Environmental Studies for
Route 234 at Brentsville Road Interchange

Prince William County
FHWA 1994 Final SEIS Number: FHWA-VA-EIS-79-03-FS
Submitted pursuant to 42 USC 4332(2)(c) and 23 CFR 771.130(c)

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Final SEIS Date: July 11, 1994
ROD Date: September 21, 1994

1. INTRODUCTION

The Prince William County Department of Transportation (PWC DOT) proposes to construct grade-separated interchanges to replace the currently at-grade signalized intersections of Prince William Parkway with Dumfries Road and Brentsville Road. The project also would convert the intersection of Prince William Parkway at Bradley Cemetery Way to a continuous green-T intersection. Brentsville Road would be realigned to provide a through roadway to Dumfries Road instead of its current through roadway connection to Prince William Parkway. The proposed interchanges and ancillary improvements would provide free flow movements and reduce travel delays associated with the existing traffic signals. Additional details on the proposed construction are provided in Section 3.

A proposed interchange of Prince William Parkway with Dumfries Road and Brentsville Road was a component of the Route 234 Bypass (now Prince William Parkway) project, evaluated in a Supplemental Environmental Impact Statement (SEIS) prepared by VDOT and the Federal Highway Administration (FHWA) in 1994 in accordance with provisions of the National Environmental Policy Act (NEPA) and 23 CFR 771. As shown in **Figure 1**, the study limits for the Route 234 Bypass SEIS extended from the intersection of Route 234 and Route 619 at Independent Hill on the south end to the intersection of Route 234 and US Route 15 at Woolsey on the north end. The Modified Selected Alternative evaluated in the SEIS, however, did not include portions of the project north of I-66 that had been included in the 1981 Final Environmental Impact Statement (FEIS). Rather, the Modified Selected Alternative consisted of a four-lane divided highway on a combination of existing and new alignment from Independent Hill to I-66. The project featured six grade-separated interchanges, including the Dumfries Road/Brentsville Road interchange; however, due to funding constraints, only two of the six interchanges (at I-66 and Route 28) were built during construction of the Prince William Parkway in the late 1990s. The remaining four interchanges, including the Dumfries Road/Brentsville Road interchange, were constructed as at-grade signalized intersections.

Since the 1990s, continuing population growth and expansion of employment centers in Prince William County have resulted in increased traffic volumes at the intersections of Route 234 with Dumfries Road and Brentsville Road. Traffic volumes at the intersections are expected to continue to increase with further population growth and expansion of commercial/industrial development within Prince William County. The proposed Dumfries Road and Brentsville Road interchange improvements would contribute to meeting the needs identified in the 1981 FEIS and the 1994 SEIS, namely, to relieve existing and future traffic congestion within the Route 234 corridor.

As shown in Figure 1, the location of the proposed improvements is essentially the same as was proposed and evaluated in the 1994 SEIS. Modifications have been made, however, to the design of the Prince William Parkway/Dumfries Road/Brentsville Road interchange to improve traffic operations.

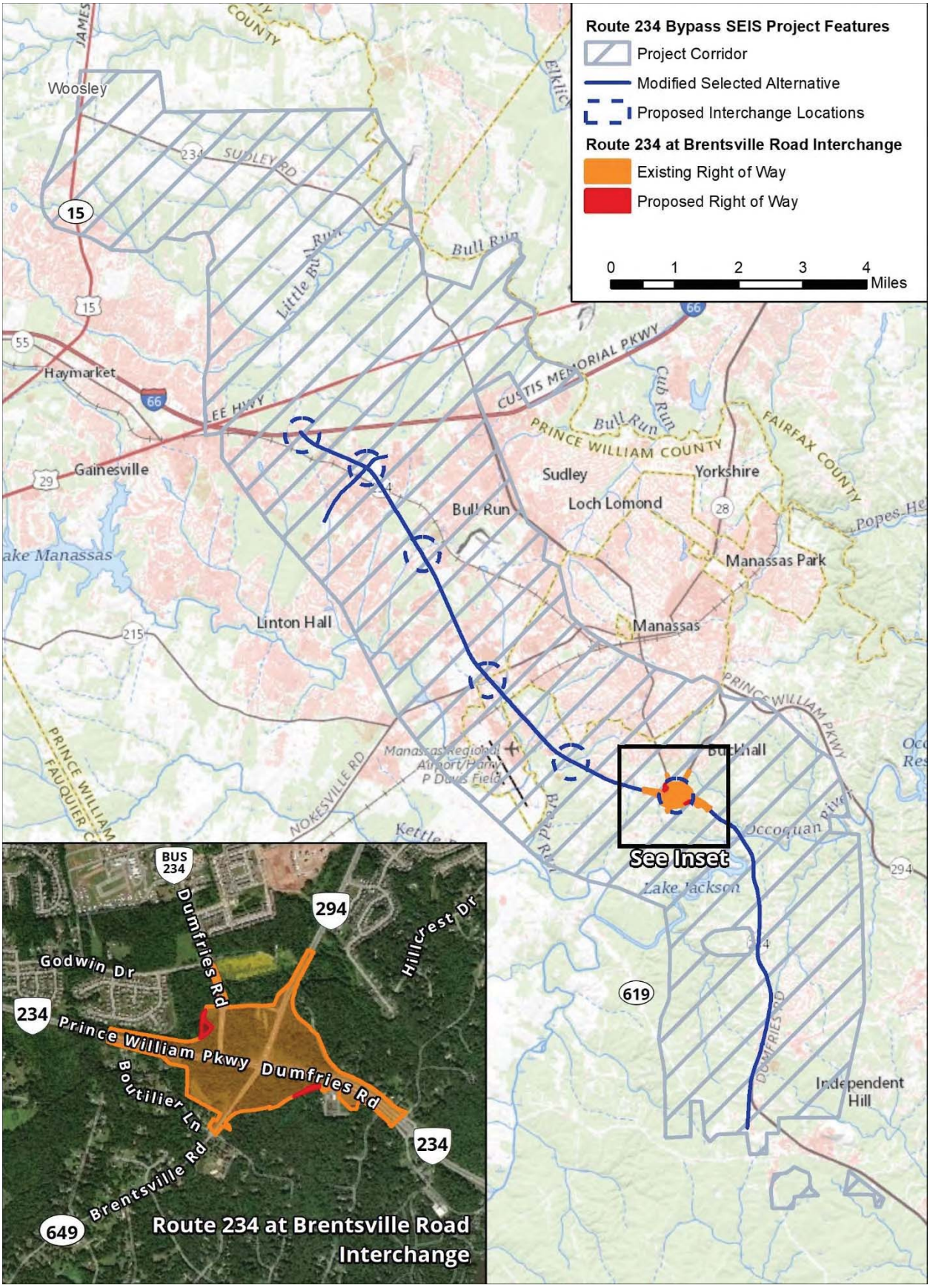

Figure 1. Route 234 Bypass SEIS Corridor and Route 234 at Brentsville Road Interchange Project Location

Regulatory Context and Next Steps

The provisions of 23 CFR 771.130 address situations where changes are made to a proposed action that was evaluated in an Environmental Impact Statement. Specifically, 23 CFR 771.130(c) states, "Where the Administration [FHWA] is uncertain of the significance of the new impacts, the applicant will develop appropriate environmental studies or, if the Administration deems appropriate, an EA [Environmental Assessment] to assess the impacts of the changes, new information, or new circumstances. If, based upon the studies, the Administration determines that a supplemental EIS is not necessary, the Administration must so indicate in the project file."

Environmental studies were conducted for the modifications to the Prince William Parkway/ Dumfries Road/Brentsville Road interchange to assess the environmental consequences resulting from changes in the design, changes in regulatory requirements and guidance, and changes in the affected environment since the SEIS was issued to help determine if there are any new significant impacts at this point in project development. A virtual presentation for public information and comments for the project was held on May 18, 2020 on the Prince William County Department of Transportation's website. The purpose of the presentation was to give the public an opportunity to review project features and exhibits, review a tentative project schedule, and provide feedback to the County to assist in the design process. A summary of the scope and status of the Environmental Studies document was provided to the public for review along with other materials posted on the Prince William County website. Comments were requested by June 1, 2020. Comments received on environmental matters included questions regarding potential noise abatement, stormwater management, the Bradley cemetery, wetlands, and Civil War history.

PWC DOT, in coordination with VDOT and FHWA, assessed whether at this point in project development any new significant environmental impacts have been identified that were not evaluated in previous NEPA documentation. Environmental reevaluations will be prepared prior to authorizing the acquisition of right-of-way and authorizing construction for the interchange (see 23 CFR 771.129) to ensure the project design plans are consistent with the 1994 SEIS and this Environmental Studies document.

2. CHANGES IN THE AFFECTED ENVIRONMENT

The most notable changes in environmental conditions within the vicinity of the intersections of Prince William Parkway (Routes 234 and 294)[1] with Dumfries Road and Brentsville Road since the publication of the 1994 SEIS include the construction of Prince William Parkway (Route 294) north of the intersection of Brentsville Road and Route 234, the residential development and growth of forest within former agricultural fields, increased traffic congestion, and multiple planned transportation improvements.

A comparison of a 1994 aerial photo of the project area with a 2018 aerial photo of the same area demonstrates the land cover changes in the vicinity of the proposed interchange (**Figure 2**). In 1994, much of the area in the immediate vicinity of the Route 234 and Dumfries Road/Brentsville Road interchange location was comprised of agricultural fields and rural estates, with forests farther out, west of Dumfries Road as well as east of what is now Route 294. As can be seen in the 2018 aerial photo, forests have become established within much of the former agricultural fields/rural estates within the immediate vicinity of the interchange location. Farther out from the

[1] Prince William Parkway has two different route number designations within the project area, as shown in Figures 1 and 2. It is designated as Route 234 entering the project area from the west and then Route 294 as it continues north and then east beyond the project area. Dumfries Road is designated as Route 234 Business to the north of the project area and then it continues as Route 234 east of the project area.

interchange location, suburban residential developments have been constructed within former agricultural/rural estate lands and forests.

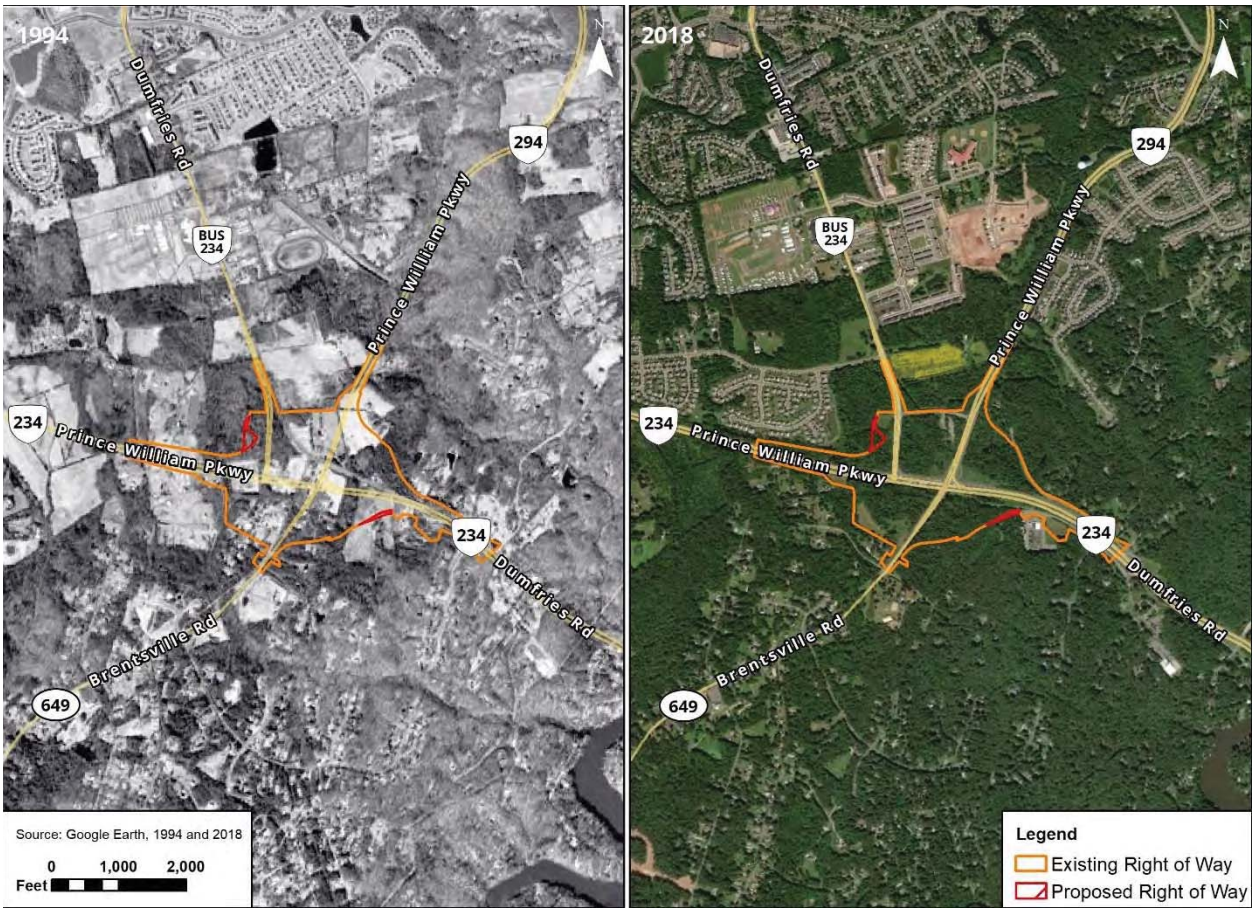

Figure 2. Comparison of Land Cover in Project Area, 1994 *(left)* and 2018 *(right)*

Over the course of 28 years, the population of Prince William County more than doubled from 215,686 in 1990 (as reported in the Route 234 Bypass SEIS) to 468,011 in 2018 as estimated by the US Census Bureau (US Census Bureau, 2019). The dramatic growth in the County's population during this timeframe has been largely attributed to the availability of more affordable housing in Prince William County compared to other jurisdictions in Northern Virginia during a time of soaring housing prices within the Washington metropolitan area and to the decentralization of jobs within the region (Singer et al., 2009). Population growth and increasing industrial and residential development within Prince William County have resulted in increased traffic congestion on local roadways and highways, including Routes 234 and 294 within the project area.

Multiple transportation improvement projects are planned or under construction within the vicinity of the Route 234 and Brentsville Road intersection. **Figure 3** shows the locations of these future transportation improvements, and these projects are listed below.

1. Intersection Improvements at Prince William Parkway and University Boulevard – Construct quadrant roadway intersection.
2. Discovery Boulevard Extension (Thomasson Barn Road Extension) (Completed June 2019) – Construction of two-lane roadway with terminus at Hornbaker Road.
3. Route 28 Phase III (VA 619 Linton Hall Road to Manassas City Limits) – Widen to six lanes.
4. Broad Run Station and Yard Improvements – Expand station and train storage capacity.

5. VRE Service Improvements – Regionwide, to reduce headways.
6. Route 234 Business Dumfries Road Widening (Manassas City Limits to Hastings Drive) – Widen to four lanes.
7. Route 294 Prince William Parkway Improvements – Improvements between VA 776 Liberia Avenue to VA 642 Hoadly Road.

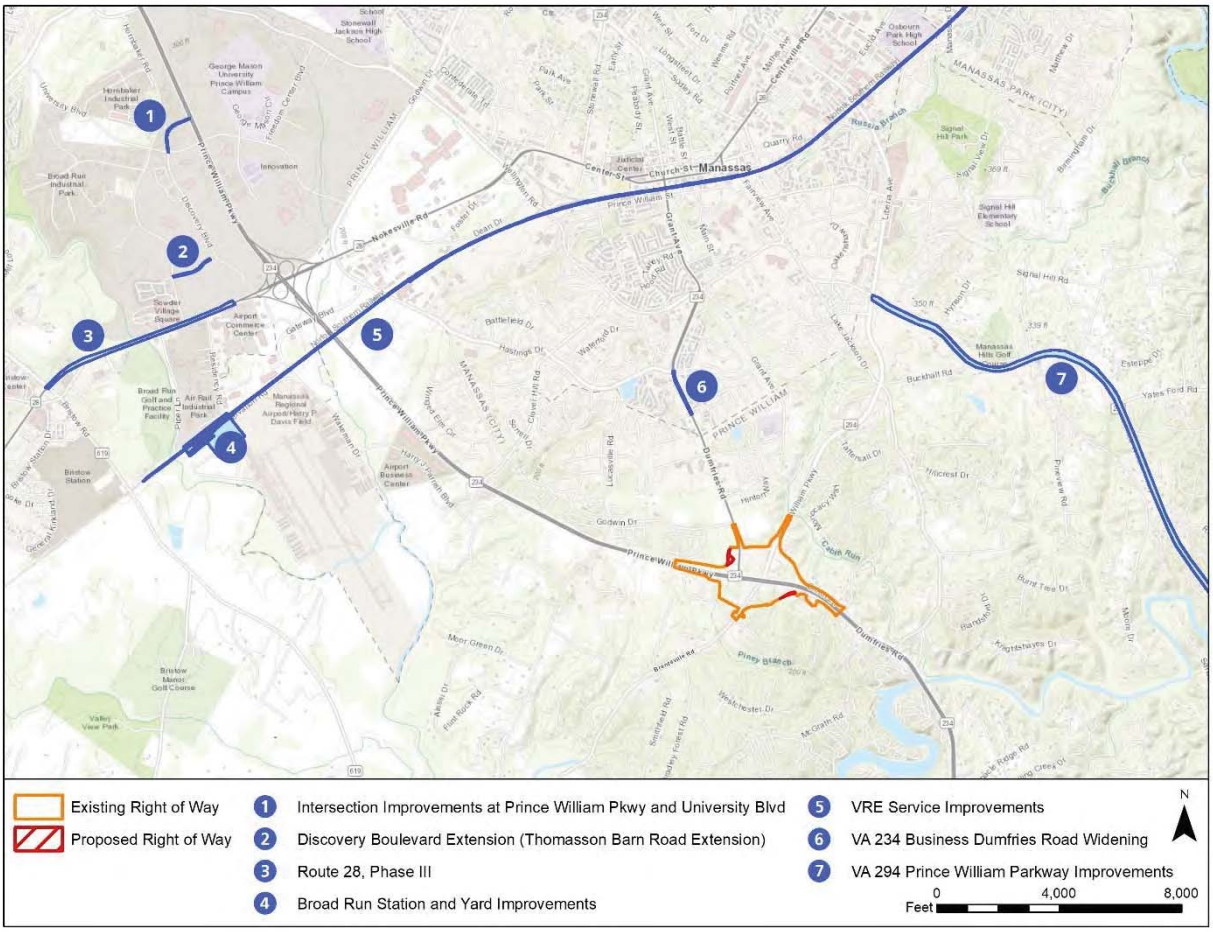

Figure 3. Future Transportation Improvements in the Project Vicinity

3. PROPOSED DESIGN

The location of the proposed Route 234/Dumfries Road/Brentsville Road interchange is consistent with the location of the proposed facilities as presented in the SEIS (see Figure 1). The conceptual design addressed in the SEIS is depicted in **Figure 4**, which is an excerpt from Figure VIII-5 in the SEIS. As noted earlier, due to funding constraints, the junctions of Route 234, the Route 234 Bypass, the Prince William Parkway (Route 294), and Brentsville Road were built as signalized at-grade intersections. However, most of the right-of-way needed to accommodate the interchange was acquired during the original Route 234 Bypass implementation.

As part of the STARS (Strategically Targeted and Affordable Roadway Solutions) Program, various alternatives were considered at this location to finally realize the grade separations. Further

refinements to an alternative suggested in the STARS study resulted in the proposed conceptual design shown in **Figure 5**.[2]

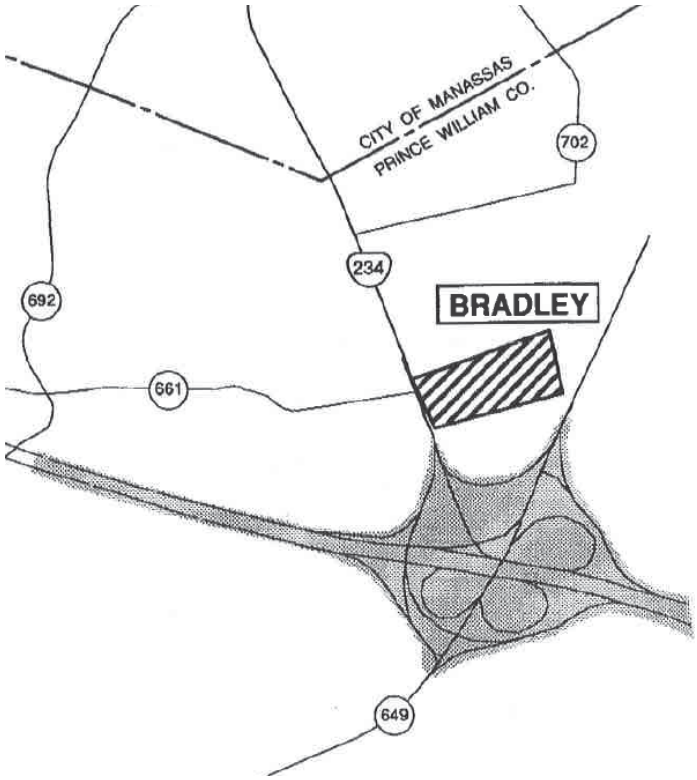

Figure 4. Brentsville Road Interchange from SEIS

PWC DOT is procuring a design-builder to implement the project, with a core requirement being to eliminate all signalized intersections on Prince William Parkway at this location. The footprint of the conceptual design is being used as the potential limits of disturbance (LOD) for this Environmental Studies document, notwithstanding that the ultimate design may change, depending on what alternative concepts a selected project developer may propose. The LOD consists of existing and proposed right-of-way and encompasses sufficient area to adequately assess the potential environmental consequences of the proposed project.

4. ENVIRONMENTAL CONSEQUENCES

Environmental studies were conducted to determine whether the current design, under current environmental conditions, would result in new or significant environmental effects compared to those presented in the SEIS. These studies took into account new regulatory requirements and guidelines that have been issued since publication of the SEIS.

[2] The goal of the STARS Program is to develop comprehensive, innovative transportation improvements to relieve congestion bottlenecks and create projects that improve critical traffic and safety challenges to be programmed in the VDOT Six-Year Improvement Program. The Prince William Parkway corridor was selected as a STARS project for two reasons: 1) existing recurring congestion and safety issues along the corridor during the AM and PM peak periods; and 2) the anticipated growth associated with this regionally significant corridor, both for through trips and local trips resulting from ongoing and planned development. *Prince William Parkway (Route 234) Bypass Corridor Intersection Alternatives Analysis*, October 31, 2018.

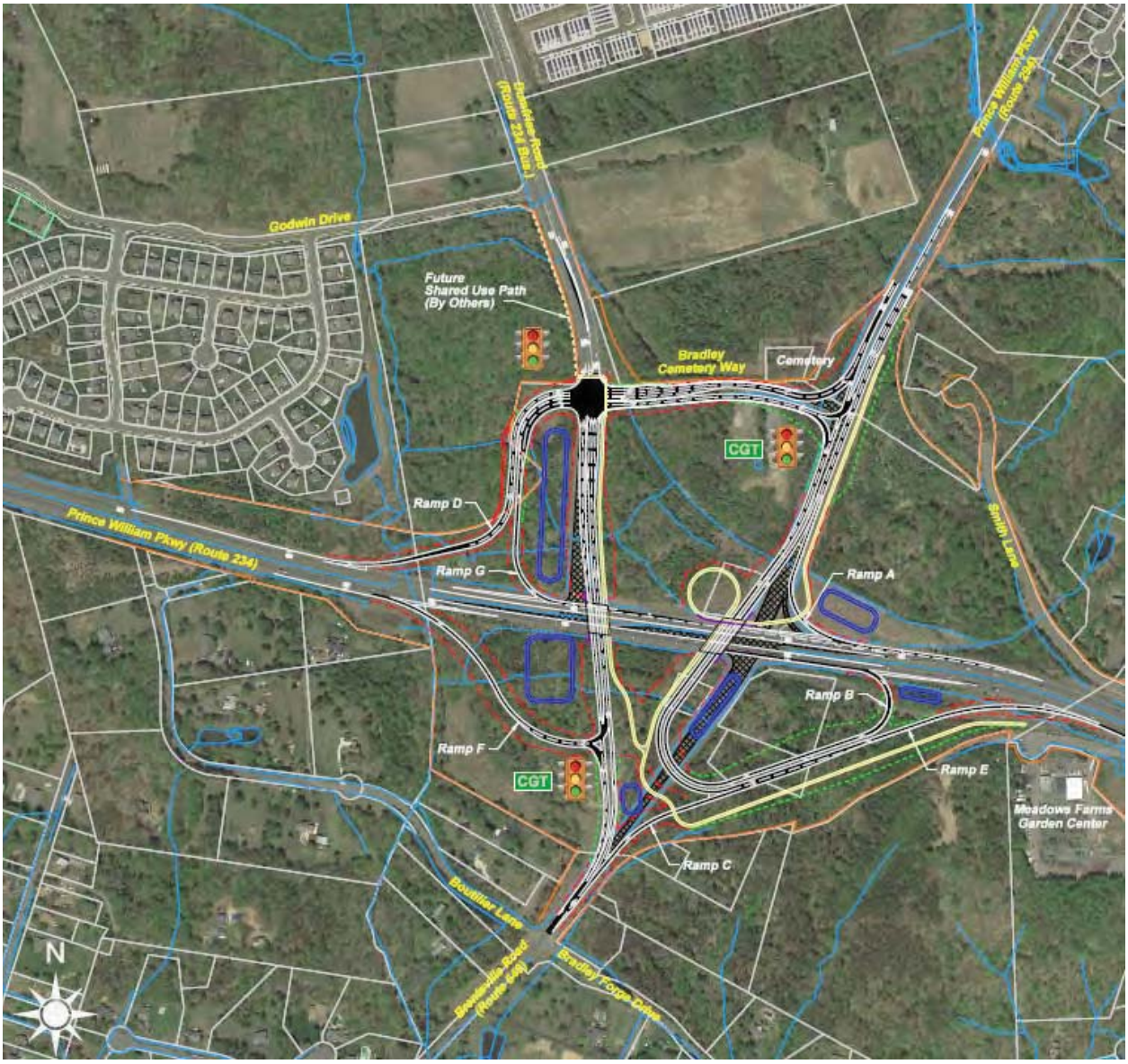

Figure 5. Proposed Brentsville Road Interchange

Figure 6 shows the LOD for the proposed improvements and environmental resources based on available geographic information systems (GIS) data and field reconnaissance. As indicated above, the current LOD consists of existing and proposed right-of-way and includes all of the areas encompassed by the proposed improvements. Resource impacts estimated in this Environmental Studies document are expected to decrease with further design and refinement of the LOD. **Table 1** summarizes the environmental studies conducted and documents the changes that have occurred in the project and its impacts within the current regulatory context. **Table 2** quantifies and compares impacts reported in the vicinity of the Dumfries Road/Brentsville Road interchange as presented in the SEIS with updated values for the current interchange conceptual design. A list of anticipated regulatory permits and authorizations for the project is provided in **Table 3**.

