the study.

Several commenters questioned the proposed removal of the regulatory provisions addressing antenna farms and whether any antenna farms currently exist. The FAA has not established any antenna farm area. Moreover, the regulations governing structures addresses the FAA needs

here. Thus, this rule removes the provisions governing antenna farms.

One commenter questioned why an object that is shielded by another structure is not subject to the notice requirements. This commenter contends that if the structure that shields an unreported structure is dismantled, there is no record of the first structure, nor is there any requirement to notify the FAA of this structure if the shielding structure is dismantled.

Section 77.15(a) provides that notice is not required for a structure if the shielding structure is of a substantial and permanent nature and is located in a congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation. This exception does not apply in areas where there are only one or two other structures. The FAA has not experienced a situation like the one described by the commenter that can be attributed to this exception. This rule does expand the current supplemental notice requirements in § 77.11, and specifies that if a construction or alteration is abandoned, dismantled, or destroyed, notice must be provided to the FAA within 5 days after the construction is abandoned, dismantled, or destroyed. In the rare case where a shielding structure is abandoned, dismantled, or destroyed, the proponent must notify the FAA so that appropriate actions concerning adjacent structures can be initiated.

Prior to this rule, part 77 provided that a proposed or existing structure was an obstruction to air navigation if it was higher than 500 ft. above ground level (AGL). The minimum altitude to operate an aircraft over non-congested areas is 500 feet above the surface.[6] Consequently, an aircraft could be operating at 500 ft. AGL and encounter a structure that was 500 ft. AGL that might not have been studied by the FAA during the obstacle evaluation process. The FAA adopts the proposal that lowers the height of a structure identified as an obstruction from above 500 ft. to above 499 ft. Accordingly, all structures that are above 499 ft. tall will be obstructions, and the FAA will study them to determine their effect on the navigable airspace. This will ensure that all usable airspace at and above 500 ft. AGL is addressed during the aeronautical study and that this airspace is protected from obstructions that may create a hazard to air navigation.

[6] 14 CFR Section 91.119(c) provides that "Except when necessary for takeoff and landing, no person may operate an aircraft below the following altitudes: (b) Over other than congested areas. An altitude of 500 feet above the surface except over open water or sparely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure."

III. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. According to the 1995 amendments to the Paperwork Reduction Act (5 CFR 1320.8(b)(2)(vi)), an agency may not collect or sponsor the collection of information, nor may it impose an information collection requirement unless it displays a currently valid Office of Management and Budget (OMB) control number. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA submitted a copy of the new information collection requirements(s) discussed below to OMB for its review. Notice of OMB approval for this information collection will be published in a future **Federal Register** document.

Title 49 U.S.C. 44718 states, "By regulation or by order when necessary, the Secretary of Transportation shall require a person to give adequate public notice, in the form and way the Secretary prescribes, of the construction, alteration, establishment, or expansion, of a structure or sanitary landfill when public notice will promote:

(1) safety in air commerce; and

(2) the efficient use and preservation of the navigable airspace and of airport traffic capacity at public use airports."

This final rule implements the requirement for notification by requiring that notice be submitted to the FAA for proposed construction or alteration of structures on or near private use airports that have an IAP. Accordingly, if a private use airport has an FAA-approved IAP, then a construction sponsor is required to notify the FAA of a proposed construction or alteration that exceeds the notice criteria in § 77.17. This action will give the FAA adequate time to adjust the IAP, if needed, and to inform those who use the IAP. While IAPs at private use airports or heliports are not currently listed in any aeronautical publication, sponsors of construction or alteration at or near a private use airport or heliport can consult the FAA Web site[7] to determine whether an FAA-approved IAP is listed for that airport. If the airport is listed on the Web site, the sponsor must file notice with the FAA. The intent of these changes is to improve safety and promote the efficient use of the National Airspace System.

The FAA estimates that on average, 3,325 Form 7460–1s would be filed annually. It is estimated to take 19 minutes, or 0.32 hours, to fill out each form. Hence, the estimated hour burden is: 0.32 hours × 3,325 = 1,064 hours.

The average cost for a firm to prepare the form itself is approximately $40 per form. It is estimated that 20 percent of the forms filed would be filed this way. Thus, the estimated average annual reporting burden for companies to process this form in-house would be: (FAA Form 7460–1) $40 × 665 = $26,600.

The average cost for a company to outsource this function to a contractor is approximately $480 per report. It is estimated that 80 percent of the forms filed would be filed this way. Thus, the estimated average annual reporting burden for companies to outsource this function is: (FAA Form 7460–1) $480 × 2,660 = $1,276,800.

It is estimated that roughly 30 percent of firms filing FAA Form 7460–1 will need to perform a site survey to complete the form. The cost of a site survey is $790. Thus, the estimated annual reporting burden for companies who require a site survey would be: (FAA Form 7460–1) $790 × 998 = $788,420.

Hence, the total annual cost to firms that fill out FAA Form 7460–1 is $2,091,820.

In the proposed rule, the FAA asked for comments on the information collection burden. You may view the FAA's specific request in the proposed rule.[8] The FAA received comments from multiple commenters. The following is a summary of the comments with the FAA's response:

Several commenters stated that the FAA underestimated the costs, in terms of time and paperwork, associated with preparing a Form 7460–1, as well as the costs of filing an OE notice, so the FAA should revise its estimates. One commenter surveyed its members and the survey indicated that the cost of processing a Form 7460–1 in-house was $406 and took about 1.6 hours per form. Further, the average hourly labor cost was found to be $36 per hour. The commenter also stated that in addition to maps, a site survey is needed to complete Form 7460–1, which ensures the accuracy of the location and costs an average of $768. Another commenter supported the notion of including the cost of a site survey in the cost estimation for filing a Form 7460–1. Another commenter suggested that the

[7] *https://oeaaa.faa.gov.*

[8] 71 FR 34028; June 13, 2006.

FAA increase its estimate for processing a Form 7460–1 in-house to $40.

The FAA omitted the cost of a site survey in the preliminary analysis because a site survey is not required to complete a Form 7460–1. However, a site survey must be completed if it is requested by the FAA's Flight Procedure Office. The agency has revised the cost analysis to reflect the wider range of costs as supplied by the commenters. The FAA also revised its cost and paperwork analyses to include the cost of filing a form in-house, as well as the costs of a site survey.

A few commenters claimed that the FAA underestimated the time and paperwork costs associated with filing additional notices. Another commenter believed that the FAA underestimated the paperwork burden that will be placed on radio spectrum users.

The FAA completed a paperwork reduction package for the proposed rule, which did show the estimated paperwork costs. The paperwork costs were also shown in the initial regulatory evaluation and were available for review in the docket. However, the FAA has elected not to adopt the radio frequency notice requirements in this final rule. As a result, there will be no additional paperwork burden placed on radio spectrum users at this time.

A commenter stated that requiring applicants to provide notice to the FAA 60 days in advance could also increase the number of filings because of the rule change. Another commenter stated that extending the notice period for all proposed projects will cause undue delay in securing FAA approval and will delay the ability of utilities to develop new sites.

The FAA has reduced the filing time period from 60 days to 45 days. This should mitigate the delay expected by the commenters and allow them to continue their operations without much change. Thus, the FAA does not expect any delays in construction or operational deficiencies resulting from the final rule.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified no new differences with these proposed regulations.

IV. Regulatory Evaluation, Regulatory Flexibility Determination, International Trade Impact Assessment, and Unfunded Mandates Assessment

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by state, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation with base year of 1995). This portion of the preamble summarizes the FAA's analysis of the economic impacts of this final rule. Readers seeking greater detail should read the full regulatory evaluation, a copy of which is in the docket for this rulemaking.

In conducting these analyses, the FAA has determined that this final rule has benefits that justify its costs and is not economically significant under Executive Order 12866; however, it is otherwise "significant" because of concerns raised by the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission (FCC) regarding the FAA's evaluation of potential electromagnetic effect during aeronautical studies. The final rule, if adopted, will not have a significant economic impact on a substantial number of small entities, will not create unnecessary obstacles to international trade, and will not impose an unfunded mandate on state, local, tribal governments, or on the private sector.

This final rule amends 14 CFR part 77. These amendments refer to the rules for obstruction evaluation standards, aeronautical studies, and notice provisions about objects that could create hazards to air navigation.

The FAA estimates the cost of this final rule to private industry will be approximately $20.9 million ($14.1 million, present value) over the next 10 years. The estimated cost of the final rule to the FAA will be approximately $18.7 million ($12.6 million, present value) over the next 10 years. Therefore, the total cost associated with the final rule will be approximately $39.6 million ($26.8 million, present value) over the next 10 years.

The final rule will enhance protection of aircraft approaches from unknown obstructions and unknown alteration projects on or near private use airports with FAA-approved instrument approach procedures (IAPs). The FAA contends that these qualitative benefits justify the costs of the final rule.

Final Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To achieve that principle, the Act requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis (RFA) as described in the Act.

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the 1980 Act provides that the head of the agency may so certify and an RFA is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

While the FAA does not maintain data on the size of businesses that file notices, the FAA estimates that approximately 40 percent of the OE notices will be filed by small businesses (comprised of business owners and private use airport owners) as defined by the Small Business Administration. Thus, in 2010 when the rule is expected to take effect, the FAA expects approximately 2,400 more OE notices

will be filed by affected parties. Of those applications filed, approximately 960 notices are estimated to be filed by small businesses (using 40 percent assumption).

For those small businesses that are inexperienced in submitting the necessary paperwork, the FAA believes they would either hire a consultant or spend as much as the consultant fee ($480) in staff time to understand, research, complete, and submit the form(s). For the purpose of this regulatory flexibility assessment, the FAA assumes that it will cost all small entities approximately $480 per case to meet the requirements of part 77.

It is unlikely that any individual small entity will file more than three OE notices in a calendar year. As a result, the FAA estimates that in virtually all cases, the cost of this rule to small businesses will not exceed $1500 per small entity, a cost the FAA does not consider significant. Therefore, as the FAA Administrator, I certify that this rule will not have a significant economic impact on a substantial number of small entities.

International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this final rule and determined that it will have only a domestic impact and, therefore, will not create unnecessary obstacles to the foreign commerce of the United States.

Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (in 1995 dollars) in any one year by state, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action." The FAA currently uses an inflation-adjusted value of $136.1 million in lieu of $100 million. This final rule does not contain such a mandate; therefore, the requirements of Title II of the Act do not apply.

Executive Order 13132, Federalism

The FAA has analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. The FAA determined that this action will not have a substantial direct effect on the States, or the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, and, therefore, does not have federalism implications.

Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 312f and involves no extraordinary circumstances.

Regulations That Significantly Affect Energy Supply, Distribution, or Use

The FAA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We have determined that it is not a "significant energy action" under the executive order because it is not a "significant regulatory action" under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

Availability of Rulemaking Documents

You can get an electronic copy of rulemaking documents using the Internet by—

1. Searching the Federal eRulemaking Portal (*http://www.regulations.gov*);
2. Visiting the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies/*; or
3. Accessing the Government Printing Office's Web page at *http://www.gpoaccess.gov/fr/index.html.*

You can also get a copy by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267–9680. Make sure to identify the amendment number or docket number of this rulemaking.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78) or you may visit *http://DocketsInfo.dot.gov.*

Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. If you are a small entity and you have a question regarding this document, you may contact your local FAA official, or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of the preamble. You can find out more about SBREFA on the Internet at *http://www.faa.gov/regulations_policies/rulemaking/sbre_act/.*

Appendix A to the Preamble

Under regulations (49 U.S.C. 44718) prescribed by the Secretary, if the Secretary decides that constructing or altering a structure may result in an obstruction of the navigable airspace or an interference with air navigation facilities and equipment or the navigable airspace, the Secretary shall conduct an aeronautical study to decide the extent of any adverse impact on the safe and efficient use of the airspace, facilities, or equipment. In conducting the study, the Secretary shall consider factors relevant to the efficient and effective use of the navigable airspace, including—

(A) The impact on arrival, departure, and en route procedures for aircraft operating under visual flight rules;

(B) The impact on arrival, departure, and en route procedures for aircraft operating under instrument flight rules;

(C) The impact on existing public use airports and aeronautical facilities;

(D) The impact on planned public use airports and aeronautical facilities; and

(E) The cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures.

Appendix B to the Preamble

The NPRM proposed that notice must be filed with the FAA for any construction of a new, or modification of an existing facility, *i.e.*—building, antenna structure, or any other man-made structure, which supports a radiating element(s) for the purpose of radio frequency transmissions operating on the following frequencies:

(i) 54–108 MHz
(ii) 150–216 MHz
(iii) 406–430 MHz
(iv) 931–940 MHz
(v) 952–960 MHz
(vi) 1390–1400 MHz
(vii) 2500–2700 MHz
(viii) 3700–4200 MHz
(ix) 5000–5650 MHz
(x) 5925–6525 MHz
(xi) 7450–8550 MHz
(xii) 14.2–14.4 GHz
(xiii) 21.2–23.6 GHz

In addition, the NPRM proposed that any changes or modification to a system operating on one of the previously mentioned frequencies when specified in the original FAA determination, including:

(i) Change in the authorized frequency;
(ii) Addition of new frequencies;
(iii) Increase in effective radiated power (ERP) equal or greater than 3 decibels;
(iv) modification of radiating elements, including: (A) Antenna mounting locations(s) if increased 100 feet or more irrespective of whether the overall height is increased; (B) changes in antenna specification (including gain, beam-width, polarization, pattern); and (C) change in antenna azimuth/bearing (*e.g.* point-to-point microwave systems).

List of Subjects in 14 CFR Part 77

Administrative practice and procedure, Airports, Airspace, Aviation safety, Navigation (air), Reporting and recordkeeping requirements.

V. The Amendment

■ In consideration of the foregoing, the Federal Aviation Administration amends Chapter I of title 14, Code of Federal Regulations by revising part 77 to read as follows:

PART 77—SAFE, EFFICIENT USE, AND PRESERVATION OF THE NAVIGABLE AIRSPACE

Subpart A—General

Sec.
77.1 Purpose.
77.3 Definitions.

Subpart B—Notice Requirements

77.5 Applicability.
77.7 Form and time of notice.
77.9 Construction or alteration requiring notice.
77.11 Supplemental notice requirements.

Subpart C—Standards for Determining Obstructions to Air Navigation or Navigational Aids or Facilities

77.13 Applicability.
77.15 Scope.
77.17 Obstruction standards.
77.19 Civil airport imaginary surfaces.
77.21 Department of Defense (DOD) airport imaginary surfaces.
77.23 Heliport imaginary surfaces.

Subpart D—Aeronautical Studies and Determinations

77.25 Applicability.
77.27 Initiation of studies.
77.29 Evaluating aeronautical effect.
77.31 Determinations.
77.33 Effective period of determinations.
77.35 Extensions, terminations, revisions and corrections.

Subpart E—Petitions for Discretionary Review

77.37 General.
77.39 Contents of a petition.
77.41 Discretionary review results.

Authority: 49 U.S.C. 106 (g), 40103, 40113–40114, 44502, 44701, 44718, 46101–46102, 46104.

Subpart A—General

§ 77.1 Purpose.

This part establishes:

(a) The requirements to provide notice to the FAA of certain proposed construction, or the alteration of existing structures;

(b) The standards used to determine obstructions to air navigation, and navigational and communication facilities;

(c) The process for aeronautical studies of obstructions to air navigation or navigational facilities to determine the effect on the safe and efficient use of navigable airspace, air navigation facilities or equipment; and

(d) The process to petition the FAA for discretionary review of determinations, revisions, and extensions of determinations.

§ 77.3 Definitions.

For the purpose of this part:

Non-precision instrument runway means a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved, or planned, and for which no precision approach facilities are planned, or indicated on an FAA planning document or military service military airport planning document.

Planned or proposed airport is an airport that is the subject of at least one of the following documents received by the FAA:

(1) Airport proposals submitted under 14 CFR part 157.

(2) Airport Improvement Program requests for aid.

(3) Notices of existing airports where prior notice of the airport construction or alteration was not provided as required by 14 CFR part 157.

(4) Airport layout plans.

(5) DOD proposals for airports used only by the U.S. Armed Forces.

(6) DOD proposals on joint-use (civil-military) airports.

(7) Completed airport site selection feasibility study.

Precision instrument runway means a runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA-approved airport layout plan; a military service approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

Public use airport is an airport available for use by the general public without a requirement for prior approval of the airport owner or operator.

Seaplane base is considered to be an airport only if its sea lanes are outlined by visual markers.

Utility runway means a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

Visual runway means a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan, a military service approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

Subpart B—Notice Requirements

§ 77.5 Applicability.

(a) If you propose any construction or alteration described in § 77.9, you must provide adequate notice to the FAA of that construction or alteration.

(b) If requested by the FAA, you must also file supplemental notice before the start date and upon completion of certain construction or alterations that are described in § 77.9.

(c) Notice received by the FAA under this subpart is used to:

(1) Evaluate the effect of the proposed construction or alteration on safety in air commerce and the efficient use and preservation of the navigable airspace and of airport traffic capacity at public use airports;

(2) Determine whether the effect of proposed construction or alteration is a hazard to air navigation;

(3) Determine appropriate marking and lighting recommendations, using FAA Advisory Circular 70/7460–1, Obstruction Marking and Lighting;

(4) Determine other appropriate measures to be applied for continued safety of air navigation; and

(5) Notify the aviation community of the construction or alteration of objects that affect the navigable airspace, including the revision of charts, when necessary.

§ 77.7 Form and time of notice.

(a) If you are required to file notice under § 77.9, you must submit to the FAA a completed FAA Form 7460–1, Notice of Proposed Construction or Alteration. FAA Form 7460–1 is available at FAA regional offices and on the Internet.

(b) You must submit this form at least 45 days before the start date of the proposed construction or alteration or the date an application for a construction permit is filed, whichever is earliest.

(c) If you propose construction or alteration that is also subject to the licensing requirements of the Federal Communications Commission (FCC), you must submit notice to the FAA on or before the date that the application is filed with the FCC.

(d) If you propose construction or alteration to an existing structure that exceeds 2,000 ft. in height above ground level (AGL), the FAA presumes it to be a hazard to air navigation that results in an inefficient use of airspace. You must include details explaining both why the proposal would not constitute a hazard to air navigation and why it would not cause an inefficient use of airspace.

(e) The 45-day advance notice requirement is waived if immediate construction or alteration is required because of an emergency involving essential public services, public health, or public safety. You may provide notice to the FAA by any available, expeditious means. You must file a completed FAA Form 7460–1 within 5 days of the initial notice to the FAA. Outside normal business hours, the nearest flight service station will accept emergency notices.

§ 77.9 Construction or alteration requiring notice.

If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of:

(a) Any construction or alteration that is more than 200 ft. AGL at its site.

(b) Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:

(1) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway more than 3,200 ft. in actual length, excluding heliports.

(2) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway no more than 3,200 ft. in actual length, excluding heliports.

(3) 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in paragraph (d) of this section.

(c) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) or (b) of this section.

(d) Any construction or alteration on any of the following airports and heliports:

(1) A public use airport listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;

(2) A military airport under construction, or an airport under construction that will be available for public use;

(3) An airport operated by a Federal agency or the DOD.

(4) An airport or heliport with at least one FAA-approved instrument approach procedure.

(e) You do not need to file notice for construction or alteration of:

(1) Any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation;

(2) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device meeting FAA-approved siting criteria or an appropriate military service siting criteria on military airports, the location and height of which are fixed by its functional purpose;

(3) Any construction or alteration for which notice is required by any other FAA regulation.

(4) Any antenna structure of 20 feet or less in height, except one that would increase the height of another antenna structure.

§ 77.11 Supplemental notice requirements.

(a) You must file supplemental notice with the FAA when:

(1) The construction or alteration is more than 200 feet in height AGL at its site; or

(2) Requested by the FAA.

(b) You must file supplemental notice on a prescribed FAA form to be received within the time limits specified in the FAA determination. If no time limit has been specified, you must submit supplemental notice of construction to the FAA within 5 days after the structure reaches its greatest height.

(c) If you abandon a construction or alteration proposal that requires supplemental notice, you must submit notice to the FAA within 5 days after the project is abandoned.

(d) If the construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

Subpart C—Standards for Determining Obstructions to Air Navigation or Navigational Aids or Facilities

§ 77.13 Applicability.

This subpart describes the standards used for determining obstructions to air navigation, navigational aids, or navigational facilities. These standards apply to the following:

(a) Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used and any permanent or temporary apparatus.

(b) The alteration of any permanent or temporary existing structure by a change in its height, including appurtenances, or lateral dimensions, including equipment or material used therein.

§ 77.15 Scope.

(a) This subpart describes standards used to determine obstructions to air navigation that may affect the safe and efficient use of navigable airspace and the operation of planned or existing air navigation and communication facilities. Such facilities include air navigation aids, communication equipment, airports, Federal airways, instrument approach or departure procedures, and approved off-airway routes.

(b) Objects that are considered obstructions under the standards

described in this subpart are presumed hazards to air navigation unless further aeronautical study concludes that the object is not a hazard. Once further aeronautical study has been initiated, the FAA will use the standards in this subpart, along with FAA policy and guidance material, to determine if the object is a hazard to air navigation.

(c) The FAA will apply these standards with reference to an existing airport facility, and airport proposals received by the FAA, or the appropriate military service, before it issues a final determination.

(d) For airports having defined runways with specially prepared hard surfaces, the primary surface for each runway extends 200 feet beyond each end of the runway. For airports having defined strips or pathways used regularly for aircraft takeoffs and landings, and designated runways, without specially prepared hard surfaces, each end of the primary surface for each such runway shall coincide with the corresponding end of the runway. At airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for aircraft takeoffs and landings, a determination must be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those determined pathways must be considered runways, and an appropriate primary surface as defined in § 77.19 will be considered as longitudinally centered on each such runway. Each end of that primary surface must coincide with the corresponding end of that runway.

(e) The standards in this subpart apply to construction or alteration proposals on an airport (including heliports and seaplane bases with marked lanes) if that airport is one of the following before the issuance of the final determination:

(1) Available for public use and is listed in the Airport/Facility Directory, Supplement Alaska, or Supplement Pacific of the U.S. Government Flight Information Publications; or

(2) A planned or proposed airport or an airport under construction of which the FAA has received actual notice, except DOD airports, where there is a clear indication the airport will be available for public use; or,

(3) An airport operated by a Federal agency or the DOD; or,

(4) An airport that has at least one FAA-approved instrument approach.

§ 77.17 Obstruction standards.

(a) An existing object, including a mobile object, is, and a future object would be an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 499 feet AGL at the site of the object.

(2) A height that is 200 feet AGL, or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile from the airport up to a maximum of 499 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal Airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under § 77.19, 77.21, or 77.23. However, no part of the takeoff or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service furnished by an airport traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) 15 feet for any other public roadway.

(3) 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) 23 feet for a railroad.

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

§ 77.19 Civil airport imaginary surfaces.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach procedure existing or planned for that runway end.

(a) *Horizontal surface.* A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by SW.inging arcs of a specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) *Conical surface.* A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) *Primary surface.* A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having non-precision instrument approaches.

(3) For other than utility runways, the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for non-precision instrument runways having visibility minimums greater than three-fourths statue mile.

(iii) 1,000 feet for a non-precision instrument runway having a non-precision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

(iv) The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) *Approach surface.* A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches;

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;

(iii) 2,000 feet for that end of a utility runway with a non-precision instrument approach;

(iv) 3,500 feet for that end of a non-precision instrument runway other than utility, having visibility minimums greater that three-fourths of a statute mile;

(v) 4,000 feet for that end of a non-precision instrument runway, other than utility, having a non-precision instrument approach with visibility minimums as low as three-fourths statute mile; and

(vi) 16,000 feet for precision instrument runways.

(2) The approach surface extends for a horizontal distance of:

(i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;

(ii) 10,000 feet at a slope of 34 to 1 for all non-precision instrument runways other than utility; and

(iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

(3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) *Transitional surface.* These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

§ 77.21 Department of Defense (DOD) airport imaginary surfaces.