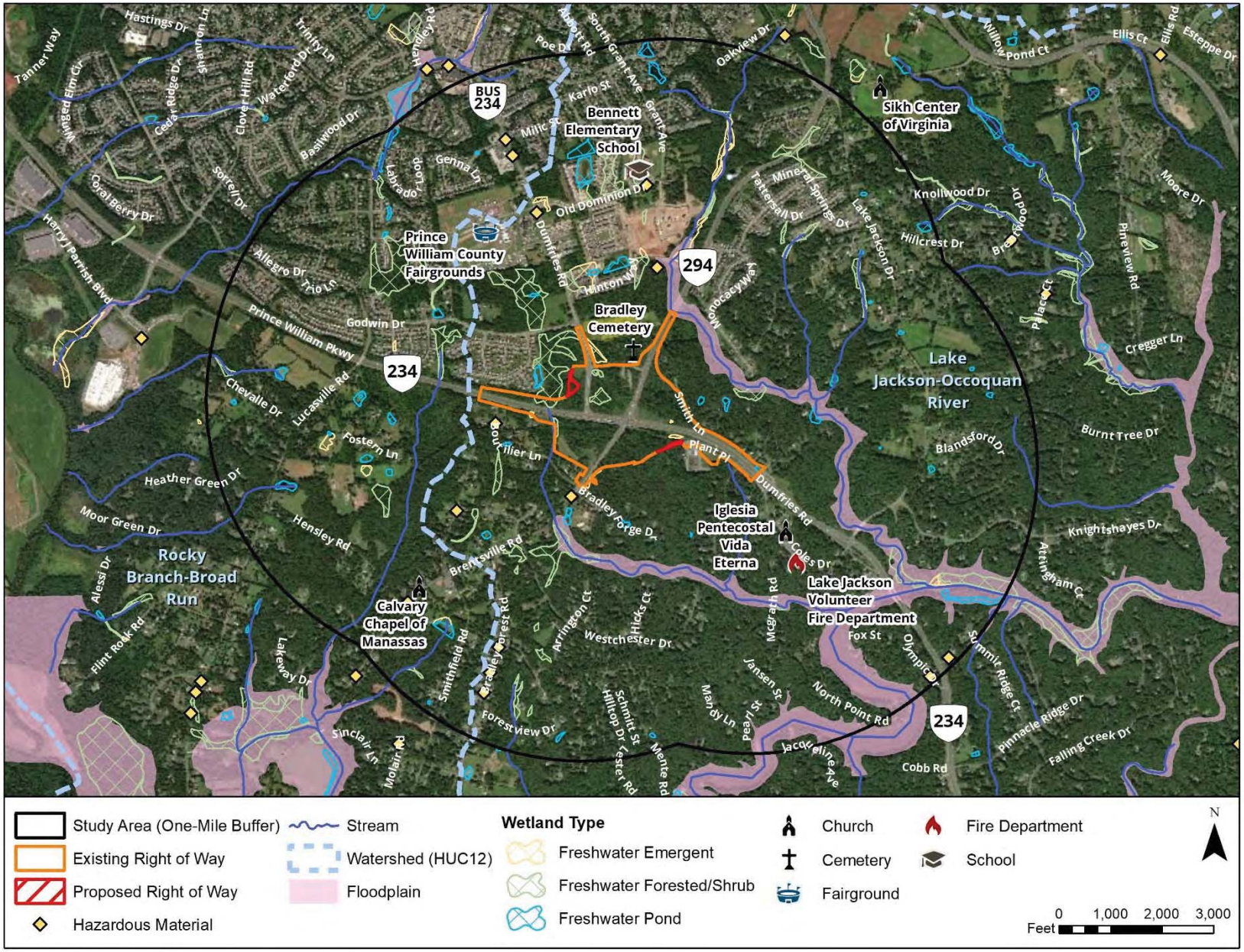

Figure 6. Environmental Resources within One Mile of the Project Area

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
TRANSPORTATION			
Traffic and Transportation	Traffic forecast updated from 2015 design year to 2045 design year. Review of SEIS; *Prince William Parkway (Route 234) Bypass Corridor Intersection Alternatives Analysis* (October 31, 2018); ongoing projects and studies in surrounding area; and Prince William County Comprehensive Plan.	Change in forecasted volumes due to extension of design year to 2045.	Implementation of the Route 234 Bypass was designed to reduce traffic congestion and travel times on existing Route 234. Additionally, the new bypass would provide an improved connection to I-66 and improved access to developing industrial, commercial, and residential areas. Population increases projected for Prince William County were cited in the SEIS to result in average daily traffic volumes to grow along all sections of existing Route 234 by the design year 2015. Updated traffic studies were completed as part of the *Prince William Parkway (Route 234) Bypass Corridor Intersection Alternatives Analysis* (Alternatives Analysis), and year 2040 was selected as the future analysis year in that study to develop design concepts that could accommodate anticipated growth. The traffic growth rates derived from the Metropolitan Washington Council of Governments (MWCOG) model using peak period and daily assigned link volumes for years 2016 and 2040 showed that annual traffic growth rates on crossing streets range from 2% to 5% while Prince William Parkway mainline annual growth rates range between 1% to 2%, with higher growth anticipated in the corridor south of Route 28 where this project is located. [Note that the design year for the current project is 2045; therefore, the 2040 forecasts from the Alternatives Analysis were increased assuming a 2% annual growth rate, as authorized by VDOT.] The project area contains four intersections that form a grid, including the intersections of Prince William Parkway at Dumfries Road and Brentsville Road/Prince William Parkway and the intersections of Bradley Cemetery Way at Dumfries Road and Prince William Parkway. As a result, these intersections were treated as one area since improvements to any one intersection would affect traffic flow at the other intersections. Interchange concepts were developed in consideration of the heavy turning movements from southbound Prince William Parkway (Route 234) to eastbound Prince William Parkway (Route 294) and northbound Dumfries Road (Route 234 Business toward Manassas) and the reverse movements (from Manassas), as well as heavy turning movements from northbound Dumfries Road (Route 234 Business) to Dumfries Road toward Manassas (Route 234 Business) and the return movements. The proximity of the Dumfries Road and Brentsville Road intersections on Prince William Parkway create challenges for moving heavy traffic volumes between the two intersections. As documented in the Alternatives Analysis, the proposed interchange would improve operations on Prince William Parkway at Brentsville Road and Dumfries Road by constructing a bridge to grade separate the eastern intersection of Prince William Parkway and Dumfries Road, converting the intersection of Prince William Parkway at Bradley Cemetery Way to a continuous green-T, and realigning Brentsville Road. The new bridge would allow free flow movement and eliminate delay for southbound Prince William Parkway/Dumfries Road to

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			eastbound Prince William Parkway as well as southbound Prince William Parkway to Dumfries Road. At the continuous green-T, the northbound direction would be free flow, which allows more green time to be provided to other movements. In the Alternatives Analysis, Brentsville Road was rerouted to align with the western intersection of Prince William Parkway and Dumfries Road. The findings from the Alternatives Analysis indicate that the proposed improvements would reduce delay on Prince William Parkway by 40%. Since the Alternatives Analysis was completed, the design concept has been further progressed to eliminate the western intersection, with a second bridge proposed in order to provide a through roadway between Brentsville Road and Dumfries Road (Route 234 Business). With the current concept shown in Figure 5, all signalized intersections would be eliminated on Prince William Parkway at this location, which would serve to further reduce delay.
SOCIOECONOMICS AND LAND USE			
Land Use Conversion	Review of SEIS, Prince William County Comprehensive Plan, historic and current aerial photography, field review, and analysis of design changes.	Minor change.	Designated land uses surrounding the proposed interchange have changed little since publication of the SEIS. The southeast, southwest, and northeast quadrants of the Brentsville Road interchange area were identified as a combination of "Agricultural/Estate," "Rural Residential," or "Semi-rural Residential" in the SEIS based on the 1990 Prince William County Comprehensive Plan. These areas are similarly designated as "Agricultural and Estate" or "Semi-Rural Residential" on Prince William County's Long-Range Land Use Map published January 1, 2020. The majority of the area west of Prince William Parkway (Route 294) was designated for "Commercial, Offices, or Employment Center" in the 1990 Comprehensive Plan and is similarly designated as "Community Employment Center" on the 2020 Long-Range Land Use Map. The land use designation for areas immediately north of Prince William Parkway (Route 234), which were "Agricultural/Estate," "Rural Residential," or "Semi-rural Residential" in 1990, changed to an only slightly higher density of "Suburban Residential Low" on the 2020 Long-Range Land Use Map.
Development	Review of historic and current aerial photography and field review.	Minor change.	Land within the LOD for the proposed project is currently undeveloped, except for the existing roadways. Agricultural buildings had been present at the interchange location at the time of the publication of the SEIS; however, they are no longer present (see Figure 2). Suburban residential development has been introduced immediately adjacent to the north of Prince William Parkway (Route 234), west of Dumfries Road (Route 234 Business), since the SEIS.
Consistency with Area's Comprehensive Plan	Comprehensive plan review.	No change.	The project remains consistent with the Prince William County Comprehensive Plan. As noted above, the SEIS for the Route 234 Bypass had included an interchange at Brentsville Road and land use classifications designated in Prince William County planning documents remain largely unchanged.
Populations	Review of SEIS and 2018 US Census data.	No change.	While there has been population growth within the Prince William Parkway corridor and surrounding communities, effects of the proposed interchange and roadway improvements on

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			populations are consistent with the SEIS. Land uses surrounding the proposed interchange have not changed substantially.
Emergency Services	Review of SEIS and field review.	No change.	The SEIS predicted improvements to response time of emergency vehicles as a result of the Route 234 Bypass project. Similarly, the proposed interchange and roadway improvements would improve the response time of emergency vehicles by reducing congestion and delay at the current intersections of Prince William Parkway with Dumfries Road and Brentsville Road.
Community Facilities	Review of SEIS and field review.	No change	No new community facilities have been identified within 1,000 feet of the LOD of the proposed interchange.
Cemeteries	Review of SEIS, DHR's V-CRIS, previous cultural resources reports, and field review.	No change.	The Bradley Cemetery is located outside the existing VDOT right-of-way and the proposed LOD on the north side of Bradley Cemetery Way just west of the intersection with Prince William Parkway. The cemetery is associated with the Bradley Plantation historic property farther to the north. The cemetery was avoided during the construction of the Route 234 Bypass project and will continue to be avoided during the construction of the proposed interchange. As the Bradley Cemetery is outside the project right-of-way, it would not be impacted by the project. PWC DOT will ensure that the design plans and construction documents for the proposed interchange conspicuously call out the cemetery and require that no encroachment on the cemetery of any kind will be allowed during construction of the project. The cemetery is maintained by Historic Prince William, a non-profit organization that promotes historical preservation in Prince William County. The Florence Cemetery (VDHR #44PW0564 is not eligible for the National Register of Historic Places). It lies within existing VDOT right-of-way in the northeast quadrant of the interchange. Although the Florence Cemetery is within existing VDOT right-of-way (acquired as part of the Route 234 Bypass construction project), it has not been disturbed and it would not be impacted by the current working design. Should the design change, care will be taken to avoid the cemetery and orange barrier fencing or other protective measures would be implemented during construction of the project to protect this cemetery. PWC DOT will ensure that the design plans and construction documents for the proposed interchange conspicuously call out the cemetery and require that no encroachment on the cemetery of any kind will be allowed during construction of the project. The cemetery is maintained by Historic Prince William under a permit from VDOT. The Clark-Jones Cemetery (076-0227 / 44PW0561 was determined not eligible for the National Register of Historic Places). It was located within the project area; near the current intersection of Route 234 and Brentsville Road; however, this cemetery, along with all of the grave markers, was relocated by VDOT to the Linton Hall Cemetery prior to construction of the Route 234 Bypass. In summary, no cemeteries would be displaced or encroached upon by the project.

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Potential Residential Relocations	Review of SEIS, and historic and current aerial photography. Field review.	No change.	The SEIS reported 42 residential relocations for the entire Route 234 Bypass project. Based on review of historical (1994) aerial photography, a few buildings were present within the vicinity of the Brentsville Road interchange; however, it is not clear whether these were residences or businesses. These buildings are no longer present and may have been impacted by the Route 234 Bypass or the subsequent construction of Prince William Parkway (Route 294). No residential relocations are expected with the current proposed interchange design and roadway improvements. The conceptual plans show proposed partial acquisitions of undeveloped land at two locations (see Figure 1).
Environmental Justice Populations	Review of SEIS and 2018 US Census American Community Survey (ACS) data. Field review.	No change.	The SEIS was published within less than six months of the issuance of Executive Order 12898 – *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, and prior to the establishment of environmental justice strategies by individual federal agencies. The SEIS provided information on minority populations and average income at the County level and concluded that the project would not impact particular social groups. An analysis of impacts to minority and low-income populations has been conducted consistent with policies and guidance contained in the Department of Transportation's Environmental Justice Order 5610.2(a) (published April 15, 1997, updated May 2, 2012) and FHWA's Environmental Justice Order 6640.23A (published December 2, 1998, updated June 14, 2012). Based on review of 2018 ACS data, the four census tract block groups within the study area contain a range of minority population percentages (22.4% to 51.3%) that are all lower than the minority population percentage in Prince William County (56.3%). Based on US Department of Health and Human Services poverty guidelines criteria and 2018 ACS median household income data, no low-income populations have been identified within the Census tract block groups traversed by the study area. No adverse community impacts are anticipated to minority populations within the study area (there would be no relocations of homes or businesses, negligible changes in noise impacts (see noise section of this table), negligible air quality impacts (see air section of this table), and no discernible disproportionately high and adverse human health or environmental effects on minority populations).
Business Relocations	Review of SEIS, historic and current aerial photography, and Prince William County parcel maps. Field review.	No change.	The SEIS identified eight commercial establishments affected by property acquisition for the entire Route 234 Bypass project. Based on review of historical (1994) aerial photography, a few buildings were present within the vicinity of the Brentsville Road interchange; however, it is not clear whether these were residences or businesses. These buildings are no longer present and may have been impacted by the Route 234 Bypass or the subsequent construction of Prince William Parkway (Route 294). No business relocations are expected with the current proposed interchange design and roadway improvements.
Visual and Aesthetics	Review of SEIS, and historic and current aerial photography. Field review.	Minor change.	The SEIS identified visual impacts for the Route 234 Bypass project from grading and clearing of vegetation where the proposed roadway would cross lands in rural use or natural vegetation, and in areas of steep slopes and visually prominent landforms. Based on review

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			of historical (1994) aerial photography, the visual character of the Brentsville Road interchange location had been a combination of rural and natural vegetation at the time of the publication of the SEIS. The current visual character of the proposed interchange is similar except that forests have replaced some of the open agricultural land (see Figure 2).
Farmlands	Review of SEIS, and historic and current aerial photography.	No change.	The SEIS identified impacts to approximately 413 acres of underlying prime farmland soils. The Farmland Conversion Impact Rating score sheet (USDA Form AD-1006) prepared for the SEIS identified a total score of less than 160, which is below the threshold for further consideration for protection of farmlands in accordance with 7 CFR 658.4(c)(2). There is no prime or unique farmland within the current project area. Per Farmland Protection Policy Act (FPPA) Rule 7 CFR 658.2, farmland does not include "land already in or committed to urban development." Farmland already in urban development includes areas identified as "urbanized area" (UA) on Census Bureau Maps. The project area is included in the Washington DC-VA-MD 92242 Urbanized Area per the 2010 Census Urbanized Area Reference Map (https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua92242_washington_dc--va--md/DC10UA92242.pdf).
NOISE			
Noise Criteria	Review of *Noise Study* for the SEIS, FHWA noise regulations in effect at time of SEIS, and current FHWA noise regulations.	FHWA amended its regulations on the *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, which included reorganizing and clarifying land use activity categories. However there were no substantive changes to the noise abatement criteria.	FHWA issued new noise regulations effective July 13, 2011 (*Procedures for Abatement of Highway Traffic Noise and Construction Noise*, 23 CFR 772). The new regulations provided clarification on applicability, certain analysis requirements, and the use of federal funds for noise abatement measures. In addition, two new activity categories were added to the noise abatement criteria (NAC), and the activity descriptions were expanded to better describe the types of land use facilities that would fall into each category. The numerical values of the criteria, however, have not changed. For example, the NAC for Activity Category B (residential) is still 67 dB(A).
Noise Impacts	Review of SEIS, noise analysis in support of the SEIS, historic and current aerial photography. Field review, and updated noise analysis in accordance with current regulations and guidance (see Attachment 1).	Minor change.	The SEIS noise evaluation identified thirty-three representative sites that reflected worst-case noise conditions along the entire Route 234 project corridor. These included residential receptors at five sites (Sites 19 through 23) in the vicinity of the cloverleaf interchange that was proposed at that time: • Site 19 represented residential receptors adjacent to the southwest quadrant of the proposed interchange. • Site 20 represented residential receptors north of Boutilier Lane at the intersection of Brentsville Road. • Site 21 represented residential receptors on both sides of Dumfries Road between Godwin Drive and the project tie-in. • Site 22 represented a residential receptor adjacent to the interchange.

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			• Site 23 represented a residential receptor adjacent to the northeast quadrant of the interchange. Predicted noise levels for the Build Condition at Sites 19 and 21 (61 and 63 dB(A), respectively) did not exceed the FHWA NAC for a residential receptor and did not represent a substantial increase (increase of 10 dB(A) or more) in noise from existing conditions. Predicted noise levels for Site 22 at 68 dB(A) exceeded the 67 dB(A) FHWA NAC for a residential receptor. Predicted noise levels for Sites 20 and 23 at 57 dB(A) and 60 dB(A), respectively, represented a substantial increase over the existing noise levels at that time of 44 dB(A) and 46 dB(A), respectively. Noise barriers were found to be not cost effective for any of the impacted receptors. Updated noise analysis was completed for the proposed project in accordance with current FHWA regulations as well as the current VDOT State Noise Abatement Policy. Traffic noise modeling was performed using FHWA's Traffic Noise Model (TNM) Version 2.5. The Noise Analysis Technical Report, included as Attachment 1, details the noise impact assessment for existing (2017) conditions as well as for the design year (2045) No-Build and Build conditions. Traffic on Prince William Parkway, Dumfries Road, Brentsville Road, and Bradley Cemetery Way was determined to be the primary source of noise attributed to the traffic noise impacts within the study area. Land use in the study area consists of single-family residences as well as commercial properties with no outdoor use areas. Noise impacts were predicted for the design year (2045) Build condition resulting from worst noise hour traffic noise levels approaching or exceeding the NAC at two receptors, one of which represents the Bradley Cemetery. The second impacted receptor represents a single-family residential frequent outdoor use area. Since the increase in traffic noise levels from existing (2017) to Build (2045) conditions was determined to be 0 to 6 dB, there would be no substantial noise increase impacts (an increase of 10 dB or more) within the study area. Noise abatement measures were evaluated for the two impacted receptors. It was determined that a noise barrier that would provide 5 dB or more of noise reduction at the impacted receptor within Bradley Cemetery would not be feasible due to access constraint issues. The noise barrier considered for the single-family residence was found to be feasible in providing traffic noise abatement but not reasonable as it does not meet the cost effectiveness criteria.
AIR QUALITY			
Air Quality	Review of SEIS and current VDOT and FHWA guidance/regulations:	No change.	Carbon Monoxide (CO): CO hotspot analysis was completed as part of the SEIS at four worst-case locations along the alignment (which did not include the intersections of Prince William Parkway at Dumfries Road and Brentsville Road/Prince William Parkway). VACAL3M4, a simplified microcomputer procedure developed from FHWA 's

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
	- VDOT's *Project-Level Air Quality Analysis Resource Document* (Version 2.0, December 2018). - FHWA-VDOT *Programmatic Agreement for Project-Level Air Quality Analyses for Carbon Monoxide* (April 2016). - FHWA-VDOT *Programmatic Agreement For Project-Level Air Quality Analyses For Carbon Monoxide* (October 2020). - FHWA-VDOT *Programmatic Agreement For Project-Level Air Quality Analyses For Carbon Monoxide Technical Support Document* (September 2020). - FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents* (October 18, 2016). - Visualize 2045 Air Quality Conformity Analysis (October 17, 2018) for the financially constrained element of the Visualize 2045 long-range transportation plan (the Route 234 Interchange at Brentsville Road has Conformity ID# 660). - Air Quality Conformity Analysis of the 2020 Amendment to Visualize		MOBILE3/CALINE3 Graphic Assessment Program (revised to include Mobile 4.1 emission factors), was used to estimate CO concentrations at all four locations, which were all below the National Ambient Air Quality Standards (NAAQS). As the project is located in a region that is classified as attainment of the CO NAAQS, EPA project-level ("hot-spot") transportation conformity requirements do not apply. As only NEPA applies, a project-specific analysis and/or assessment for carbon monoxide (CO) is not needed under the terms of the October 2020 programmatic agreement between FHWA and VDOT for project-level air quality analyses for CO. As documented in that agreement, which is based on the analysis and information presented in the template Programmatic Agreement and Technical Support Document (TSD) developed in the National Cooperative Highway Research Program (NCHRP) 25-25 Task 104 study (2020), the weight-of-evidence shows that it may reasonably be concluded that the NAAQS for CO will be met. Fine Particulate Matter ($PM_{2.5}$): No NAAQS for $PM_{2.5}$ were in effect at the time of the SEIS. The Washington, D.C. metropolitan area is designated attainment for the current $PM_{2.5}$ standard and therefore is not subject to a PM conformity assessment. On August 24, 2016, EPA published a final rule (Reference 5) that resulted in the region no longer being required to demonstrate transportation conformity for any fine particles standard. As part of the rule, EPA revoked the 1997 fine particles standard since a more stringent 2012 standard had been put in place. The revocation, combined with the decreasing levels of fine particles in the region always remaining below the 2012 standard, resulted in the region no longer being required to analyze fine particles in the air quality conformity determinations of the regional transportation plans and TIPs. Mobile Source Air Toxics (MSAT): The Clean Air Act Amendments (CAAA) of 1990 identifies 188 air toxics, also known as hazardous air pollutants. Subsequent to the completion of the SEIS, the Environmental Protection Agency (EPA) assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System (IRIS). In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics (MSAT), the list is subject to change and may be adjusted in consideration of future EPA rules. FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
	2045 (March 18, 2020, Conformity ID# 660). - Virginia Ambient Air Monitoring 2018 Data Report (October 2019) by Virginia Department of Environmental Quality (VDEQ). - Virginia Ambient Air Monitoring 2019 Annual Report (October 2020) by VDEQ.		1) No analysis for projects with no potential for meaningful MSAT effects; 2) Qualitative analysis for projects with low potential MSAT effects; or 3) Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects. This project would be described as one with low potential MSAT effects, based on the definition below (as it proposes a new interchange with design year traffic projected to be less than 140,000 AADT): FHWA defines projects with low potential MSAT effects as those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects, including minor widening projects; new interchanges; replacing a signalized intersection on a surface street; and projects where design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT). Guidance on MSAT analysis is provided in FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents* dated October 18, 2016. The Guidance incorporates analysis conducted using MOVES2014a, the latest major update of the Motor Vehicle Emissions Simulator (MOVES) vehicle emissions model. As indicated in the Guidance, EPA's regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent. Regional Conformity Status of the Project: Because the project is located in an eight-hour ozone nonattainment area, conformity applies and the project must be included in a conforming financially constrained regional long-range transportation plan adopted by the Metropolitan Planning Organization (MPO). This project is included in the Visualize 2045 Air Quality Conformity Analysis (Conformity ID# 660) for the financially constrained element of the Visualize 2045 long-range transportation plan (Constrained Element ID# 3178) and FY2021-2024 Transportation Improvement Program (TIP) (National Capital Region Transportation Planning Board, March 18, 2020).
NATURAL RESOURCES			
Terrestrial Wildlife Habitat	Review of SEIS, and historic and current aerial photography. Field review.	No substantial change.	The SEIS identified impacts to wildlife habitat from the removal of vegetation. SEIS Figure III-10 indicates that forest habitats were present west of Dumfries Road (Route 234 Business) and areas farther south and northeast of the proposed interchange. Based on review of current (2018) and historic (1994) aerial photography (see Figure 2), the area of the proposed interchange was formerly mostly agricultural land and is now largely forested. The current

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			LOD includes 58.91 acres of forest habitat. The current LOD includes areas between the proposed roadway improvements that may or may not be disturbed during construction. The actual acreage of forest impacts is expected to substantially decrease with further design and refinement of the LOD.
Threatened & Endangered Species	Review of SEIS; field reconnaissance; US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online project review process; and Virginia Department of Game and Inland Fisheries (VDGIF) Virginia Fish and Wildlife Information System (VFWIS) database search.	Minor change.	The SEIS did not identify any potential impacts to federally listed threatened or endangered species as a result of construction of the Route 234 Bypass. The SEIS identified unconfirmed reports of the state-threatened loggerhead shrike along the proposed bypass and committed to mitigation of potential impacts should the presence of the birds be confirmed. The official federally listed species list was updated in January 2020 as part of the environmental studies for the proposed improvements by conducting an online project review through USFWS's IPaC system (see Attachment 2 for complete project review package). Under 50 CFR 402.12(e) of the regulations implementing Section 7 of the Endangered Species Act (Act) of 1973, the accuracy of this species list should be verified after 90 days. An updated list was requested through the IPaC system on October 5, 2020 and yielded the same results (see Attachment 2).The official species list provided by IPaC consisted of the following endangered species, and the resulting conclusions for each are provided below and in Attachment 2: Northern Long-Eared Bat (*Myotis septentrionalis*) – species may be present in the project area given the presence of suitable habitat. The project may affect, but would not likely adversely affect, the northern long-eared bat. In accordance with the 4(d) Rule for the Northern Long-Eared Bat (81 FR 1900), incidental take of northern long-eared bats resulting from tree removal is prohibited if it: (1) Occurs within a 0.25 mile radius of known northern long-eared bat hibernacula; or (2) cuts or destroys known occupied maternity roost trees during the pup season (June 1 through July 31). Based on VDGIF mapping of known northern long-eared bat winter habitat and roost trees, there are no known hibernacula or roost trees in the vicinity of the project. However, there are wooded areas along the project that could potentially provide suitable summer roosting and foraging habitat. To avoid potential incidental take of northern long-eared bats, tree removal would occur outside of the pup season (June 1 through July 31). This voluntary avoidance and minimization measure was coordinated with USFWS and USFWS concurred that responsibilities for this project under Endangered Species Act Section 7(a)(2) with respect to the northern long-eared bat were satisfied, except that recoordination would be necessary if the project is not completed by January 29, 2021. Further coordination will be conducted at a time when the project is closer to construction. Harperella (*Ptilimnium nodosum*) – there is no suitable habitat in the project area. Suitable habitat characteristics include stable point bars, bedrock outcrops, and rocky and gravelly shoals in perennial streams and rivers with moderate to swift flow. Field observations within the project area found no such habitat present. Instead, the several intermittent streams,

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			ephemeral streams, and stormwater drainage ditches have organic detritus or vegetated substrates. Intermittent streams are considered unsuitable habitat because the hydrologic pulsing characteristics needed to support and promote harperella are absent. Land use and land cover in the project area consist largely of commercial and residential uses and multiple roadways, the runoff from which is routed through a number of stormwater management ponds within the project area. The project would have no effect on harperella since there is no suitable habitat present.
Critical Habitat	Review of SEIS and USFWS IPaC online project review process.	No change.	According to information provided by USFWS through IPaC, no critical habitat is currently designated within the project area.
Wildlife and Waterfowl Refuges	Review of SEIS and USFWS IPaC online project review process.	No change.	According to information provided by USFWS through IPaC, no wildlife or waterfowl refuges are within or proximate to the project area.
Wetlands and Streams (Aquatic Sites)	Review of SEIS, National Wetland Inventory (NWI) and National Hydrography Dataset (NHD) mapping, and historic and current aerial photography. Field review.	Minor change.	The SEIS anticipated wetland and stream impacts within the area surrounding the proposed interchange. SEIS Figure II-2 identifies a large wetland area at the location of the Brentsville Road interchange which was mostly avoided by shifting the alignment of the Route 234 Bypass southward. The exhibit shows two smaller wetland areas that were within the project LOD. Based on SEIS Table IV-9 Characteristics and Acreages of Wetlands and Aquatic Sites in conjunction with SEIS Figure IV-7 Wetlands and Aquatic Sites map, approximately 8.18 acres of freshwater forested wetlands, 0.95 acre of freshwater emergent wetlands, and 0.22 acre of a "constructed pond with vegetated littoral zone" were identified as impacted by the proposed interchange. The headwaters of Piney Branch are listed as impacted in association with the wetlands within the list of impacted aquatic sites in SEIS Table IV-9; however, the acreage or linear feet of stream impacts, separate from that of the wetland impacts, are not provided. Wetlands and streams were mapped within the LOD of the current interchange design based on review of NWI and NHD maps and field reconnaissance. Wetlands and streams within the LOD that are anticipated to be considered jurisdictional by the US Army Corps of Engineers (USACE) are shown in Figure 6. A more detailed map of water features, including VDOT stormwater basins, is provided in Attachment 3. Approximately 4.04 acres of wetlands and aquatic sites are located within the LOD of the Brentsville Road interchange. Wetlands include freshwater forested, scrub-shrub, and emergent wetlands. Streams within the LOD include Piney Branch, multiple tributaries to Piney Branch, and a tributary to Cabin Run. The current LOD includes areas between the proposed roadway improvements that may or may not be disturbed during construction. The actual acreage of wetland and stream impacts are expected to substantially decrease with further design and refinement of the LOD. A formal jurisdictional delineation will be completed during final design. Efforts will be made during project design to avoid impacts to streams and wetlands to the extent practicable.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			Where streams or wetlands cannot be avoided, impacts will be minimized by measures such as making minor shifts in alignment, using retaining walls to reduce fill impacts, and locating planned stormwater management facilities in upland areas. See "Mitigation Measures" section below for discussion of compensatory mitigation for wetland and stream impacts.
Public Water Supply	Review of SEIS and Prince William County Service Authority's (PWCSA) 2019 Water Quality Report – West 6153251.	No change.	No public water supply sources are present in the project vicinity. Public drinking water within western Prince William County is drawn from the Potomac River and Lake Manassas. The Potomac River water is treated at Fairfax Water's James J. Corbalis, Jr. Water Treatment Plant, whereas Lake Manassas has its own treatment plant. Water quality testing by PWCSA in 2019 found that the public water supply met all federal and state water quality standards. The project area is located within the Occoquan River-Occoquan Reservoir-Lake Jackson Hydrologic Unit Code 12 (020700100801) watershed. The Occoquan Reservoir is managed by the Fairfax County Water Authority as a public water supply for residents of Fairfax County and the City of Alexandria. Potential impacts of the Route 234 and Brentsville Road interchange to downstream waters are addressed under "Water Quality" below.
Aquatic Wildlife Habitat	Review of SEIS.	No change.	As indicated in the SEIS, fish species would be impacted to some degree by construction of the new roadway. Potential impacts include changes in water quality, physical impediments to fish movements, changes in actual habitat, and changes in such hydrological parameters as current velocity, depth, and flood levels. Any proposed culvert extension at the crossing of Piney Branch would be consistent with the current culvert design and would not substantially alter stream flow characteristics.
Floodplains	Review of SEIS and Federal Emergency Management Agency (FEMA) 100-year floodplain mapping (latest update 1/12/01).	No change.	Floodplain locations shown in SEIS Figure III-12 in the vicinity of the proposed Brentsville Road interchange appear consistent with current 100-year floodplain mapping shown in Figure 6. Approximately 0.16 acre of the floodplain associated with Cabin Run is within the LOD; however, efforts would be made to avoid encroachment of the floodplain during project design.
Resource Protection Areas	Review of SEIS and current Resource Protection Area (RPA) mapping.	Minor change.	According to SEIS Figure III-13 Resource Protection Areas and SEIS Table IV-11 Resource Protection Area Encroachments, the Brentsville Road interchange would encroach upon 7.76 acres of a RPA associated with Piney Branch. The mapping of RPAs within Prince William County has been revised since the establishment of RPA designation criteria by the Commonwealth of Virginia in 2001 (9 VAC 10-20-10 *et seq*.). Under the criteria, RPAs include, at minimum, areas within a 100-foot buffer area of water bodies with perennial flow, tidal shores and wetlands, nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, and other lands adjacent to water bodies with perennial flow that have an intrinsic water quality value. Based on the current design and RPA mapping, the proposed project would encroach on approximately 5.82 acres of a RPA associated with Piney Branch and Cabin Run.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
Water Quality	Review of SEIS, NWI and NHD mapping, and 2018 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report.	Minor change.	As discussed in the SEIS, the increase in impervious surfaces associated with roadway construction results in an increase in stormwater runoff, which can transport roadway pollutants and sediments into nearby streams, potentially affecting water quality within downstream waters, including the Occoquan Reservoir. To minimize these impacts, appropriate permanent erosion and sediment control best management practices would be implemented in accordance with state and federal regulations. Such practices have improved with the establishment of Municipal Separate Storm Sewer Systems (MS4) Permits under the National Pollutant Discharge Elimination System (NPDES) and Virginia Stormwater Management Program (VSMP), under which Prince William County began its MS4 permit program in December 2014.
Energy	Review of SEIS and new traffic forecast.	No change.	As anticipated in the SEIS, the construction of the Route 234 Bypass would require the short-term consumption of energy resources. The traffic-reducing benefits of the project, however, may reduce fuel consumption over the long term.
Hazardous Waste Sites	Review of SEIS, EPA Facility Registry Service, field review, and Phase I Environmental Site Assessment (ESA).	Minor change.	SEIS Figure IV-8 identified a hazmat site (#7) adjacent to the north side of Route 234, east of the proposed interchange. The site was an automobile service shop that was displaced by the Route 234 Bypass construction. A review of EPA's Facility Registry Service data (2019) identified multiple sites that use and/or store hazardous materials within 0.5 mile of the project location, including one landfill, one Resource Conservation and Recovery Act (RCRA) small quantity generator (SQG), one National Compliance Database (NCDB) site, and three residences listed under the Integrated Compliance Information System (ICIS) for NPDES permits. None of these sites are within the proposed LOD. A Phase I ESA was completed in July 2020. The objective of this Phase I ESA was to identify Recognized Environmental Conditions (RECs) as defined in ASTM Practice E-1527-13 with regard to the site and to evaluate potential future liability associated with past or current practices on the site. An REC is the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. The Phase I ESA revealed no evidence of RECs within the LOD. See Attachment 4 for the complete report.
HISTORIC & ARCHAEOLOGICAL RESOURCES			
Architectural Resources	Review of SEIS and Virginia Cultural Resource Information System (V-CRIS), coordination with DHR.	Original effect determination documented in SEIS was adverse effect- due to visual effects, which were addressed in an MOA. DHR concurred with	As indicated by SEIS Figure III-8, one National Register of Historic Places (NRHP)-eligible architectural resource, Bradley (076-0070), was identified near the Brentsville Road interchange.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
		no adverse effect determination 2/20/20 for the current interchange project.	A review of the V-CRIS database revealed no additional NRHP-eligible architectural resources within the project's Area of Potential Effect (APE).[3] In accordance with the Section 106 Memorandum of Agreement (MOA) dated 1994, the proposed interchange would not physically encroach on the Bradley historic property. Pursuant to the MOA, visual effects on Bradley were addressed by landscaping measures implemented as part of the construction of the Route 234 Bypass. As noted in coordination with DHR (see Attachment 5), the thick growth of trees since construction of the Route 234 Bypass now effectively screen the Bradley property from potential visual effects of the current interchange project. Accordingly, DHR concurred with a no adverse effect determination on February 20, 2020.
Archaeological Resources	Review of SEIS and V-CRIS, coordination with DHR.	No adverse effect.	As noted in the Cemeteries section above, The Bradley Cemetery, located outside the existing VDOT right-of-way and the proposed LOD on the north side of Bradley Cemetery Way just west of the intersection with Prince William Parkway, is associated with the Bradley Plantation historic property farther to the north. The cemetery was avoided during the construction of the Route 234 Bypass project and will continue to be avoided during the construction of the proposed interchange. As the Bradley Cemetery is outside the project right-of-way, it would not be impacted by the project. PWC DOT will ensure that the design plans and construction documents for the proposed interchange conspicuously call out the cemetery and require that no encroachment on the cemetery of any kind will be allowed during construction of the project. The cemetery is maintained by Historic Prince William, a non-profit organization that promotes historical preservation in Prince William County. As indicated by SEIS Figure III-8, the NRHP-eligible archaeological site, 44PW0563, was identified near the Brentsville Road interchange. Although mitigation measures to resolve adverse effects to site 44PW0563 were identified in the 1994 MOA, the current conceptual interchange plans have been designed to avoid this archaeological site. A review of the V-CRIS database indicated no additional archaeological sites have been recorded in the APE. DHR concurred with a no adverse effect determination for the project on February 20, 2020 (see Attachment 5).
Brown's Tavern Site	Coordination with Historic Prince William, review of previous cultural resources reports, online research	No change.	A historical marker sign erected by the Prince William County Historical Commission on the west side of Brentsville Road references Brown's Tavern (aka Gaines' Tavern). According to information on the sign, the tavern operated in the late 1700s and early 1800s and was visited many times by Thomas Jefferson on his travels between his home and Washington,

[3] A large portion of the project area is located within a resource recorded as the Limstrong Historic District (076-0489); however, this historic district was determined not eligible for listing in the NRHP. With the exception of Bradley (076-0070) and the Bradley domestic archaeological site (44PW0563), the remainder of the resources that were proposed as contributing to the district are no longer extant or were determined not eligible for listing in the NRHP.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			DC. According to deed and other research conducted by Historic Prince William, the site of the tavern was in the vicinity of the current intersection of Brentsville Road and Bradley Forge Road, which is outside the area of potential effects of the project.
INDIRECT & CUMULATIVE IMPACTS			
Socioeconomic Impacts	SEIS review.	No substantial change.	As noted in the SEIS, transportation projects may influence land use by altering or improving access to developable lands. The SEIS concluded that residential, commercial, and industrial land uses were already expanding in Prince William County, and that the Route 234 Bypass project may accelerate the pace by making land more accessible. The Route 234 Bypass project was included in the County's 1990 Comprehensive Plan, and therefore the SEIS concluded that the project was part of the planned growth of the County. The proposed improvements as currently designed would reduce traffic congestion and delay at the intersections of Route 234 (Prince William Parkway) and Dumfries Road (Route 234 Business), Brentsville Road (Route 649), and Route 294 (Prince William Parkway), thereby making travel to adjacent development more expedient. This improved access remains consistent with the current Prince William County Strategic Plan 2017-2020, which encourages the continued improvement of transportation within the County to maintain quality of life for residents and businesses. The direct impacts of the proposed interchange at Brentsville Road to the socioeconomic environment do not differ substantially from those anticipated in the SEIS. The effects of past, present, and reasonably foreseeable future projects on the socioeconomic environment have occurred and are expected to continue to occur, consistent with the goals and objectives of consecutive Prince William County Comprehensive Plans. Therefore, no new adverse cumulative effects on the socioeconomic environment are anticipated from the proposed improvements when combined with other past, present, and reasonably foreseeable future projects.
Natural Resource Impacts	SEIS review	No substantial change.	The SEIS identified potential indirect hydrologic impacts resulting from alteration of drainage characteristics of wetlands and aquatic sites. Implementation of appropriate permanent erosion and sediment control best management practices in accordance with state and federal regulations would avoid substantial indirect effects downstream of the project. The direct impacts of the proposed interchange at Brentsville Road to natural resources do not differ substantially from those anticipated in the SEIS. While rapid growth and development within Prince William County has continued to adversely affect natural resources (e.g. degradation of water quality and loss of wildlife habitat), such growth within the County had been anticipated in the SEIS. No new adverse cumulative effects on natural resources are anticipated from the proposed improvements when combined with other past, present, and reasonably foreseeable future projects. Some adverse effects may be reduced by more stringent environmental regulations that have been implemented since the

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			publication of the SEIS, especially in the area of stormwater management, as discussed in Water Quality above.
CONSTRUCTION IMPACTS			
Traffic and Transportation	SEIS review.	No change.	Similar to what was anticipated in the SEIS, construction of the proposed improvements may result in temporary detours and traffic delays. Temporary lane closures may also be required during bridge construction. A detailed Maintenance of Traffic (MOT) Plan will be prepared during final design.
Emergency Services	SEIS review.	No change.	The SEIS concluded that there would be no increases in response time of emergency vehicles because the project would not close any major local roads. Measures to avoid or minimize potential delays resulting from lane closures will be included in the MOT Plan.
Air Quality	SEIS review.	No change.	The SEIS identified temporary air quality impacts from project construction, including exhaust emissions from construction equipment and dust generated by construction activities on disturbed earth. These impacts would be minimized by adherence to VDOT's 2020 *Road and Bridge Specifications*.
Noise	SEIS review.	No change.	As indicated in the SEIS, noise receptors that would be sensitive to highway noise would also be sensitive to noise from construction equipment while the project is being built. Noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Any construction noise impacts that may occur as a result of roadway construction are anticipated to be temporary in nature and would cease upon completion of the project construction phase. The contractor will be required to conform to the specifications found in VDOT's 2020 Road and Bridge Specifications, Section 107.16(b.3), "Noise." Adherence to this policy of establishing a maximum level of noise that construction operations can generate would reduce the potential impact of construction noise on the surrounding community.
Wetlands and Streams	SEIS review.	No change.	Construction of the proposed improvements would result in permanent and/or temporary impacts to wetlands and streams. Avoidance and minimization measures for permanent impacts to wetlands and streams would follow the procedures discussed under the "Natural Resources" and "Mitigation Measures" subheadings. As noted in the SEIS, temporary impacts to wetlands and streams during construction may occur from temporary clearing and filling associated with relocation of underground utilities and provision of construction access and from temporary stream diversion during culvert construction. Areas of temporary disturbance would be restored to pre-construction conditions.
Water Quality	SEIS review.	No change.	As discussed in the SEIS, project construction may result in short-term water quality impacts from erosion and associated sedimentation. As discussed further below, erosion and sediment control measures will be implemented to minimize water quality impacts from increased levels of sedimentation and turbidity.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
MITIGATION MEASURES			
Relocations	SEIS review.	No change.	No residential or business relocations would be required for the current design of the proposed interchange at Brentsville Road.
Noise	SEIS review.	No change.	No new noise impacts have been identified and no noise abatement measures are warranted.
Threatened & Endangered Species	SEIS review; information from USFWS, VDCR, and VDGIF.	Change (avoidance measures for newly-listed species).	To avoid potential incidental take of northern long-eared bats, tree removal would occur outside of the pup season (June 1 through July 31).
Wetlands	SEIS review.	Minor change (additional compensation required for more refined estimate of impacts)	In 2008, EPA and the USACE expanded the 404(b)(1) Guidelines to include more comprehensive standards for compensatory mitigation. Under the Final Rule for Compensatory Mitigation for Losses of Aquatic Resources (DOD 33 CFR Parts 325 and 332, EPA 40 CFR Part 230), compensation follows a hierarchy of preferred mitigation approaches that include: 1) mitigation banks; 2) in-lieu fees; and 3) permitee-responsible mitigation. If required, compensation for unavoidable wetland and stream impacts would be provided as part of the permit conditions for any authorizations issued by the USACE and VDEQ. Because these agencies determine the compensation requirements for stream impacts on a case-by-case basis, the quantitative requirements for the project would be determined with them as part of the permit application process.
Water Quality	SEIS review.	No change.	The SEIS recommended erosion and sediment control measures to be implemented to minimize water quality impacts from increased levels of sedimentation and turbidity. Control measures may include berms, dikes, sediment basins, fiber MATS™, straw silt barriers, netting, mulch, temporary and permanent seeding, and other methods. Construction impacts to in-stream aquatic habitats may be minimized to the extent practicable by avoiding stream relocations and by crossing streams at right angles. To the extent possible, construction equipment will be restricted from fording and otherwise disrupting in-stream habitats.
Hazardous Waste Sites	SEIS review.	No change.	A Phase I ESA has been performed and revealed no evidence of RECs within the LOD.
Air Quality	SEIS review.	No change.	Construction impacts ranging from exhaust emissions from construction equipment to dust generated by construction activities on disturbed earth would be minimized by enforcement of construction specifications and adherence to the VDEQ regulations.

TABLE 2. SUMMARY OF ENVIRONMENTAL IMPACTS

Category	Modified Selected Alternative from Route 234 Bypass SEIS 1994	Route 234 Interchange at Brentsville Road Project Area	
		Per Route 234 Bypass SEIS 1994	Per Current Limits of Disturbance and Resource Mapping 2018
Right-of-Way Required (acres)	809	unknown*	1.38
Residences (units)	34	unknown*	0
Businesses	8	unknown*	0
Schools	0	0	0
Other Community Facilities (rescue squads, fire stations, etc.)	0	0	0
Prime and Unique Farmland (acres)	346	unknown*	0
Forest (acres)	387	unknown*	58.91**
Parks and Recreational Resources	0	0	0
Historic Districts (#)	1	0	0
Archaeological Sites (#)	3	1	1
Stream Crossings (#)	49	1	1
Wetland and Aquatic Sites (#) (includes streams)	68	3	7**
Wetland and Aquatic Sites (acres) (includes streams)	23**	9.35***	4.04***
Floodplains Crossed (#)	3	0	1
Floodplains (acres)	9	0	0.16
Noise Impacts (Number of Receptors Impacted)	210	$\geq$5	0
Known Hazardous Material Sites Impacted (#)	16	1	0
Resource Protection Areas (acres)	49	7.76	5.82

* Specific quantities for the Brentsville Road interchange area were not identified in the SEIS.

** Impacts to streams and wetlands were combined in the 1994 SEIS; for consistency, the impacts are reported the same way for the Brentsville interchange project.

*** The current LOD includes all of the areas between the proposed improvements. Resource impacts are expected to decrease with further design and refinement of the LOD.

TABLE 3. PERMITS AND AUTHORIZATIONS

Permit/Authorization	Law	Agency
Section 404 Permit	Clean Water Act (CWA)	USACE
Section 401 Water Quality Certification	CWA	VDEQ
Section 402 National Pollutant Discharge Elimination System (NPDES) Permit	CWA	VDEQ
Subaqueous Bed Permit (no applicable water resources present)	Virginia Water Law	Virginia Marine Resources Commission (VMRC)
Section 7 Consultation	Endangered Species Act (ESA)	USFWS
Section 106 Consultation	National Historic Preservation Act (NHPA)	Virginia Department of Historic Resources (VDHR)

5. FINDINGS/CONCLUSION

Based on the foregoing discussion, this Environmental Studies document demonstrates that, with respect to the Route 234 at Brentsville Road Interchange Project, changes to the project, changes in the affected environment, and changes in applicable regulatory requirements and guidance would not result in significant environmental impacts not already considered in the previous environmental documentation. In addition, there is no new information or circumstances relevant to environmental concerns and bearing on the proposed action or its impacts that would result in significant impacts not identified in the previous environmental documentation. Accordingly, a Supplemental Environmental Impact Statement is not necessary.

The FHWA concurs with this determination.

THOMAS L NELSON JR

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Date: 2021.03.15 14:30:35 -04'00'

March 15, 2021

Federal Highway Administration — Date

ATTACHMENT 1

NOISE ANALYSIS TECHNICAL REPORT

From:	Lovejoy Muchenje
To:	Tyler, Stuart; Shikurye, Dagmawie D.
Cc:	Anissa Brown; Ashton, Surbhi; Berg, Gregory
Subject:	[EXTERNAL] RE: Route 234 at Brentsville Road Interchange, Prince William County - Updated Noise Analysis, Final Report
Date:	Thursday, October 01, 2020 11:11:39 AM
Attachments:	image001.png

Stuart-Thanks again for the report and associated files. I have reviewed and all comments were addressed. I have no other comments.

Respectfully,

LJ Muchenje, P.E., PMP | Environmental Division | Virginia Department of Transportation (VDOT) | 1401 E. Broad Street, Richmond VA | Phone 804-371-6768 | Lovejoy.Muchenje@VDOT.Virginia.gov

From: Tyler, Stuart <Stuart.Tyler@parsons.com>
Sent: Wednesday, September 30, 2020 11:50 AM
To: 'Shikurye, Dagmawie D.' <DShikurye@pwcgov.org>; Lovejoy.Muchenje@VDOT.Virginia.gov
Cc: 'Brown, Anissa' <anissa.brown@vdot.virginia.gov>; Ashton, Surbhi <Surbhi.Ashton@parsons.com>; Berg, Gregory <Gregory.Berg@parsons.com>
Subject: Route 234 at Brentsville Road Interchange, Prince William County - Updated Noise Analysis, Final Report

Attached for your use and files is the final Noise Analysis Technical Report for the subject project, which addresses all review comments on the draft from VDOT and Prince William County. Also attached is a zip file containing the modeling files.

Thanks.

Stuart

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ROUTE 234 AT BRENTSVILLE ROAD INTERCHANGE

PRINCE WILLIAM COUNTY PROJECT NO.: 19C17005

MANASSAS, VA

NOISE ANALYSIS TECHNICAL REPORT

September 2020

Prepared for:

Prince William County Department of Transportation

Prepared by:

PARSONS

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Executive Summary

This Noise Analysis Technical Report analyzes potential future worst-case traffic noise impacts and possible abatement measures resulting from the Route 234 at Brentsville Road Interchange. The project would convert the existing at-grade intersections of Prince William Parkway with Brentsville Road and Dumfries Road (Route 234 Business) to grade-separated interchanges. The new overpasses would provide free flow movements and would reduce travel delays.

The report conforms to the regulations and standards of the Federal Highway Administration's (FHWA) 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2011) for Type I projects as well as the current Virginia Department of Transportation (VDOT) State Noise Abatement Policy. The Noise Abatement Criteria (NAC), which represent the threshold at which abatement of highway traffic noise must be considered for specific types of land uses, were used for determining traffic noise impacts as established by FHWA (23 CFR 772). The regulations do not mandate that the abatement criteria be met in all situations, but rather require that reasonable and feasible efforts be made to provide noise abatement when the noise abatement criteria are approached or exceeded.

This study details the noise impact assessment for existing (2017) conditions as well as for the design year (2045) No-Build and Build conditions. Traffic on Prince William Parkway, Dumfries Road, Brentsville Road, and Cemetery Way was determined to be the primary source of noise attributed to the traffic noise impacts within the study area. Traffic noise modeling was performed using FHWA's Traffic Noise Model (TNM) Version 2.5.

Noise impacts were predicted for the design year (2045) Build condition resulting from worst noise hour traffic noise levels approaching or exceeding the NAC. Land use in the study area consists of single-family residences as well as commercial properties with no outdoor use areas.

Traffic noise levels under the Build condition are expected to result in a total of two impacted receptors, one of which represents the Bradley Cemetery which is considered a Section 4(f) resource, the second represents a single-family residential frequent outdoor use area. Since the increase in traffic noise levels from existing (2017) to build (2045) conditions was determined to be 0 to 6 dB, there would be no substantial noise increase impacts (an increase of 10 dB or more) within the study area. **Table ES-1** shows the range of modeled traffic noise levels and resulting impact counts for each condition.

Table ES-1. Summary of Modeled Traffic Noise Levels and Impacted Receptors

Condition (Year)	Predicted Range of Traffic Noise Levels (dBA)*	Total Impacted Receptors	Total impacted Frequent Outdoor Use Areas
Existing (2017)	45 - 66	1	1
No-Build (2045)	46 - 68	1	1
Build (2045)	46 - 67	2	2

Noise abatement measures were evaluated where future noise impacts are predicted to occur at frequent outdoor use areas. A noise barrier for the impacted receptor within the Bradley Cemetery and a noise barrier for the impacted single-family residence were considered.

It was determined that a noise barrier that would provide 5 dB or more of noise reduction at the impacted receptor within Bradley Cemetery would not be feasible due to access constraint issues. However, the noise barrier considered for the single-family residence was found to be feasible but not reasonable in providing traffic noise abatement for one single-family outdoor use area.

The total length of the feasible barrier would be approximately 478 feet; the height would be 14 feet and the total surface area would be approximately 6,692 square feet. These dimensions would result in a total cost of $281,064 with an assumed cost per square foot of $42, which is the statewide average in Virginia. The square footage per benefitted receptor is 6,692, which is above the maximum allowable value of 1,600 to be considered cost effective. An overview of the parameters and analysis calculations for each barrier is shown in **Table ES-2**.

Table ES-2. Summary of Noise Abatement Measures

Barrier	Insertion Loss (IL) (dBA)	Height (ft)	Total Length (ft)	Total Area (ft^2)	Impacted and Benefited / Total Impacted	Additional Benefits / Total Benefits	Area / Benefited	Cost ($42/$ft^2$)
Barrier G	7	14	478	6,692	1 / 1	0 / 1	6,692	$281,064

During the construction phase of the proposed project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Any construction noise impacts that may occur as a result of roadway construction are anticipated to be temporary in nature and would cease upon completion of the project construction phase. The contractor will be required to conform to the specifications found in VDOT's 2020 *Road and Bridge Specifications*, Section 107.16(b.3), “Noise.” Adherence to this policy of establishing a maximum level of noise that construction operations can generate would reduce the potential impact of construction noise on the surrounding community.

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1 Introduction

1.1. Project Description

Prince William County Department of Transportation (PWC DOT) proposes to convert the existing at-grade intersections of Prince William Parkway with Brentsville Road and Dumfries Road (Route 234 Business) to grade-separated interchanges. The new overpasses would provide free flow movements and would reduce travel delays. The project location is shown in **Figure 1-1**.

1.2. Purpose of the Noise Analysis Technical Report

The purpose of this Noise Analysis Technical Report is to evaluate noise impacts and abatement under the requirements of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) "Procedures for Abatement of Highway Traffic Noise." The 23 CFR 772 regulations provide procedures for preparing operational and construction noise studies and evaluating noise abatement/mitigation considered for federal and federal-aid highway projects. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with Federal Highway Administration (FHWA) noise regulations.

The report evaluated barriers for any locations where future design year build impacts were predicted to occur.

This study includes (a) short-term noise measurements; (b) roadway traffic noise modeling using FHWA's Traffic Noise Model (TNM); and (c) feasible noise abatement measures.