(a) *Related to airport reference points.* These surfaces apply to all military airports. For the purposes of this section, a military airport is any airport operated by the DOD.

(1) *Inner horizontal surface.* A plane that is oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

(2) *Conical surface.* A surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

(3) *Outer horizontal surface.* A plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) *Related to runways.* These surfaces apply to all military airports.

(1) *Primary surface.* A surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000-foot width may be reduced to the former criteria.

(2) *Clear zone surface.* A surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

(3) *Approach clearance surface.* An inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The width of this surface at the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) *Transitional surfaces.* These surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the approach clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7 to 1 outward and upward at right angles to the runway centerline.

§ 77.23 Heliport imaginary surfaces.

(a) *Primary surface.* The area of the primary surface coincides in size and shape with the designated take-off and landing area. This surface is a horizontal plane at the elevation of the established heliport elevation.

(b) *Approach surface.* The approach surface begins at each end of the heliport primary surface with the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet where its width is 500 feet. The slope of the approach surface is 8 to 1 for civil heliports and 10 to 1 for military heliports.

(c) *Transitional surfaces.* These surfaces extend outward and upward from the lateral boundaries of the primary surface and from the approach surfaces at a slope of 2 to 1 for a distance of 250 feet measured horizontally from the centerline of the primary and approach surfaces.

Subpart D—Aeronautical Studies and Determinations

§ 77.25 Applicability.

(a) This subpart applies to any aeronautical study of a proposed construction or alteration for which notice to the FAA is required under § 77.9.

(b) The purpose of an aeronautical study is to determine whether the aeronautical effects of the specific proposal and, where appropriate, the cumulative impact resulting from the proposed construction or alteration when combined with the effects of other existing or proposed structures, would constitute a hazard to air navigation.

(c) The obstruction standards in subpart C of this part are supplemented by other manuals and directives used in determining the effect on the navigable airspace of a proposed construction or alteration. When the FAA needs additional information, it may circulate a study to interested parties for comment.

§ 77.27 Initiation of studies.

The FAA will conduct an aeronautical study when:

(a) Requested by the sponsor of any proposed construction or alteration for which a notice is submitted; or

(b) The FAA determines a study is necessary.

§ 77.29 Evaluating aeronautical effect.

(a) The FAA conducts an aeronautical study to determine the impact of a proposed structure, an existing structure that has not yet been studied by the FAA, or an alteration of an existing structure on aeronautical operations, procedures, and the safety of flight. These studies include evaluating:

(1) The impact on arrival, departure, and en route procedures for aircraft operating under visual flight rules;

(2) The impact on arrival, departure, and en route procedures for aircraft operating under instrument flight rules;

(3) The impact on existing and planned public use airports;

(4) Airport traffic capacity of existing public use airports and public use airport development plans received before the issuance of the final determination;

(5) Minimum obstacle clearance altitudes, minimum instrument flight rules altitudes, approved or planned instrument approach procedures, and departure procedures;

(6) The potential effect on ATC radar, direction finders, ATC tower line-of-sight visibility, and physical or electromagnetic effects on air navigation, communication facilities, and other surveillance systems;

(7) The aeronautical effects resulting from the cumulative impact of a proposed construction or alteration of a structure when combined with the effects of other existing or proposed structures.

(b) If you withdraw the proposed construction or alteration or revise it so that it is no longer identified as an obstruction, or if no further aeronautical study is necessary, the FAA may terminate the study.

§ 77.31 Determinations.

(a) The FAA will issue a determination stating whether the proposed construction or alteration would be a hazard to air navigation, and will advise all known interested persons.

(b) The FAA will make determinations based on the aeronautical study findings and will identify the following:

(1) The effects on VFR/IFR aeronautical departure/arrival operations, air traffic procedures, minimum flight altitudes, and existing, planned, or proposed airports listed in § 77.15(e) of which the FAA has received actual notice prior to issuance of a final determination.

(2) The extent of the physical and/or electromagnetic effect on the operation of existing or proposed air navigation facilities, communication aids, or surveillance systems.

(c) The FAA will issue a Determination of Hazard to Air Navigation when the aeronautical study concludes that the proposed construction or alteration will exceed an obstruction standard and would have a substantial aeronautical impact.

(d) A Determination of No Hazard to Air Navigation will be issued when the aeronautical study concludes that the proposed construction or alteration will exceed an obstruction standard but would not have a substantial aeronautical impact to air navigation. A Determination of No Hazard to Air Navigation may include the following:

(1) Conditional provisions of a determination.

(2) Limitations necessary to minimize potential problems, such as the use of temporary construction equipment.

(3) Supplemental notice requirements, when required.

(4) Marking and lighting recommendations, as appropriate.

(e) The FAA will issue a Determination of No Hazard to Air Navigation when a proposed structure does not exceed any of the obstruction standards and would not be a hazard to air navigation.

§ 77.33 Effective period of determinations.

(a) A determination issued under this subpart is effective 40 days after the date of issuance, unless a petition for discretionary review is received by the FAA within 30 days after issuance. The determination will not become final pending disposition of a petition for discretionary review.

(b) Unless extended, revised, or terminated, each Determination of No Hazard to Air Navigation issued under this subpart expires 18 months after the effective date of the determination, or on the date the proposed construction or alteration is abandoned, whichever is earlier.

(c) A Determination of Hazard to Air Navigation has no expiration date.

§ 77.35 Extensions, terminations, revisions and corrections.

(a) You may petition the FAA official that issued the Determination of No Hazard to Air Navigation to revise or reconsider the determination based on new facts or to extend the effective period of the determination, provided that:

(1) Actual structural work of the proposed construction or alteration, such as the laying of a foundation, but not including excavation, has not been started; and

(2) The petition is submitted at least 15 days before the expiration date of the Determination of No Hazard to Air Navigation.

(b) A Determination of No Hazard to Air Navigation issued for those construction or alteration proposals not requiring an FCC construction permit may be extended by the FAA one time for a period not to exceed 18 months.

(c) A Determination of No Hazard to Air Navigation issued for a proposal requiring an FCC construction permit may be granted extensions for up to 18 months, provided that:

(1) You submit evidence that an application for a construction permit/license was filed with the FCC for the associated site within 6 months of issuance of the determination; and

(2) You submit evidence that additional time is warranted because of FCC requirements; and

(3) Where the FCC issues a construction permit, a final Determination of No Hazard to Air Navigation is effective until the date prescribed by the FCC for completion of the construction. If an extension of the original FCC completion date is needed, an extension of the FAA determination must be requested from the Obstruction Evaluation Service (OES).

(4) If the Commission refuses to issue a construction permit, the final determination expires on the date of its refusal.

Subpart E—Petitions for Discretionary Review

§ 77.37 General.

(a) If you are the sponsor, provided a substantive aeronautical comment on a proposal in an aeronautical study, or have a substantive aeronautical comment on the proposal but were not given an opportunity to state it, you may petition the FAA for a discretionary review of a determination, revision, or extension of a determination issued by the FAA.

(b) You may not file a petition for discretionary review for a Determination of No Hazard that is issued for a temporary structure, marking and lighting recommendation, or when a proposed structure or alteration does not exceed obstruction standards contained in subpart C of this part.

§ 77.39 Contents of a petition.

(a) You must file a petition for discretionary review in writing and it must be received by the FAA within 30 days after the issuance of a determination under § 77.31, or a revision or extension of the determination under § 77.35.

(b) The petition must contain a full statement of the aeronautical basis on

which the petition is made, and must include new information or facts not previously considered or presented during the aeronautical study, including valid aeronautical reasons why the determination, revisions, or extension made by the FAA should be reviewed.

(c) In the event that the last day of the 30-day filing period falls on a weekend or a day the Federal government is closed, the last day of the filing period is the next day that the government is open.

(d) The FAA will inform the petitioner or sponsor (if other than the petitioner) and the FCC (whenever an FCC-related proposal is involved) of the filing of the petition and that the determination is not final pending disposition of the petition.

§ 77.41 Discretionary review results.

(a) If discretionary review is granted, the FAA will inform the petitioner and the sponsor (if other than the petitioner) of the issues to be studied and reviewed. The review may include a request for comments and a review of all records from the initial aeronautical study.

(b) If discretionary review is denied, the FAA will notify the petitioner and the sponsor (if other than the petitioner), and the FCC, whenever a FCC-related proposal is involved, of the basis for the denial along with a statement that the determination is final.

(c) After concluding the discretionary review process, the FAA will revise, affirm, or reverse the determination.

Issued in Washington, DC, on July 13, 2010.

J. Randolph Babbitt,

Administrator.

[FR Doc. 2010–17767 Filed 7–20–10; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 97

[Docket No. 30734; Amdt. No. 3382]

Standard Instrument Approach Procedures, and Takeoff Minimums and Obstacle Departure Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs) and associated Takeoff Minimums and Obstacle Departure Procedures for operations at certain airports. These regulatory actions are needed because of the adoption of new or revised criteria, or because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, adding new obstacles, or changing air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: This rule is effective July 21, 2010. The compliance date for each SIAP, associated Takeoff Minimums, and ODP is specified in the amendatory provisions.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of July 21, 2010.

ADDRESSES: Availability of matters incorporated by reference in the amendment is as follows:

For Examination—

1. FAA Rules Docket, FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591;

2. The FAA Regional Office of the region in which the affected airport is located;

3. The National Flight Procedures Office, 6500 South MacArthur Blvd., Oklahoma City, OK 73169; or

4. The National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

Availability—All SIAPs and Takeoff Minimums and ODPs are available online free of charge. Visit *http://www.nfdc.faa.gov* to register. Additionally, individual SIAP and Takeoff Minimums and ODP copies may be obtained from:

1. FAA Public Inquiry Center (APA–200), FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591; or

2. The FAA Regional Office of the region in which the affected airport is located.

FOR FURTHER INFORMATION CONTACT: Harry J. Hodges, Flight Procedure Standards Branch (AFS–420), Flight Technologies and Programs Divisions, Flight Standards Service, Federal Aviation Administration, Mike Monroney Aeronautical Center, 6500 South MacArthur Blvd., Oklahoma City, OK 73169 (Mail Address: P.O. Box 25082, Oklahoma City, OK 73125) Telephone: (405) 954–4164.

SUPPLEMENTARY INFORMATION: This rule amends Title 14 of the Code of Federal Regulations, Part 97 (14 CFR part 97), by establishing, amending, suspending, or revoking SIAPS, Takeoff Minimums and/or ODPS. The complete regulators description of each SIAP and its associated Takeoff Minimums or ODP for an identified airport is listed on FAA form documents which are incorporated by reference in this amendment under 5 U.S.C. 552(a), 1 CFR part 51, and 14 CFR part 97.20. The applicable FAA Forms are FAA Forms 8260–3, 8260–4, 8260–5, 8260–15A, and 8260–15B when required by an entry on 8260–15A.

The large number of SIAPs, Takeoff Minimums and ODPs, in addition to their complex nature and the need for a special format make publication in the **Federal Register** expensive and impractical. Furthermore, airmen do not use the regulatory text of the SIAPs, Takeoff Minimums or ODPs, but instead refer to their depiction on charts printed by publishers of aeronautical materials. The advantages of incorporation by reference are realized and publication of the complete description of each SIAP, Takeoff Minimums and ODP listed on FAA forms is unnecessary. This amendment provides the affected CFR sections and specifies the types of SIAPs and the effective dates of the associated Takeoff Minimums and ODPs. This amendment also identifies the airport and its location, the procedure, and the amendment number.

The Rule

This amendment to 14 CFR part 97 is effective upon publication of each separate SIAP, Takeoff Minimums and ODP as contained in the transmittal. Some SIAP and Takeoff Minimums and textual ODP amendments may have been issued previously by the FAA in a Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts. The circumstances which created the need for some SIAP and Takeoff Minimums and ODP amendments may require making them effective in less than 30 days. For the remaining SIAPS and Takeoff Minimums and ODPS, an effective date at least 30 days after publication is provided.

Further, the SIAPs and Takeoff Minimums and ODPS contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Procedures

DOMINION VIRGINIA POWER

Surry-Skiffes Creek 500 kV Transmission Project, Skiffes Creek-Whealton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station

Chickahominy-Lightfoot Junction 500 kV Transmission Line North and South Alternatives

APPENDIX H-3

Original Zoning Categories, Descriptions, and Standardized Zoning Categories

Appendix G-3
Chickahominy-Lightfoot Junction 500kV Transmission Line
North and South Alternatives

Original Zoning Categories, Descriptions, and Merged Zoning Categories

Original Zoning Code	Zone Description [a]	Merged Zoning Category
Charles City County [a]		
Agriculture	District offers opportunities for a combination of land uses that are considered necessary and beneficial to the County. Uses include; agricultural, forestal, limited residential, and applicable commercial.	Agricultural
Residential	District offers opportunities for denser areas of suburban residential development.	Single-Family Residential
Multi-Family Residential	District offers higher density areas of residential development including; apartments, townhouses, and other multi-family homes.	Multi-Family Residential
General Business	Designated areas in appropriate locations for service, retail, and public activities that serve large portions of the County. The County supports clustering of commercial development in these areas.	Commercial
Neighborhood Business	Designated areas for retail and personal service uses that serve the daily needs of smaller neighborhoods and populations.	Commercial
Tourist Business	Areas that are not appropriate for general business use including; hotels, recreational facilities, and restaurants. Areas may be associated with a historical site or special interest area.	Commercial
Light Industrial	Areas on or near major roads or railroads in Development Center that provide space for light manufacturing, fabricating, wholesale distribution, processing, and warehouse use.	Industrial
Heavy Industrial	Areas located away from residential development that provide space for heavy industrial uses with potential nuisance factors including; dust, smoke, vibration, odor, noise, and increased traffic.	Industrial
Planned Development-Industrial Park	District provides opportunities for warehousing, distribution centers, office and research, and light/medium intensity industrial uses in a well-designed and managed setting.	Planned Development
New Kent County [b]		
Agricultural	District designated for agricultural and forestal uses. Some residential and commercial uses are also permitted.	Agricultural
Business	Areas located along major roads that provide opportunities for large-scale retail, office, and service uses.	Commercial
Conservation	District designated for the conservation of a natural habitat. Approved uses include; agriculture, forestry, game preserves, conservation areas, orchards and vineyards, wildlife preserves, and boat ramps.	Recreational Areas
Courthouse Development District	Areas within the New Kent Courthouse Village. Portions have been re-zoned as business.	Planned Development
Economic Opportunity	District that provides opportunities for mixed-use commercial and employment centers that will provide job opportunities for County residents and have a positive impact on the local economy.	Commercial
General Residential	District provides opportunities for lower density residence uses. Approved uses include; group care facilities, single-family dwellings, nursing homes, places of worship, schools, public buildings, and parks.	Single-Family Residential
Industrial	District provides opportunities for limited industrial uses that maintain an aesthetic appeal and protect the environment.	Industrial
Multi-Family Residential	District provides opportunities for multi-family dwellings such as apartments,	Multi-Family Residential

	condos, group care facilities and senior housing. Additional approved uses include single-family attached homes, places of worship, schools, libraries, and parks.	
Planned Unit Development	District provides opportunities for development areas with single-family residence, multi-family residence, commercial, and light industrial uses.	Planned Development
Single Family Residential	District provides opportunities for areas consisting of single-family dwellings. Additional approved uses include; group care facilities, transitional homes, places of worship, schools, and parks.	Single-Family Residential
James City County [c]		
General Agricultural	District includes areas typically outside primary service area and without utilities or urban services. The district maintains rural areas with uses for farming, forestry, low-density rural residential, and approved recreational and public activities.	Agricultural
General Business	District includes areas used to conduct general business activities required by the community on a frequent basis. These areas do not have heavy truck traffic or high levels of noise or light pollution.	Commercial
General Business Airport Approach	District has same regulations as general business district but is located in designated airport approach area.	Commercial
General Industrial	District includes areas where the primary use of the land is for industrial activities which are not compatible with residential or commercial districts.	Industrial
General Residential	District includes quiet areas designated for low-density residences and open spaces where low density development may occur in the future.	Single-Family Residential
General Residential Airport Approach	District has same regulations as general residential district but is located in the designated airport approach area.	Single-Family Residential
Limited Business	District provides areas of small to medium sized office, retail and service businesses with well-landscaped parking lots. These areas are away from heavy traffic, noise, dust, and light pollution and may be located closer to residential areas.	Commercial
Limited Business/Industrial	District includes areas where the primary use of the land is for limited business and industrial activities which are not typically compatible with residential or commercial districts.	Industrial
Limited Residential	District includes quiet areas designated for low-density residences and open spaces where low density development may occur in the future. Commercial activities are prohibited from this district.	Single-Family Residential
Limited Residential Airport Approach	District has same regulations as limited residential district but is located in the designated airport approach area.	Single-Family Residential
Low-Density Residential	District includes areas where a quiet low-density housing quality has been established and where limited agricultural activities occur side-by-side with the residential land uses.	Single-Family Residential
Mixed Use	District includes areas that promote a wide variety of land uses occurring concurrently while; providing multi-use planned communities, promoting flexible and diversified land planning, reduces commuting by localizing community needs, and allowing denser development than normally permitted.	Mixed Use
Multi-Family Residential	District includes areas of moderate to high-density residences and areas where these developments are likely to occur in the future.	Multi-Family Residential
Multi-Family Residential Airport Approach	District has same regulations as multi-family residential district but is located in the designated airport approach area.	Multi-Family Residential
Planned Unit Development Commercial	District provides opportunities for commercial areas that promote efficient land use, promote flexible land development, allow a variety of land uses, and are protected by natural features and scenic beauty.	Planned Development
Planned Unit Development Residential	District provides opportunities for residential areas that promote efficient land use,	Single-Family Residential

	promote flexible land development, allow a variety of land uses, and are protected by natural features and scenic beauty.	
Public Lands	District includes areas that are both publically owned and used for a public purpose.	Special Public Interest Areas
Public Lands Airport Approach	District has same regulations as public lands district but is located in the designated airport approach area.	Special Public Interest Areas
Residential Planned Community	District provides opportunities for residential areas that promote efficient land use, promote flexible land development, allow a variety of land uses, and are protected by natural features and scenic beauty.	Single-Family Residential
Residential Planned Community Airport Approach	District has same regulations as residential planned community but is located in the designated airport approach area.	Single-Family Residential
Rural Residential	District provides opportunities for residential areas which are within the primary service area and where utilities and urban services are planned but not fully in place. Areas that are suitable for farming, forestry, low-density residences, and approved recreational and public activities.	Rural Residential
Rural Residential Airport Approach	District has same regulations as rural residential but is located in the designated airport approach area.	Rural Residential

[a] Charles City County 2006
[b] New Kent County 2009. While New Kent County is not part of the routes described in the routing report, it is part of the North and South Alternatives discussed in Appendix G.
[c] James City County No Date

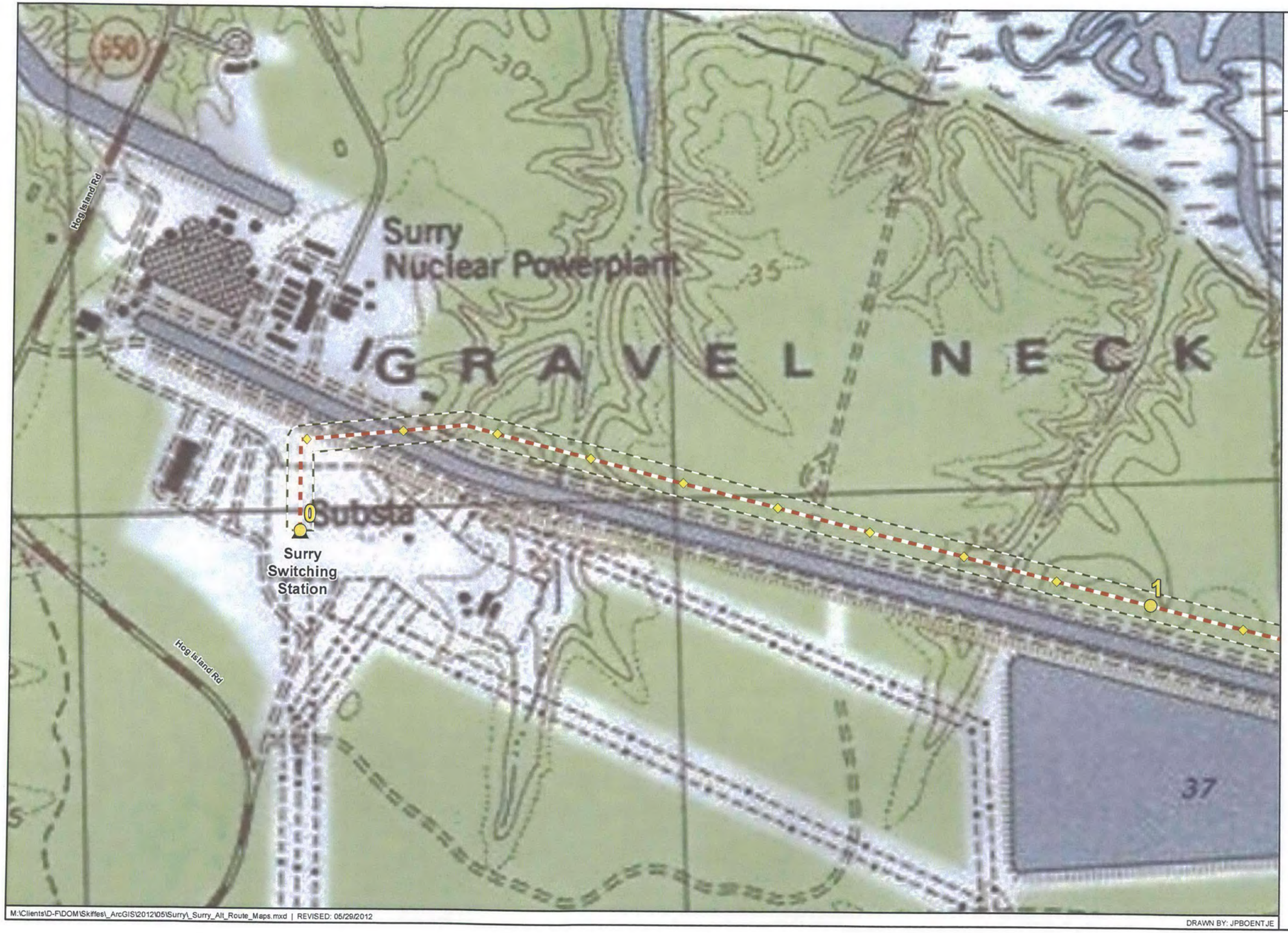
DOMINION VIRGINIA POWER

Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek-Whealton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station

APPENDIX I

USGS Topographical Route Maps 500 kV and 230 kV Routes

- Surry – Skiffes Creek 500 kV Transmission Line
  - James River Crossing Variation 1
  - James River Crossing Variation 2
  - James River Crossing Variation 3
- Chickahominy – Skiffes Creek 500 kV Transmission Line
- Skiffes Creek – Whealton 230 kV Transmission Line



Dominion

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Topographic Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 1 of 7