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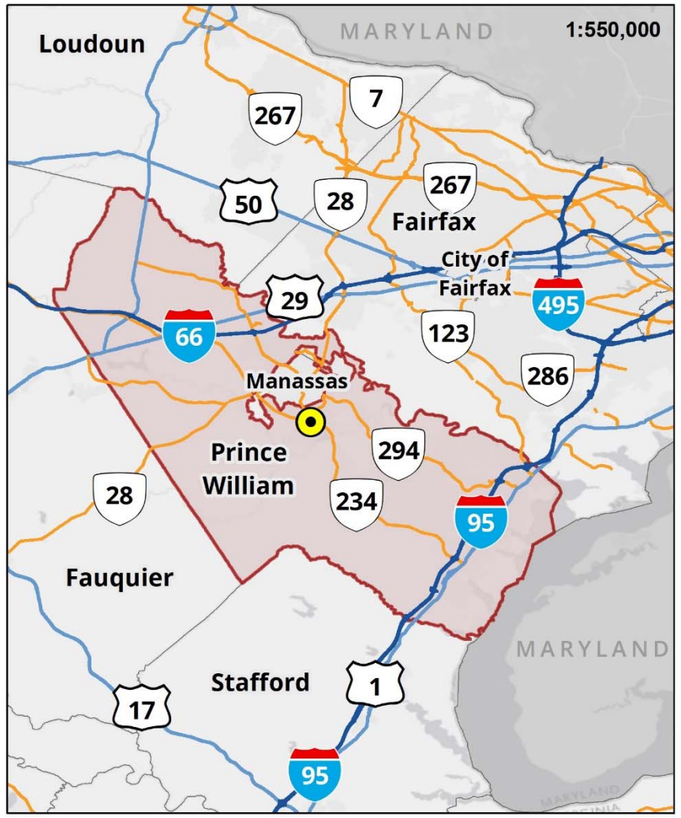
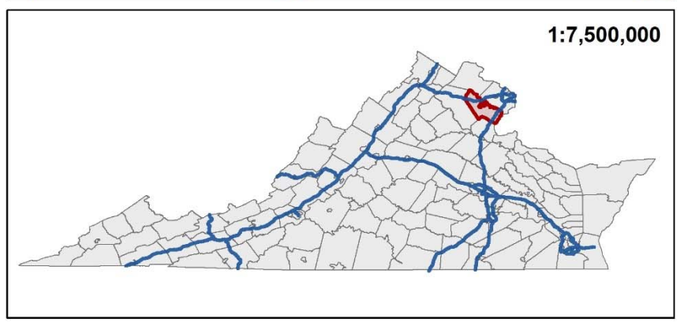
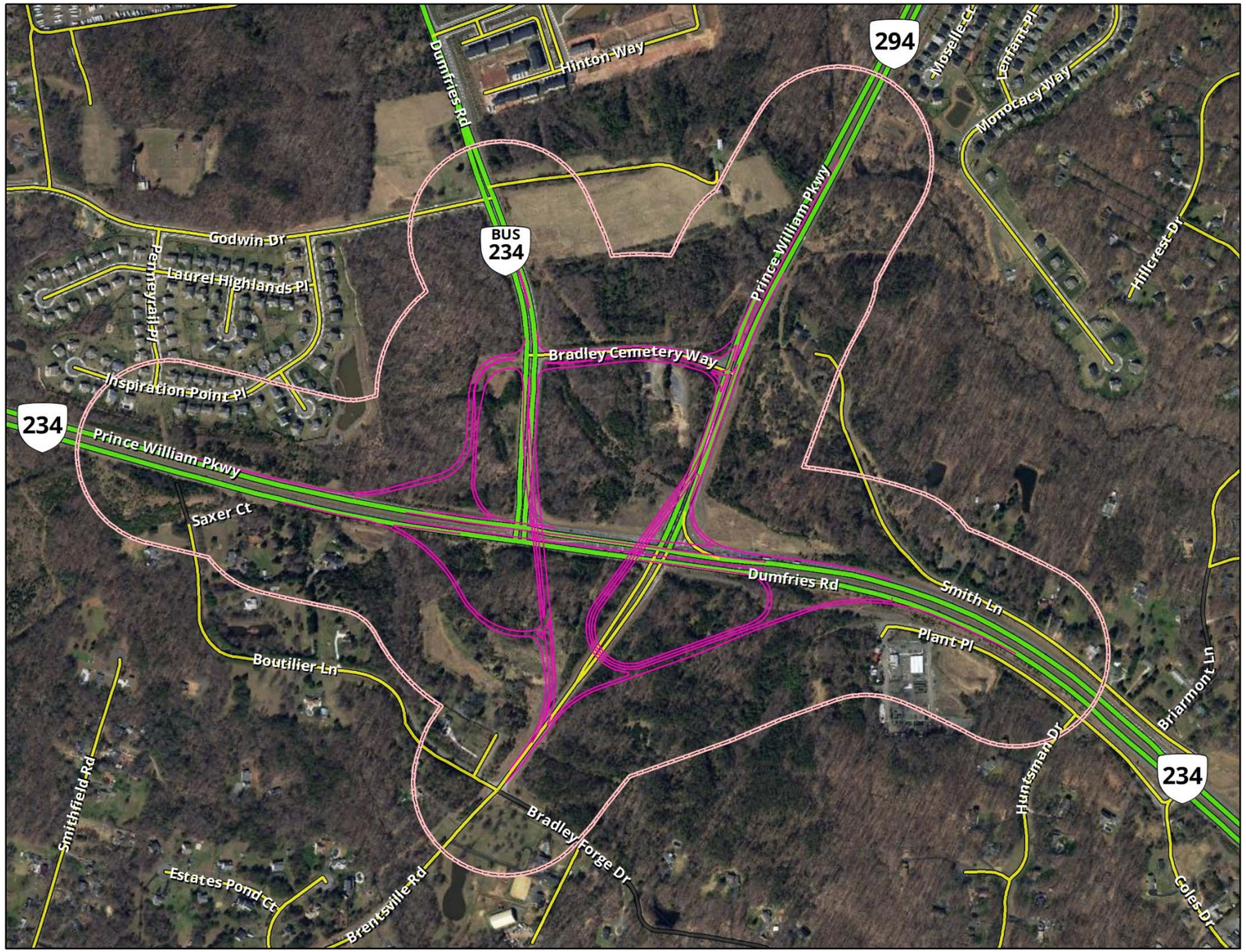
Figure 1-1. Project Location Map







Route 234 at Brentsville Road Interchange
Prince William County

THE SEAL OF PRINCE WILLIAM COUNTY, VA.

Project Location
Build Alternative
500-foot Buffer

Road Type
State Route
Secondary Route
Local Road

Figure 1-1
Project Location Map

Scale (Feet)
0 250 500 1,000 1,500

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2 Methodology

2.1. Federal Regulation and State Policy Compliance

The Noise Control Act of 1972 gives the US Environmental Protection Agency (USEPA) the authority to establish noise regulations to control major noise sources, including motor vehicles and construction equipment. Furthermore, the USEPA is required to set noise emission standards for motor vehicles used for interstate commerce and the FHWA is required to enforce the USEPA noise emission standards through the Office of Motor Carrier Safety. The National Environmental Policy Act (NEPA) of 1969 gives broad authority and responsibility to Federal agencies to evaluate and mitigate adverse environmental impacts caused by Federal actions. FHWA is required to comply with NEPA, including mitigating adverse highway traffic noise effects.

The Federal-Aid Highway Act of 1970 mandates FHWA to develop standards for mitigating highway traffic noise. It also requires FHWA to establish traffic noise level criteria for various types of land uses. The Act prohibits FHWA approval of federal-aid highway projects unless adequate consideration has been made for noise abatement measures to comply with the standards. FHWA regulations for highway traffic noise for federal-aid highway projects are contained in 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise (23 CFR 772). The regulations contain noise abatement criteria, which represent the threshold at which abatement of highway traffic noise must be considered for specific types of land uses. The regulations do not mandate that the abatement criteria be met in all situations, but rather require that reasonable and feasible efforts be made to provide noise mitigation when the abatement criteria are approached or exceeded.

The Virginia Department of Transportation (VDOT) State Noise Abatement Policy was developed to implement the requirements of 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise, FHWA's Highway Traffic Noise Analysis and Abatement Policy and Guidance (FHWA 2011), and the noise-related requirements of NEPA. The current VDOT State Noise Abatement Policy became effective on July 13, 2011 and was updated on February 20, 2018 (VDOT 2018).

Under 23 CFR 772.7, projects are categorized as Type I, Type II, or Type III projects. Type I projects include those that create a completely new noise source, as well as those that increase the volume or speed of traffic or move the traffic closer to a receiver. Type I projects include the physical alteration of an existing highway where there is substantial horizontal alterations and the addition of through-traffic lanes. A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment. Projects unrelated to increased noise levels, such as striping, lighting, signing, and landscaping projects would be considered Type III. This project would be considered a Type I project.

2.2. Sound Level Metrics

The following sections describe the necessary technical terminologies and concepts that are used when presenting and discussing the noise study analysis.

2.2.1. Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound. In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

2.2.2. Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

2.2.3. Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (µPa). One µPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 µPa. Because of this huge range of values, sound is rarely expressed in terms of µPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for humans is 0 dB, which corresponds to 20 µPa.

2.2.4. Addition of Decibels

Because decibels are logarithmic units, SPLs cannot be added or subtracted through ordinary arithmetic means. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

2.2.5. A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of dBA) can be computed based on this information.

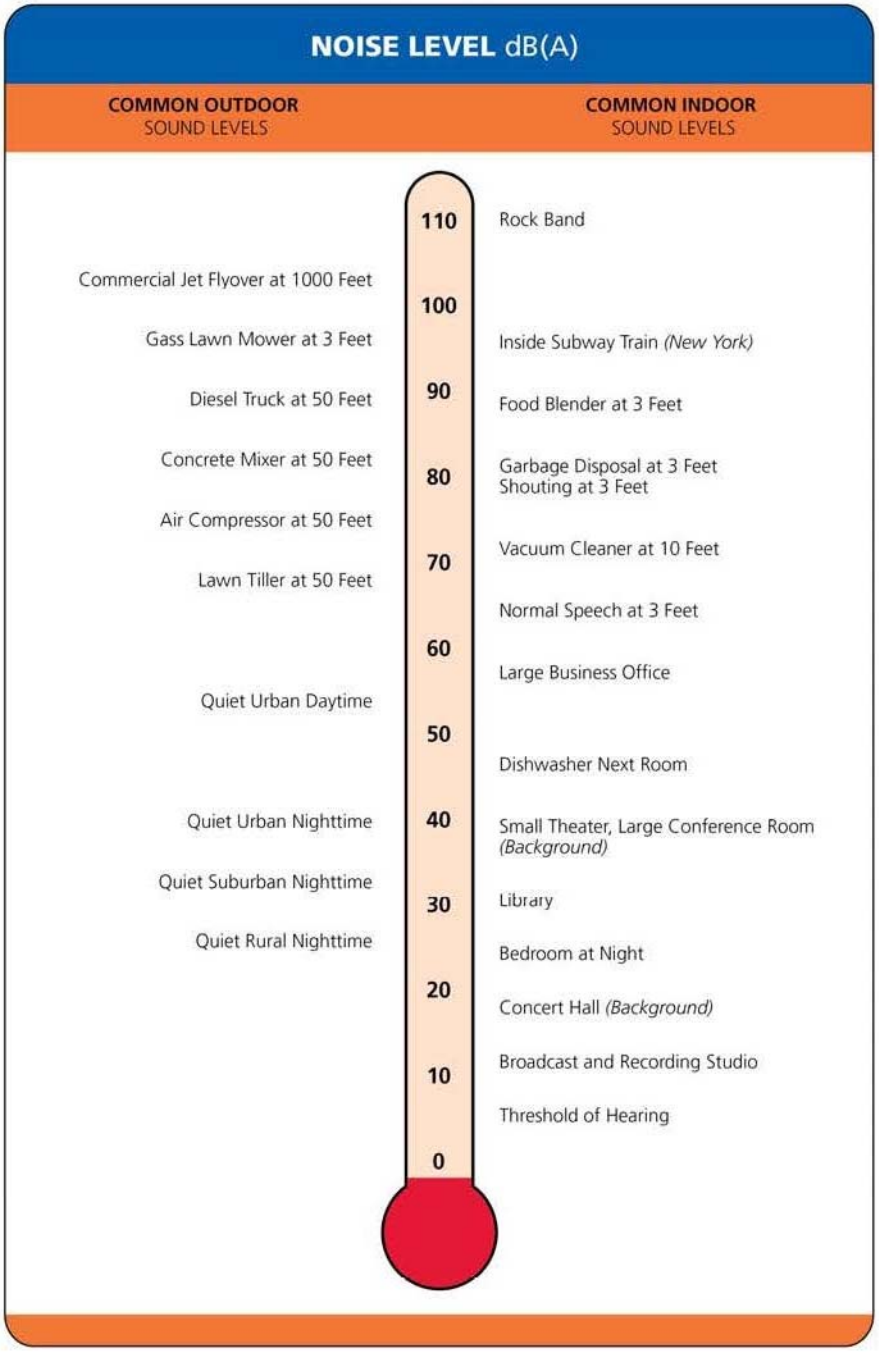
The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-weighted levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway-traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels or dBA. **Figure 2-1** shows typical A-weighted noise levels for various noise sources.

2.2.6. Human Response to Changes in Noise Levels

As discussed above, doubling sound energy results in a 3-dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different than what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 Hz–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Furthermore, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

Figure 2-1. Typical A-Weighted Noise Levels



2.3. Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

2.3.1. Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path, and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

2.3.2. Ground Absorption

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance.

2.3.3. Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have some effects.

2.3.4. Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. Taller barriers provide increased noise reduction.

2.4. Noise Descriptors

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously and fluctuate over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Most environmental noise includes a conglomeration of noise from distant sources, creating a relatively steady background noise in which no particular source is identifiable. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis:

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq[h]}$) is the energy average of A-weighted sound levels occurring during a one-hour period.
- **Percentile-Exceeded Sound Level (L_n):** L_n represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).
- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10 p.m. and 7 a.m.

2.5. Noise Abatement Criteria

The State Noise Abatement Policy has adopted the Noise Abatement Criteria (NAC) that have been established by FHWA (23 CFR 772) for determining traffic noise impacts for a variety of land uses. The NAC, listed in **Table 2-1** for various activities, represent the threshold at which, if approached or exceeded, consideration of noise abatement is required. The NAC apply to outdoor areas having frequent human use and where lowered noise levels are desirable. They do not apply to the entire tract of land on which the activity is based, but only to that portion where the activity takes place. The NAC are given in terms of the hourly, A-weighted, equivalent sound level in decibels (dBA). The noise impact assessment is made using the criteria listed in Table 2-1.

Table 2-1. Activity Categories and Noise Abatement Criteria

PART 772—NOISE ABATEMENT CRITERIA (Hourly A–Weighted Sound Level decibels (dBA)[1]			
Activity Category	**Activity $L_{eq(h)}$[4]**	**Evaluation Location**	**Activity Description**
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[3]	67	Exterior	Residential.
C[3]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[3]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A–D or F.
F	--	Exterior	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

[1] Either $L_{eq(h)}$ or $L_{10(h)}$ (but not both) may be used on a project.
[2] The $L_{eq(h)}$ and $L_{10(h)}$ Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.
[3] Includes undeveloped lands permitted for this activity category.
[4] VDOT uses the $L_{eq(h)}$ designation

Source: 23 CFR Part 772.

2.6. Noise Impact Determination and Analysis Procedure

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design year build condition approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level for the design year build condition substantially exceeds the existing noise level (a "substantial" noise increase). The terms "substantial increase" or "approach" are not specifically defined in 23 CFR 772; these criteria are defined on a state-by-state basis. Under VDOT policy, traffic noise impacts occur if either of the following two conditions is met:

- The predicted traffic noise levels (future design year build condition) approach or exceed the NAC, as shown in Table 2-1. The VDOT State Noise Abatement Policy defines an approach level to be used when determining a traffic noise impact. The "Approach" level has been defined by VDOT as 1 dB less than the NAC for Activity Categories A to E.

For example, for a Category B receptor, 66 dBA would be approaching 67 dBA and would be considered an impact. If design year noise levels "approach or exceed" the NAC, then the activity is impacted and abatement measures must be considered.

- The predicted design year build condition traffic noise levels are substantially higher than the existing noise levels. A substantial noise increase has been defined by VDOT when the predicted (future design year) highway traffic noise levels exceed existing noise levels by 10 dB or more for all noise-sensitive exterior activity categories. For example, if a receptor's existing noise level is 50 dBA, and if the future noise level is 60 dBA, then it would be considered an impact. The noise levels of the substantial increase impact do not have to exceed the appropriate NAC. Receptors that satisfy this condition warrant consideration of highway traffic noise abatement.

If a traffic noise impact is identified within the project corridor, then consideration of noise abatement measures is necessary. The final decision on whether or not to provide noise abatement along a project corridor will take into account the feasibility of the design, the reasonableness or cost-effectiveness, and input from benefited property owners.

Noise-sensitive Section 4(f) resources are evaluated under the appropriate Noise Abatement Criteria activity category in 23 CFR Part 772 (usually activity category C). In order for FHWA to begin considering whether or not a highway traffic noise increase may constitute a constructive use under Section 4(f), there must be:

- a future highway traffic noise level that approaches or exceeds 67 dB(A); or
- existing noise levels which approach or exceed 67 dB(A) and a predicted increase with the future "build" alternative greater than 3 dB(A) above the predicted "no-build" alternative noise level.

Once it is established that either one of these criteria has been met for a noise-sensitive Section 4(f) resource, FHWA must then make a determination as to whether the predicted noise level will interfere with the use and enjoyment of a noise-sensitive facility or activity associated with that Section 4(f) resource. Any discussion of noise impacts in the context of a Section 4(f) property must be closely coordinated with VDOT Noise Abatement Staff.

2.7. Traffic Noise Level Prediction

2.7.1. Highway Noise Computation Model

Since roadway noise can be determined accurately through computer modeling techniques for areas that are dominated by roadway traffic, design year traffic noise calculations have been predicted using FHWA's Traffic Noise Model (TNM) Version 2.5, which is the latest approved version. The TNM was developed and sponsored by the U. S. Department of Transportation and John A. Volpe National Transportation Systems Center, Acoustics facility. The TNM estimates

vehicle noise emissions and resulting noise levels based on reference energy mean emission levels. The existing and proposed alignments (horizontal and vertical) are input into the model, along with the receptor locations, traffic volumes of cars, medium trucks (vehicles with 2 axles and 6 tires), heavy trucks, average vehicle speeds, pavement type, and any traffic control devices. The TNM uses its acoustic algorithms to predict noise levels at the selected receptor locations by taking into account sound propagation variables, such as atmospheric absorption, divergence, intervening ground, barriers, and building rows (FHWA, 2004).

TNM input is based on a three-dimensional grid created for the study area to be modeled. All roadways, barriers, terrain lines, and receiver points are defined by x, y, and z coordinates. Receptors, defined as single points, are typically located at frequent outdoor use areas such as residences, playgrounds, and golf courses. Roadways, terrain lines, and barriers are coded into TNM as line segments defined by a series of points. A series of line segments that represent a particular modeling feature is often referred as a "line string". Line strings are created for all pertinent roadways and distinguishing terrain features within the study area. To obtain the elevations for existing areas, line strings are draped onto three dimensional (3D) digital terrain map files. The line strings are then extracted from the design files and imported into TNM. Elevations for proposed roadways are extracted from the proposed plan and profile data.

2.7.2. Modeling Assumptions and Considerations

Receptors were modeled at a height of 5 feet above the corresponding elevation of their represented frequent outdoor use area, namely the backyards of residential properties. The propagation path between source and receiver is modeled in TNM by specifying special terrain features and building structures. Propagation of noise can be further specified by selecting ground types such as hard soil, loose soil, pavement, lawn, and field grass. The lawn option was chosen as the overall ground type for this study because other than roads, the study area is grassy and vegetated.

2.7.3. Traffic Volumes and Flow Control

Traffic noise is a function of traffic volumes and traffic speed. Noise increases with speed and higher volumes of traffic. However, at higher volumes, speed decreases (stop and go), so the worst-case traffic noise levels are experienced when there is a balance between the volume and speed also referred to as Level of Service (LOS) C traffic conditions. Since TNM produces hourly L_{eq} values, all traffic inputs are based on hourly traffic volumes. In order to determine the noise levels generated by traffic, the TNM computer program requires inputs of traffic volumes, speeds, and vehicle types. The source of the volumes and speeds used for the noise analysis as well as the determination of the worst noise hour is discussed in the next section.

Traffic volumes provided in the Prince William Parkway (Route 234) Bypass Corridor Intersectional Alternatives Analysis (Kimley Horn, 2018) were used for the Existing (2017),

future No-Build (2045) and future Build (2045) conditions. Year 2040 traffic volumes as presented in the Prince William Parkway (Route 234) Bypass Corridor Intersectional Alternatives Analysis (Kimley Horn, 2018) were projected to year 2045 by increasing the 2040 volumes by a 2% annual growth. Traffic volumes from 2017 is the most current data available for the existing conditions

The traffic volume Level of Service (LOS) during the peak hours as presented in the Intersectional Alternatives Analysis were analyzed to determine which peak hour would produce the worst-case noise hour. Considering that the majority of intersections operated at LOS C under the Existing conditions and the interchange would operate at LOS C under future Build conditions during the PM peak hour whereas the traffic conditions exceeded LOS C at several intersections during the AM peak hour, the PM peak hour traffic volumes were used in this study.

Appendix C presents the comprehensive listing of the worst noise hour traffic volumes, speeds, and traffic distribution per direction of travel used for the noise analysis for the Existing, No-Build, and Build conditions.

3 Existing Noise Environment

A field investigation was conducted by Parsons personnel to identify frequent outdoor use areas that could be subject to potential traffic noise impacts from the proposed project. Noise monitoring was also conducted to develop a comparison between the monitored results and the output obtained from the noise prediction model. This exercise was performed to validate the model so that it could be used with confidence to predict the worst hour traffic noise levels for the existing and future conditions. Short-term noise measurements of 15 minutes in duration were conducted at a total of three (3) sites on June 25 and 26, 2020 within the project corridor. All three of the short-term measurements were conducted with simultaneous traffic video recordings for noise model validation purposes. The short-term noise measurements were conducted during free flow traffic conditions.

3.1. Noise Measurement Procedure

Noise measurements were conducted in conformance with the guidelines outlined in the FHWA's "Measuring of Highway Related Noise," FHWA-DP-96-046. The following are brief descriptions of the measurement procedures used for this project:

- Microphones were primarily placed approximately 5 feet above the ground and were positioned more than 10 feet from any wall or building to prevent reflections or unrepresentative shielding of the noise where possible.
- Sound level meters were calibrated before and after each set of measurements.
- Following the calibration of equipment, a windscreen was placed over the microphone.
- Frequency weighting was set on "A", and the slow detector response was selected.
- Results of the short-term noise measurements were recorded on data sheets in the field.
- Traffic was counted during the short-term measurements for model validation. Vehicle types were separated into three vehicle groups: automobiles, medium trucks (2-axle with 6-wheels but not including dually pick-up trucks), and heavy trucks (3 or more axle vehicles). Average traffic speeds were determined by pacing the traffic before and/or after the measurement.
- Wind speed, temperature, humidity, and sky conditions were observed and documented during the short-term noise measurements.

The instruments used for the noise measurements included the following:

- Sound Level Meter – Larson Davis model LxT.
- Larson Davis LxT Transducer Components – Larson Davis model PRMLxT1 microphone preamp; PCB model 337B02, ½-inch pressure microphone.

- ❖ Acoustic Field Calibrators – Larson Davis model CA200 constant pressure microphone calibrator.
- ❖ 4-inch diameter windscreen and tripods.
- ❖ Wind Monitor/Temperature and Humidity Gauge – Kestrel 3000 Pocket Weather Meter.

Documentation of the long-term and short-term measurements, graphs, site photographs, and equipment certifications are located in ***Appendix B***.

NOTE: Short-term noise monitoring is not a process to determine design year noise impacts or barrier locations. Short-term noise monitoring provides a level of consistency between what is present in real-world situations and how that is represented in the computer noise model. Short-term monitoring does not need to occur within every Common Noise Environment (CNE) to validate the computer noise model.

3.2. Noise Measurement Results

The dominant source of noise for all the short-term measurement sites was vehicular traffic on Route 234 and Route 294. Project layout plans shown in Figures 1 through 5 in ***Appendix A*** present the measurement locations and the CNE designations. A CNE is defined as a group of receptors that share similar noise sources, traffic variables, and topographic features. Results for the short-term measurements are presented in **Table 3-1**.

Table 3-1. Short-Term Noise Measurement Results

Site No.	Street Address, City	CNE	Land Use	Meas. Date	Start Time	Meas. L_{eq}, dBA[1]
ST1	11411 Huntsman Drive, Manassas	H	Residential	06/25/20	10:05	63.0
ST2	8700 Smith Lane, Manassas	C	Residential	06/26/20	09:05	57.6
ST3	9001 Fletcher Farm Court, Manassas	D	Residential	06/25/20	11:05	57.9

Note:

1. All short-term measured noise levels are 15-minute L_{eq}.

3.3. Traffic Noise Model Validation

Measurement data at the three short-term sites were used for model validation. During the validation measurements, traffic volumes and speeds on Route 234, Dumfries Road (Route 234 Business), and Route 294 were concurrently recorded. The traffic counts were tabulated according to vehicle types, including automobiles, medium trucks (2-axle with 6-wheels but not including dually pick-up trucks), and heavy trucks (3 or more axle vehicles). Traffic volumes were normalized to 1-hour after counting the traffic during the measurement periods by reviewing simultaneous video recordings of traffic. These normalized volumes were assigned to

the corresponding roadways within the project area to simulate the noise source strength at the roadways during the actual measurement periods. After inputting the traffic counts, site geometry, and any other pertinent existing features, noise levels at the validation sites were modeled in the TNM software. **Table 3-2** presents the results of the model validation. Traffic volumes collected during the validation measurements are included in ***Appendix C.***

Table 3-2. Noise Model Validation Results

Measurement Site	Date	Start Time	Noise Levels, $L_{eq(h)}$, dBA		Deviation, dB (Modeled - Measured)
			Measured	Modeled	
ST1	06/25/20	10:05	63.0	63.5	0.5
ST2	06/26/20	09:05	57.6	59.2	1.6
ST3	06/25/20	11:05	57.9	60.4	2.5

Source: Parsons 2020.

According to VDOT's *Highway Traffic Noise Impact Analysis Guidance Manual*, the difference between measured and modeled values must lie within ±3 dB to fall within the accepted level of accuracy. Differences greater than ±3 dB require that both the observed and predicted data be carefully examined to determine the reason(s) for the margin of error (VDOT, 2018). Because the difference between measured and modeled values fall within ±3 dB, the noise model is within the accepted level of accuracy.

3.4. Undeveloped Lands and Permitted Developments

Highway traffic noise analyses are performed for developed lands as well as undeveloped lands if they are considered "permitted." Undeveloped lands are deemed to be permitted when there is a definite commitment to develop land with an approved specific design of land use activities as evidenced by the issuance of at least one building permit.

In accordance with the VDOT Traffic Noise Policy, an undeveloped lot is considered to be planned, designed, and programmed if a building permit has been issued by the local authorities prior to the Date of Public Knowledge for the relevant project. VDOT considers the "Date of Public Knowledge" as the date that the final NEPA approval is made. VDOT has no obligation to provide noise mitigation for any undeveloped land that is permitted or constructed after this date. There are no undeveloped parcels within the study limits of this project.

3.5. Common Noise Environment (CNE) Determination and Existing Noise Setting

This section outlines the CNEs within the project area that contain all of the noise sensitive receptors within at least 500 feet of the proposed project limits that were considered for

evaluation of traffic noise analysis. A CNE is defined as a group of receptors that share similar noise sources, traffic variables, and topographic features. Eleven CNE areas were determined to be present within the study area.

Land use in the study area is predominately single-family residential as well as a commercial nursery. Modeled noise receptors were placed at the frequent outdoor use areas of the residential properties. The land uses associated with the commercial land use were not considered noise sensitive because there are no frequent outdoor use areas on that property; therefore, modeled noise receptors were not included at this location.

Tables 4-1 in the next section presents the existing (2017) noise levels for all sites. Traffic noise levels under the existing condition are predicted to range from 45 to 66 dBA and would result in a total of one impacted receptor that represents one residential frequent outdoor use area.

CNE A

CNE A is located in the northwest quadrant of the existing Prince William Parkway (Route 234)/Dumfries Road (Route 234 Business) intersection immediately north of Godwin Drive and contains one receptor (A1), representing one single-family residence. The dominant noise sources within CNE A is traffic on Dumfries Road. For the studied site, the existing condition (2017) noise level is predicted to range from 55 to 61 dBA.

CNE B

CNE B is located between Dumfries Road (Route 234 Business) and Prince William Parkway (Route 294) north of Bradley Cemetery Way and contains five receptors (B1 through B5), representing one single-family residence and Bradley Cemetery. Bradley Cemetery is associated with the Bradley Plantation historic property farther to the north and is therefore a historic property as well as a 4(f) property. The dominant noise sources within CNE B is traffic on Prince William Parkway and Dumfries Road. For the studied site, the existing condition (2017) noise level is predicted to range from 55 to 61 dBA.

CNE C

CNE C is located in the northeast quadrant of the existing Dumfries Road (Route 234)/Prince William Parkway (Route 294) intersection at Bradley Cemetery Way and contains seven receptors (C1 through C7), representing two single-family residences as well as Florence Cemetery. The cemetery is located within existing VDOT right-of-way and is not eligible for the National Register of Historic Places and is therefore not historic or 4(f) property. Receptor C3 was a noise measurement site and does not represent the outdoor use area of the property represented by Receptor C1 The dominant noise source within CNE C is traffic on Prince William Parkway. The existing condition (2017) noise levels are predicted to range from 54 to 63 dBA.

CNE D

CNE D is located in the northwest quadrant of the existing Prince William Parkway (Route 234)/Dumfries Road (Route 234 Business) intersection immediately north of Prince William Parkway and contains 38receptors (D1 through D38), representing 37 single-family residences where Receptor D38 was a noise measurement site and does not represent the outdoor use area of the property represented by Receptor D17. The dominant noise sources within CNE D is traffic on Prince William Parkway where there is an existing 12 foot tall wall protecting these residences from traffic noise. For the studied sites, the existing condition (2017) noise level is predicted to range from 48 to 58 dBA. Note that the homes in this CNE were constructed in 2009 and were not planned and permitted prior to the date of public knowledge for the Route 234 Bypass project, of which an interchange at this location was a part. The date of public knowledge was September 21, 1994, which was the date the Federal Highway Administration's Record of Decision was issued for the Supplemental Environmental Impact Statement for the Route 234 Bypass. Under the 23 CFR 772 noise abatement regulations, Consideration of noise abatement is not required for lands that are not permitted by the date of public knowledge. Nevertheless, the noise analysis included this area for informational purposes.

CNE E

CNE E is located north of Dumfries Road (Route 234) and contains 11 receptors (E1 through E11), representing 11 single-family residences. The dominant noise source within CNE E is traffic on Dumfries Road. For the studied sites, the existing condition (2017) noise level is predicted to range from 54 to 63 dBA.

CNE F

CNE F is located south of Prince William Parkway (Route 234) and contains three receptors (F1, F2, and F3), representing three single-family residences. The dominant noise source within CNE F is traffic on Prince William Parkway. For the studied sites, the existing condition (2017) noise level is predicted to range from 51 to 61 dBA.

CNE G

CNE G is located south of Prince William Parkway (Route 234) near the existing Dumfries Road (Route 234 Business) intersection and contains two receptors (G1 and G2), representing two single-family residences. The dominant noise source within CNE G is traffic on Prince William Parkway. For the studied sites, the existing condition (2017) noise level is predicted to be 57 and 66 dBA.

CNE H

CNE H is located south of Dumfries Road (Route 234) and contains six receptors (H1 through H6), representing five single-family residences where Receptor H6 was a noise measurement site and does not represent the outdoor use area of the property represented by Receptor H1. CNE H

also contains a commercial nursery with no noise sensitive land use as well as church owned land west of the nursery; however, the land is still undeveloped with no known plans and contains no frequent outdoor use areas. Therefore, the church owned land has not been considered in the analysis. The dominant noise source within CNE H is traffic on Dumfries Road. For the studied sites, the existing condition (2017) noise level is predicted to range from 54 to 65 dBA.

CNE I

CNE I is located southwest of the existing Prince William Parkway (Route 234)/Brentsville Road (Route 649) intersection and contains two receptors (I1 and I2), representing two single-family residences. The dominant noise source within CNE I is traffic on Brentsville Road. The existing condition (2017) noise level is predicted to be 52 and 53 dBA.

CNE J

CNE J is located west of Brentsville Road (Route 649) and contains two receptors (J1 and J2), representing two single-family residences. The dominant noise source within CNE J is traffic on Brentsville Road. The existing condition (2017) noise level is predicted to be 48 and 51 dBA.

CNE K

CNE K is located east of Brentsville Road (Route 649) and contains two receptors (K1 and K2), representing two single-family residences. The dominant noise source within CNE K is traffic on Brentsville Road. The existing condition (2017) noise level is predicted to be 45 and 51 dBA.

4 Future Noise Environment, Impacts, and Noise Abatement Determination

This section presents predicted worst noise hour traffic noise levels within the project area under the design year No-Build and Build conditions. An analysis with barrier heights ranging from 6 to 20 feet was conducted for the potentially impacted areas. Analysis for barriers above 20 feet was not considered because all impacted receptor sites are located at ground elevation and analysis showed that additional benefits could not be gained by heights above 20 feet. The worst noise hour traffic noise levels for the design year were predicted using TNM.

4.1. Traffic Noise Impacts

Table 4-1 presents the modeled noise levels for noise sensitive sites for the worst noise hour under existing conditions as well as No-Build and Build conditions in design year 2045.

Traffic noise levels under No-Build conditions are predicted to range between 46 and 68 dBA and range between 46 and 67 dBA under Build conditions. Build conditions would result in a total of two impacted receptors that are representative of one area of Bradley Cemetery and one residential frequent outdoor use area. Since the increase in traffic noise levels from existing conditions to build conditions was determined to be no more than 6 dB, there would be no substantial noise increase impacts (an increase of 10 dB or more) within the study area. Figures 1 through 5 in ***Appendix A*** show the predicted 66 dBA contours for Build conditions.

CNE A

Future design year (2045) No-Build and Build noise levels are predicted to be 57 dBA. Traffic noise impacts due to approaching or exceeding the NAC are not predicted for this CNE under the future design year (2045) Build condition. Additionally, none of the sites are predicted to experience a substantial noise increase impact. Figures 1 and 2 in ***Appendix A*** show CNE A.

CNE B

Future design year (2045) No-Build and Build noise levels are predicted to range from 56 to 63 dBA and range from 57 to 67 dBA, respectively. One site (Receptor B4) representing a portion of Bradley Cemetery (Section 4(f)) is predicted to experience noise impacts due to levels exceeding the NAC under the future design year (2045) build condition. The noise level of Receptor B4 is predicted to increase by 4 dB comparing Build to No-Build as a result of additional predicted traffic flow under the build condition on Bradley Cemetery Way near Receptor B4. None of the sites are predicted to experience a substantial noise increase impact. Furthermore, existing noise levels at Section 4(f) sites would not approach or exceed 67 dBA nor would there be an increase of 3 dB or greater when comparing predicted Build noise levels to predicted No-Build noise levels. Figures 1 and 2 in ***Appendix A*** show CNE B.

CNE C

Noise levels under Future design year (2045) No Build and Build conditions are both predicted to range from 56 to 64 dBA. There are no sites that are predicted to experience noise impacts due to levels approaching or exceeding the NAC under the future design year (2045) Build condition. Additionally, none of the sites are predicted to experience a substantial noise increase impact. Figures 1, 2 and 4 in ***Appendix A*** show CNE C.

CNE D

Future design year (2045) No Build and Build noise levels are both predicted to range from 46 to 62 dBA. There are no sites that are predicted to experience noise impacts due to levels approaching or exceeding the NAC under the future design year (2045) Build condition. Additionally, none of the sites are predicted to experience a substantial noise increase impact. Figure 3 in ***Appendix A*** shows CNE D.

CNE E

Future design year (2045) No Build and Build noise levels are both predicted to range from 55 to 64 dBA There are no sites that are predicted to experience noise impacts due to levels approaching or exceeding the NAC under the future design year (2045) Build condition. Additionally, none of the sites are predicted to experience a substantial noise increase impact. Figure 4 in ***Appendix A*** shows CNE E.

CNE F

Noise levels under Future design year (2045) No Build and Build conditions are both predicted to range from 52 to 62 dBA. There are no sites that are predicted to experience noise impacts due to levels approaching or exceeding the NAC under the future design year (2045) Build condition. Additionally, none of the sites are predicted to experience a substantial noise increase impact. Figure 3 in ***Appendix A*** shows CNE F.

CNE G

Future design year (2045) No-Build and Build noise levels are predicted to range from 58 and 68 dBA and 59 and 67 dBA, respectively. One site (Receptor G1) representing the backyard of a single-family residence is predicted to experience noise impacts due to levels exceeding the NAC under the future design year (2045) build condition. None of the sites are predicted to experience a substantial noise increase impact. Figures 3 and 5 in ***Appendix A*** show CNE G.

CNE H

Noise levels under Future design year (2045) No Build and Build conditions are predicted to range from 55 to 62 dBA and from 56 to 62 dBA, respectively. There are no sites that are predicted to experience noise impacts due to levels exceeding the NAC under the future design year (2045) build condition; however, this site is not located at a frequent outdoor use area and

does not need to be considered for noise abatement. None of the sites are predicted to experience a substantial noise increase impact. Figure 5 in ***Appendix A*** shows CNE H.

CNE I

Future design year (2045) noise levels are predicted to range from 53 to 54 dBA under No-Build conditions and from 53 dBA under Build conditions. There are no sites that are predicted to experience noise impacts due to levels approaching or exceeding the NAC under the future design year (2045) Build condition. None of the sites are predicted to experience a substantial noise increase impact. Figures 3 and 5 in ***Appendix A*** show CNE I.

CNE J

Future design year (2045) No Build and Build noise levels are both predicted to range from 50 to 52 dBA. There are no sites that are predicted to experience noise impacts due to levels approaching or exceeding the NAC under the future design year (2045) Build condition. Additionally, none of the sites are predicted to experience a substantial noise increase impact. Figure 5 in ***Appendix A*** shows CNE J.

CNE K

Future design year (2045) No Build and Build noise levels are both predicted to range from 46 to 53 dBA. There are no sites that are predicted to experience noise impacts due to levels approaching or exceeding the NAC under the future design year (2045) Build condition. Additionally, none of the sites are predicted to experience a substantial noise increase impact. Figure 5 in ***Appendix A*** shows CNE K.

Table 4-1. Predicted Traffic Noise Levels

Receptor Number	NAC	Land Use	No. of Dwelling Units	Predicted Noise Levels (dBA)			Noise Abatement Criteria*	Abatement Considered
				Existing Condition (2017)	No Build Condition (2045)	Build Condition (2045)		
CNE A								
A1	B	Residential	1	55	57	57	65	No
CNE B								
B1	B	Residential	1	55	56	57	65	No
B2	C	Cemetery	1	59	61	61	66	No
B3	C	Cemetery	1	61	62	65	66	No
B4	C	Cemetery	1	61	63	67	66	No
B5	C	Cemetery	1	56	57	59	66	No
CNE C								
C1	B	Residential	1	59	61	61	66	No
C2	B	Residential	1	54	56	56	64	No
C4	C	Cemetery	1	60	62	61	66	No
C5	C	Cemetery	1	63	64	64	66	No
C6	C	Cemetery	1	59	60	60	66	No
C7	C	Cemetery	1	57	59	58	66	No
CNE D								
D1	B	Residential	1	60	62	62	66	No
D2	B	Residential	1	56	58	58	66	No
D3	B	Residential	1	56	58	58	66	No
D4	B	Residential	1	56	58	58	66	No
D5	B	Residential	1	55	57	57	65	No
D6	B	Residential	1	57	58	58	66	No
D7	B	Residential	1	55	56	56	65	No
D8	B	Residential	1	54	56	55	64	No
D9	B	Residential	1	54	56	55	64	No
D10	B	Residential	1	55	56	56	65	No
D11	B	Residential	1	55	57	56	65	No
D12	B	Residential	1	54	56	55	64	No
D13	B	Residential	1	55	56	55	65	No
D14	B	Residential	1	57	59	58	66	No
D15	B	Residential	1	58	60	59	66	No
D16	B	Residential	1	58	60	59	66	No
D17	B	Residential	1	57	59	58	66	No
D18	B	Residential	1	58	59	59	66	No

Table 4-1. Predicted Traffic Noise Levels

Receptor Number	NAC	Land Use	No. of Dwelling Units / Recreational Units	Predicted Noise Levels (dBA)			Noise Abatement Criteria*	Abatement Considered
				Existing Condition (2017)	No Build Condition (2045)	Build Condition (2045)		
CNE D (Cont'd)								
D19	B	Residential	1	59	61	61	66	No
D20	B	Residential	1	51	53	53	61	No
D21	B	Residential	1	48	49	49	58	No
D22	B	Residential	1	51	52	52	61	No
D23	B	Residential	1	50	51	51	60	No
D24	B	Residential	1	50	51	51	60	No
D25	B	Residential	1	52	54	54	62	No
D26	B	Residential	1	54	56	56	64	No
D27	B	Residential	1	46	48	48	56	No
D28	B	Residential	1	46	48	48	56	No
D29	B	Residential	1	46	48	47	56	No
D30	B	Residential	1	47	48	48	57	No
D31	B	Residential	1	45	47	46	55	No
D32	B	Residential	1	45	46	46	55	No
D33	B	Residential	1	51	53	52	61	No
D34	B	Residential	1	52	54	54	62	No
D35	B	Residential	1	55	57	57	65	No
D36	B	Residential	1	49	51	51	59	No
D37	B	Residential	1	48	50	49	58	No
CNE E								
E1	B	Residential	1	58	60	60	66	No
E2	B	Residential	1	55	57	57	65	No
E3	B	Residential	1	59	60	60	66	No
E4	B	Residential	1	59	60	60	66	No
E5	B	Residential	1	61	62	62	66	No
E6	B	Residential	1	60	61	61	66	No
E7	B	Residential	1	54	55	56	64	No
E8	B	Residential	1	62	64	64	66	No
E9	B	Residential	1	63	64	64	66	No
E10	B	Residential	1	56	58	58	66	No
E11	B	Residential	1	54	55	55	64	No

Table 4-1. Predicted Traffic Noise Levels

Receptor Number	NAC	Land Use	No. of Dwelling Units / Recreational Units	Predicted Noise Levels (dBA)			Noise Abatement Criteria*	Abatement Considered
				Existing Condition (2017)	No Build Condition (2045)	Build Condition (2045)		
CNE F								
F1	B	Residential	1	51	52	52	61	No
F2	B	Residential	1	61	62	62	66	No
F3	B	Residential	1	57	58	58	66	No
CNE G								
G1	B	Residential	1	66	68	67	66	Yes
G2	B	Residential	1	57	58	59	66	No
CNE H								
H1	B	Residential	1	60	62	62	66	No
H2	B	Residential	1	57	58	58	66	No
H3	B	Residential	1	59	60	60	66	No
H4	B	Residential	1	54	55	56	64	No
H5	B	Residential	1	55	57	57	65	No
CNE I								
I1	B	Residential	1	53	54	53	63	No
I2	B	Residential	1	52	53	53	62	No
CNE J								
J1	B	Residential	1	51	52	52	61	No
J2	B	Residential	1	48	50	50	58	No
CNE K								
K1	B	Residential	1	51	53	53	61	No
K2	B	Residential	1	45	46	46	55	No
Number of Impacted Sites								
				Existing	**No Build**	**Build**		
				1	**1**	**2**		
Range of Predicted Noise Levels								
				Existing	**No Build**	**Build**		
			Min ->	**45**	**46**	**46**		
			Max ->	**66**	**68**	**67**		

Notes:

* Criteria based on NAC or substantial increase, whichever is lower.

† Noise measurement location and does not represent frequent outdoor use area.

Indicates noise impact.

4.2. Noise Abatement Determination

The progression of noise abatement determination follows three phases where each must be considered and satisfied before proceeding further.

4.2.1. Warranted Criterion

This first phase of the process is to determine if highway traffic noise abatement consideration is warranted for the affected land uses and/or the affected receptors. In order to make a determination that a noise impact exists, one of the following conditions must be met:

- Predicted highway traffic noise levels (for the design year) approach or exceed the highway traffic noise abatement criteria in Table 2-1. “Approach” has been defined by VDOT as 1 dB below the noise abatement criteria.
- A substantial noise increase has been defined by VDOT as a 10 dB increase above existing noise levels for all noise-sensitive exterior activity categories. A 10 dB increase in noise reflects the generally accepted range of a perceived doubling of the loudness.

Receptors that satisfy either of these conditions warrant consideration of highway traffic noise abatement.

4.2.2. Feasibility Criteria for Noise Barriers

To determine feasibility of a highway traffic noise barrier, the following two conditions shall be considered:

- At least a 5 dB highway traffic noise reduction at impacted receptors. Per 23 CFR 772, FHWA requires the highway agency to determine the number of impacted receptors required to achieve at least 5 dB of reduction. VDOT requires that fifty percent (50%) or more of the impacted receptors experience 5 dB or more of insertion loss to be feasible.
- The determination that it is possible to design and construct the noise abatement measure. The factors related to the design and construction include: safety, barrier height, topography, drainage, utilities, and maintenance of the abatement measure, maintenance access to adjacent properties, and general access to adjacent properties (i.e., arterial widening projects).

4.2.3. Reasonableness Criteria for Noise Barriers

Noise barrier reasonableness is determined by assessing multiple issues including:

- The viewpoints of the benefited receptors;
- Cost effectiveness value, based on a square foot cost ceiling (maximum square footage of abatement per benefited receptor); and

- Noise reduction design goal of 7 dB of insertion loss for at least one impacted receptor.

Typically, the limiting factor related to barrier reasonableness is the cost effectiveness value, where the total surface area of the barrier is divided by the number of benefited receptors receiving at least a 5 dB reduction in noise level. VDOT's approved cost is based on a maximum square footage of abatement per benefited receptor. VDOT's noise barrier cost effectiveness value is 1,600 square feet per benefited receptor.

4.3. Alternative Abatement Measures

VDOT guidelines recommend a variety of mitigation measures that should be considered in response to transportation-related noise impacts. While noise barriers and/or earth berms are generally the most effective form of noise mitigation, additional mitigation measures exist that have the potential to provide considerable noise reductions, under certain circumstances. Mitigation measures considered for this project included:

- Traffic management;
- Alignment modifications;
- Acoustical insulation of public use and non-profit facilities;
- Buffer lands;
- Construction of noise barriers; and
- Construction of earth berms.

Additionally, the Noise Policy Code of Virginia (HB 2577, as amended by HB 2025) "*Requires that whenever the Commonwealth Transportation Board or the Department plan for or undertake any highway construction or improvement project and such project includes or may include the requirement for the mitigation of traffic noise impacts, first consideration should be given to the use of noise reducing design and low noise pavement materials and techniques in lieu of construction of noise walls or sound barriers. Vegetative screening, such as the planting of appropriate conifers, in such a design would be utilized to act as a visual screen if visual screening is required.* An HB 2577 Memorandum is included in Appendix E.

Each of the mitigation measures is further described below.

Traffic Control Measures (TCM): Traffic control measures, such as speed limit restrictions, truck traffic restrictions, and other traffic control measures that may be considered for the reduction of noise emission levels are not considered practical for this project. These traffic control measures would be counterproductive to the project's objective of improving traffic flow and reducing travel delay . Reducing speeds would not be an effective noise mitigation measure since a substantial decrease in speed is necessary to provide adequate noise reduction. Typically,

a 10 mph reduction in speed will result in only a 2 dB decrease in noise level, which would not eliminate all impacts.

Alteration of Horizontal and Vertical Alignments: The alteration of the horizontal alignment would not be considered practical for this project due to developed lands on both sides of roadway which would not allow for any alteration of alignments that would produce noise reducing effects.

Insulation: This noise abatement measure option applies only to public and institutional use buildings. Since no public use or institutional structures are anticipated to have interior noise levels exceeding FHWA's interior NAC, this noise abatement option will not be applied.

Acquisition of Buffering Land: The purchase of property and/or buildings for noise barrier construction or the creation of a "buffer zone" to reduce noise impacts is only considered for predominantly unimproved properties because the amount of property required for this option to be effective would create additional impacts (e.g., in terms of residential and commercial displacements), which were determined to outweigh the benefits of land acquisition.

Construction of Noise Barriers / Berms: Construction of noise barriers can be an effective way to reduce noise levels at areas of outdoor activity. Noise barriers can be wall structures, earthen berms, or a combination of the two. The effectiveness of a noise barrier depends on the distance and elevation difference between roadway and receptor and the available placement location for a barrier.

Noise walls and earth berms are often implemented in the highway design in response to the identified traffic noise impacts. The effectiveness of a freestanding (post and panel) noise barrier and an earth berm of equivalent height are relatively consistent; however, an earth berm is perceived as a more aesthetically pleasing option.

In contrast, the use of earth berms is not always a viable option due to the excessive space they require adjacent to the roadway corridor. At a standard slope of 2:1 for a typical berm, every one foot in height would require four feet of horizontal width. This requirement becomes more complex in urban settings where residential properties often abut the proposed roadway corridor. In these situations, implementation of earth berms can require substantial property acquisitions to accommodate noise mitigation. The cost associated with the acquisition of property to construct a berm can substantially increase the total costs to implement this form of noise mitigation and make it unreasonable. Therefore, earth berms have not been considered for this project. Noise barriers considered for this project are noise walls.

As a general practice, noise barriers are most effective when placed at a relatively high point between the roadway and the impacted noise sensitive land use. To achieve the greatest benefit

from a potential noise barrier, the goal of the barrier should focus on breaking the line-of-sight (to the greatest degree possible) from the roadway to the receptor.

The effectiveness of a noise barrier is measured by examining the barrier's capability to reduce future noise levels. Noise reduction is measured by comparing design year pre- and post-barrier noise levels. This difference between unabated and abated noise levels is known as insertion loss (IL). The following discussion presents potential mitigation measures for each of the impacted noise sensitive land uses.

4.4. Noise Barriers

A noise barrier in the form of a noise wall was evaluated for the single area predicted to experience traffic noise impacts under the Build condition. The evaluated noise barrier would be ground mounted. One noise barrier was determined to be feasible but not reasonable in accordance with VDOT's State Noise Abatement Policy. Figure 3 in ***Appendix A*** shows the barrier location.

Table 4-2 presents an overview of the evaluated barrier parameters. Details of the barrier insertion loss associated with the evaluated barrier are listed in Table 4-3. Warranted, Feasible, and Reasonableness Worksheets are located in ***Appendix D***.

The following discussion presents the noise abatement consideration for impacted CNE B and noise abatement measure for impacted CNE G. Barriers were not evaluated for CNEs A, C through F, and H through K because there were no traffic noise impacts at frequent outdoor use areas within these CNEs and traffic noise abatement is not warranted.

4.4.1. CNE B

Within CNE B, the Bradley Cemetery is predicted to be impacted by traffic noise at Receptor C4. However, it is not feasible to evaluate a noise barrier for this impacted receptor due to access constraint issues. Noise abatement would be required along Bradley Cemetery Way; however, access to the cemetery would be blocked by a noise barrier. Therefore, noise abatement has not been considered for this receptor. Figure 2 in ***Appendix A*** shows this receiver within CBE B

4.4.2. Barrier G – CNE G

Barrier G would be located along southbound Prince William Parkway (Route 234) at the right-of-way line within CNE G. Barrier G would have a height of 14 feet and an approximate total length of 478 feet, resulting in a total surface area of approximately 6,692 square feet. With an assumed cost per square foot of $42, which is the statewide average in Virginia, the estimated cost of Barrier G would be $281,064. Figure 3 in ***Appendix A*** shows Barrier G.

Barrier G would provide feasible abatement for impacted Receptor G1, which represents one single-family residence. An overview of the evaluated barrier parameters and analysis calculations are shown in Table 4-2. Details of the barrier analysis including barrier insertion losses are listed in Tables 4-3.

This barrier would provide feasible abatement for at least 50% of impacted receivers, meets the noise reduction design goal of 7 dB for at least one impacted receptor, and has a square feet per benefited receptor value of 6,692, which is greater than 1,600; therefore, Barrier B would be feasible but not reasonable in accordance with VDOT's State Noise Abatement Policy.

The total number of receptors and frequent outdoor use areas used for feasibility and reasonableness calculations are presented in ***Appendix D*** within the *Warranted, Feasible, and Reasonableness Worksheet*.

Table 4-2. Evaluated Noise Barrier Parameters

Barrier	Insertion Loss (IL) (dBA)	Height (ft)	Total Length (ft)	Total Area (ft^2)	Impacted and Benefited / Total Impacted	Additional Benefits / Total Benefits	Area / Benefited	Cost ($42/$ft^2$)
Barrier G	7	14	478	6,692	1 / 1	0 / 1	6,692	$281,064

Table 4-3. Predicted Noise Barrier Insertion Loss

Receptor Number	Predicted Noise Levels (dBA)																	
	Build Condition (2045) No Barrier	No. of Dwelling Units	Build Condition (2040) - With Barrier															
			6ft		8ft		10ft		12ft		14ft		16ft		18ft		20ft	
			Level	IL*	Level	IL*	Level	IL*	Level	IL*	Level	IL*	Level	IL*	Level	IL*	Level	IL*
Barrier G																		
G1	67	1	66	2 *	64	3	63	4	61	6	60	7	60	8 *	59	8	59	8

Notes:

Denotes predicted noise impact.

Denotes benefit.

Denotes benefit and recommended barrier height.

* Predicted Insertion Losses (IL) may be different than the no barrier noise level minus the level with barrier due to rounding.

5 Construction Noise

Noise generated by construction activities could intermittently dominate the noise environment in the immediate area of construction. The degree of construction noise impact will vary, as it is directly related to the types and number of equipment used and the proximity to the noise-sensitive land uses within the project area. Land uses that are sensitive to traffic noise are also potentially considered to be sensitive to construction noise. Any construction noise impacts that do occur as a result of roadway construction measures are anticipated to be temporary in nature and will cease upon completion of the project construction phase.