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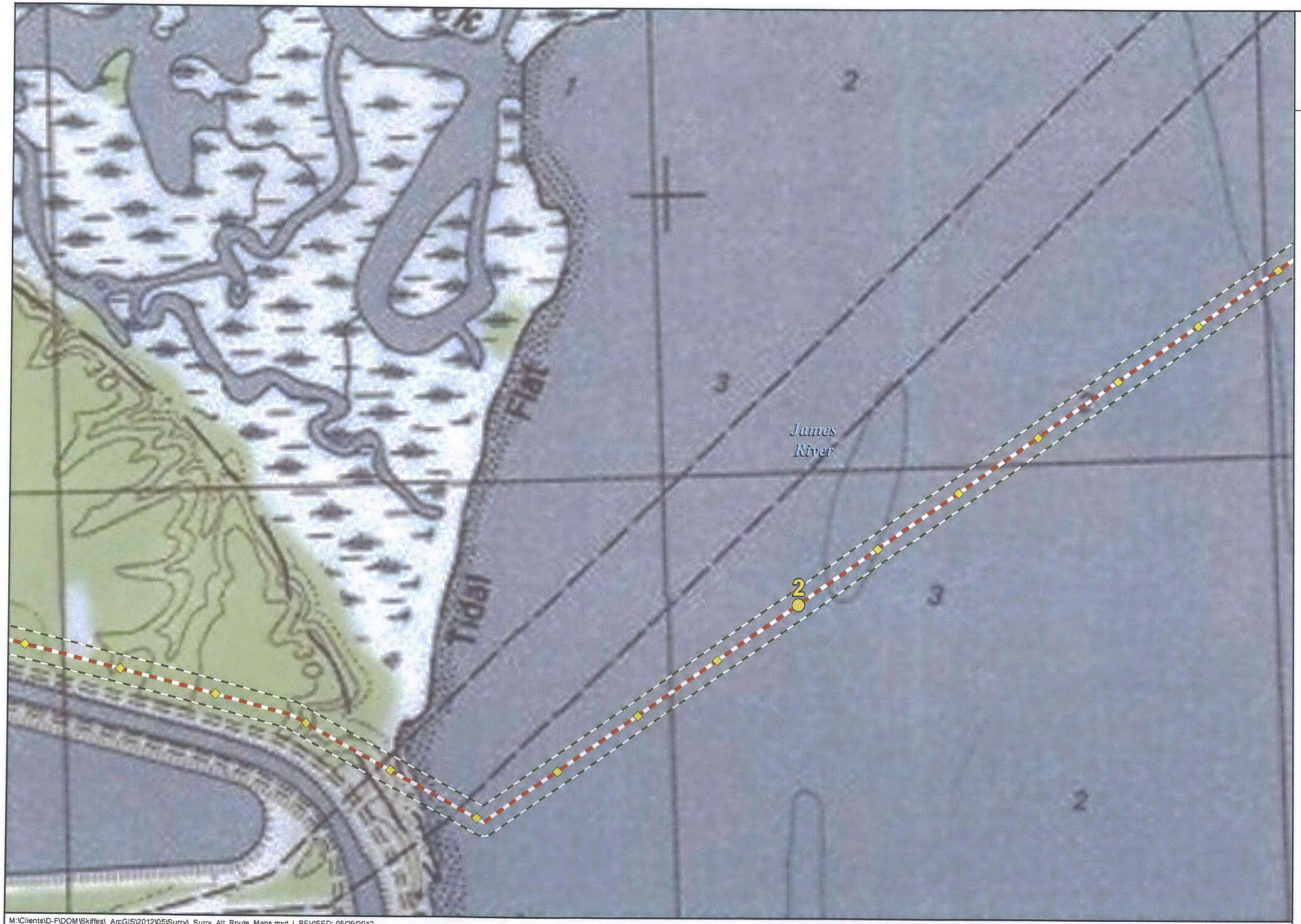

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Topographic Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 2 of 7

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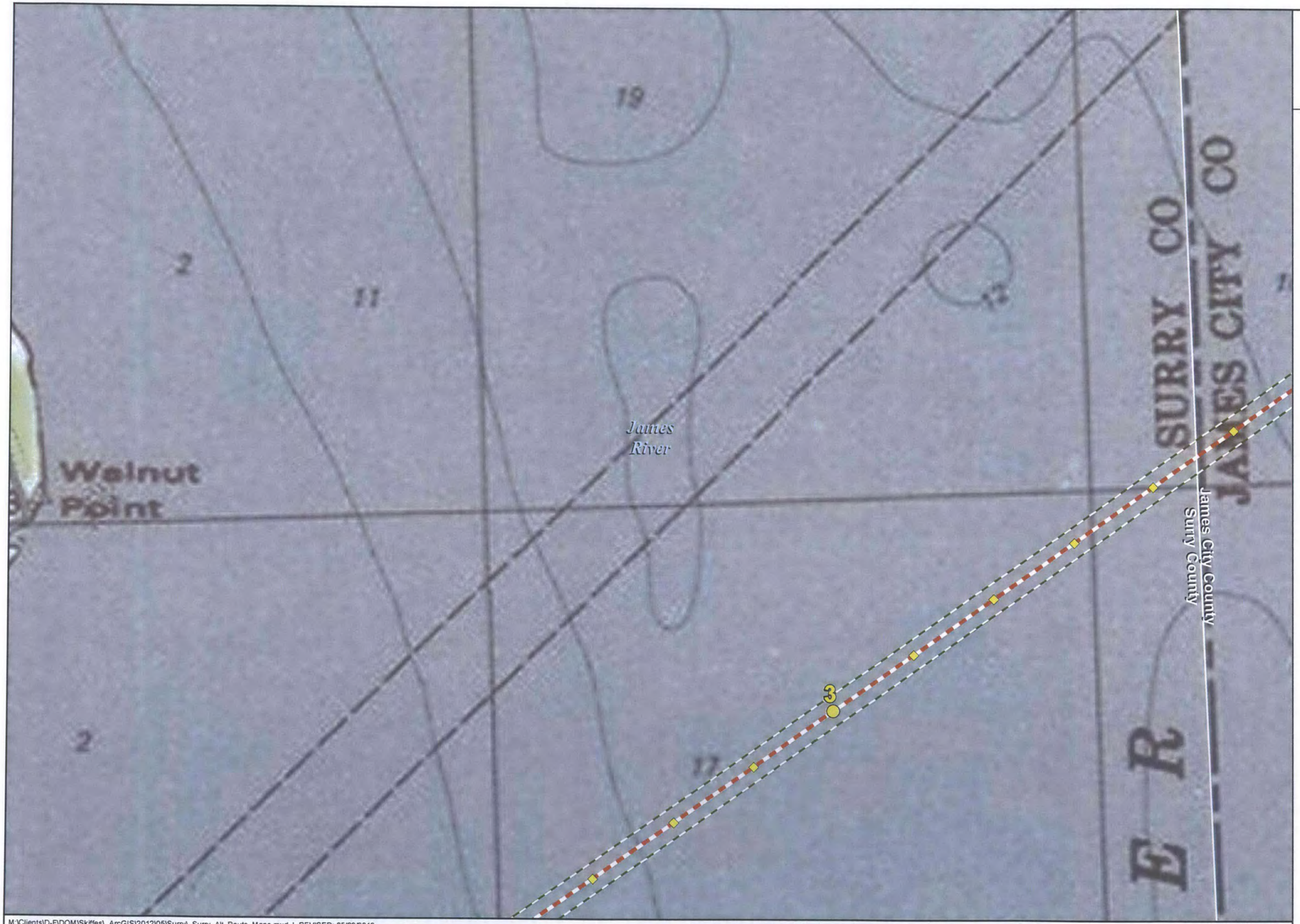

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Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Topographic Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 3 of 7

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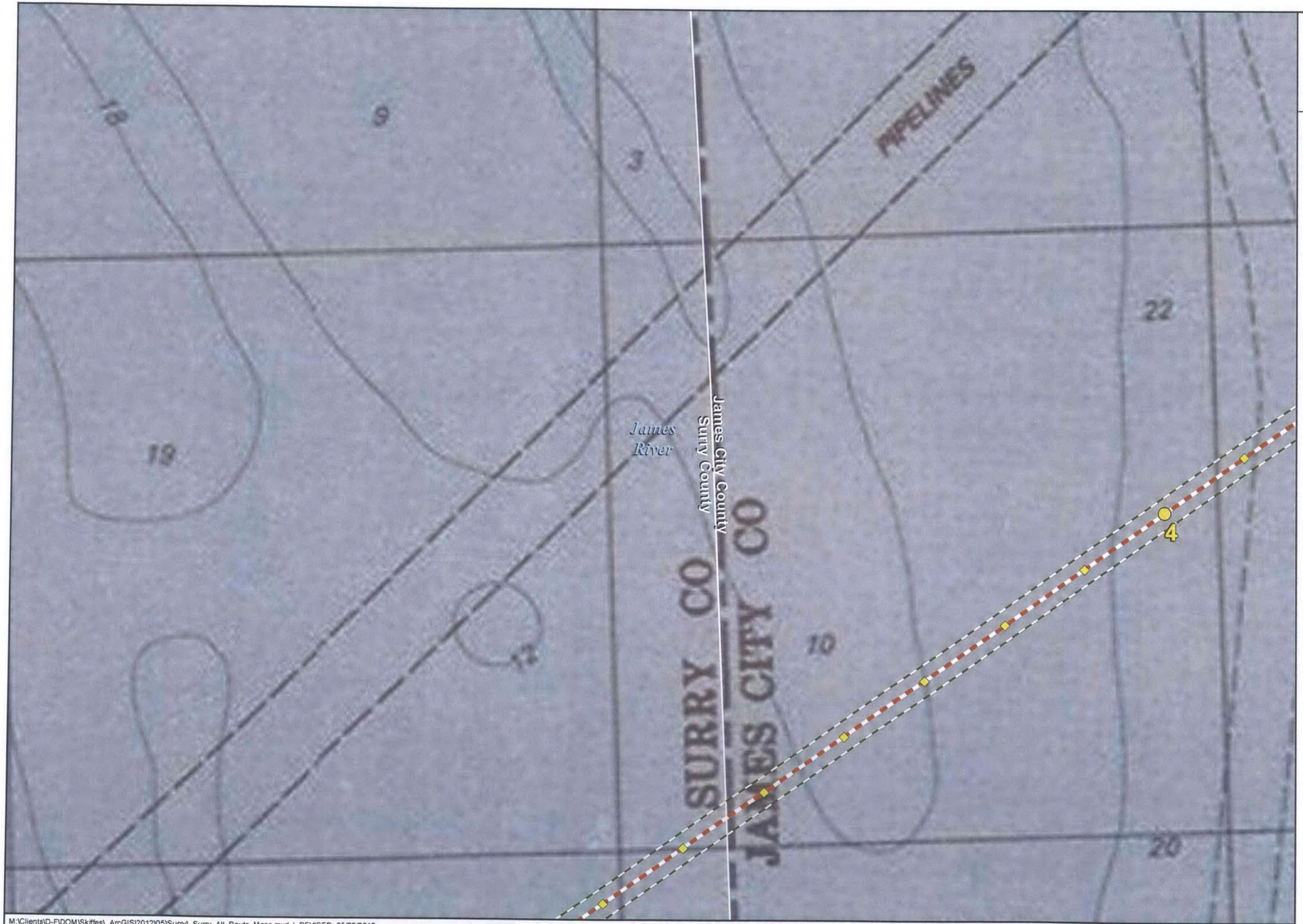

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Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Topographic Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 4 of 7

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Topographic Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 5 of 7

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Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Topographic Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 6 of 7

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Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Topographic Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 7 of 7

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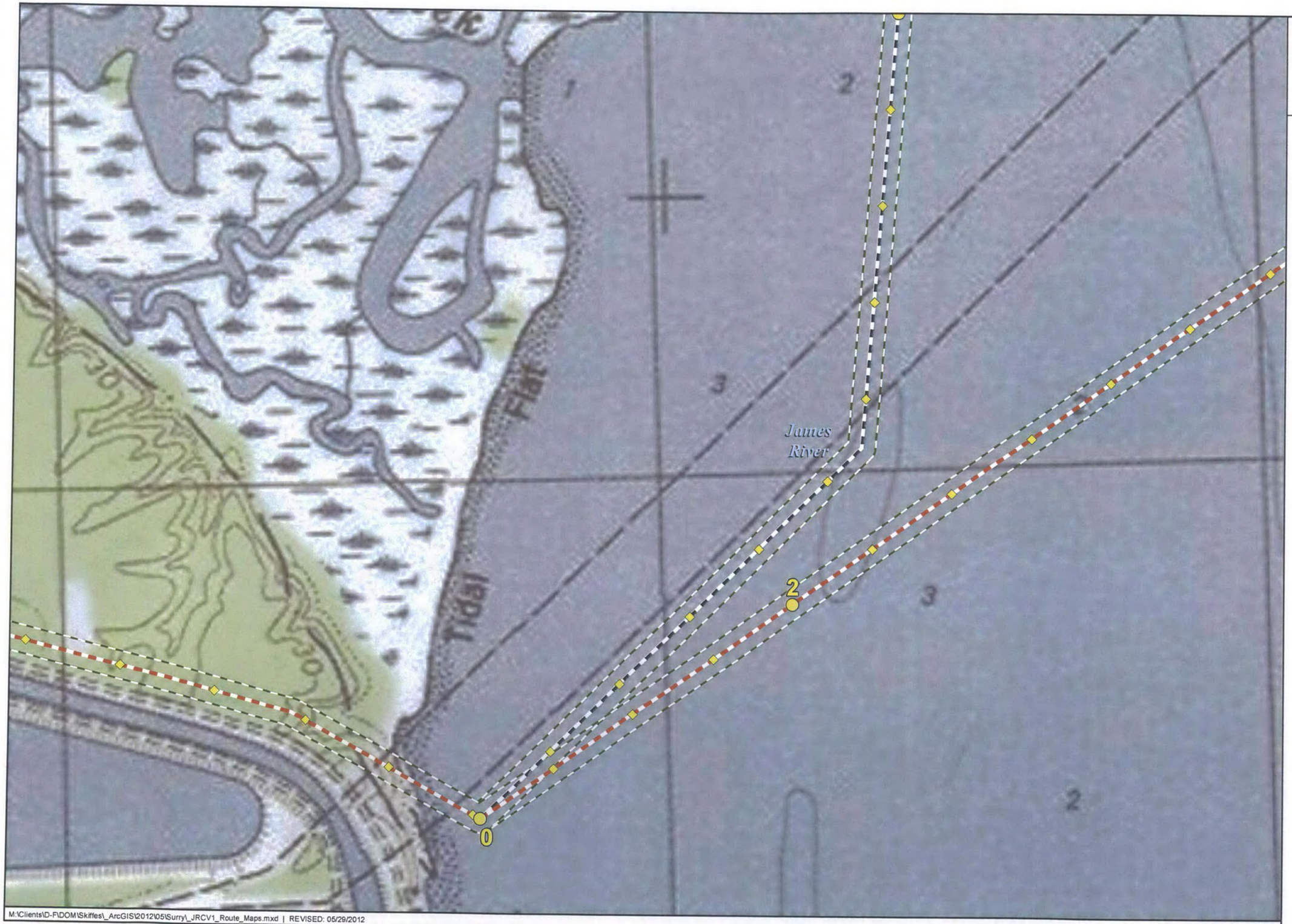

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 1

Topographic Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 1 of 4

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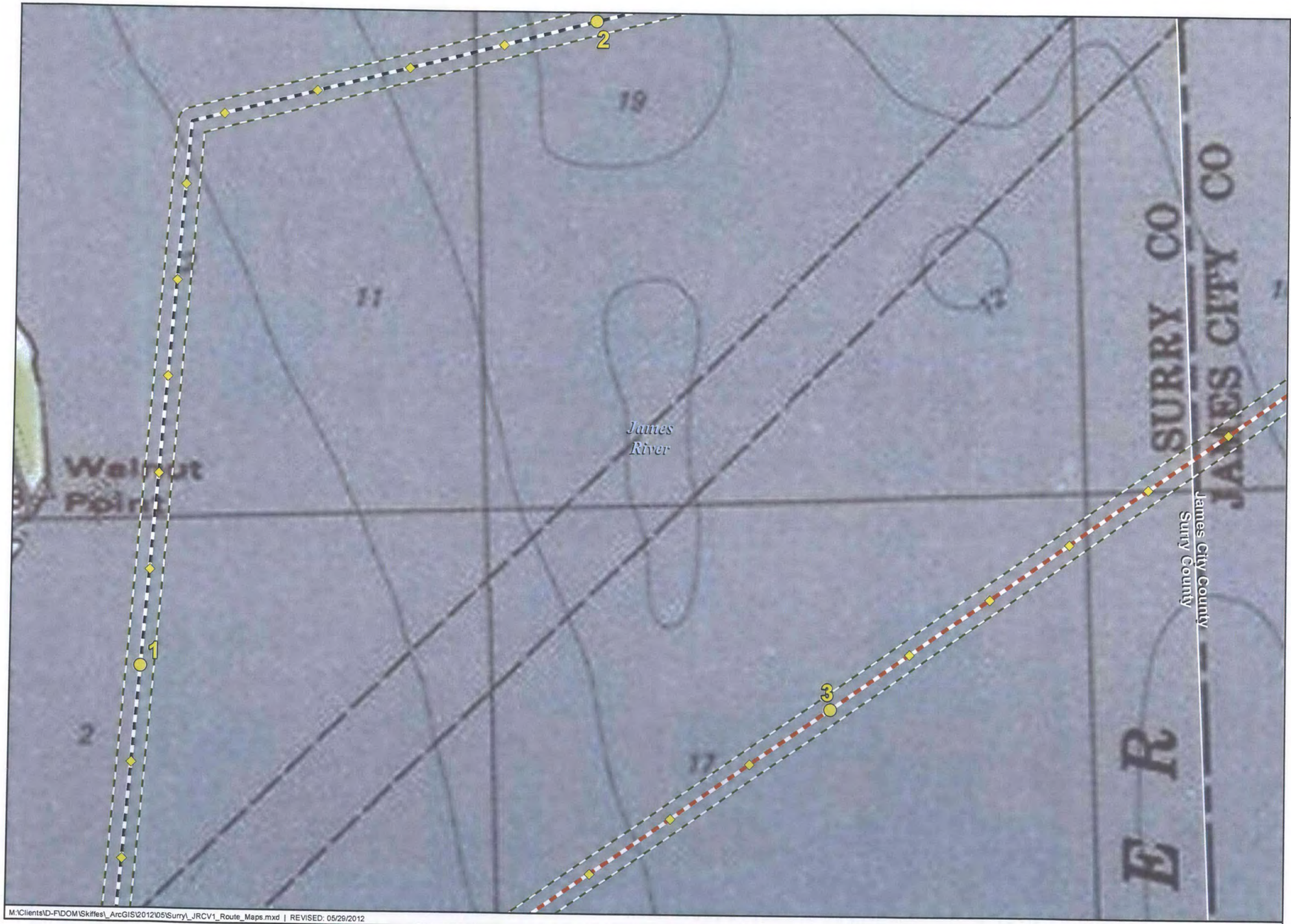

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 1

Topographic Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 2 of 4

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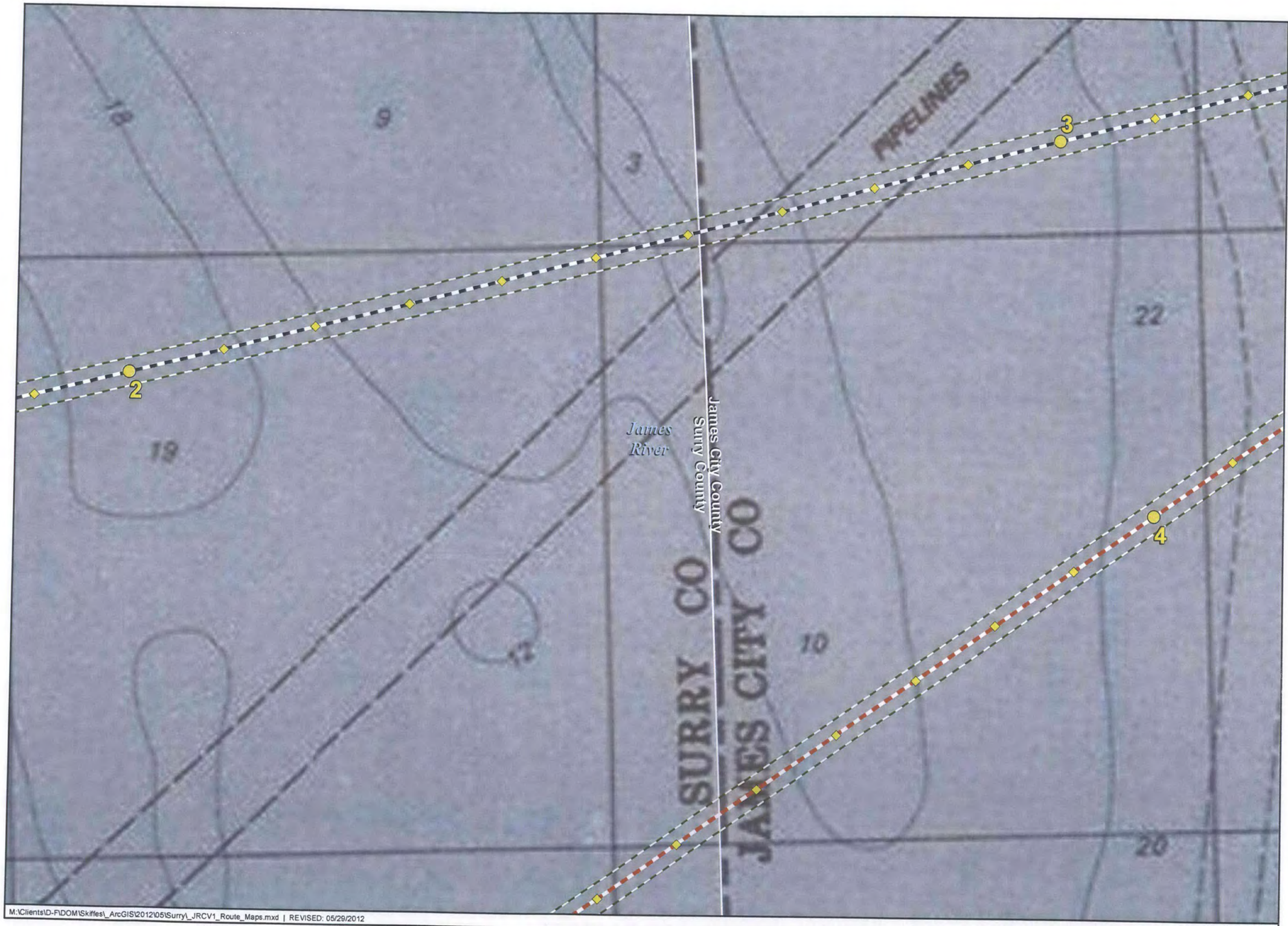

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 1

Topographic Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 3 of 4

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Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 1

Topographic Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 4 of 4

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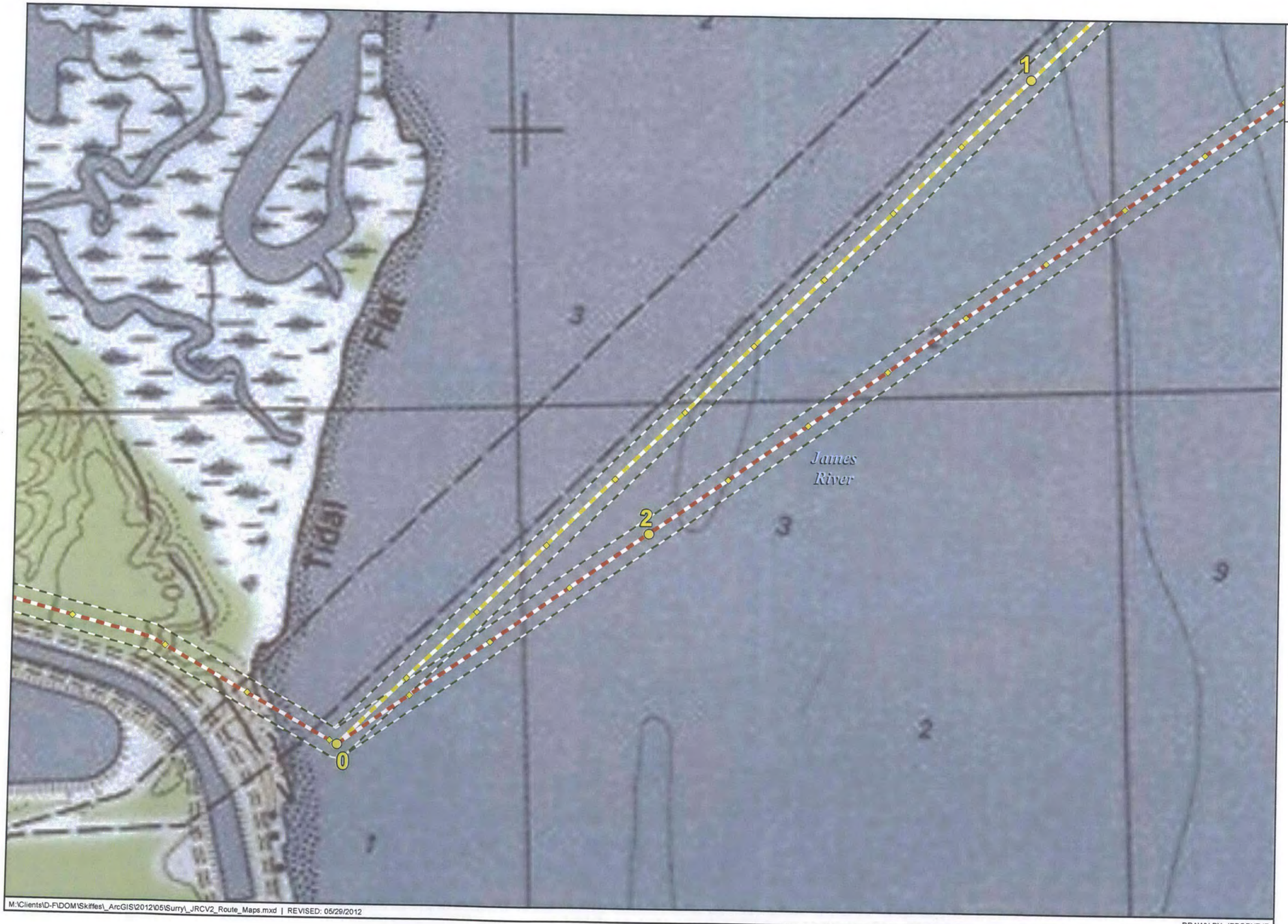

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 1 of 5

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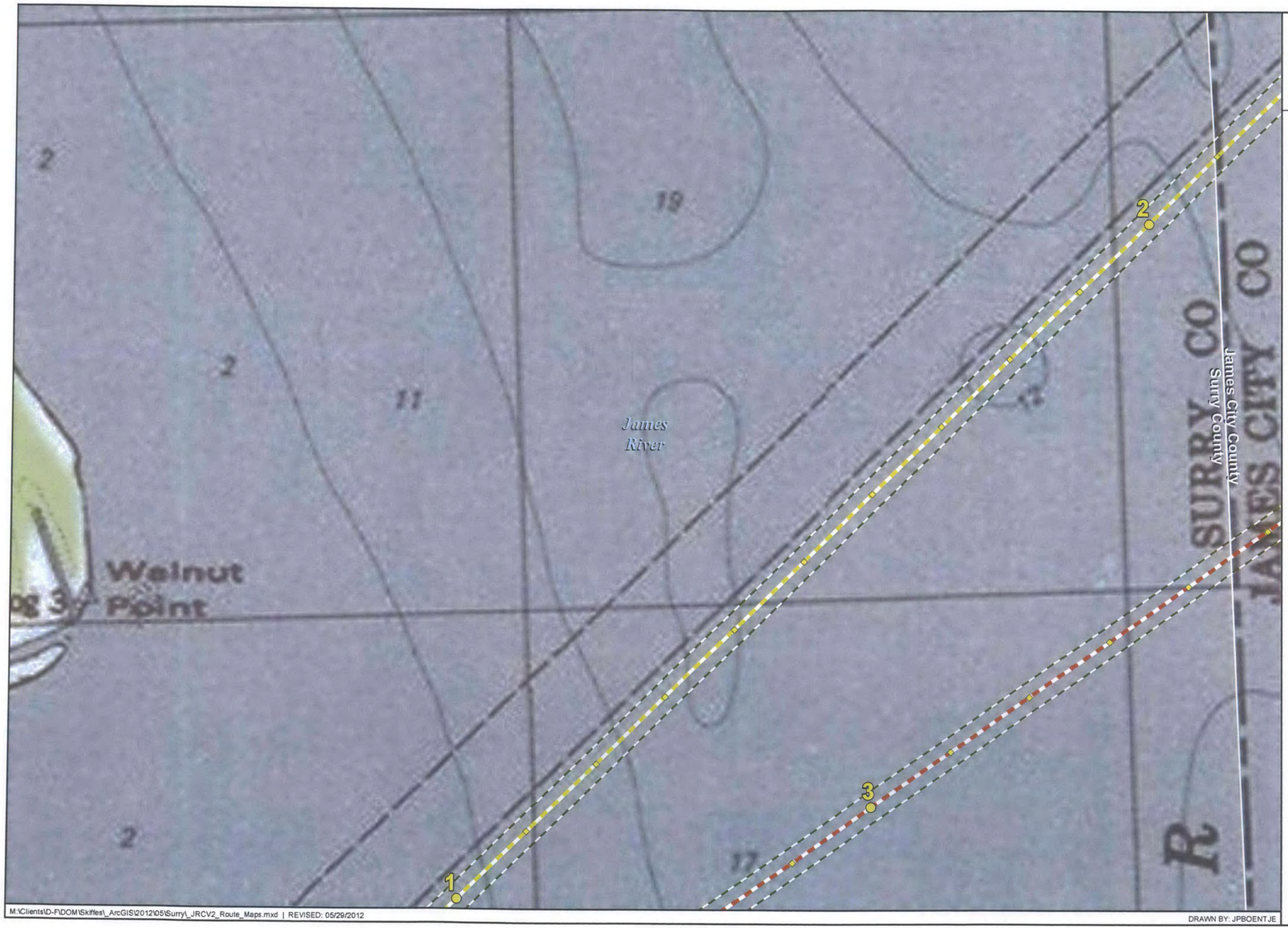

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 2 of 5

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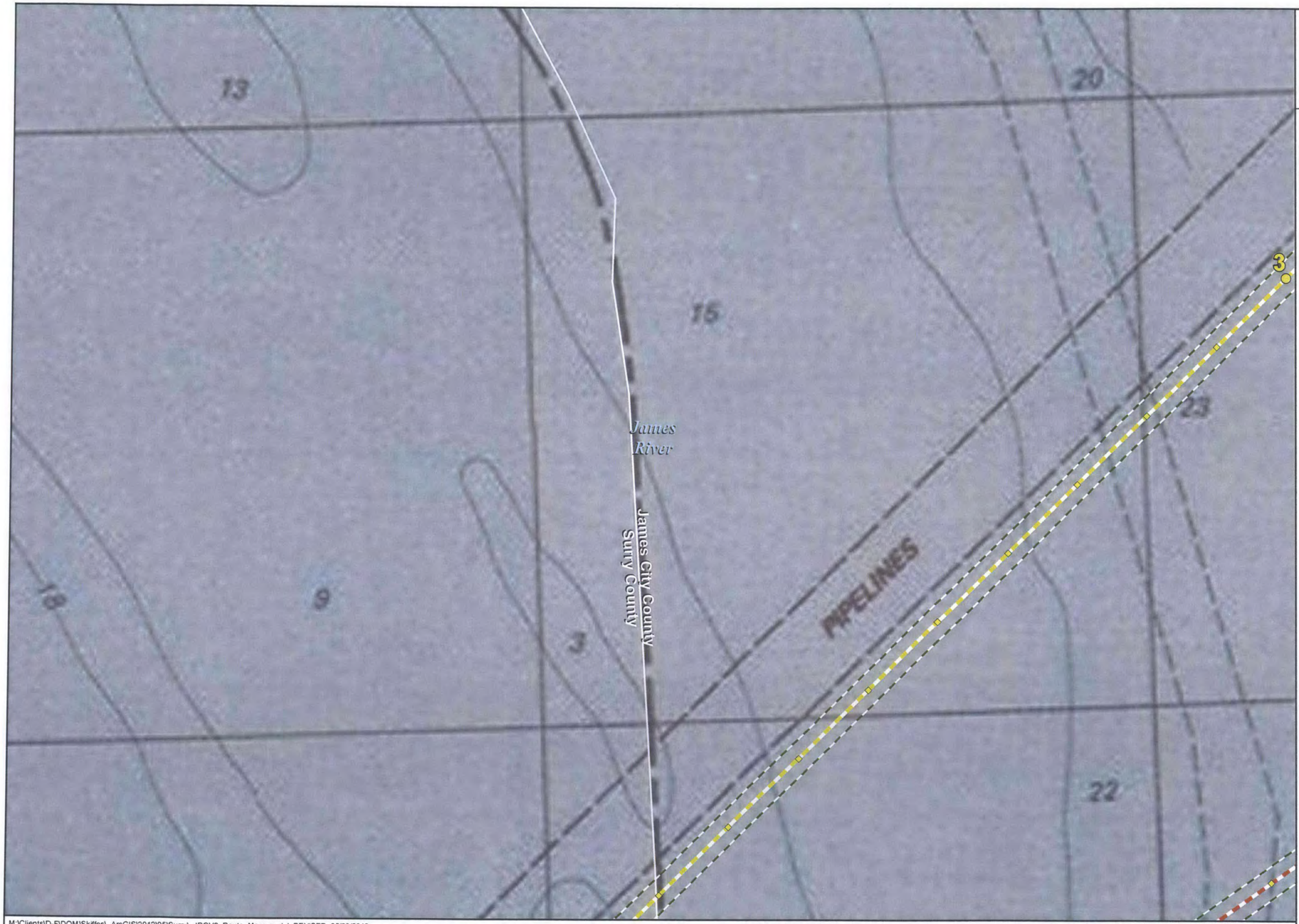

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 3 of 5

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 4 of 5

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

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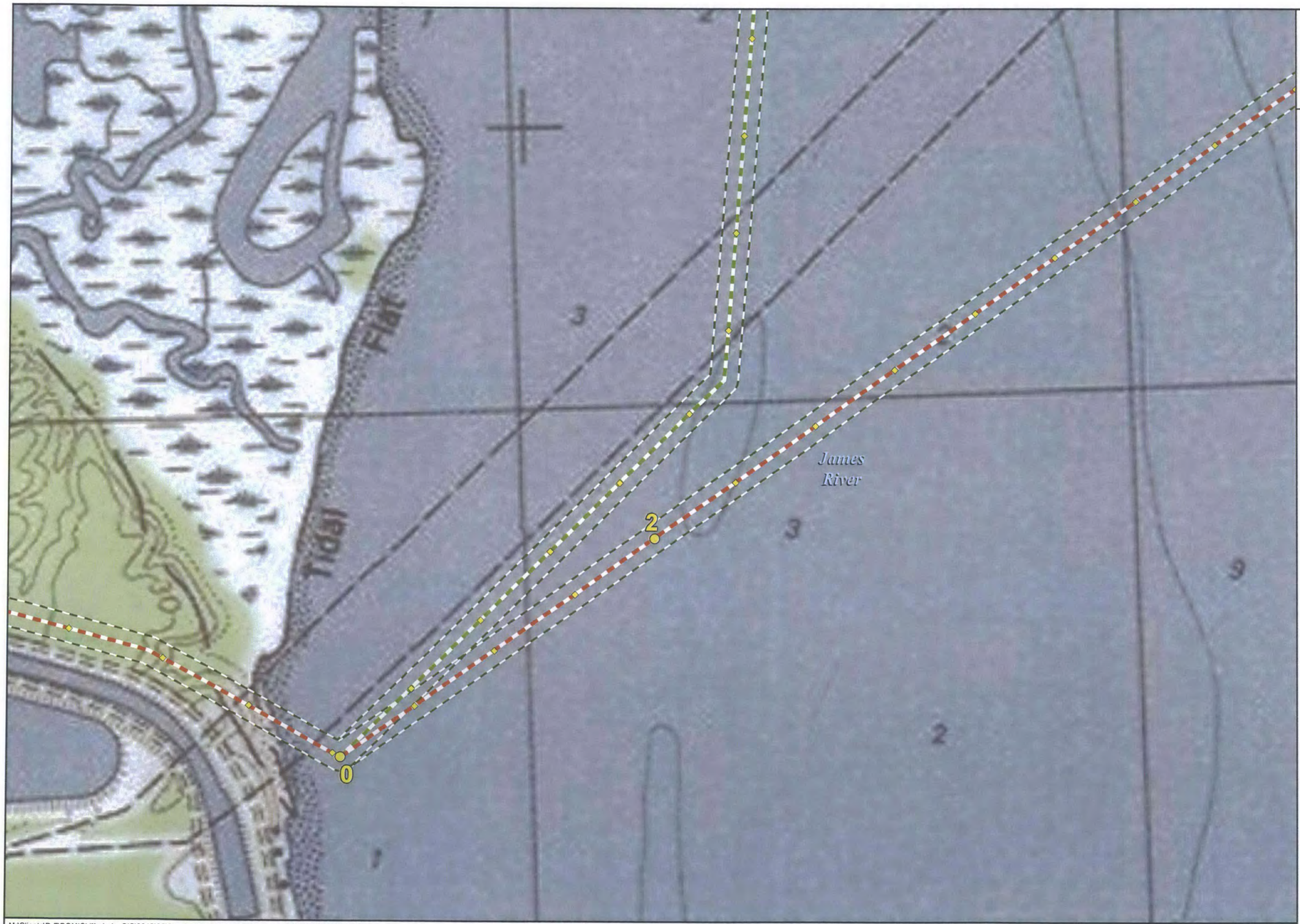

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River
Crossing Variation 3

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

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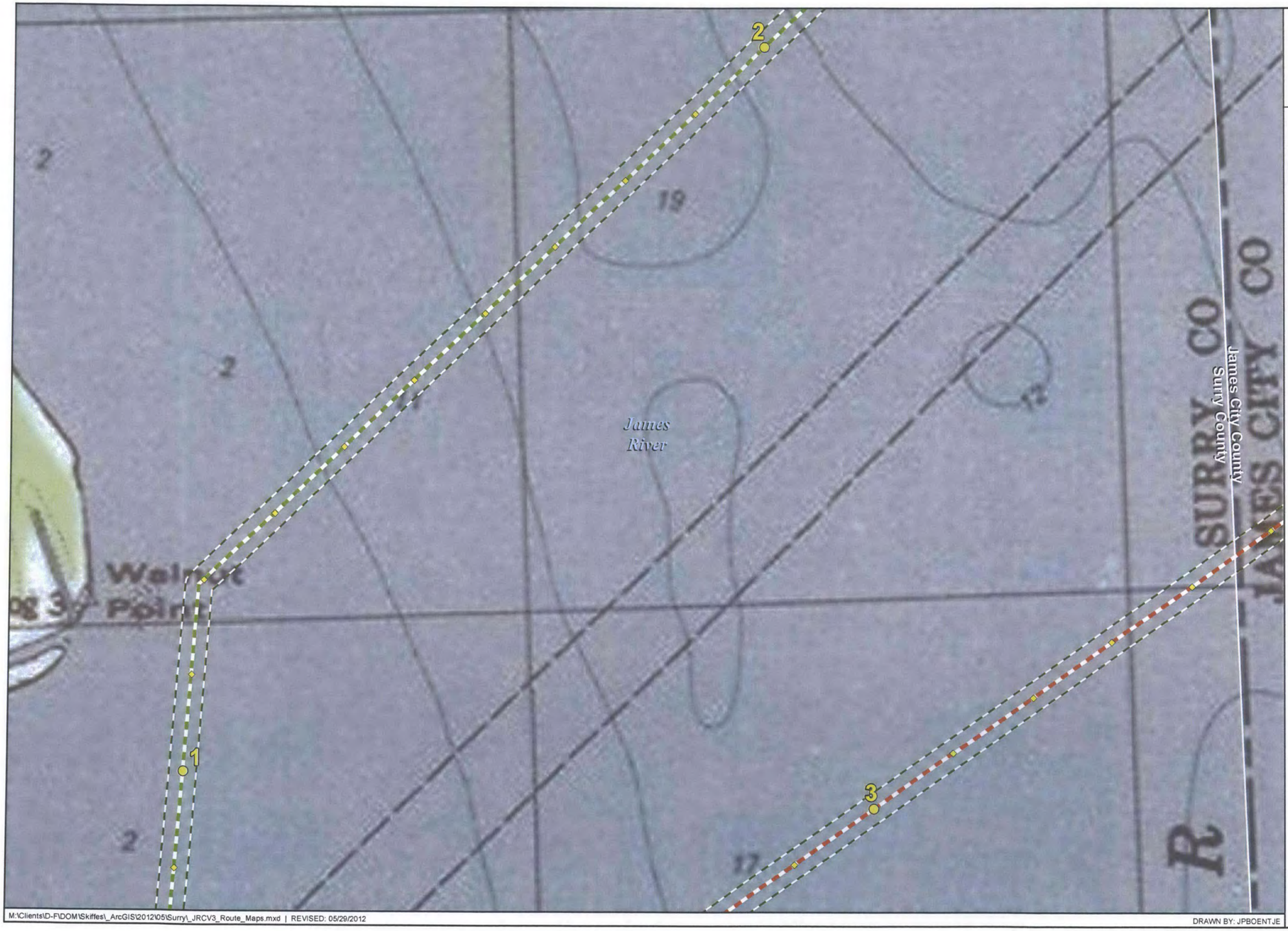

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 2 of 5

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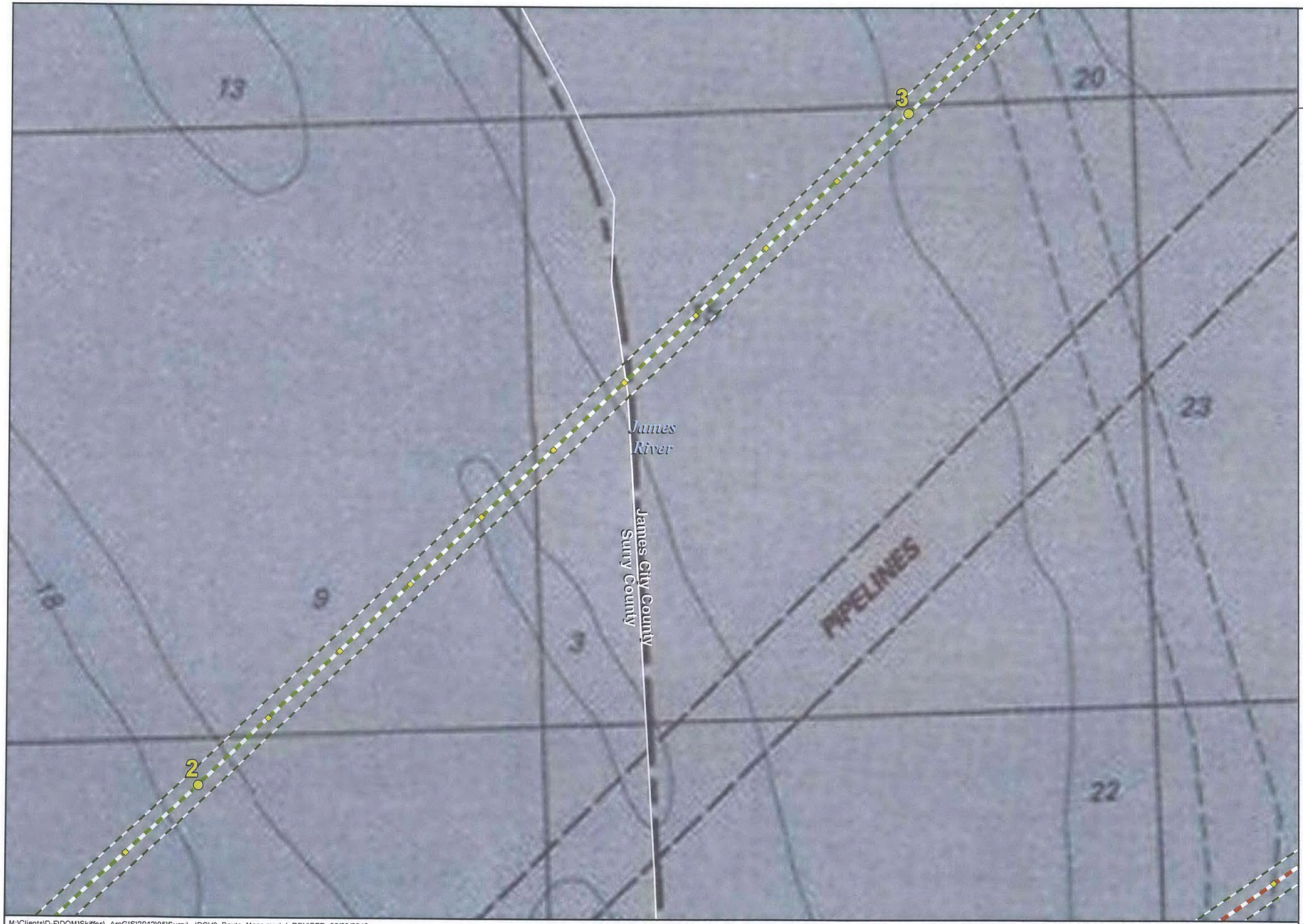

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 3 of 5

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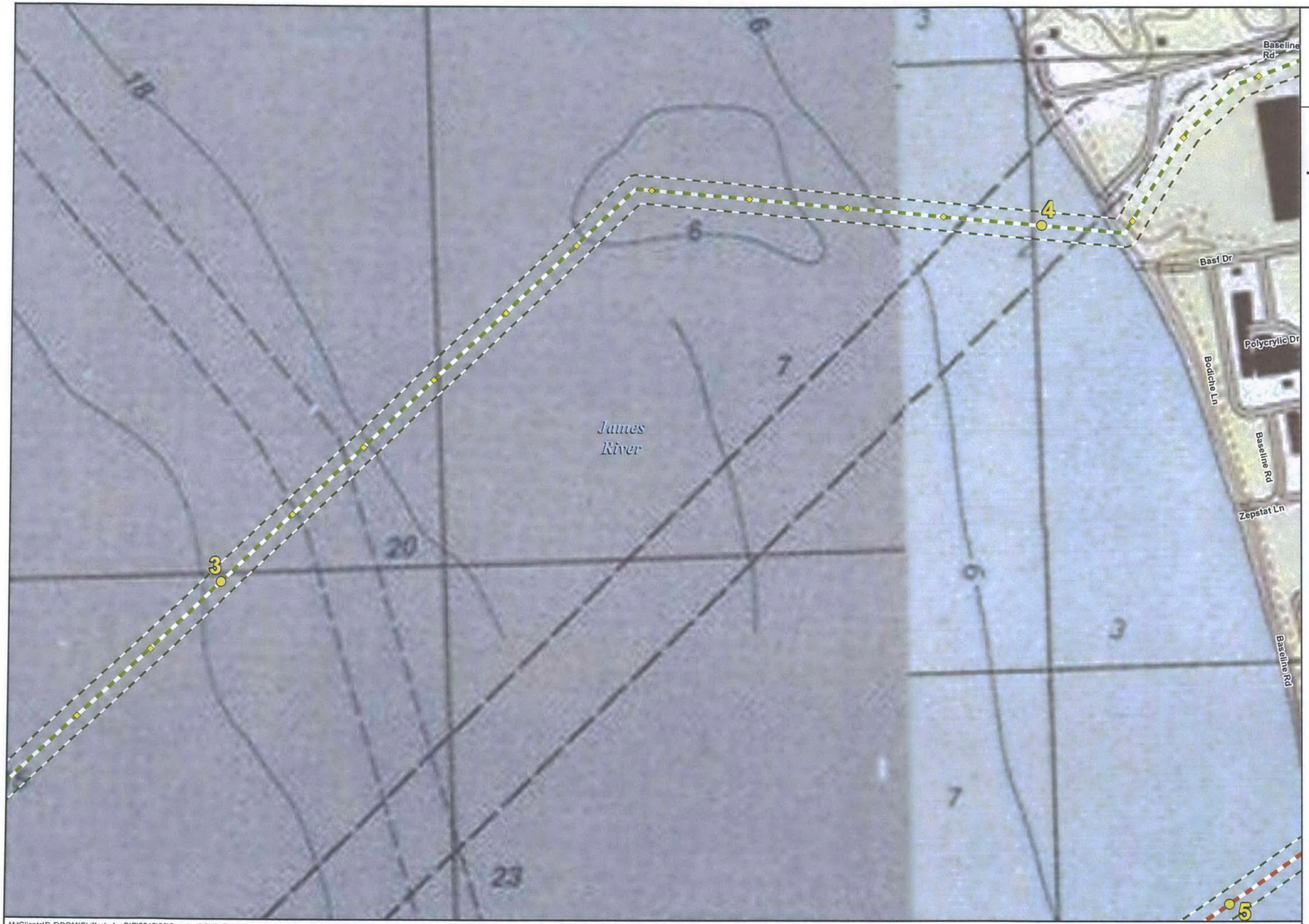