A method of controlling construction noise is to establish the maximum level of noise that construction operations can generate. In view of this, VDOT has developed and FHWA has approved a specification that establishes construction noise limits. This specification can be located in VDOT's 2020 *Road and Bridge Specifications*, Section 107.16(b.3), "Noise". The contractor will be required to conform to this specification to reduce the impact of construction noise on the surrounding community.

The specification has been reproduced below:

- The Contractor's operations shall be performed so that exterior noise levels measured during a noise-sensitive activity shall not exceed 80 decibels. Such noise level measurements shall be taken at a point on the perimeter of the construction limit that is closest to the adjoining property on which a noise-sensitive activity is occurring. A noise-sensitive activity is any activity for which lowered noise levels are essential if the activity is to serve its intended purpose and not present an unreasonable public nuisance. Such activities include, but are not limited to, those associated with residences, hospitals, nursing homes, churches, schools, libraries, parks, and recreational areas.
- VDOT may monitor construction-related noise. If construction noise levels exceed 80 decibels during noise-sensitive activities, the Contractor shall take corrective action before proceeding with operations. The Contractor shall be responsible for costs associated with the abatement of construction noise and the delay of operations attributable to noncompliance with these requirements.
- VDOT may prohibit or restrict certain portions of the project any work that produces objectionable noise between 10 PM and 6 AM. If other hours are established by local ordinance, the local ordinance shall govern.
- Equipment shall in no way be altered so as to result in noise levels that are greater than those produced by the original equipment.

- ❖ When feasible, the Contractor shall establish haul routes that direct his vehicles away from developed areas and ensure that noise from hauling operations is kept to a minimum.

These requirements shall not be applicable if the noise produced by sources other than the Contractor's operation at the point of reception is greater than the noise from the Contractor's operation at the same point.

6 Public Involvement Process

FHWA and VDOT policies require that VDOT provides certain information to local officials within whose jurisdiction the highway project is located to minimize future traffic noise impacts of Type I projects on currently undeveloped lands (Type I projects involve highway improvements with noise analysis). This information must include information on noise-compatible land-use planning and noise impact zones in undeveloped land in the highway project corridor. This section of the report provides that information, as well as information about VDOT's noise abatement program.

6.1. Noise-Compatible Land-Use Planning

Sections 12.1 and 12.2 of VDOT's 2018 Highway Traffic Noise Impact Analysis Guidance Manual outline VDOT's approach to communication with local officials and provide information and resources on highway noise and noise-compatible land-use planning. VDOT's intention is to assist local officials in planning the uses of undeveloped land adjacent to highways to minimize the potential impacts of highway traffic noise.

Entering the Quiet Zone is a brochure that provides general information and examples to elected officials, planners, developers, and the general public about the problem of traffic noise and effective responses to it. A link to this brochure on FHWA's website is provided:

http://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/land_use/qz00.cfm

A wide variety of administrative strategies may be used to minimize or eliminate potential highway noise impacts, thereby preventing the need or desire for costly noise abatement structures such as noise barriers in future years. There are five broad categories of such strategies:

- Zoning,
- Other legal restrictions (subdivision control, building codes, health codes),
- Municipal ownership or control of the land,
- Financial incentives for compatible development, and
- Educational and advisory services.

The Audible Landscape: A Manual for Highway and Land Use is a very well-written and comprehensive guide addressing these noise-compatible land use planning strategies, with detailed information. This document is available through FHWA's Website, at

http://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/audible_landscape/al00.cfm

Noise Impact Zones in Undeveloped Land along the Study Corridor

Also required under the revised 2011 FHWA and VDOT noise policies is information on the noise impact zones adjacent to project roadways in undeveloped lands. To determine these zones, noise levels are computed at various distances from the edge of the project roadways in each of the undeveloped areas of the project study area. Then, the distances from the edge of the roadway to the NAC sound levels are determined through interpolation. Distances vary in the project corridor due to changes in traffic volumes or terrain features. Any noise sensitive sites within these zones should be considered noise impacted if no barrier is present to reduce sound levels. The figures in ***Appendix A*** show the predicted 66 dBA contours for the project.

6.2. Public Involvement Efforts

For noise barriers determined to be feasible and reasonable, the affected public will be given an opportunity to decide whether they are in favor of construction of the noise barrier. A final determination as to the construction of barriers will be made after the public hearing process. As part of the final design noise analysis, for barriers that are determined to be feasible and reasonable, input from the impacted property owners and renters must be obtained through citizen surveys via certified mail. Of the votes tallied, 50% or more must be in favor of a proposed noise barrier in order for that barrier to be considered further.

Upon completion of the citizen survey, the VDOT Noise Abatement staff which will make recommendations to the Chief Engineer for approval. Approved barriers will be incorporated into the road project plans. A technical memorandum (noise barrier survey addendum report) will be prepared after the voting process has been completed, which documents the voting results and summary of public comments of the noise barrier public survey process.

7 References

23 CFR Part 772. *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, 23 Codes of Federal Regulations, Part 772.

FHWA, 2004. U.S. Department of Transportation, FHWA Traffic Noise Model, TNM 2.5, Report No. FHWA–PD–96–010, Revision No. 1, April.

FHWA, 2011. U.S. Department of Transportation, *FHWA Highway Traffic Noise Analysis and Abatement Policy and Guidance*, December.

Kimley Horn, 2018. *Prince William Parkway (Route 234) Bypass Corridor Intersectional Alternatives Analysis*. October.

VDOT, 2015. *Noise Report Development and Guidance Document*. Virginia Department of Transportation. Version No. 5. August.

VDOT, 2018. *Highway Traffic Noise Impact Analysis Guidance Manual*. Virginia Department of Transportation. Version No. 8. February.

VDOT, 2020. *Road and Bridge Specifications*, Section 107.16(b.3), "Noise". Virginia Department of Transportation.

8 List of Preparers

Greg Berg, Senior Noise Control Specialist. Bachelor of Arts, Acoustics, Columbia College Chicago, Chicago, IL; 15 years of experience in environmental noise and vibration analysis. Contribution: Lead author of Noise Analysis Technical Report. Performed all traffic noise analysis, noise barrier design, and quality assurance/quality control.

Thanh Luc, Senor Engineering Manager. Bachelor of Science, Mechanical Engineering, California State Polytechnic University, Pomona, CA; 30 years of experience in environmental and transportation noise and vibration analysis. Contribution: Conducted review and quality control for the Noise Analysis Technical Report.

Appendix A Receptor Locations and Evaluated Noise Barrier Locations

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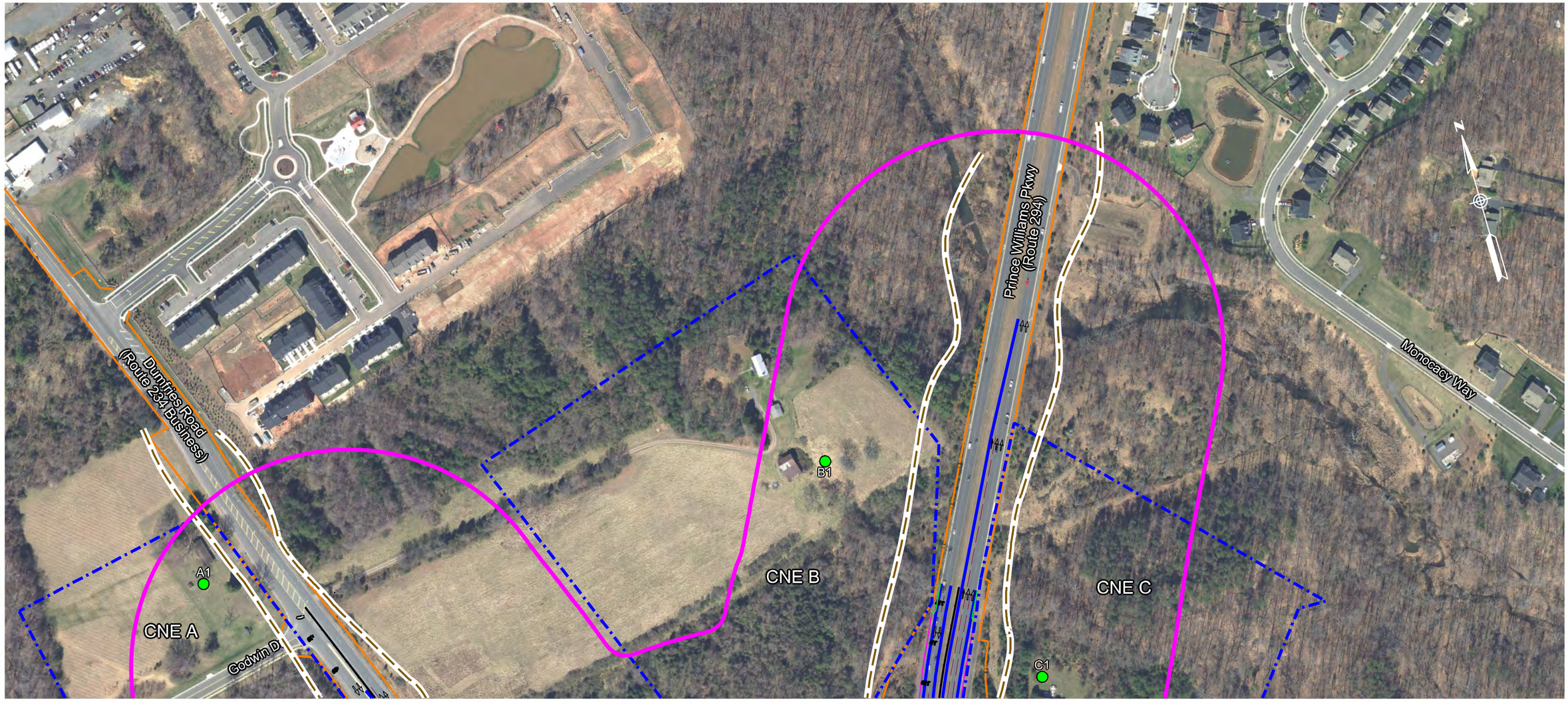
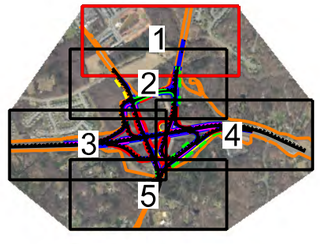


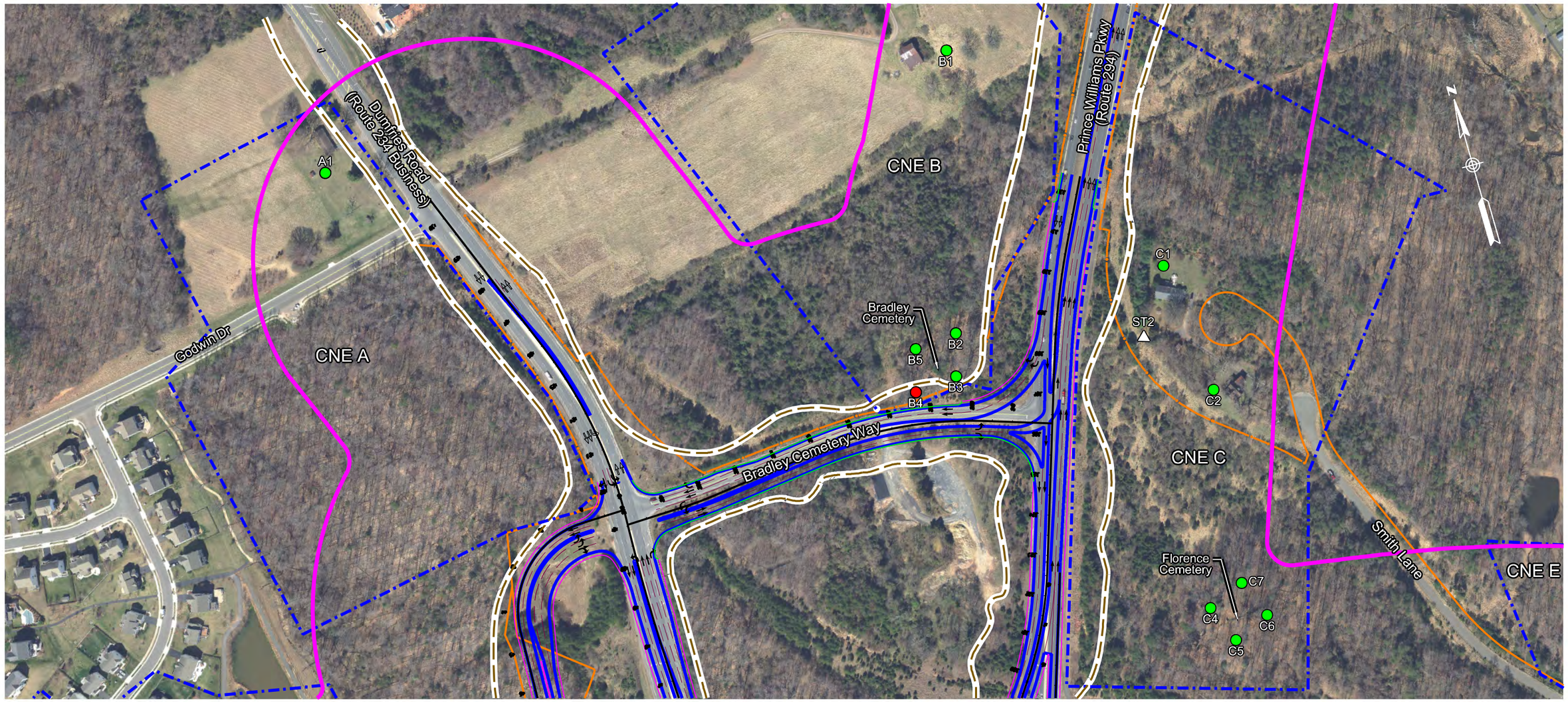
Route 234 At Brentsville Road Interchange
Prince William County
Contract Number : 19C17005



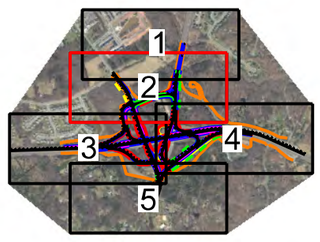
0 250 500 FEET

- Not Impacted Not Benefited
- Benifited Not Impacted
- Impacted and Benefited
- Impacted and Not Benefited
- Noise Measurement Site
- Evaluated Barrier-Feasible and Reasonable
- Evaluated Barrier-Feasible and Not Reasonable
- 66 dBA $L_{eq(h)}$ Noise Contour
- Right of Way
- Common Noise Environment (CNE) Areas
- 500' Noise Study Areas

Figure 1
Noise Prediction Locations and Potential Noise Barriers



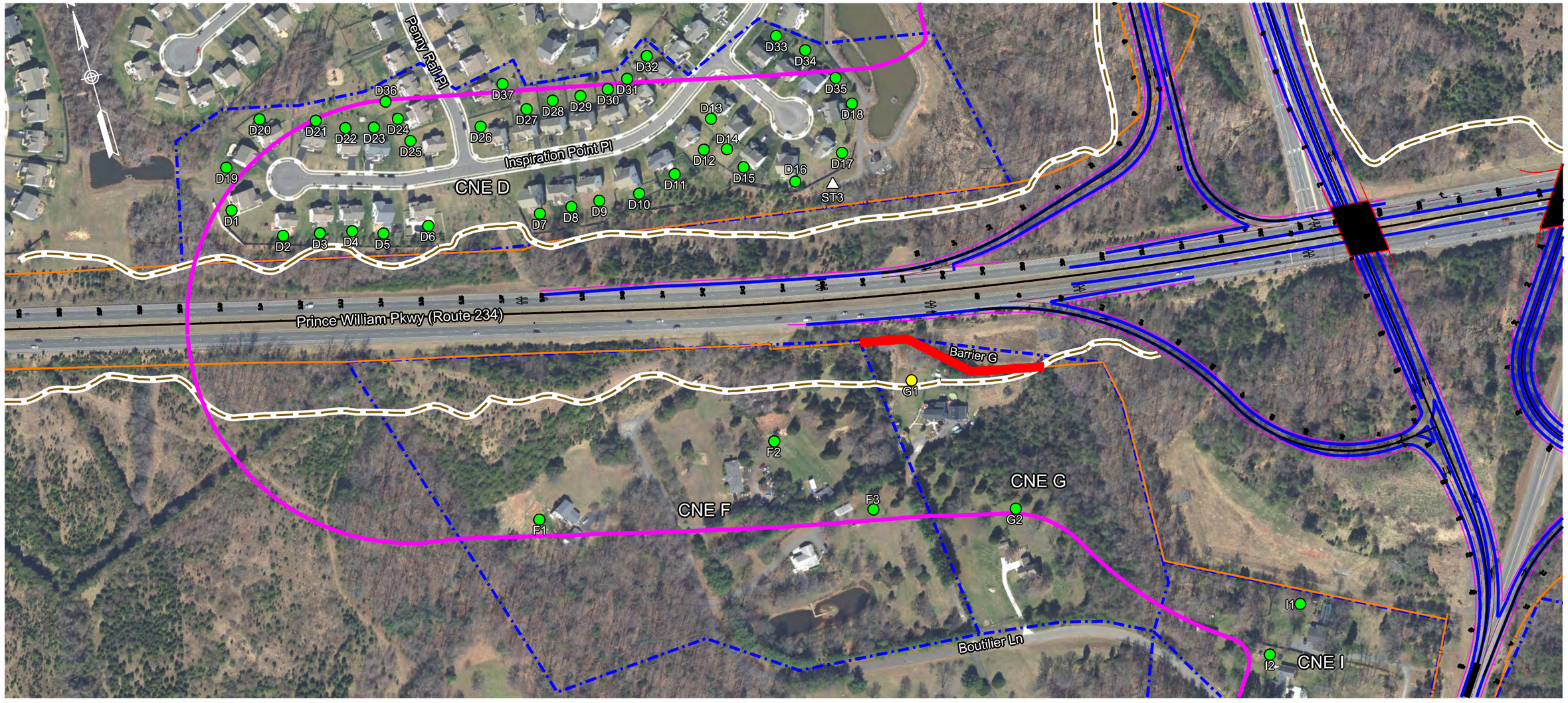
Route 234 At Brentsville Road Interchange
Prince William County
Contract Number : 19C17005



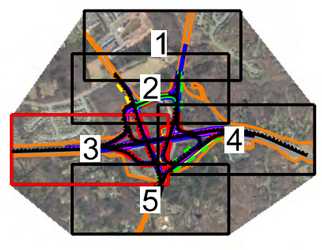
0 250 500 FEET

- Not Impacted Not Benefited
- Benifited Not Impacted
- Impacted and Benefited
- Impacted and Not Benefited
- Noise Measurement Site
- Evaluated Barrier-Feasible and Reasonable
- Evaluated Barrier-Feasible and Not Reasonable
- 66 dBA $L_{eq(h)}$ Noise Contour
- Right of Way
- Common Noise Environment (CNE) Areas
- 500' Noise Study Areas

Figure 2
Noise Prediction Locations and Potential Noise Barriers



Route 234 At Brentsville Road Interchange
Prince William County
Contract Number : 19C17005



0 250 500 FEET

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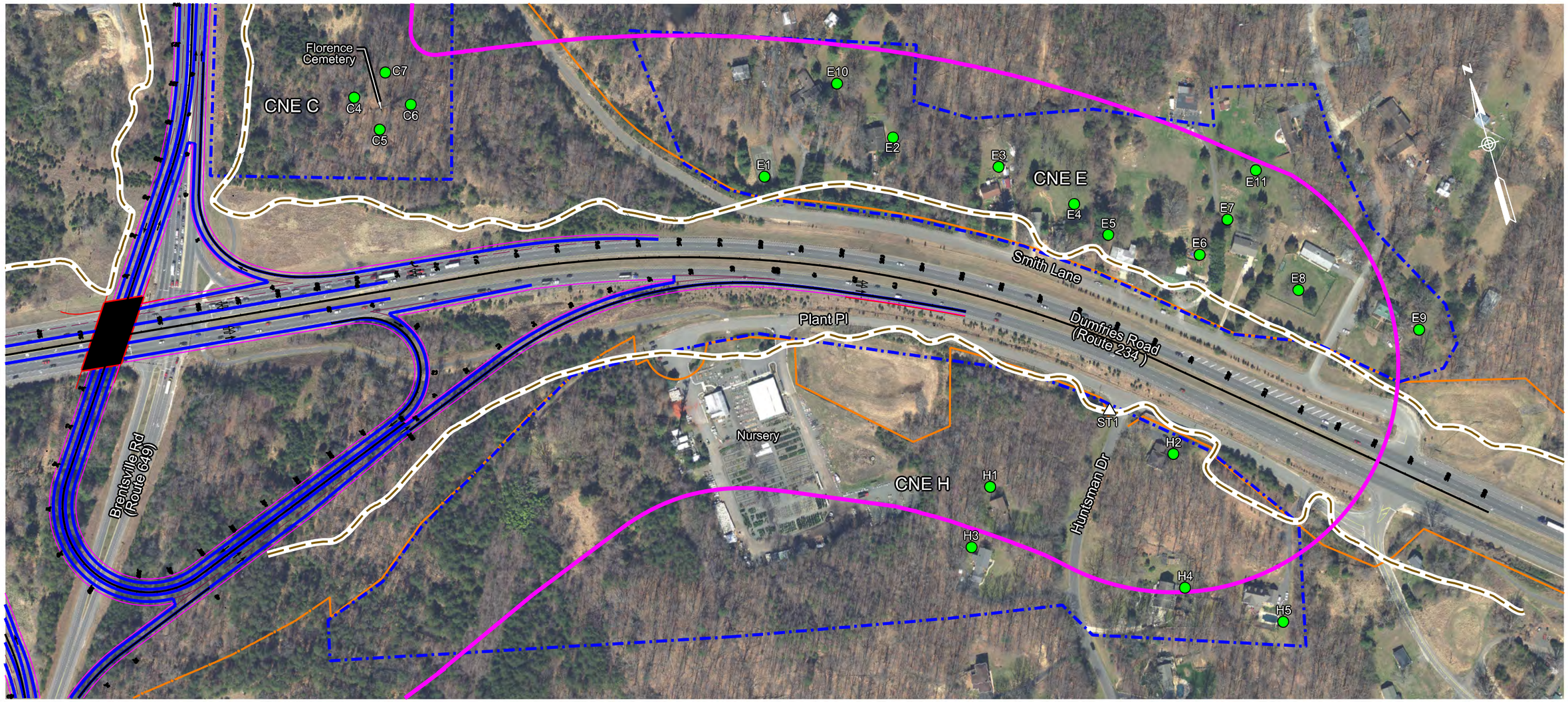
- Benifited Not Impacted
- Impacted and Benefited
- Impacted and Not Benefited
- Noise Measurement Site
- Evaluated Barrier-Feasible and Reasonable
- Evaluated Barrier-Feasible and Not Reasonable
- 66 dBA $L_{eq(h)}$ Noise Contour
- Right of Way
- Common Noise Environment (CNE) Areas
- 500' Noise Study Areas

Figure 3
Noise Prediction Locations and Potential Noise Barriers



Route 234 At Brentsville Road Interchange
Prince William County
Contract Number : 19C17005

0 250 500 FEET

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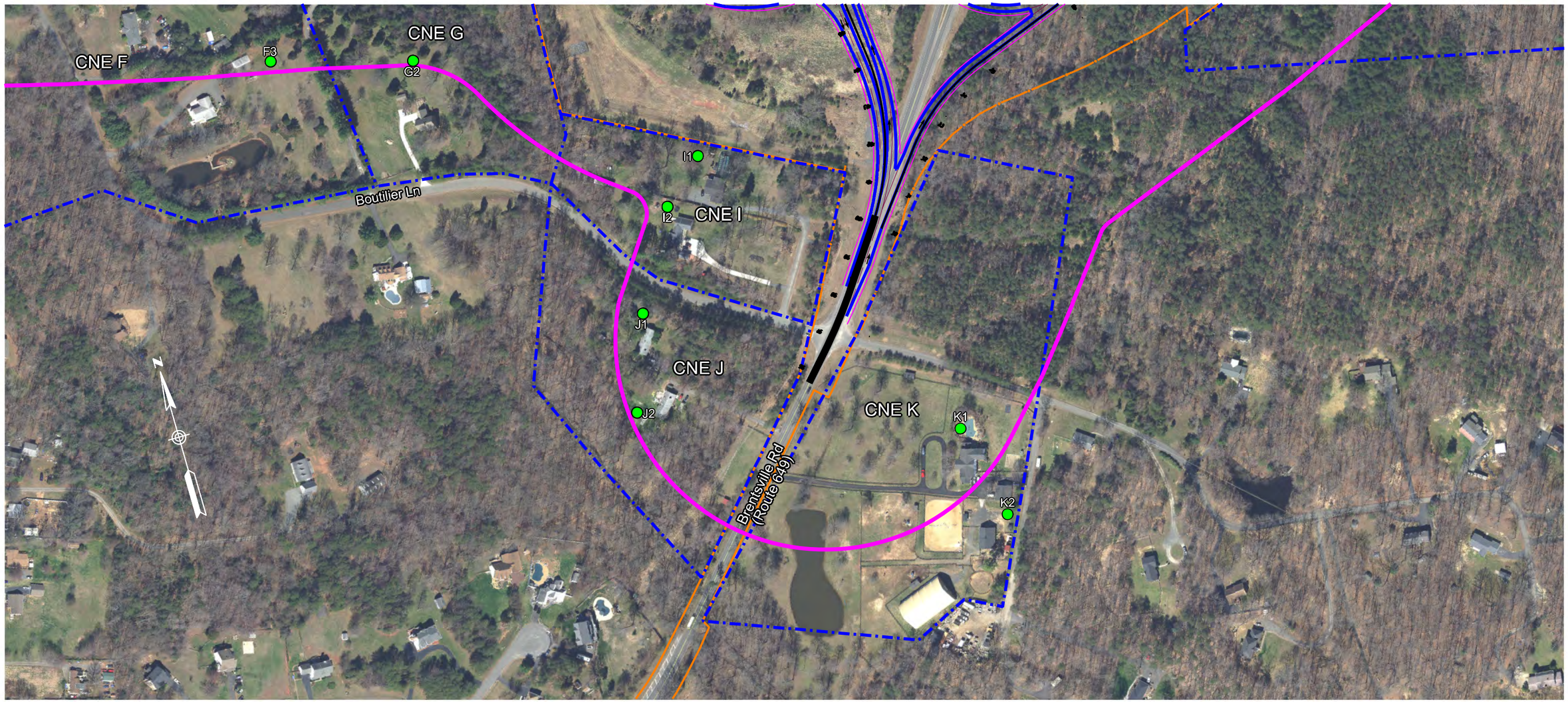
- Benifited Not Impacted
- Impacted and Benefited
- Impacted and Not Benefited
- Noise Measurement Site
- Evaluated Barrier-Feasible and Reasonable
- Evaluated Barrier-Feasible and Not Reasonable
- 66 dBA $L_{eq(h)}$ Noise Contour
- Right of Way
- Common Noise Environment (CNE) Areas
- 500' Noise Study Areas

Figure 4
Noise Prediction Locations and Potential Noise Barriers



Route 234 At Brentsville Road Interchange
Prince William County
Contract Number : 19C17005