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 4 of 5

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Topographic Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 5 of 5

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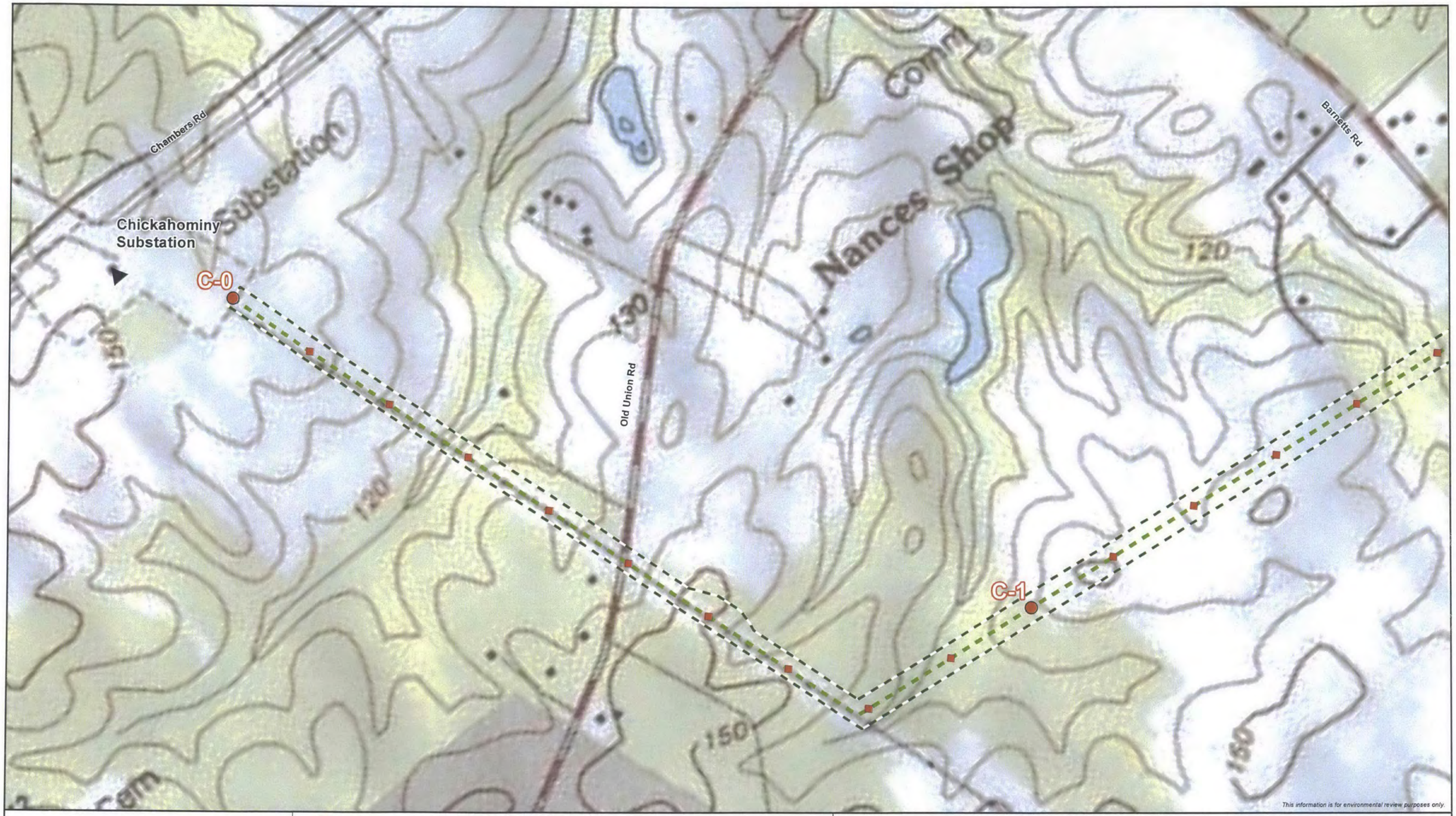

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Milepost
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Existing Substation
Proposed Switching Station
Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C1 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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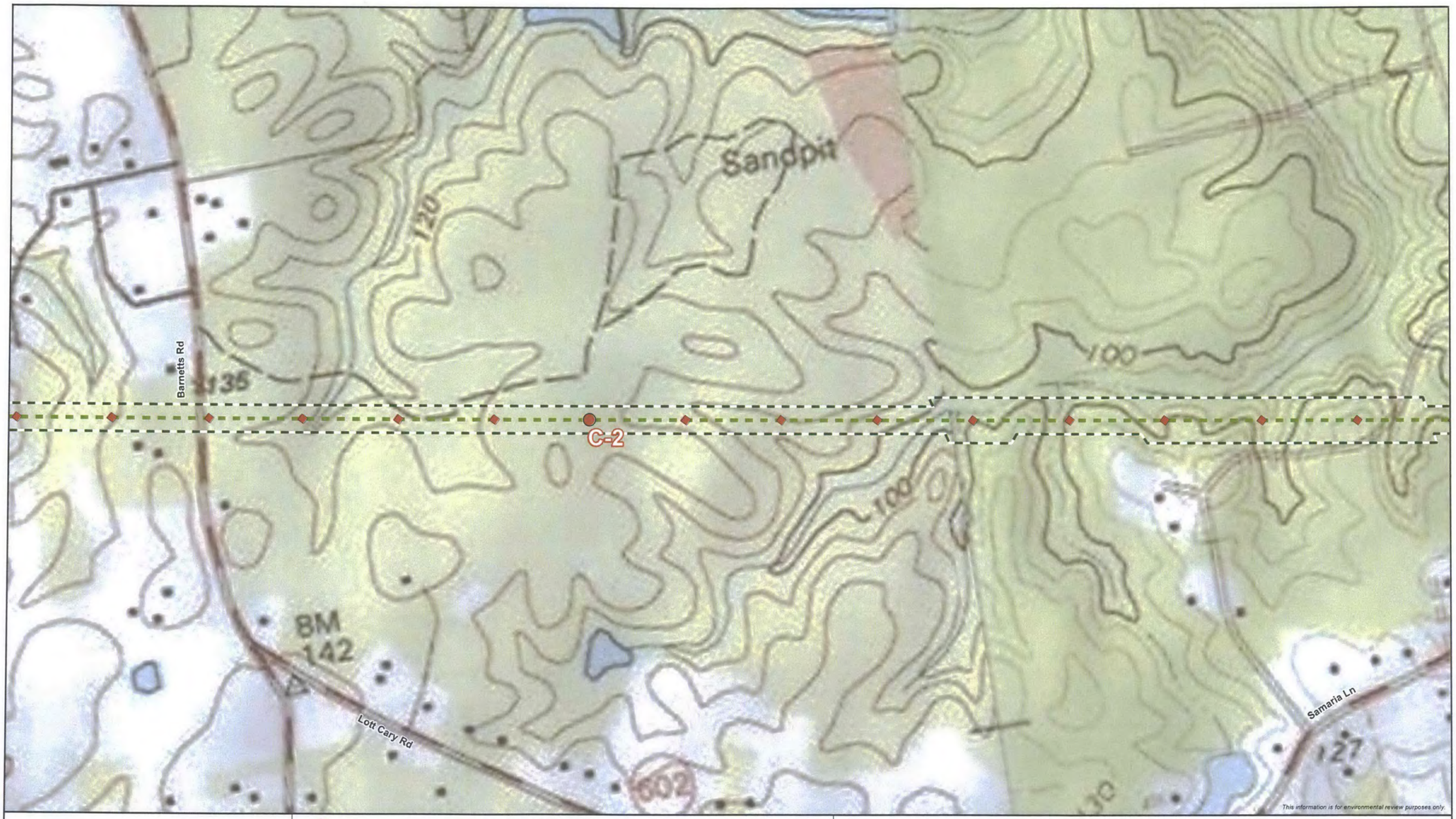

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C2 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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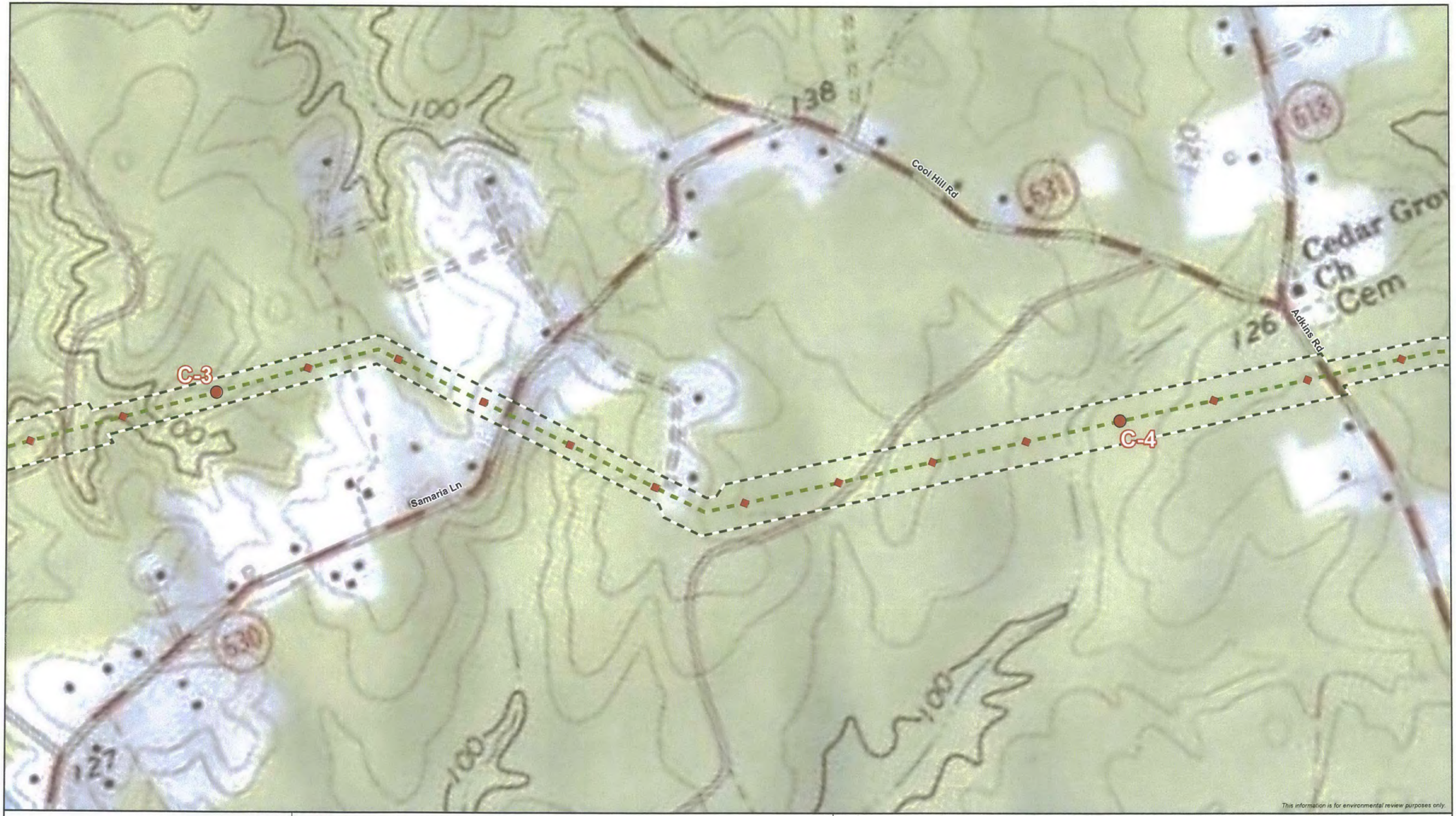

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C3 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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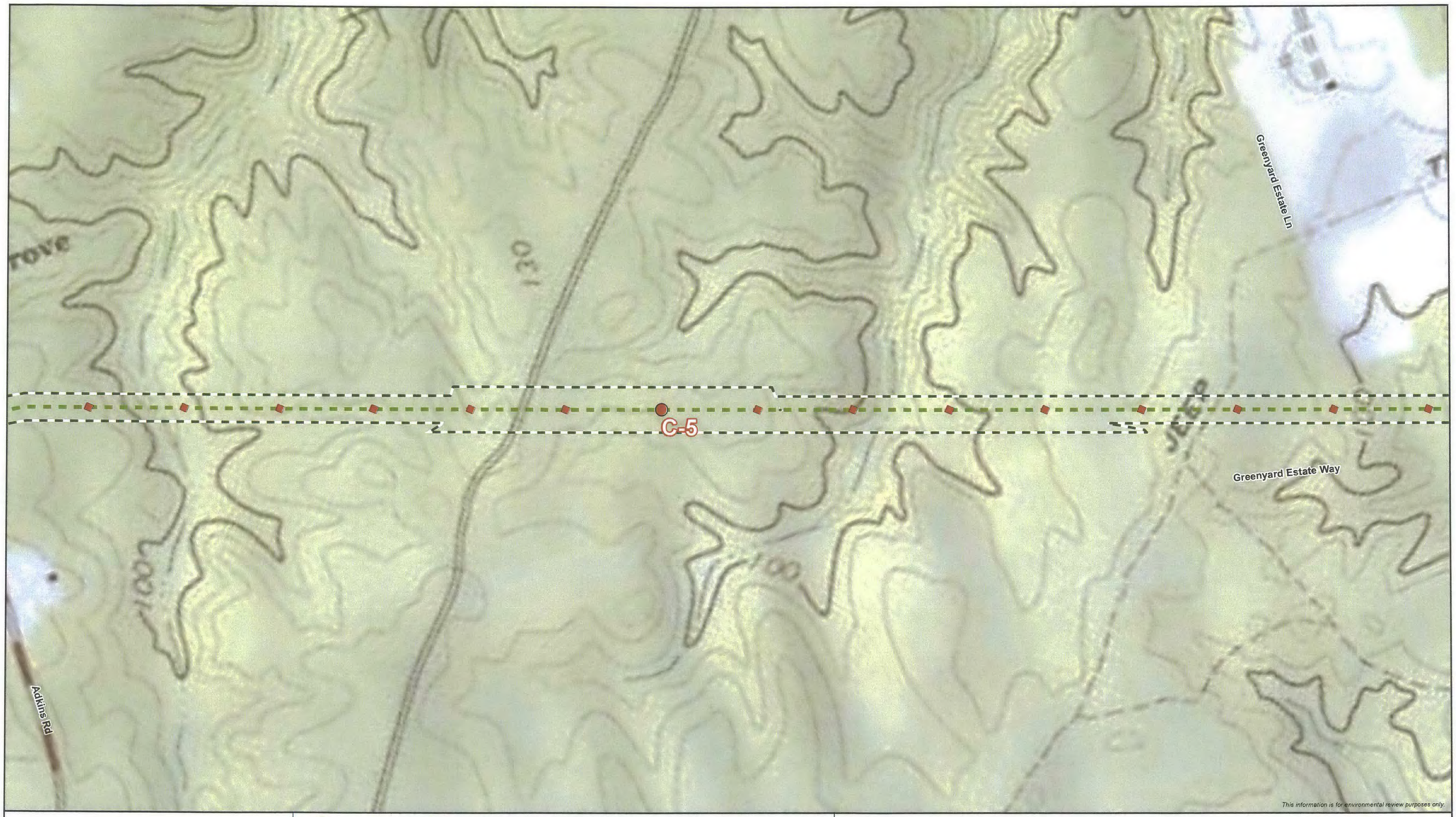

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Milepost
Tenth Milepost
Existing Substation
Proposed Switching Station
Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C4 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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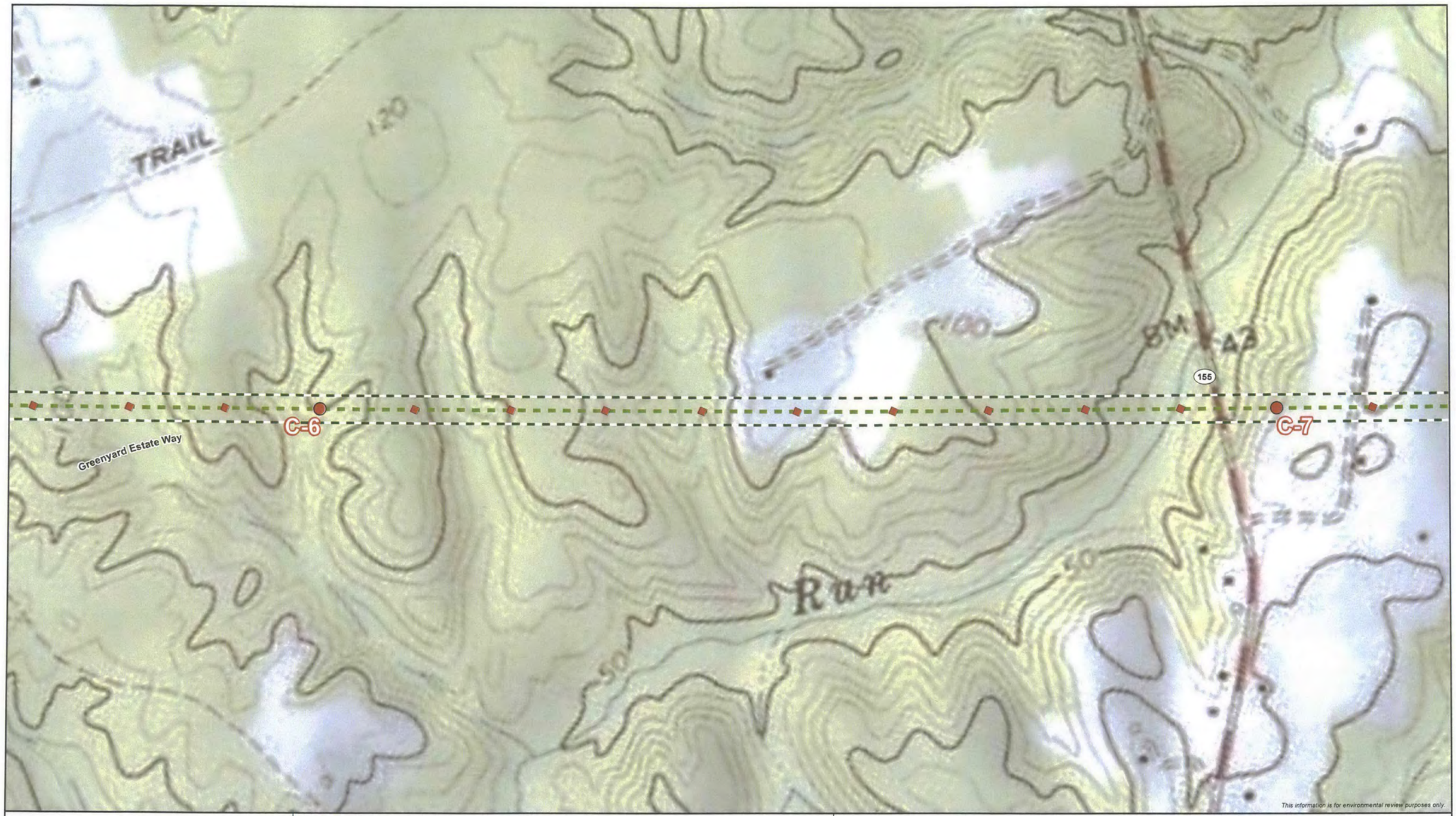

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C5 of C27

Dominion

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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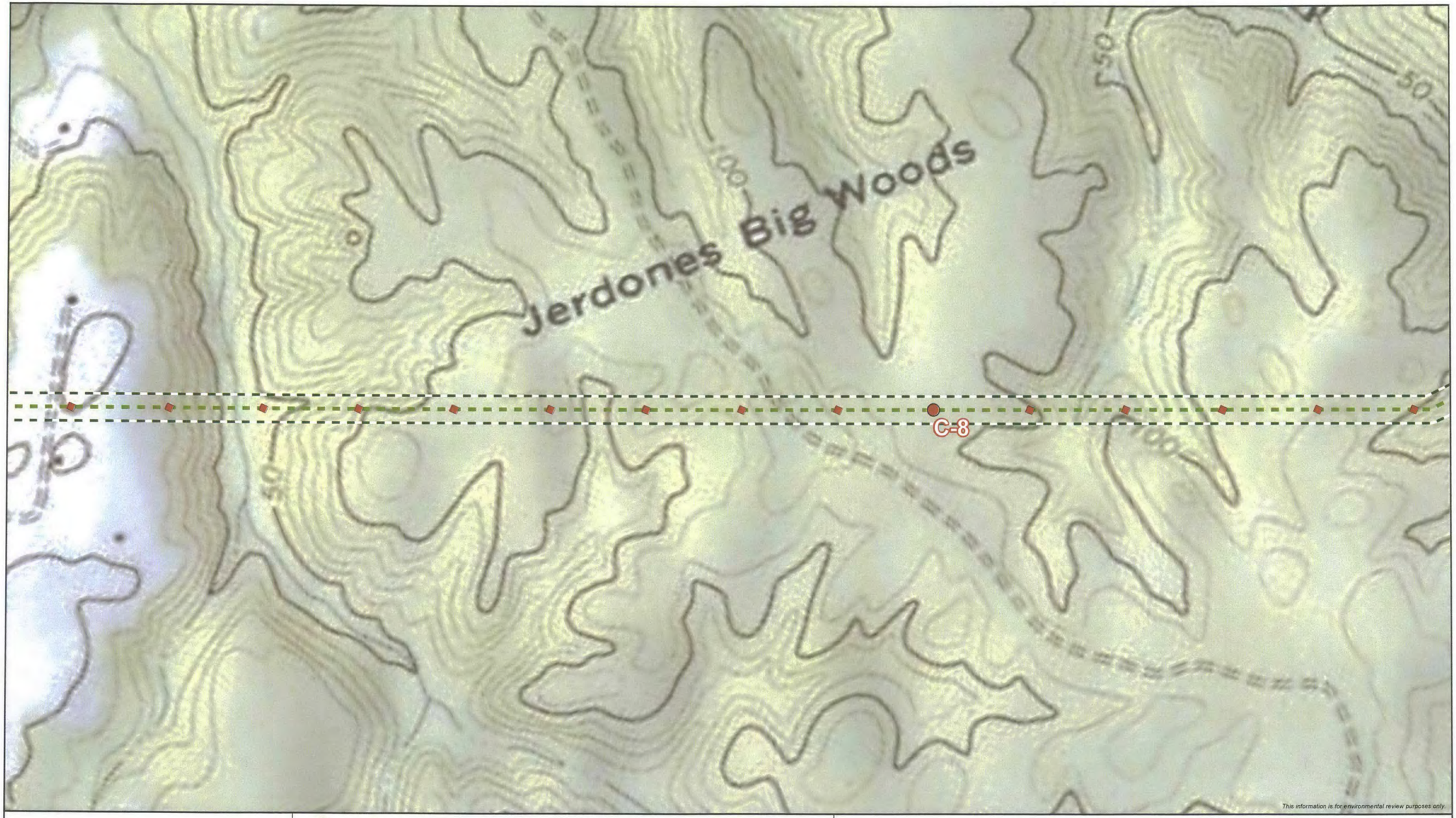

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Proposed Switching Station
Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C6 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C7 of C27

Dominion

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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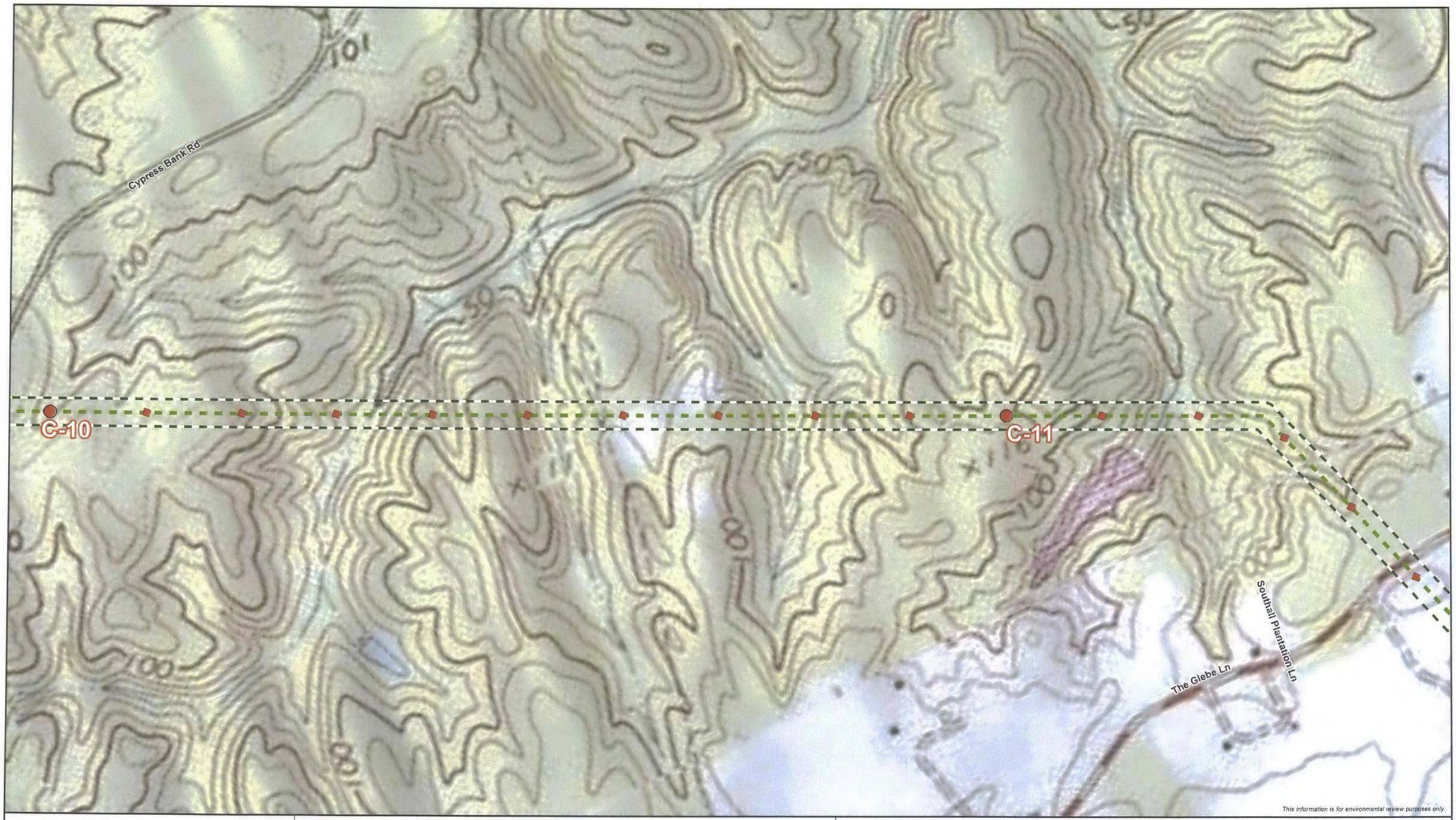

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C8 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C9 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C10 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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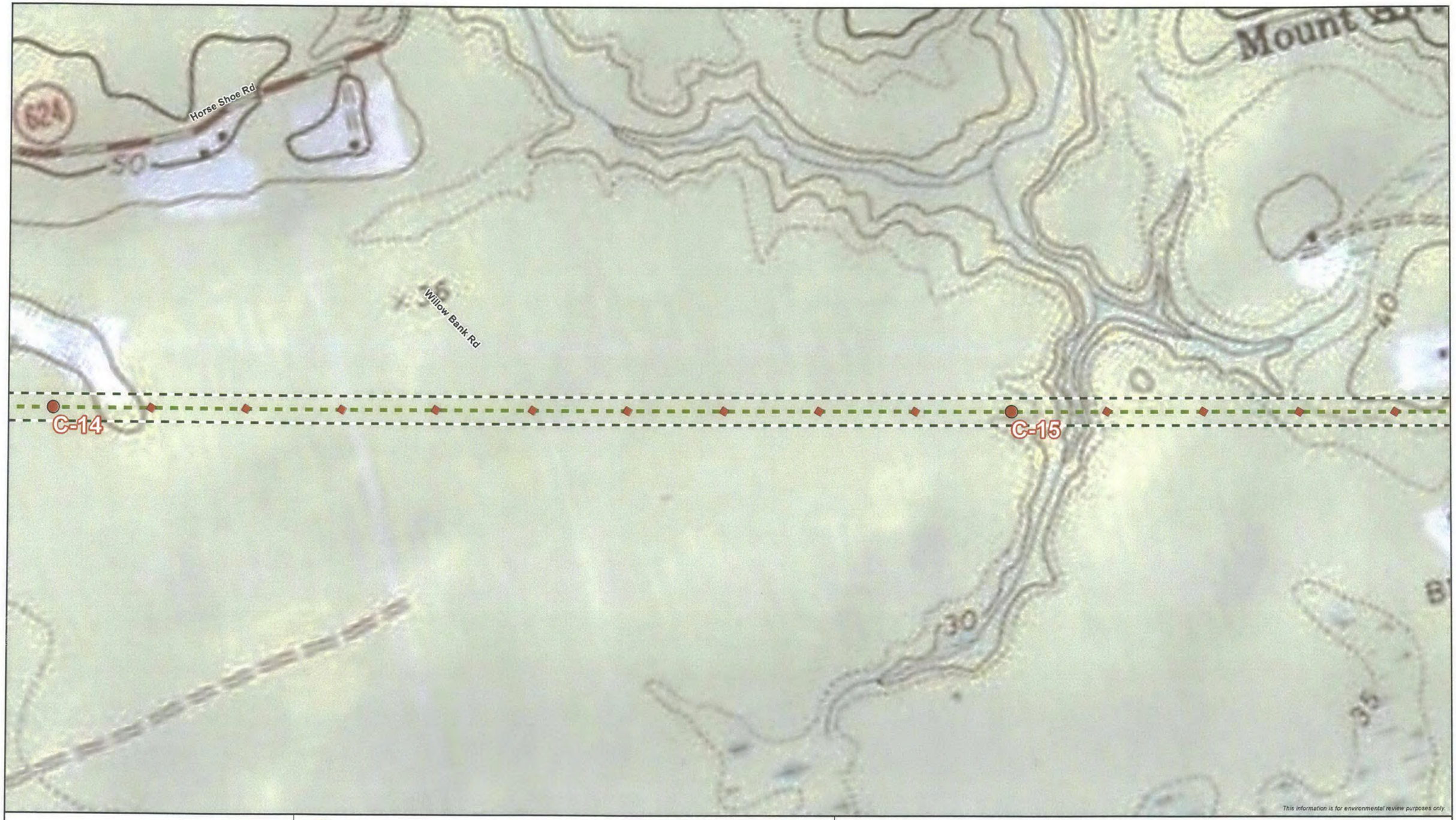

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

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Dominion

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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Tenth Milepost
Existing Substation
Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C12 of C27

Dominion

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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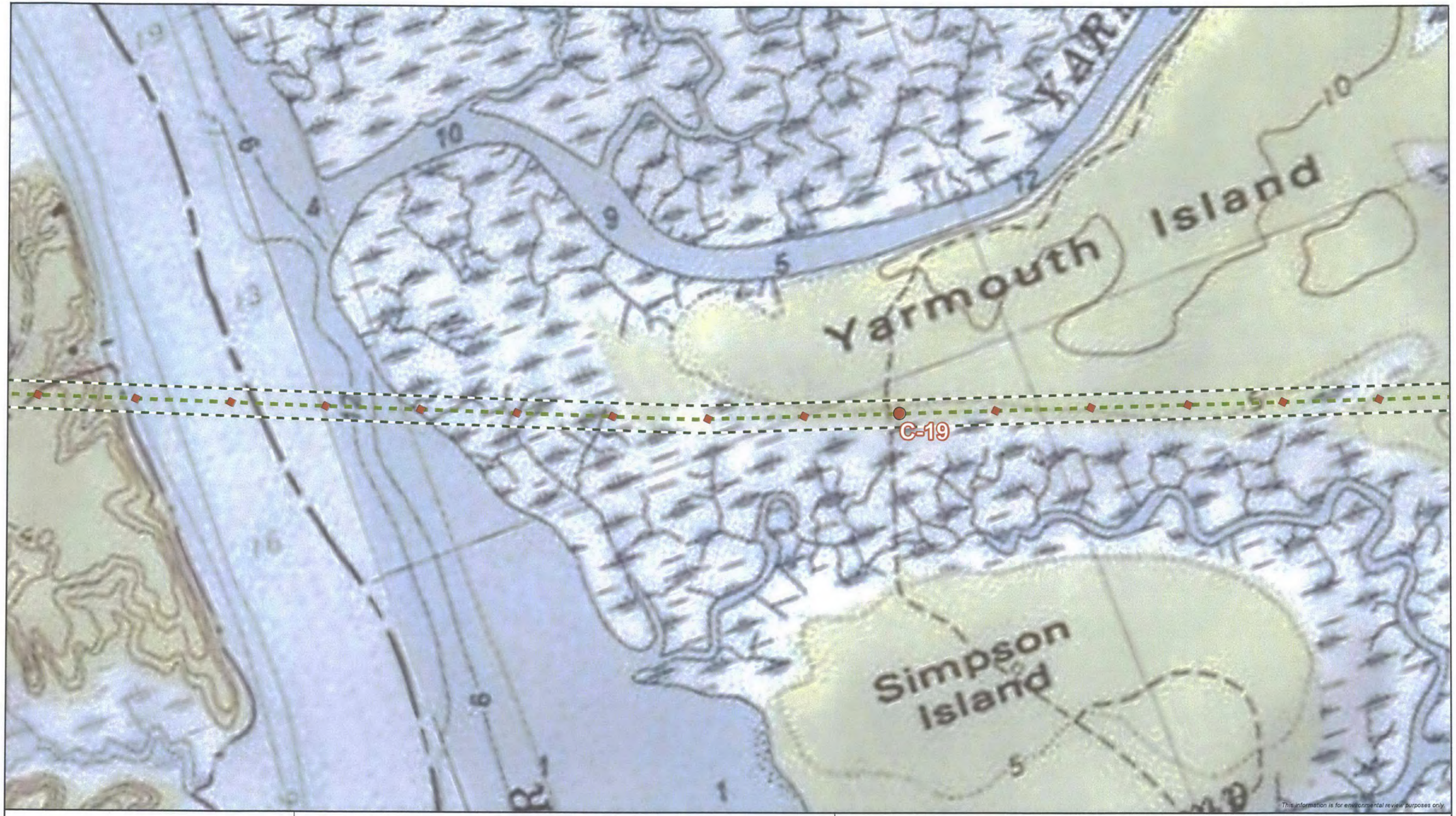

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Wheelton Section
- Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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Tenth Milepost
Existing Substation
Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C15 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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Tenth Milepost
Existing Substation
Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C16 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C18 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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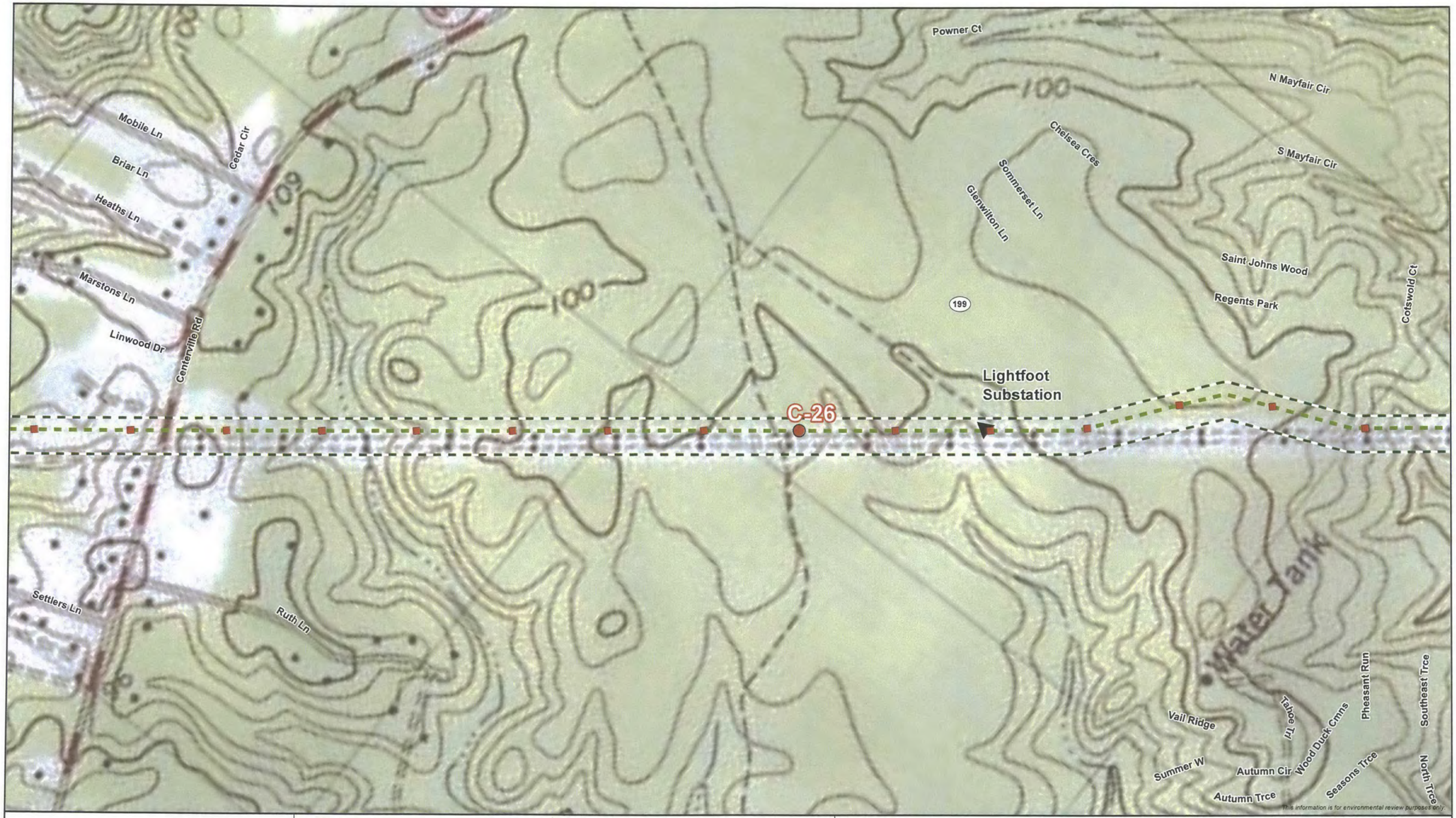

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C19 of C27

Dominion

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C20 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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Tenth Milepost
Existing Substation
Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C21 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C22 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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Milepost
Tenth Milepost
Existing Substation
Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C23 of C27

Dominion

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C25 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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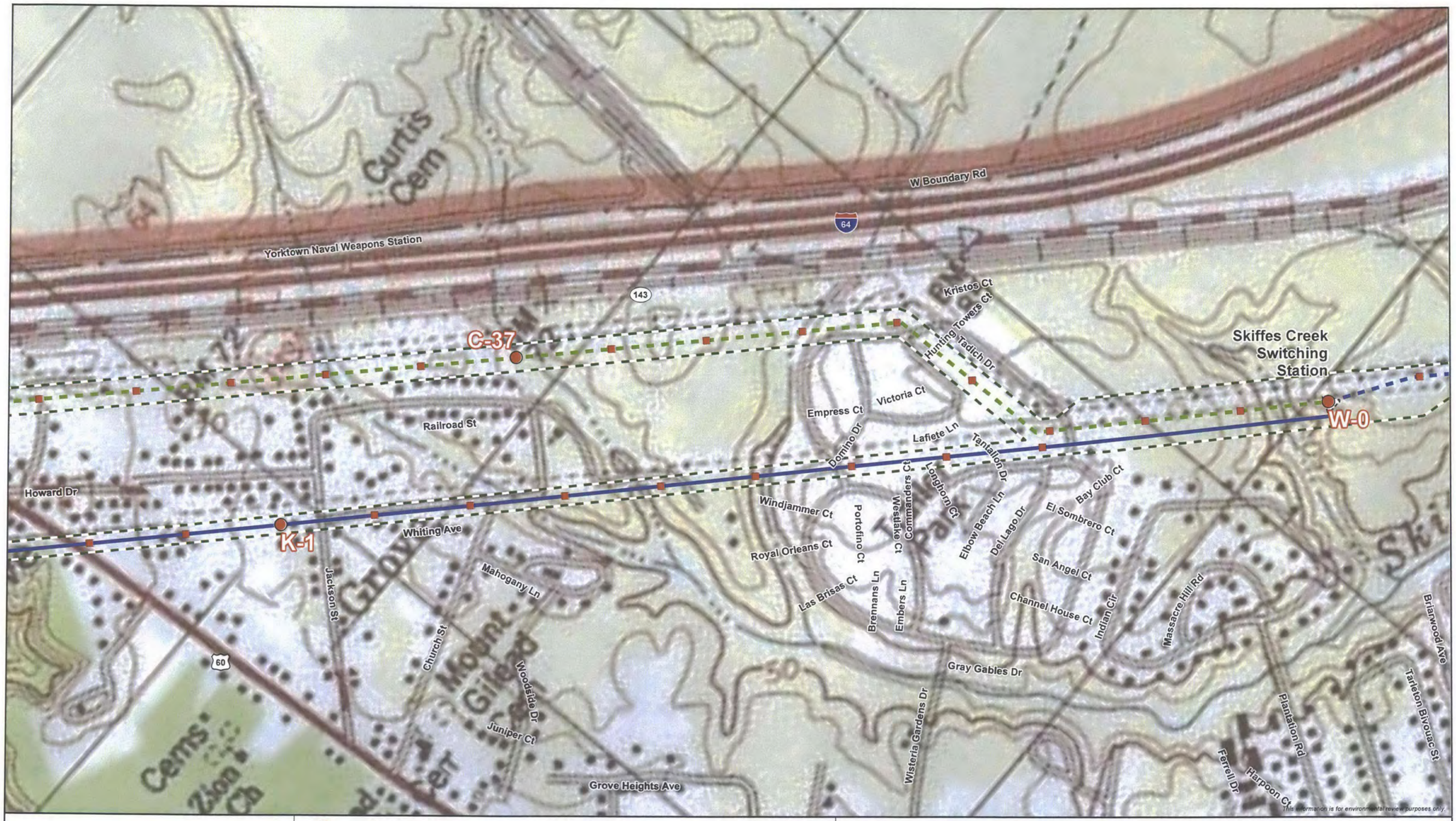

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C27 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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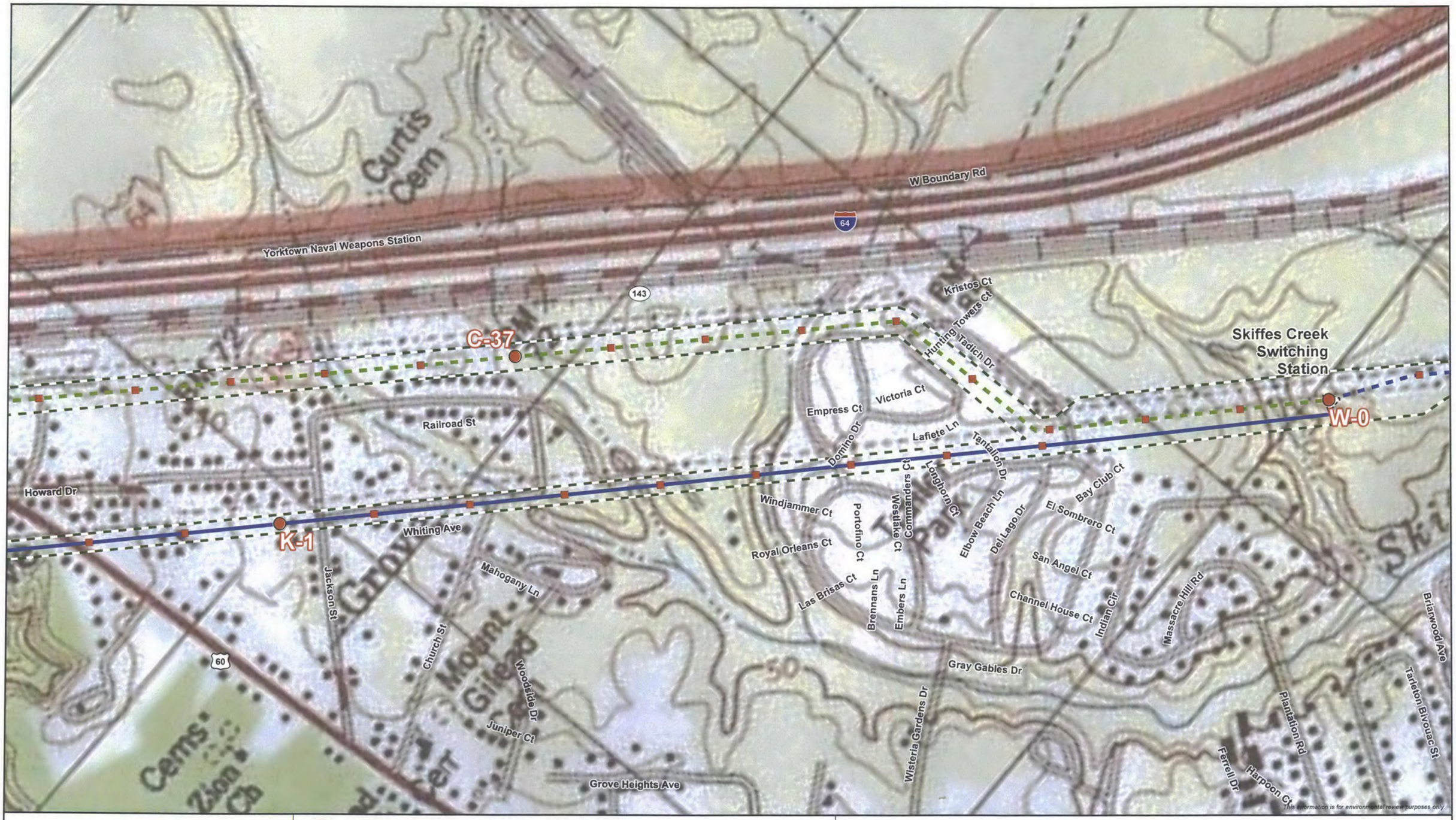

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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Sheet W1 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W2 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