0 250 500 FEET

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- Benifited Not Impacted
- Impacted and Benefited
- Impacted and Not Benefited
- Noise Measurement Site
- Evaluated Barrier-Feasible and Reasonable
- Evaluated Barrier-Feasible and Not Reasonable
- 66 dBA $L_{eq(h)}$ Noise Contour
- Right of Way
- Common Noise Environment (CNE) Areas
- 500' Noise Study Areas

Figure 5
Noise Prediction Locations and Potential Noise Barriers

Appendix B Noise Measurement Data, Site Photographs, and Equipment Calibration Records

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FIELD SURVEY FORM

PROJECT: Brentsville Rd		ENGINEER: OGDEN	DATE: 6/25/20
MEASUREMENT ADDRESS: 11411 Huntsman Dr.	CITY: Manassas	☒ Single-Family ☐ Multi-Family ☐ School ☐ Recreational ☐ Commercial ☐ Church	SITE NO.: ST1

SOUND LEVEL METER:
☐ LD-870 ☐ LD-820 ☒ LD-LxT
☐ LD-824 ☐ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ _____
SERIAL #: 6169

MICROPHONE:
☑ NON-POLAR ☐ POLARIZED
☑ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☒ RANDOM
☑ WIND SCREEN
SERIAL #: LW135545

PRE AMP:
☐ LD-900 ☑ LD-LxT
☐ LD-828 ☐ ZC-0032
☐ LD-902 ☐ _____
SERIAL #: 46632

NOTES:
SYSTEM PWR: ☐ BAT ☐ AC
(observations during measurement)
TEMP: 83.6 °F R.H.: 49.8 %
WIND SPEED: 0.7 MPH
TOWARD (DIR): W
SKIES: Clear
CAMERA _____
☑ VIDEO ☐ RADAR

CALIBRATOR:
☐ LD CA250 ☒ LD CA200
☐ B&K 4231 ☐ _____
S/N 16684
Freq, Hz.
☐ 250
☒ 1000
☐ 84
☐ _____

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0, 114.0, -50.8, 9:40
After 114.0, 114.1, -50.7, 10:32

METER SETTINGS:
☒ A-WTD ☑ LINEAR ☒ SLOW ☐ 1/1 OCT ☑ INTERVALS 15 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☑ L_N PERCENTILE VALUES

NOTES:


MEASUREMENT TYPE:
☐ Long Term
☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
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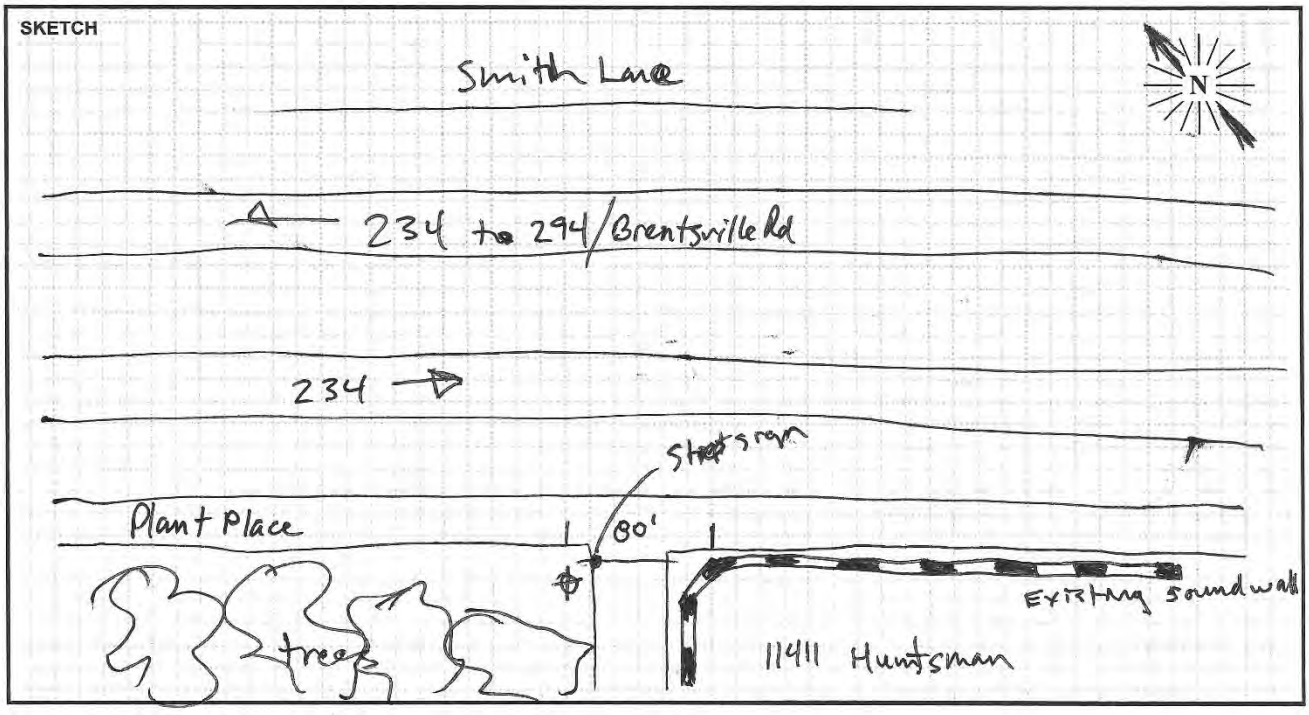


PARSONS

(Facing North)

(Facing East)

SHORT-TERM MEASUREMENT SITE ST1

FIELD SURVEY FORM

PROJECT:	ENGINEER:	DATE:
Brentsville Road	OGDEN	6/26/25

MEASUREMENT ADDRESS:	CITY:			SITE NO.:
8700 Smith Lane	Manassas	☒ Single-Family ☐ Multi-Family ☐ School	☐ Recreational ☐ Commercial ☐ Church	ST2

SOUND LEVEL METER:
☐ LD-870 ☐ LD-820 ☐ LD-LxT
☐ LD-824 ☐ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ _____
SERIAL #: 6169

MICROPHONE:
☒ NON-POLAR ☐ POLARIZED
☒ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☒ RANDOM
☒ WIND SCREEN
SERIAL #: LW135545

PRE AMP:
☐ LD-900 ☒ LD-LxT
☐ LD-828 ☐ ZC-0032
☐ LD-902 ☐ _____
SERIAL #: 46632

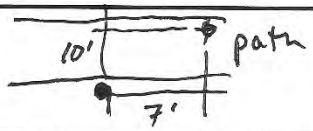
NOTES:
SYSTEM PWR: ☐ BAT ☐ AC
(observations during measurement)
TEMP: 76 °F R.H.: 58 %
WIND SPEED: 0 MPH
TOWARD (DIR): Calm
SKIES: Clear
CAMERA _____
☐ VIDEO ☐ RADAR

CALIBRATOR:
☐ LD CA250 ☒ LD CA200
☐ B&K 4231 ☐ _____
S/N 166684
Freq, Hz.
☐ 250
☒ 1000
☐ 84
☐ _____

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 113.8 / -50.5 / 8:49
After 114 / 113.8 / -50.8 / 9:40

METER SETTINGS:
☒ A-WTD ☒ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 15 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES: utility pole



MEASUREMENT TYPE:
☐ Long Term
☒ Short Term

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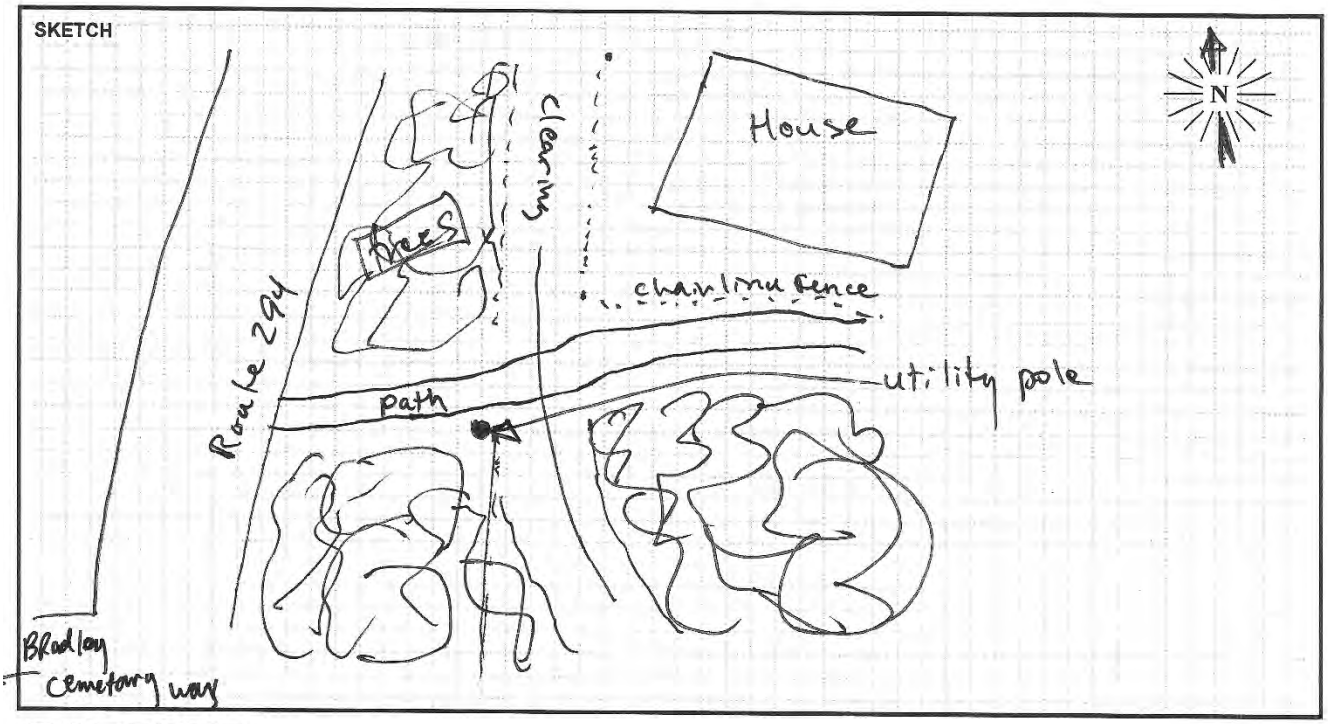

(Facing Northwest)

(Facing Northeast)

SHORT-TERM MEASUREMENT SITE ST2

FIELD SURVEY FORM

PROJECT: Brentsville Road		ENGINEER: OGDEN	DATE: 6/25/20
MEASUREMENT ADDRESS: 9001 Fletcher Farm Ct.	CITY: Manassas	☒ Single-Family ☐ Multi-Family ☐ School ☐ Recreational ☐ Commercial ☐ Church	SITE NO.: ST3

SOUND LEVEL METER:
☐ LD-870 ☐ LD-820 ☐ LD-LxT
☐ LD-824 ☐ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ _____
SERIAL #: 6169

MICROPHONE:
☑ NON-POLAR ☐ POLARIZED
☑ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☑ RANDOM
☑ WIND SCREEN
SERIAL #: LW135545

PRE AMP:
☐ LD-900 ☑ LD-LxT
☐ LD-828 ☐ ZC-0032
☐ LD-902 ☐ _____
SERIAL #: 46632

CALIBRATOR:
☐ LD CA250 ☒ LD CA200
☐ B&K 4231 ☐ _____
S/N 16684

Freq, Hz.
☐ 250
☒ 1000
☐ 84
☐ _____

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.1 / -0.7 / 10:32
After 114 / 114.0 / -0.7 / 11:41

METER SETTINGS:
☑ A-WTD ☑ LINEAR ☑ SLOW ☐ 1/1 OCT ☑ INTERVALS 15 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☑ L_N PERCENTILE VALUES

NOTES:
SYSTEM PWR: ☐ BAT ☐ AC
(observations during measurement)
TEMP: 88 °F R.H.: 44.1 %
WIND SPEED: 0.9 MPH
TOWARD (DIR): _____
SKIES: Slightly Cloudy
CAMERA _____
☐ VIDEO ☐ RADAR

NOTES:

MEASUREMENT TYPE:
☐ Long Term
☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
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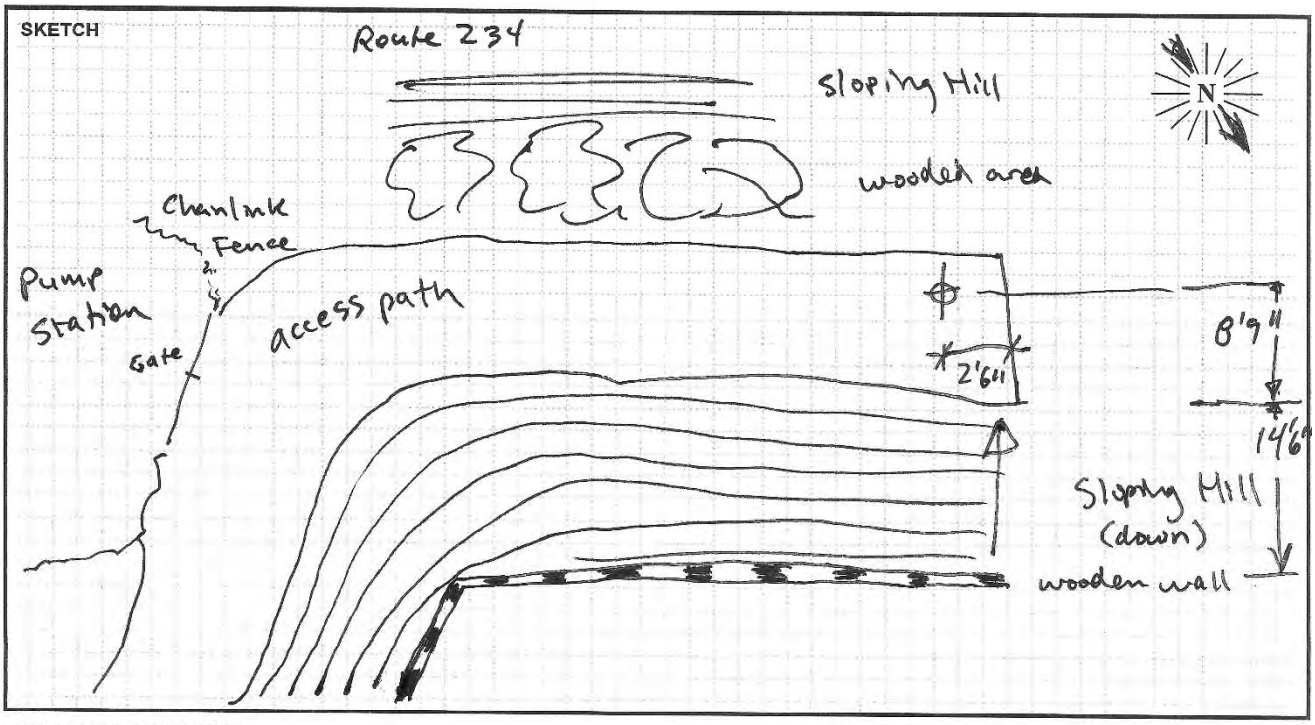

(Facing South)

(Facing Northeast)

SHORT-TERM MEASUREMENT SITE ST3

Calibration Certificate

Certificate Number 2020003650

Customer:

The Modal Shop
3149 East Kemper Road
Cincinnati, OH 45241, United States

Model Number	LxT1	***Procedure Number***	D0001.8378		
Serial Number	0006169	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	18 Mar 2020		
Initial Condition	As Manufactured	***Calibration Due***			
		Temperature	23.56	°C	± 0.25 °C
Description	SoundTrack LxT Class 1 Class 1 Sound Level Meter Firmware Revision: 2.402	***Humidity***	52.8	%RH	± 2.0 %RH
		Static Pressure	85.43	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRMLxT1L S/N 069940 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 23.6 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1
IEC 61260:2001 Class 1	ANSI S1.11 (R2009) Class 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev O Supporting Firmware Version 4.0.5, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ilac-MRA ACCREDITED Cert. #3622.01

LARSON DAVIS A PCB PIEZOTRONICS DIV.

~ *Certificate of Calibration and Compliance* ~

Microphone Model: 377B02 Serial Number: LW135545 Manufacturer: PCB

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Reference Equipment

Manufacturer	Model #	Serial #	PCB Control #	Cal Date	Due Date
National Instruments	PCIe-6351	1896F08	CA1918	10/18/19	10/16/20
Larson Davis	PRM915	134	CA2114	11/11/19	11/11/20
Larson Davis	PRM902	4407	CA1248	5/31/19	5/29/20
Larson Davis	PRM916	140	CA2129	11/25/19	11/25/20
Larson Davis	CAL250	5374	CA2068	2/13/20	2/12/21
Larson Davis	2201	143	CA1206	2/13/20	2/12/21
Bruel & Kjaer	4192	2764626	CA1636	8/20/19	8/21/20
Larson Davis	GPRM902	5281	CA1595	11/20/19	11/20/20
Newport	iTHX-SD/N	1080002	CA1511	2/6/20	2/5/21
Larson Davis	PRA951-4	234	CA1154	11/8/19	11/6/20
Larson Davis	PRM915	123	CA866	11/20/19	11/20/20
PCB	68510-02	N/A	CA2672	2/13/20	2/12/21
0	0	0	0	not required	not required
0	0	0	0	not required	not required
0	0	0	0	not required	not required

Frequency sweep performed with B&K UA0033 electrostatic actuator.

Condition of Unit

As Found: Out of Tolerance, Physically Damaged (Diaphragm Damaged)

As Left: Repaired (Unit), In Tolerance

Notes

1. Calibration of reference equipment is traceable to one or more of the following National Labs; NIST, PTB or DFM.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 10012-1, ANSI/NCSL Z540.3 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Open Circuit Sensitivity is measured using the insertion voltage method following procedure AT603-5.
6. Measurement uncertainty (95% confidence level with coverage factor of 2) for sensitivity is +/-0.20 dB.
7. Unit calibrated per ACS-20.

Technician: Leonard Lukasik Date: April 28, 2020

ilac-MRA ACCREDITED

CALIBRATION CERT #1862.01

PCB PIEZOTRONICS VIBRATION DIVISION

3425 Walden Avenue, Depew, New York, 14043

TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

ID:CAL112-3670913228.299+0

Calibration Certificate

Certificate Number 2017001233

Customer:
The Modal Shop
3149 East Kemper Road
Cincinnati, OH 45241, United States

Model Number	PRMLxT1	***Procedure Number***	D0001.8383		
Serial Number	046632	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	2 Feb 2017		
Initial Condition	As Manufactured	***Calibration Due***			
		Temperature	23.36	°C	± 0.01 °C
Description	Larson Davis 1/2" Preamplifier for LxT Class 1 -23 dB	***Humidity***	50	%RH	± 0.5 %RH
		Static Pressure	86.24	kPa	± 0.03 kPa

Evaluation Method Tested electrically using a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Sound Level Meter / Real Time Analyzer	03/08/2016	03/08/2017	003003
Hart Scientific 2626-S Humidity/Temperature Sensor	06/17/2016	06/17/2017	006946
Agilent 34401A DMM	06/07/2016	06/07/2017	007165
SRS DS360 Ultra Low Distortion Generator	10/14/2016	10/14/2017	007167

THE MODAL SHOP
AN MTS COMPANY

~Calibration Certificate~

10310 Aerohub Boulevard
Cincinnati, OH 45215
Ph: 513.351.9919
Fax: 513.458.2172
www.modalshop.com

Manufacturer:	Larson Davis	Asset ID:	
Model:	CAL200	Calibration Date / Cal ID:	Jul 23, 2020 09:44:31
Serial Number:	16684	Due Date:	
Description:	Acoustic Calibrator	Technician:	Ed Devlin
Customer:	TMS Rental	Approval:	

Calibration Results:

Measured SPL : 93.95 dB re. 20µPa		Temperature:	21 °C (71 °F)
Measured Frequency : 1,000.33 Hz		Humidity:	58.00%
		Pressure:	997.7 mbar

Upon receipt for calibration, the instrument was found to be:
WITHIN the stated tolerance of the manufacturer's specification.

Note: **As Found / As Left: In Tolerance.**

Measurement uncertainty at 95% confidence level: 0.30 dB

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the customer.

This calibration is traceable through : A2007

Notes:
The calibration was performed under operating procedures intended to implement the requirements of ISO 9001, ISO 17025 and ANSI Z540. Unless otherwise noted, the reported value is both "as found" and "as left" data. Calibration results relate only to the items calibrated. This certificate may not be reproduced, except in full, without written permission.

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
GRAS	40AG	58094	2/19/2020	2/19/2021

Appendix C Model Validation, Existing, and Future Traffic Data

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Table C-1. Noise Model Validation Traffic Counts

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks	Heavy Trucks
Hourly Traffic Counts for Measurements ST1 dated 06/25/20 from 10:05 to 10:20						
Eastbound Dumfries Road (Rte 234)	2	912	55	740	80	92
EB Dumfries Road Lane 1	1			370	40	46
EB Dumfries Road Lane 2	1			370	40	46
Westbound Dumfries Road (Rte 234)	2	748	55	632	32	84
WB Dumfries Road Lane 1	1			316	16	42
WB Dumfries Road Lane 2	1			316	16	42
Hourly Traffic Counts for Measurement ST2 dated 06/26/20 from 9:05 to 9:20						
Eastbound Dumfries Road (Rte 234)	2	1,012	55	820	64	128
EB Dumfries Road Lane 1	1			410	32	64
EB Dumfries Road Lane 2	1			410	32	64
Westbound Dumfries Road (Rte 234)	2	1,292	55	1,152	48	92
WB Dumfries Road Lane 1	1			576	24	46
WB Dumfries Road Lane 2	1			576	24	46
Northtbound Prince William Parkway (Rte 294)	2	640	55	584	32	24
NB Prince William Parkway Lane 1	1			292	16	12
NB Prince William Parkway Lane 2	1			292	16	12
Southtbound Prince William Parkway (Rte 294)	2	588	55	528	28	32
SB Prince William Parkway Lane 1	1			264	14	16
SB Prince William Parkway Lane 2	1			264	14	16

Table C-2. Noise Model Validation Traffic Counts (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks	Heavy Trucks
Hourly Traffic Counts for Measurement ST3 dated 06/25/20 from 11:05 to 11:20						
Eastbound Prince William Parkway (Rte 234)	2	844	55	744	24	76
EB Prince William Parkway Lane 1	1			372	12	38
EB Prince William Parkway Lane 2	1			372	12	38
Westbound Prince William Parkway (Rte 234)	2	1,076	55	948	52	76
WB Prince William Parkway Lane 1	1			474	26	38
WB Prince William Parkway Lane 2	1			474	26	38
Northbound Dumfries Road (Rte 234 Bus.)	1	160	45	160	0	0
NB Dumfries Road Lane 1	1			20	0	0
NB Dumfries Road from WB Rte 234	1			140	0	0
Southbound Dumfries Road (Rte 234 Bus.)	1	256	45	224	20	12
SB Dumfries Road Lane 1	1			112	10	6
SB Dumfries Road Lane 2	1			112	10	6

Table C-2. Existing (2017) Modeled Traffic Volumes

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Prince William Parkway (Rte 234) - West of Dumfries Road (Rte 234 Bus.)						
Eastbound Prince William Parkway (Rte 234)	2	1,980	55	1,841	40 [1]	99 [1]
EB Prince William Parkway Lane 1	1			920	20	49
EB Prince William Parkway Lane 2	1			921	20	50
Westbound Prince William Parkway (Rte 234)	2	1,483	55	1,379	30 [1]	74 [1]
WB Prince William Parkway Lane 1	1			689	15	37
WB Prince William Parkway Lane 2	1			690	15	37
Prince William Parkway (Rte 234) - Between Dumfries Road (Rte 234 Bus.) and Prince William Parkway (Rte 294)						
Eastbound Prince William Parkway (Rte 234)	2	2,269	55	2,111	45 [1]	113 [1]
EB Prince William Parkway Lane 1	1			1,055	22	56
EB Prince William Parkway Lane 2	1			1,056	23	57
Westbound Prince William Parkway (Rte 234)	2	1,623	55	1,510	32 [1]	81 [1]
WB Prince William Parkway Lane 1	1			755	16	40
WB Prince William Parkway Lane 2	1			755	16	41
Dumfries Road (Rte 234) - East of Prince William Parkway (Rte 294)						
Eastbound Dumfries Road (Rte 234)	2	2,167	55	2,016	43 [1]	108 [1]
EB Dumfries Road Lane 1	1			1,008	21	54
EB Dumfries Road Lane 2	1			1,008	22	54
Westbound Dumfries Road (Rte 234)	2	1,307	55	1,216	26 [1]	65 [1]
WB Dumfries Road Lane 1	1			608	13	32
WB Dumfries Road Lane 2	1			608	13	33

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-2. Existing (2017) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Dumfries Road (Rte 234 Bus.) - Between Prince William Parkway (Rte 294) and Bradley Cemetery Way						
Northbound Dumfries Road (Rte 234 Bus.)	1	255	45	249	6 [2]	0 [2]
NB Dumfries Road Lane 1	1			78	2	0
NB Dumfries Road from WB Rte 234	1			171	4	0
Southbound Dumfries Road (Rte 234 Bus.)	1	404	55	396	8 [2]	0 [2]
SB Dumfries Road Lane 1	1			198	4	0
SB Dumfries Road Lane 2	1			198	4	0
Dumfries Road (Rte 234 Bus.) - North of Bradley Cemetery Way						
Northbound Dumfries Road (Rte 234 Bus.)	1	365	45	358	7 [2]	0 [2]
NB Dumfries Road Lane 1	1			179	3	0
NB Dumfries Road from WB Rte 234	1			179	4	0
Southbound Dumfries Road (Rte 234 Bus.)	1	424	45	416	8 [2]	0 [2]
SB Dumfries Road Lane 1	1			208	4	0
SB Dumfries Road Lane 2	1			208	4	0
Bradley Cemetery Way - Between Dumfries Road (Rte 234 Bus.) and Prince William Parkway (Rte 294)						
Eastbound Bradley Cemetery Way	1	48	40	47	1 [2]	0 [2]
Westbound Bradley Cemetery Way	1	138	40	135	3 [2]	0 [2]

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-2. Existing (2017) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Prince William Parkway (Rte 294) - Between Dumfries Road (Rte 294) and Bradley Cemetery Way						
Northtbound Prince William Parkway (Rte 294)	2	859	50	833	17 [3]	9 [3]
NB Prince William Parkway Lane 1	1			416	8	4
NB Prince William Parkway Lane 2	1			417	9	5
Southtbound Prince William Parkway (Rte 294)	2	1,253	50	1,215	25 [3]	13 [3]
SB Prince William Parkway Lane 1	1			607	12	6
SB Prince William Parkway Lane 2	1			608	13	7
Prince William Parkway (Rte 294) - North of Bradley Cemetery Way						
Northtbound Prince William Parkway (Rte 294)	2	870	50	844	17 [3]	9 [3]
NB Prince William Parkway Lane 1	1			422	8	4
NB Prince William Parkway Lane 2	1			422	9	5
Southtbound Prince William Parkway (Rte 294)	2	1,354	50	1,313	27 [3]	14 [3]
SB Prince William Parkway Lane 1	1			656	13	7
SB Prince William Parkway Lane 2	1			657	14	7
Brentsville Road (Rte 649) - South of Dumfries Road (Rte 294)						
Northbound Brentsville Road (Rte 649)	1	185	40	181	4 [2]	0 [2]
Southbound Brentsville Road (Rte 649)	1	365	40	358	7 [2]	0 [2]