Dominion

NATURAL RESOURCE GROUP

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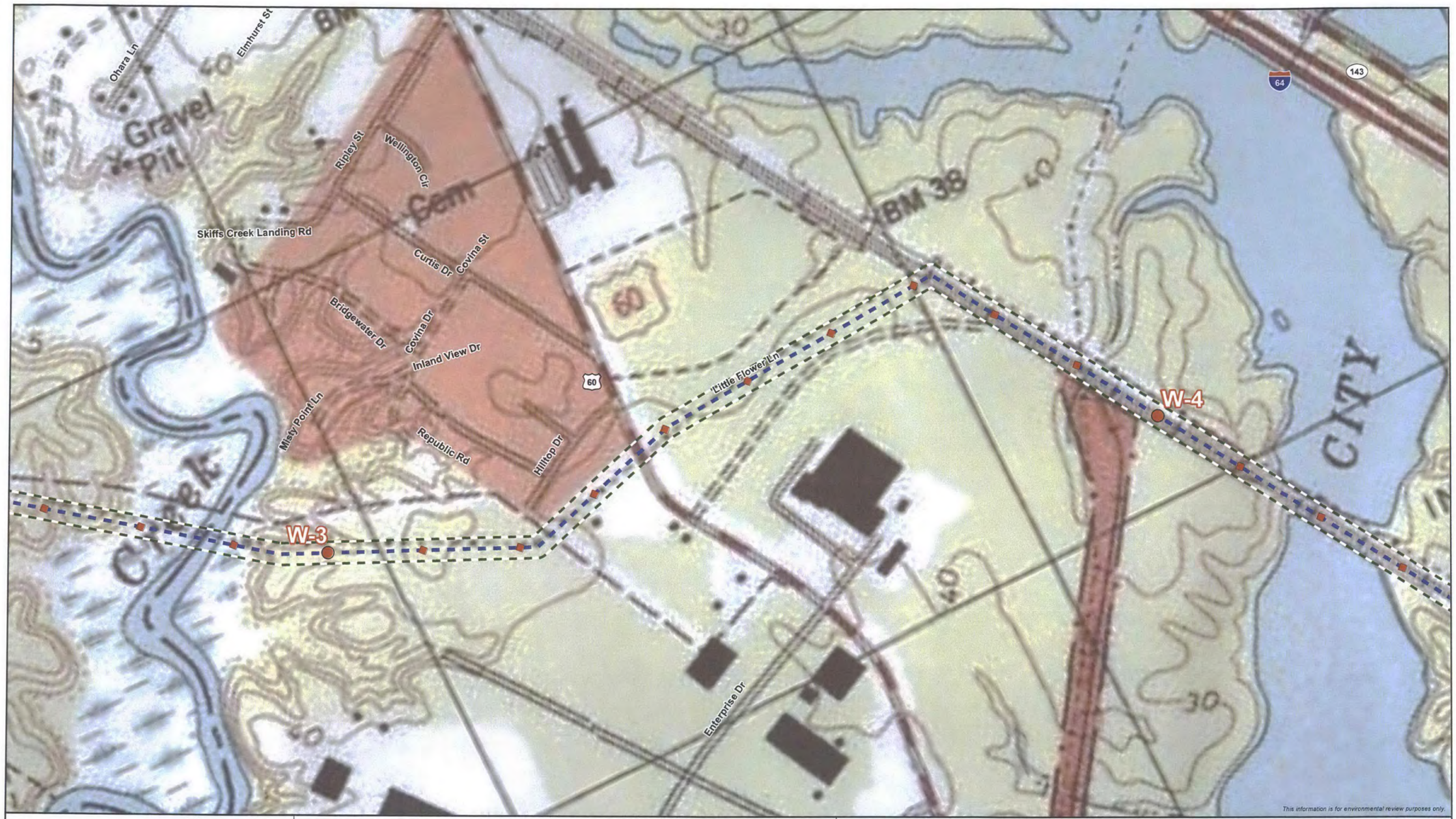

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- Milepost
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- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W3 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W4 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W5 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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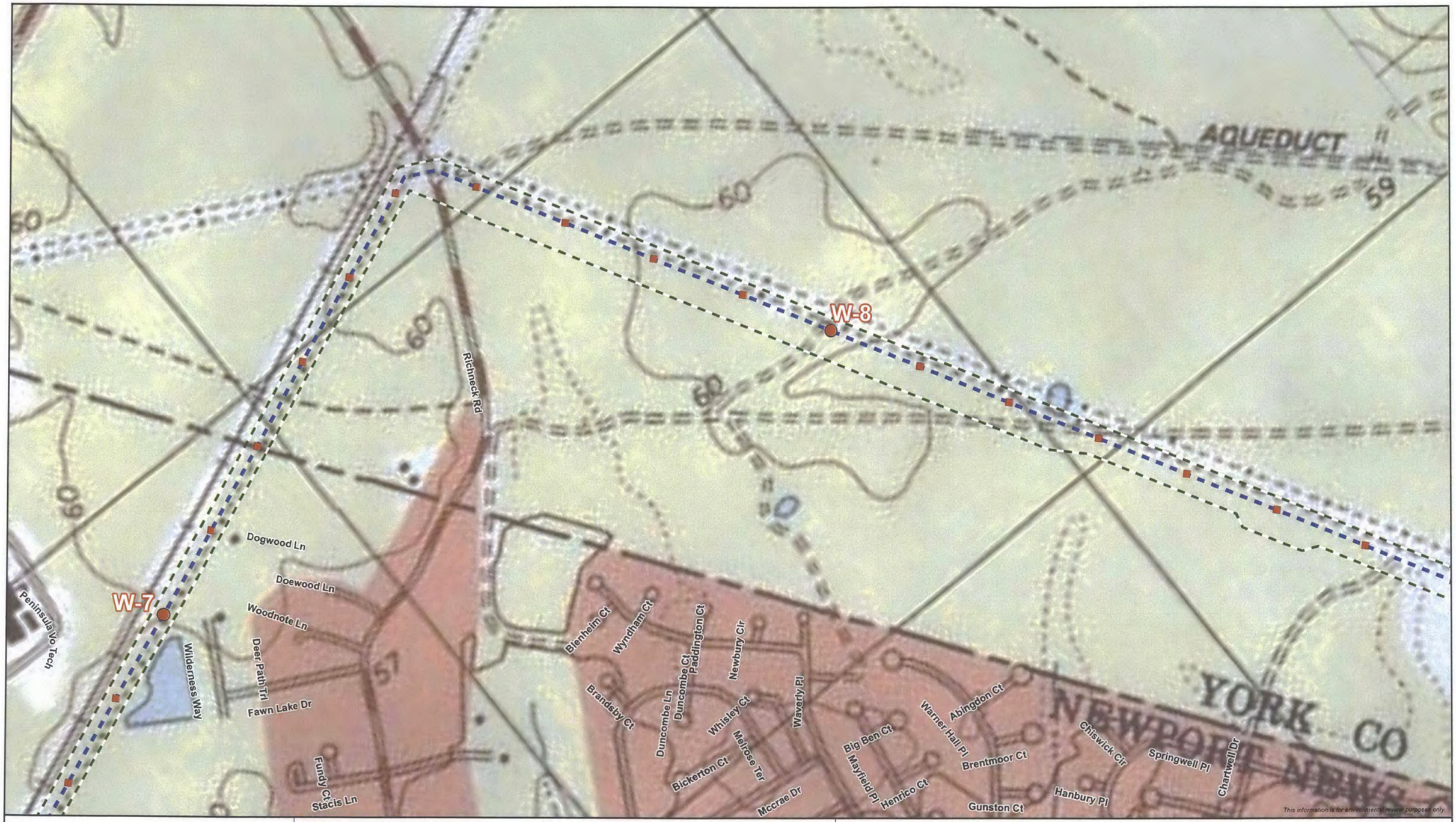

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W6 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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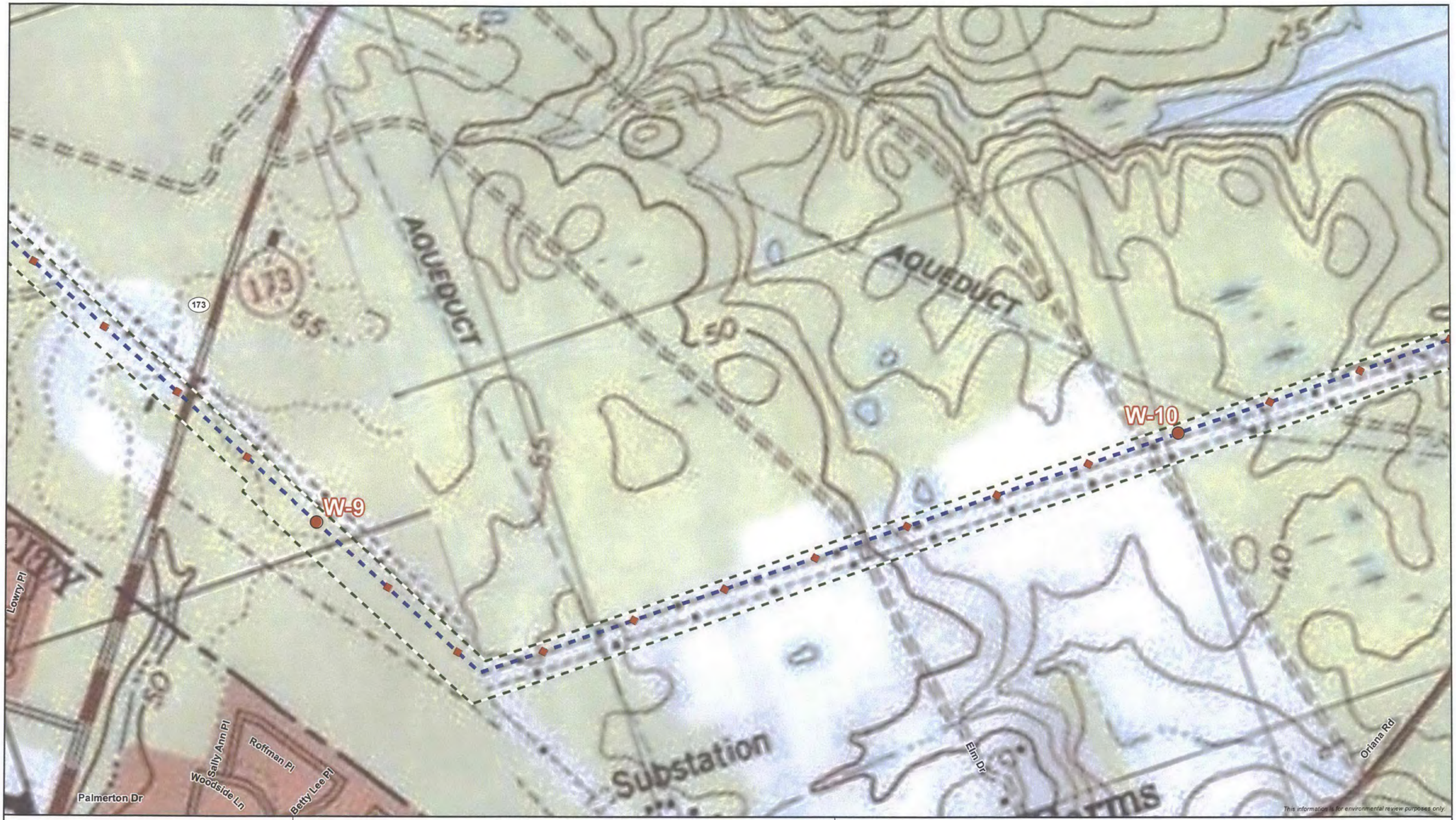

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W7 of W14

Dominion

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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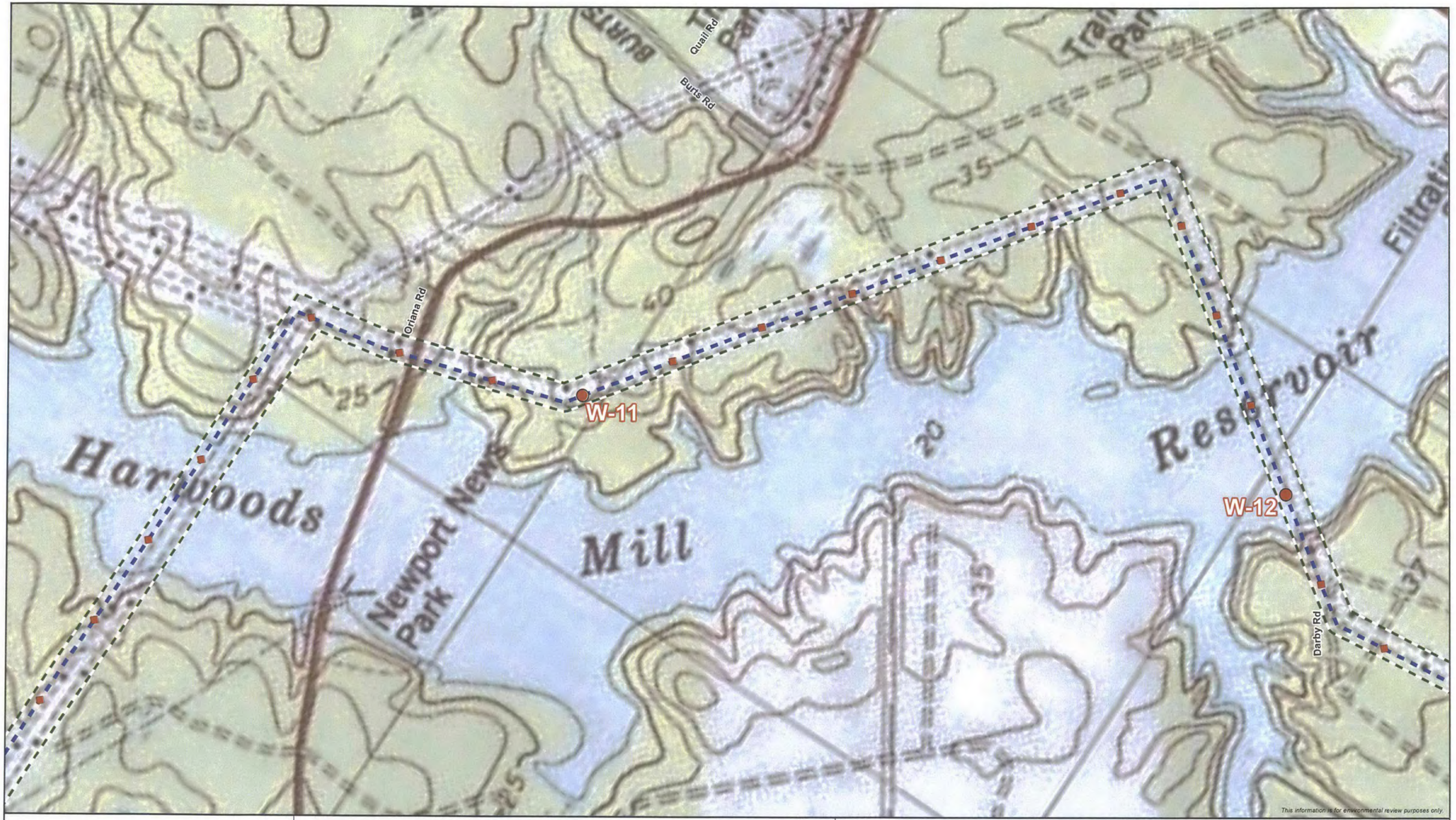

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Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet W8 of W14

Dominion Virginia Power
Skiffes Creek - Whealton 230 kV Transmission Line
Topographic Maps

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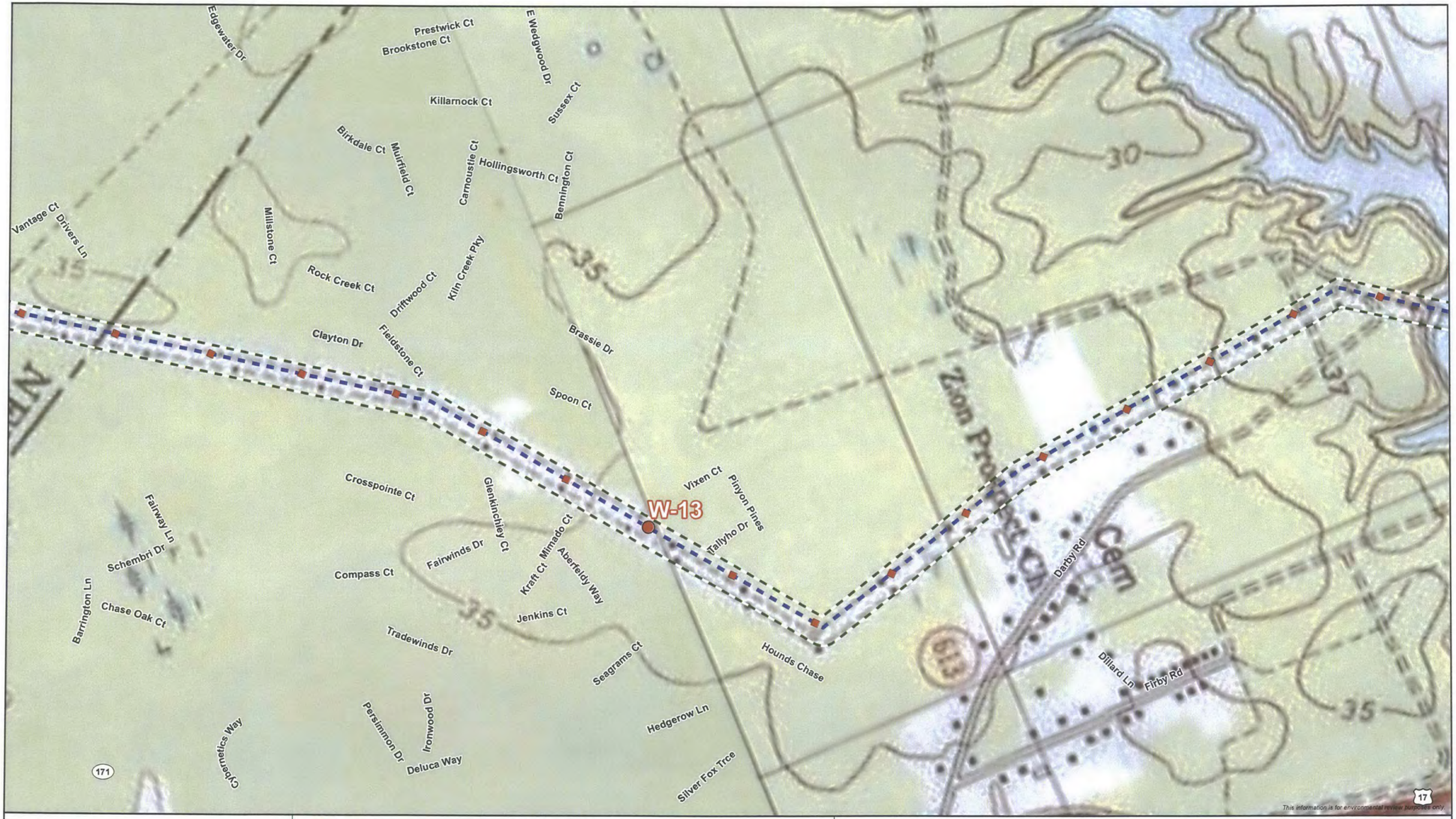

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W9 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W10 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W11 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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Tenth Milepost
Existing Substation
Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet W12 of W14

Dominion

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W13 of W14

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Topographic Maps

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- Existing 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet W14 of W14

Dominion

Dominion Virginia Power
Skiffes Creek - Whealton 230 kV Transmission Line
Topographic Maps

NATURAL RESOURCE GROUP

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Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek-Whealton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station

APPENDIX J

Aerial Photo-Based Route Maps 500 kV and 230 kV Routes

- Surry – Skiffes Creek 500 kV Transmission Line
  - James River Crossing Variation 1
  - James River Crossing Variation 2
  - James River Crossing Variation 3
- Chickahominy – Skiffes Creek 500 kV Transmission Line
- Skiffes Creek – Whealton 230 kV Transmission Line

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Aerial Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 1 of 7

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Aerial Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 2 of 7

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Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Aerial Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Aerial Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 4 of 7

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Aerial Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 5 of 7

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Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Aerial Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 6 of 7

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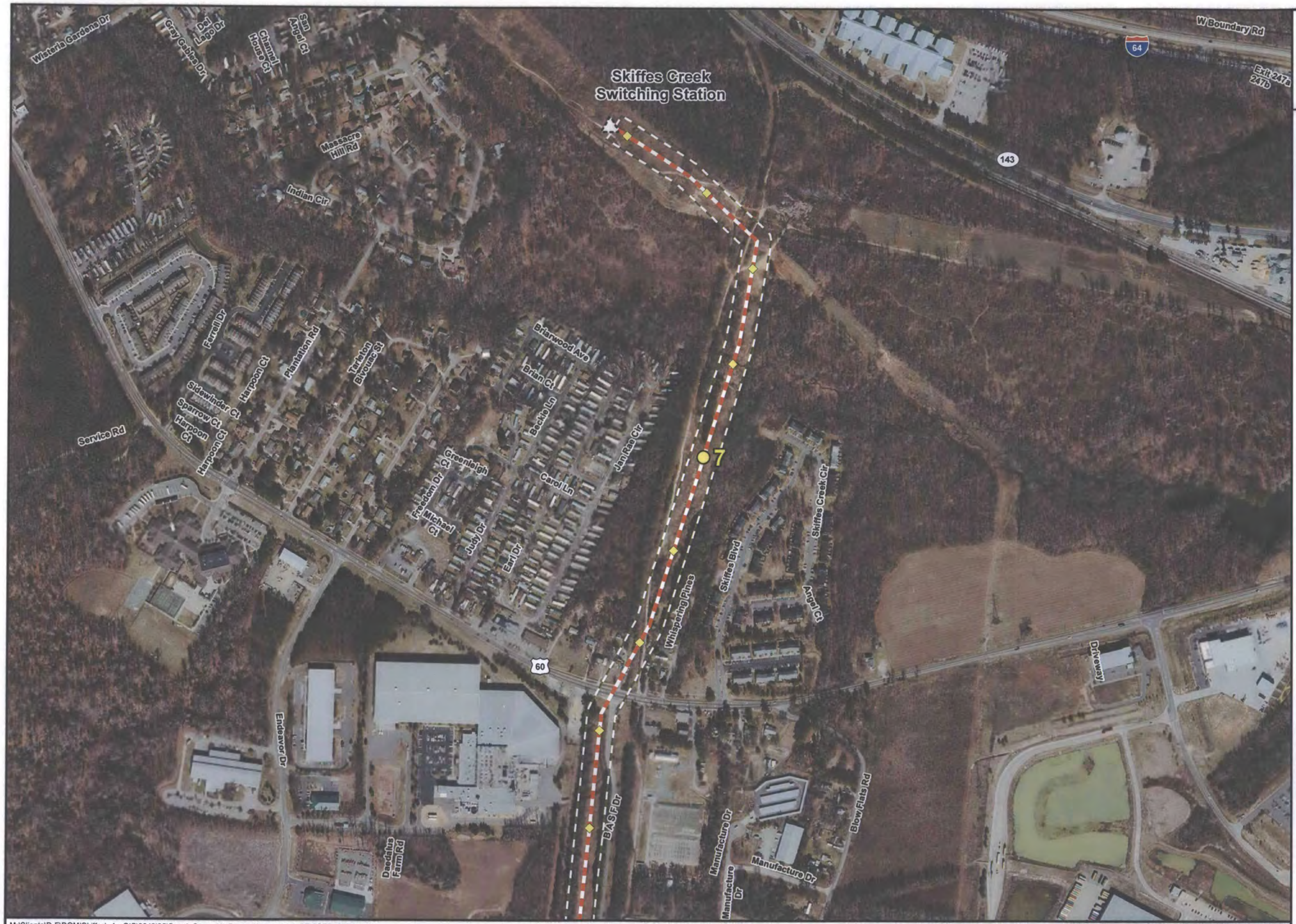

Surry - Skiffes Creek 500 kV Transmission Line

Surry Alternative

Aerial Maps

- Existing Switching Station
- Proposed Switching Station
- Milepost
- Tenth Milepost
- Surry Alternative
- Existing 230 kV Line
- Right-of-Way

Sheet 7 of 7

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 1

Aerial Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 1 of 4

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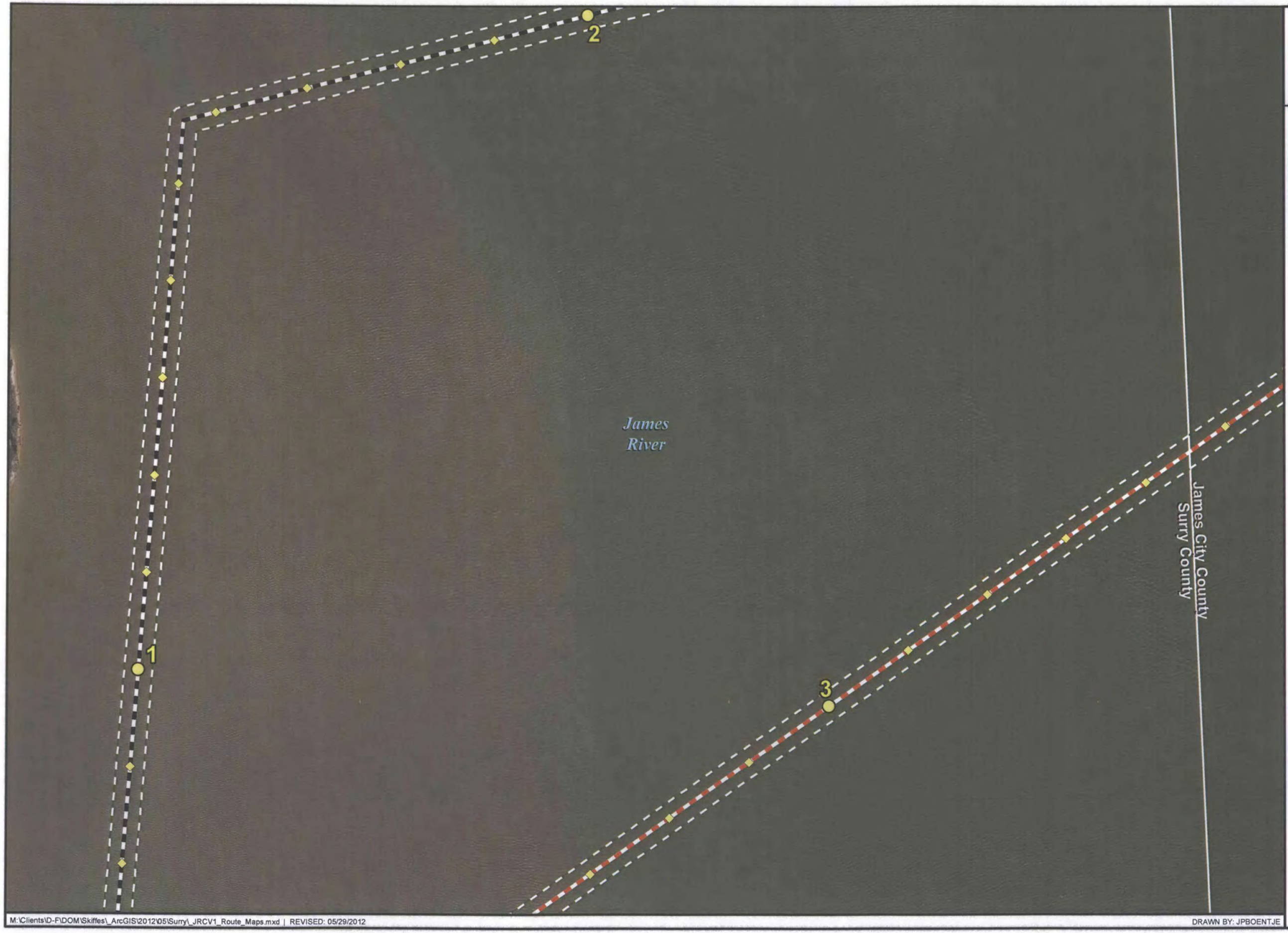

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Surry - Skiffes Creek 500 kV Transmission Line

James River
Crossing Variation 1

Aerial Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 2 of 4

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Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 1

Aerial Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 3 of 4

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River
Crossing Variation 1

Aerial Maps

- Milepost
- Tenth Milepost
- Surry Alternative
- James River Crossing Variation 1
- Right-of-Way

Sheet 4 of 4

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 1 of 5

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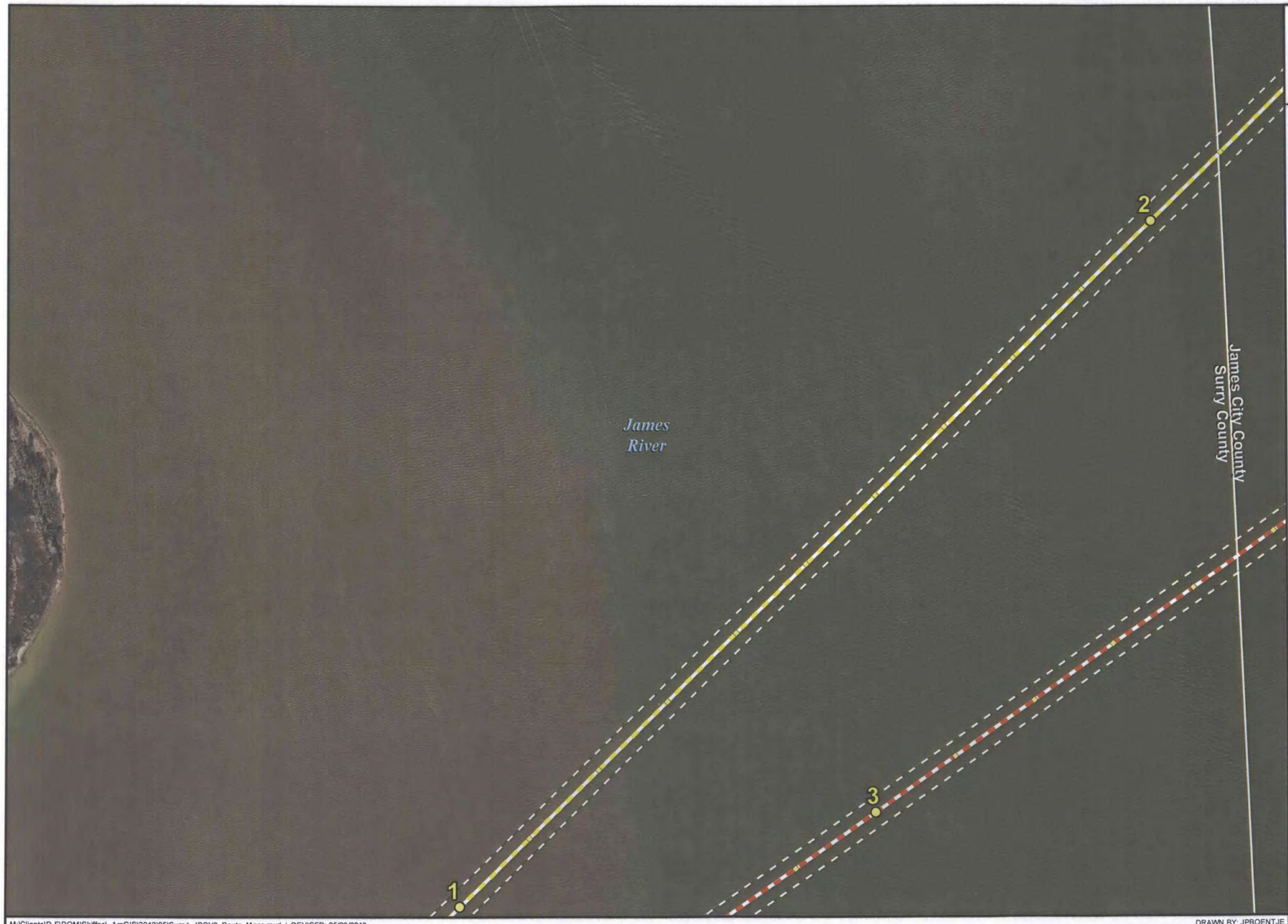

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Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 2 of 5

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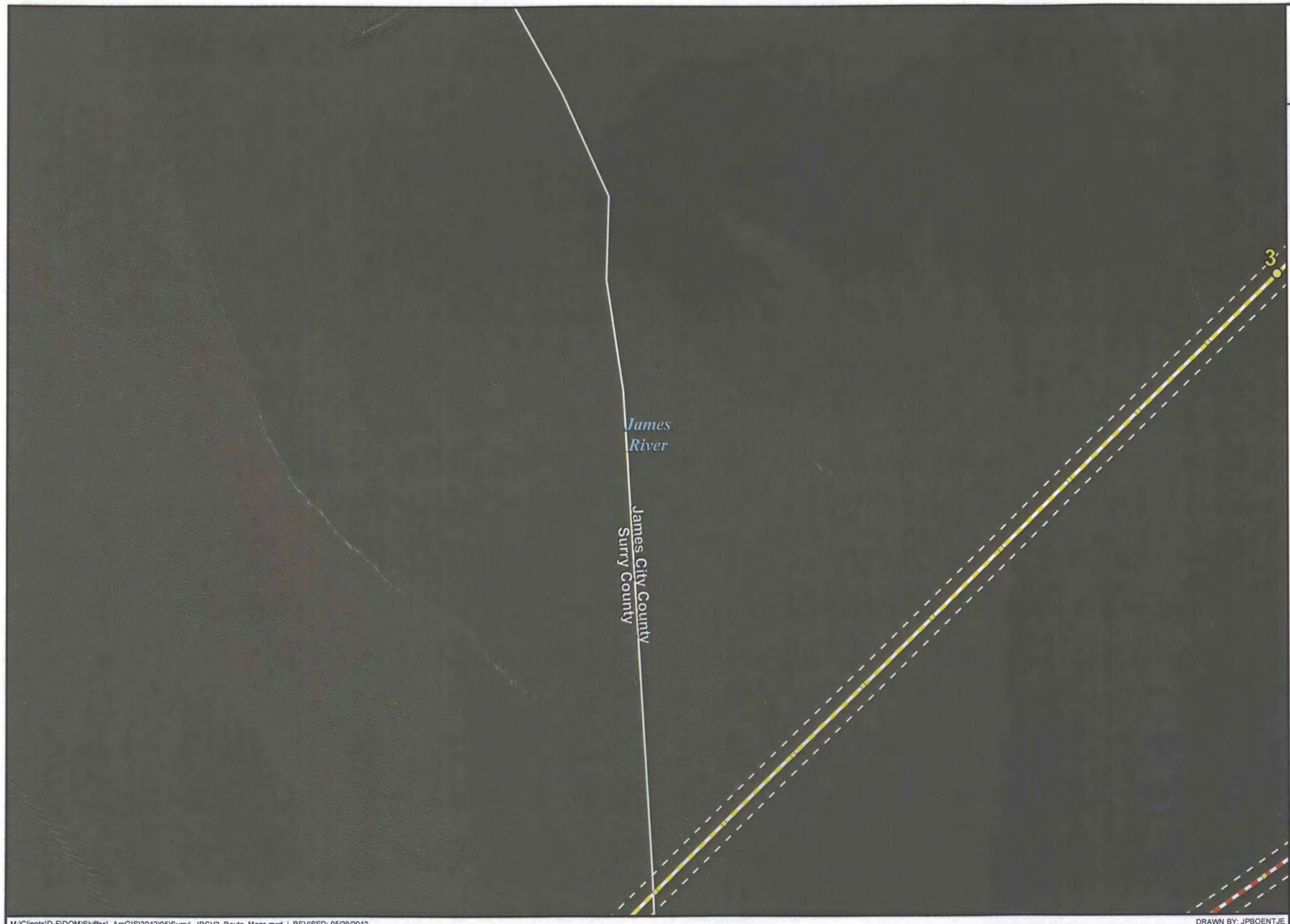

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 3 of 5

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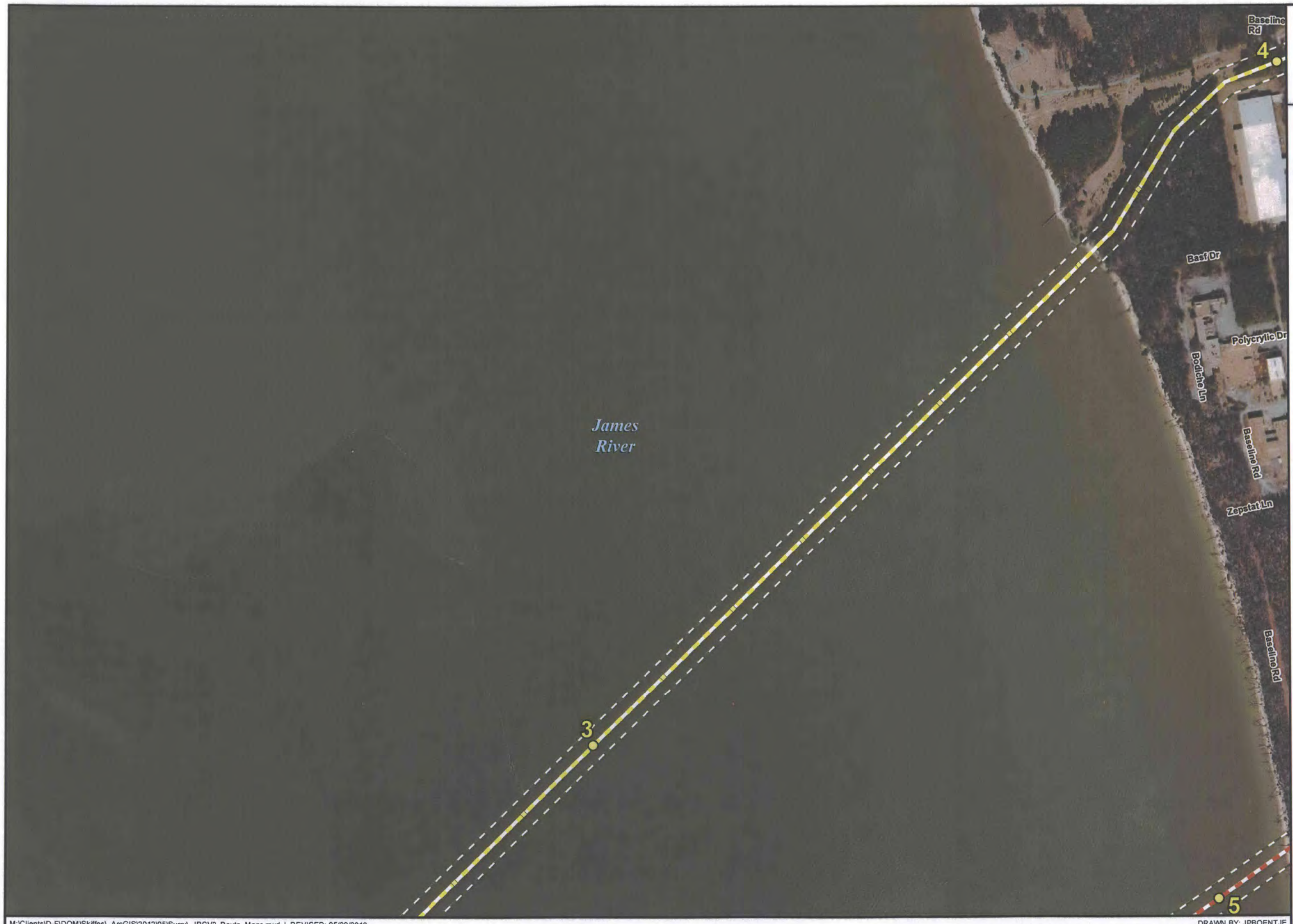

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Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 4 of 5

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 2

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 2
- Surry Alternative
- Right-of-Way

Sheet 5 of 5

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NATURAL RESOURCE GROUP

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 1 of 5

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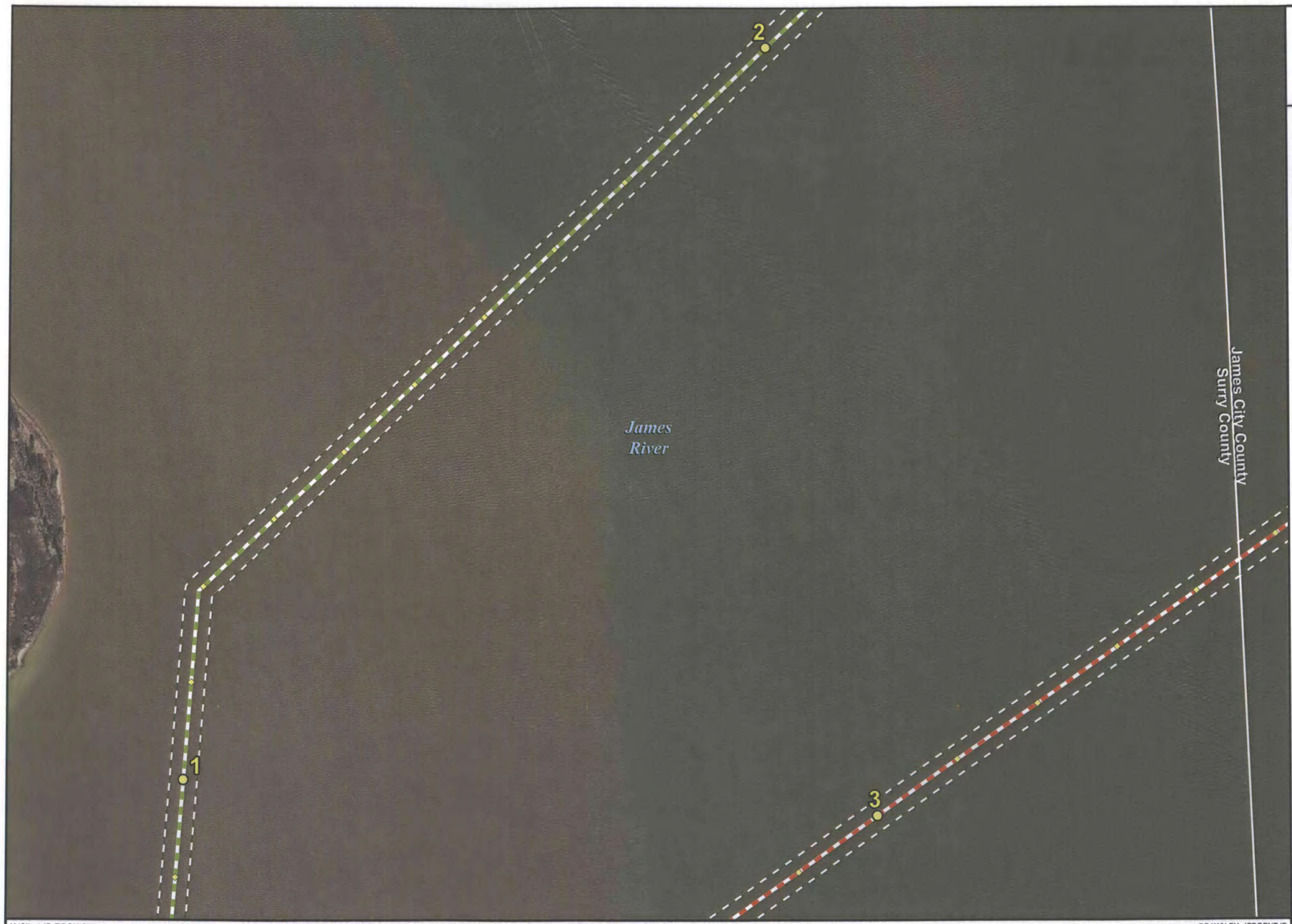

Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 2 of 5

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 3 of 5

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 4 of 5

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Dominion

Surry - Skiffes Creek 500 kV Transmission Line

James River Crossing Variation 3

Aerial Maps

- Milepost
- Tenth Milepost
- James River Crossing Variation 3
- Surry Alternative
- Right-of-Way

Sheet 5 of 5

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Tenth Milepost
Existing Substation
Proposed Switching Station

230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C1 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C2 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C3 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C4 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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- Milepost
- Tenth Milepost
- Existing Substation
- Proposed Switching Station
- 230 kV Route
- Chickahominy Alternative
- Skiffes Creek to Whealton Section
- Right-of-Way

Sheet C5 of C27

Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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Existing Substation
Proposed Switching Station
230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

Sheet C6 of C27

Dominion Virginia Power
Chickahominy - Skiffes Creek 500 kV Transmission Line
Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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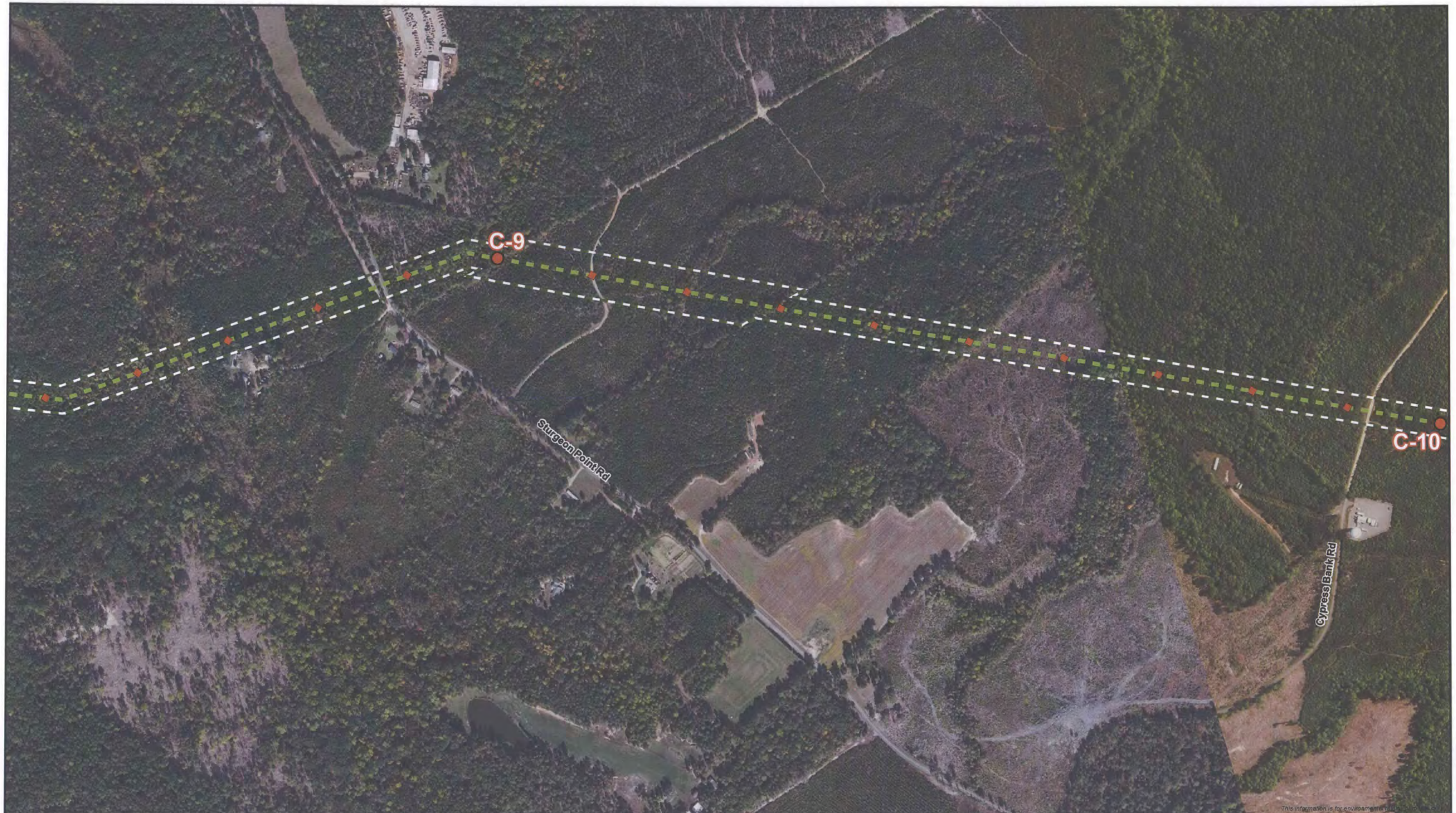

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230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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NATURAL RESOURCE GROUP

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Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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- Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

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Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power
Chickahominy - Skiffes Creek 500 kV Transmission Line
Aerial Maps

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Skiffes Creek to Whealton Section
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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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NATURAL RESOURCE GROUP

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Skiffes Creek to Whealton Section
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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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NATURAL RESOURCE GROUP

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Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

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Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power

Chickahominy - Skiffes Creek 500 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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- Right-of-Way

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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- Right-of-Way

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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- Right-of-Way

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

Dominion

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Proposed Switching Station

Existing 230 kV Route
Chickahominy Alternative
Skiffes Creek to Whealton Section
Right-of-Way

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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- Existing Substation
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- Chickahominy Alternative
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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

Dominion

NATURAL RESOURCE GROUP

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Right-of-Way

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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NATURAL RESOURCE GROUP

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Dominion

Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

NATURAL RESOURCE GROUP

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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NATURAL RESOURCE GROUP

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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Skiffes Creek - Whealton 230 kV Transmission Line

Aerial Maps

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Dominion Virginia Power

Skiffes Creek - Whealton 230 kV Transmission Line

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