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-3. No-Build (2045) Modeled Traffic Volumes

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Prince William Parkway (Rte 234) - West of Dumfries Road (Rte 234 Bus.)						
Eastbound Prince William Parkway (Rte 234)	2	2,858	55	2,658	57 [1]	143 [1]
EB Prince William Parkway Lane 1	1			1,329	28	71
EB Prince William Parkway Lane 2	1			1,329	29	72
Westbound Prince William Parkway (Rte 234)	2	2,165	55	2,014	43 [1]	108 [1]
WB Prince William Parkway Lane 1	1			1,007	21	54
WB Prince William Parkway Lane 2	1			1,007	22	54
Prince William Parkway (Rte 234) - Between Dumfries Road (Rte 234 Bus.) and Prince William Parkway (Rte 294)						
Eastbound Prince William Parkway (Rte 234)	2	3,231	55	3,004	65 [1]	162 [1]
EB Prince William Parkway Lane 1	1			1,502	32	81
EB Prince William Parkway Lane 2	1			1,502	33	81
Westbound Prince William Parkway (Rte 234)	2	2,364	55	2,199	47 [1]	118 [1]
WB Prince William Parkway Lane 1	1			1,100	23	59
WB Prince William Parkway Lane 2	1			1,099	24	59
Dumfries Road (Rte 234) - East of Prince William Parkway (Rte 294)						
Eastbound Dumfries Road (Rte 234)	2	2,943	55	2,737	59 [1]	147 [1]
EB Dumfries Road Lane 1	1			1,368	29	73
EB Dumfries Road Lane 2	1			1,369	30	74
Westbound Dumfries Road (Rte 234)	2	1,774	55	1,650	35 [1]	89 [1]
WB Dumfries Road Lane 1	1			825	17	44
WB Dumfries Road Lane 2	1			825	18	45

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-3. No-Build (2045) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Dumfries Road (Rte 234 Bus.) - Between Prince William Parkway (Rte 294) and Bradley Cemetery Way						
Northbound Dumfries Road (Rte 234 Bus.)	1	384	45	376	8 [2]	0 [2]
NB Dumfries Road Lane 1	1			126	3	0
NB Dumfries Road from WB Rte 234	1			250	5	0
Southbound Dumfries Road (Rte 234 Bus.)	1	558	55	547	11 [2]	0 [2]
SB Dumfries Road Lane 1	1			274	5	0
SB Dumfries Road Lane 2	1			273	6	0
Dumfries Road (Rte 234 Bus.) - North of Bradley Cemetery Way						
Northbound Dumfries Road (Rte 234 Bus.)	1	561	45	550	11 [2]	0 [2]
NB Dumfries Road Lane 1	1			275	5	0
NB Dumfries Road from WB Rte 234	1			275	6	0
Southbound Dumfries Road (Rte 234 Bus.)	1	590	45	578	12 [2]	0 [2]
SB Dumfries Road Lane 1	1			289	6	0
SB Dumfries Road Lane 2	1			289	6	0
Bradley Cemetery Way - Between Dumfries Road (Rte 234 Bus.) and Prince William Parkway (Rte 294)						
Eastbound Bradley Cemetery Way	1	77	40	75	2 [2]	0 [2]
Westbound Bradley Cemetery Way	1	222	40	218	4 [2]	0 [2]

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-3. No-Build (2045) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Prince William Parkway (Rte 294) - Between Dumfries Road (Rte 294) and Bradley Cemetery Way						
Northtbound Prince William Parkway (Rte 294)	2	1,313	50	1,274	26 [3]	13 [3]
NB Prince William Parkway Lane 1	1			637	13	6
NB Prince William Parkway Lane 2	1			637	13	7
Southtbound Prince William Parkway (Rte 294)	2	1,903	50	1,846	38 [3]	19 [3]
SB Prince William Parkway Lane 1	1			923	19	9
SB Prince William Parkway Lane 2	1			923	19	10
Prince William Parkway (Rte 294) - North of Bradley Cemetery Way						
Northtbound Prince William Parkway (Rte 294)	2	1,330	50	1,290	27 [3]	13 [3]
NB Prince William Parkway Lane 1	1			645	13	6
NB Prince William Parkway Lane 2	1			645	14	7
Southtbound Prince William Parkway (Rte 294)	2	2,066	50	2,004	41 [3]	21 [3]
SB Prince William Parkway Lane 1	1			1,002	20	10
SB Prince William Parkway Lane 2	1			1,002	21	11
Brentsville Road (Rte 649) - South of Dumfries Road (Rte 294)						
Northbound Brentsville Road (Rte 649)	1	291	40	285	6 [2]	0 [2]
Southbound Brentsville Road (Rte 649)	1	580	40	568	12 [2]	0 [2]

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-4. Build (2045) Modeled Traffic Volumes

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Prince William Parkway (Rte 234) - West of Interchange						
Eastbound Prince William Parkway (Rte 234)	2	2,858	55	2,658	57 [1]	143 [1]
EB Prince William Parkway Lane 1	1			1,329	28	71
EB Prince William Parkway Lane 2	1			1,329	29	72
Westbound Prince William Parkway (Rte 234)	2	2,165	55	2,014	43 [1]	108 [1]
WB Prince William Parkway Lane 1	1			1,007	21	54
WB Prince William Parkway Lane 2	1			1,007	22	54
Prince William Parkway (Rte 234) - Between Interchange						
Eastbound Prince William Parkway (Rte 234)	2	2,619	55	2,436	52 [1]	131 [1]
EB Prince William Parkway Lane 1	1			1,218	26	65
EB Prince William Parkway Lane 2	1			1,218	26	66
Westbound Prince William Parkway (Rte 234)	2	1,106	55	1,029	22 [1]	55 [1]
WB Prince William Parkway Lane 1	1			514	11	27
WB Prince William Parkway Lane 2	1			515	11	28
Dumfries Road (Rte 234) - East of Interchange						
Eastbound Dumfries Road (Rte 234)	2	2,943	55	2,737	59 [1]	147 [1]
EB Dumfries Road Lane 1	1			1,368	29	73
EB Dumfries Road Lane 2	1			1,369	30	74
Westbound Dumfries Road (Rte 234)	2	1,774	55	1,650	35 [1]	89 [1]
WB Dumfries Road Lane 1	1			825	17	44
WB Dumfries Road Lane 2	1			825	18	45

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-4. Build (2045) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Dumfries Road (Rte 234 Bus.) - North of Bradley Cemetery Way						
Northbound Dumfries Road (Rte 234 Bus.)	1	561	45	550	11 [2]	0 [2]
NB Dumfries Road Lane 1	1			275	5	0
NB Dumfries Road Lane 2	1			275	6	0
Southbound Dumfries Road (Rte 234 Bus.)	1	590	45	578	12 [2]	0 [2]
NB Dumfries Road Lane 1	1			289	6	0
NB Dumfries Road Lane 2	1			289	6	0
Dumfries Road (Rte 234 Bus.) - Between Interchange and Bradley Cemetery Way						
Northbound Dumfries Road (Rte 234 Bus.)	1	385	45	377	8 [2]	0 [2]
NB Dumfries Road Lane 1	1			188	4	0
NB Dumfries Road Lane 2	1			189	4	0
Southbound Dumfries Road (Rte 234 Bus.)	1	469	45	460	9 [2]	0 [2]
NB Dumfries Road Lane 1	1			230	4	0
NB Dumfries Road Lane 2	1			230	5	0

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-4. Build (2045) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Prince William Parkway (Rte 294) - North of Bradley Cemetery Way						
Northtbound Prince William Parkway (Rte 294)	2	1,330	50	1,290	27 [3]	13 [3]
NB Prince William Parkway Lane 1	1			645	13	6
NB Prince William Parkway Lane 2	1			645	14	7
Southtbound Prince William Parkway (Rte 294)	2	2,066	50	2,004	41 [3]	21 [3]
SB Prince William Parkway Lane 1	1			1,002	20	10
SB Prince William Parkway Lane 2	1			1,002	21	11
Prince William Parkway (Rte 294) - Between Interchange and Bradley Cemetery Way						
Northtbound Prince William Parkway (Rte 294)	2	1,113	50	1,080	22 [3]	11 [3]
NB Prince William Parkway Lane 1	1			540	11	5
NB Prince William Parkway Lane 2	1			540	11	6
Southtbound Prince William Parkway (Rte 294)	2	1,057	50	1,025	21 [3]	11 [3]
SB Prince William Parkway Lane 1	1			513	10	5
SB Prince William Parkway Lane 2	1			512	11	6

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-4. Build (2045) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Bradley Cemetery Way - Between Dumfries Road (Rte 234 Bus.) and Prince William Parkway (Rte 294)						
Eastbound Bradley Cemetery Way	2	657	40	644	13 [2]	0 [2]
EB Bradley Cemetery Way Lane 1	1			322	6	0
EB Bradley Cemetery Way Lane 2	1			322	7	0
Westbound Bradley Cemetery Way	2	1,449	40	1,420	29 [2]	0 [2]
WB Bradley Cemetery Way Lane 1	1			710	14	0
WB Bradley Cemetery Way Lane 2	1			710	15	0
Brentsville Road (Rte 649) - South of Interchange						
Northbound Brentsville Road (Rte 649)	1	291	40	285	6 [2]	0 [2]
Southbound Brentsville Road (Rte 649)	1	580	40	568	12 [2]	0 [2]

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

3 - Medium and heavy truck percentages estimated to be 2.0% and 1.0%, respectively.

Table C-4. Build (2045) Modeled Traffic Volumes (Cont'd)

Description of Traffic Lane	Number of Lanes	Total Peak Hour Traffic Volumes	Travel Speeds, mph	Volumes by Vehicle Type		
				Cars	Medium Trucks*	Heavy Trucks*
Route 234/Brentsville Road Interchange						
Eastbound Rte 234 to Brentsville Road (Ramp F)	1	240	45	235	5 [2]	0 [2]
Northbound Brentsville Road (Left Turn)	1	129		126	3 [2]	0 [2]
Southbound Brentsville Road (Right Turn)	1	110		108	2 [2]	0 [2]
Eastbound Rte 234 to Northbound Rte 294 (Ramp B)	1	767	45	744	15 [3]	8 [3]
Westbound Rte 234 to Northbound Rte 294 (Ramp A)	1	346	40	336	7 [3]	3 [3]
Westbound Rte 234 to Rte 234 Bus. (Ramp G)	1	322	40	316	6 [2]	0 [2]
Northbound Brentsville Road to Easbound Rte 234 (Ramp C)	1	35	40	34	1 [2]	0 [2]
Northbound Brentsville Road/Southbound 294 to Eastbound 234 (Ramp E)	1	1,092	45	1,059	22 [3]	11 [3]
Northbound Brentsville Road to Northbound Rte 234 Bus.	1	256	40	251	5 [2]	0 [2]
Southbound Rte 294 to Eastbound Rte 234	1	1,057	40	1,025	21 [3]	11 [3]
Rte 234 Bus. to Westbound Rte 234 (Ramp D)	2	1,059	40	1,038	21 [2]	0 [2]
Rte 234 Bus. to Westbound Rte 234 Lane 1	1			519	10	0
Rte 234 Bus. to Westbound Rte 234 Lane 2	1			519	11	0

Notes:

* - Medium and heavy truck percentage based on VDOT Traffic Engineering Division 2019 AADT volume estimates.

1 - Medium and heavy truck percentages estimated to be 2.0% and 5.0%, respectively.

2 - Medium and heavy truck percentages estimated to be 2.0% and 0.0%, respectively.

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Appendix D Warranted, Feasible, and Reasonable Worksheets

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Warranted, Feasible, and Reasonable Worksheet

Note: the answers provided in the worksheet may differ between preliminary and final design. This worksheet is available in a protected digital format upon request.

Date:	08/04/20
Project No. and UPC:	5019843
County:	Prince William County
Facility:	Prince William Parkway (Route 234)
Barrier System ID:	Barrier G
Noise Abatement Category(s)	NAC B
Community Name and/or CNE#	CNE G

Design phase: ☑ Preliminary Design ☐ Final Design

Warranted

1. Community Documentation (if applicable)
   a. Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued). — 1985
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): — September 21, 1994
   c. Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate." — ☑ Yes ☐ No

2. Criteria requiring consideration of noise abatement
   a. Project causes design year noise levels to approach or exceed the Noise Abatement Criteria? — ☑ Yes ☐ No
   b. Project causes a substantial noise increase of 10 dBA or more? — ☐ Yes ☑ No

Feasibility

1. Impacted receptor units
   a. Number of impacted receptor units: — One
   b. Number of impacted receptor units receiving 5 dBA or more insertion loss (IL): — One
   c. Percentage of impacted receptor units receiving 5 dB(A) or more IL — 100%
   d. Is the percentage 50 or greater? — ☑ Yes ☐ No

2 Will placement of the noise barrier cause engineering or safety conflicts, e.g. drainage or site distance issues? ☐ Yes ☑ No

3 Will placement of the noise barrier restrict access to vehicular or pedestrian travel? ☐ Yes ☑ No

4 Will placement of the noise barrier conflict with existing utility locations? ☐ Yes ☑ No

Reasonableness

1. Cost-Benefit Factors
   a. Surface Area (Total square foot) of the proposed noise barrier. (ft²) — 6,692
   b. Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more. — One
   c. Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more. — None
   d. Total number of benefited receptors. — One
   e. Surface Area per benefited receptor unit. (ft²/BR) — 6,692
   f. Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600? — No
   g. Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year? — Yes

2. Community Desires Related to the Barrier
   a. Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to "decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the impacted receptor unit owners do not desire the barrier." ☐ Yes ☐ No

3. Additional Noise Barrier Details
   a. Length of the proposed noise barrier — 478 Ft
   b Height range of the proposed noise barrier — 14 Ft
   c. Average height of the proposed noise barrier — 14 Ft
   d Cost per square foot. ($/ft²) — $42
   e. Total Barrier Cost ($) — $281,064
   f. Additional comments (if applicable)
   g. Barrier material — ☐ Absorptive ☐ Reflective

Decision

Is the Noise Barrier(s) WARRANTED?	☑ Yes	☐ No
Is the Noise Barrier(s) FEASIBLE?	☑ Yes	☐ No
Is the Noise Barrier(s) REASONABLE?	☐ Yes	■ No

Additional Reasons for Decision:

Appendix E HB 2577 Memorandum

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COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION

Stephen C. Brich, P.E.
Commissioner

1401 East Broad Street
Richmond, Virginia 23219

(804) 786-2701
Fax: (804) 786-2940

August 26, 2020

MEMORANDUM

TO: Stuart Tyler, Project Manager
Anissa Brown, Environmental Contact

FROM: LJ Muchenje PE, Noise Abatement Engineer

SUBJECT: Route 234 at Brentsville Rd Interchange
Prince William County Project Number: 19C17005

The 2009 General Assembly passed Chapter 120 (HB 2577), which amends the Code of Virginia by adding in Article 15 of Chapter 1 of Title 33.1 a section numbered 33.1-223.2:21, relating to highway noise abatement.

House Bill 2577 States: Requires that whenever the CTB or the Department plan for or undertake any highway construction or improvement project and such project includes or may include the requirement for the mitigation of traffic noise impacts, consideration *should* be given to the use of noise reducing design and low noise pavement materials and techniques in lieu of construction of noise walls or sound barriers. Landscaping in such a design would be utilized to act as a visual screen if visual screening is required.

In an effort to honor the intent of HB 2577 we are asking for your input (per Chapter VI of Materials Division's Manual of Instruction and Section 2B-3 Determination of Roadway Design of the VDOT Road Design manual (pages 2B-5 and 2B-6)). As part of the Noise Technical Report and technical files, we are seeking your professional opinion by providing comments for the project noted above. Please distribute this memorandum to the appropriate District staff and combine all responses into one response.

Should you have any questions, please contact me at (804) 371-6768. Thank you for your time and consideration regarding this request.

Comment: Is noise reducing design feasible in lieu of construction of noise walls or sound barriers? For example, the roadway alignment can be shifted away from noise sensitive receptors or the roadway can be placed in deep cut.

Response: A noise reducing design is not feasible for this project. The Build Alternative currently includes modifications of and connections to the existing Route 234 and intersecting roads to create grade separations. The geometry of the existing roadways, the terrain, existing development along the roadways, and the need to maintain traffic during construction are all factors that make shifting the roadway or constructing in a deep cut infeasible. (Response provided by Stuart Tyler, PE)

Comment: Can the project support the use of low noise pavement in lieu of construction of noise walls or sound barriers?

Response: The Virginia Department of Transportation is not authorized by the Federal Highway Administration to use "quiet pavement" at this time as a form of noise mitigation. Upon completion of the Quiet Pavement Pilot Program and approval from FHWA, the use of "quiet pavement" will be given additional consideration. (Response provided by Lovejoy Muchenje, PE)

Comment: Can landscaping be utilized to act as a visual screen if visual screening is required?

Response: Landscaping could be provided at selected locations if determined to be required during final design. One of the impacted receptors, the Bradley Cemetery in CNE B, already is screened on three sides by existing woodland, and somewhat screened along the Bradley Cemetery Way side by existing trees, which will not be disturbed by the project. Due to the proximity of Bradley Cemetery Way, there is not sufficient room to provide additional screening. Furthermore, the cemetery is located well away from the main portions of the project (the grade separations and associated ramps at Dumfries Road and Brentsville Road). The other impacted receptor, a single-family residence in CNE G, already is largely screened by existing trees, which could be supplemented by additional plantings if required. Other receptors surrounding the project that would not be impacted by noise are well screened by existing tree cover. (Response provided by Stuart Tyler, PE)

ATTACHMENT 2
THREATENED AND ENDANGERED SPECIES DOCUMENTATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: October 05, 2020
Consultation Code: 05E2VA00-2020-SLI-1358
Event Code: 05E2VA00-2021-E-00158
Project Name: Route 234 at Brentsville Rd Interchange

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

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

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

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

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

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

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

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E2VA00-2020-SLI-1358

Event Code: 05E2VA00-2021-E-00158

Project Name: Route 234 at Brentsville Rd Interchange

Project Type: TRANSPORTATION

Project Description: The project will include the construction of a bridge to grade separate the intersection of Prince William Parkway and Brentsville Road. The project will convert the intersection of Prince William Parkway at Bradley Cemetery Way to a continuous green-T intersection and will include the realigning of Brentsville Road to provide a through roadway to Dumfries Road.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.715860011323144N77.4673132104148W

Counties: Prince William, VA

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

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

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

---

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

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Harperella *Ptilimnium nodosum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3739	Endangered

Critical habitats

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

USFWS National Wildlife Refuge Lands And Fish Hatcheries

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

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

From:	Gresham, Danielle
To:	Virginia Field Office, FW5
Cc:	Ashton, Surbhi; Tyler, Stuart
Subject:	Self Certification Letter - Route 234 at Brentsville Road Interchange Project
Date:	Wednesday, January 29, 2020 3:23:32 PM
Attachments:	200129_BrentsvilleRd-234Interchange_Species Conclusions Table.pdf Route 234_Brent_MA Verif Lttr_NLEB Consult and 4(d) Rule Consist 2020-01-29.pdf Route 234_Brent_project_review_certification_SIGNED.pdf Rt234_Brent_Species List_Virginia Ecological Services Field Office.pdf Rt234_BrentsvilleRd_CBB_Eagle Nest Locator.pdf

---

Dear USFWS Virginia Field Office Representative,

I am submitting this project review package on behalf of the Prince William County Department of Transportation for the Route 234 at Brentsville Road Project (Consultation Code: 05E2VA00-2020-SLI-1358, Event Code: 05E2VA00-2020-E-03759).

The following attachments are provided for this submittal:

1. Official Species List from IPaC (1/8/20)
2. VA Eagle Nest Locator Map (1/27/20)
3. Species Conclusion Table (1/29/20)
4. Verification Letter under January 5, 2016, PBO on Final 4(d) Rule for NLEB (1/29/20)
5. Online project review certification letter (1/29/20)

Please contact me at danielle.gresham@parsons.com if you have any questions, or require additional information regarding this submittal.

Best Regards,

Danielle Gresham

Danielle Gresham
PARSONS
Mobile: 619-252-7748

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: January 08, 2020
Consultation Code: 05E2VA00-2020-SLI-1358
Event Code: 05E2VA00-2020-E-03759
Project Name: Route 234 at Brentsville Rd Interchange

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

To Whom It May Concern:

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

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

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species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

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

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

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Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E2VA00-2020-SLI-1358

Event Code: 05E2VA00-2020-E-03759

Project Name: Route 234 at Brentsville Rd Interchange

Project Type: TRANSPORTATION

Project Description: The project will include the construction of a bridge to grade separate the intersection of Prince William Parkway and Brentsville Road. The project will convert the intersection of Prince William Parkway at Bradley Cemetery Way to a continuous green-T intersection and will include the realigning of Brentsville Road to provide a through roadway to Dumfries Road.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.715860011323144N77.4673132104148W

Counties: Prince William, VA

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

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

---

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

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Harperella *Ptilimnium nodosum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3739	Endangered

Critical habitats

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

USFWS National Wildlife Refuge Lands And Fish Hatcheries

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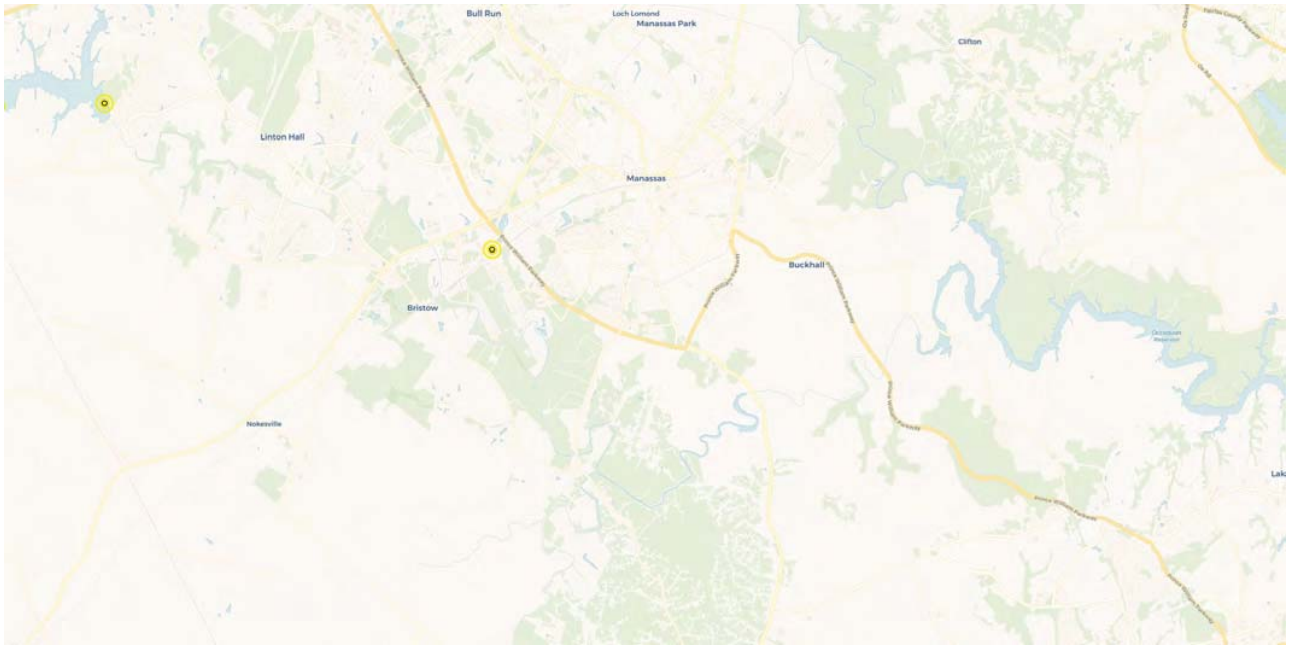
THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

CCB Mapping Portal



Layers: VA Eagle Nest Locator, VA Eagle Nest Buffers

Map Center [longitude, latitude]: [-77.4697494506836, 38.731054199763825]

Map Link:
https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&layer=VA+Eagle+Nest+Buffers&zoom=13&lat=38.731054199763825&lng=-77.4697494506836&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 01/27/2020

Species Conclusions Table
Project Name: Route 234 at Brentsville Road Interchange, Prince William County, Virginia
Date: 1/29/20

Listed Species

Species/Resource Name	Conclusion	ESA Section 7/Eagle Act Determination	Notes/Documentation
Northern long-eared bat (*Myotis septentrionalis*) Threatened	Suitable summer roosting and foraging habitat present.	May affect, not likely to adversely affect	01-2020 FWS – Official Species List 01-2020 VDGIF-FWIS online results within 3 miles – Known or Likely species Relying upon the findings of the 1/5/2016 Programmatic Biological Opinion for Final 4(d) Rule on the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions to fulfill project-specific section 7 responsibilities. As a voluntary avoidance and minimization measure, tree removal would occur outside of the pup season (June 1 through July 31)
Harperella (*Ptilimnium nodosum*)	No suitable habitat present	No effect	01-2020 FWS – Official Species List Suitable habitat characteristics include stable point bars, bedrock outcrops, and rocky and gravelly shoals in perennial streams and rivers with moderate to swift flow. Field observations within the action area found no such habitat present. Instead, the several intermittent streams, ephemeral streams, and stormwater drainage ditches have organic detritus or vegetated substrates. Intermittent streams are considered unsuitable habitat because the hydrologic pulsing characteristics needed to support and promote harperella are absent. Land use and land cover in the action area consist largely of commercial and residential uses and multiple roadways, the runoff from which is routed through a number of stormwater management ponds within the action area.
Bald eagle (*Haliaeetus leucocephalus*) Species of Concern	Unlikely to disturb nesting bald eagles.*	No Eagle Act permit required.	01-2020 FWS – Official Species List 01-2020 Center for Conservation Biology

	Does not intersect with an eagle concentration area.		
Critical habitat	No critical habitat present.	No effect.	

*All documented nests are over 660' away (2019 data)

REFERENCES

Center for Conservation Biology

2020 Eagle Nest Locator, http://www.ccbbirds.org/what-we-do/research/species-of-concern/virginia-eagles/nest-locator/. Accessed January 27, 2020.

USFWS (United States Fish and Wildlife Service)

2020 Virginia Field Office - Bald Eagle Concentration Areas. https://www.fws.gov/northeast/virginiafield/endangered/projectreviews_step6b.html Accessed January 27, 2020.

2020 Official Species List – List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project. Consultation Code: 05E2VA00-2020-E-03759. Virginia Ecological Services Field Office, 6669 Short Lane, Gloucester, VA 23061. January 8, 2020.

VDGIF (Virginia Department of Game and Inland Fisheries)

2020 The Virginia Fish and Wildlife Information Service (VAFWIS) – online Geographic Search. http://vafwis.org/fwis/?Title=VaFWIS+Geographic+Search. Accessed January 15, 2020.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: January 29, 2020
Consultation Code: 05E2VA00-2020-TA-1358
Event Code: 05E2VA00-2020-E-04672
Project Name: Route 234 at Brentsville Rd Interchange

Subject: Verification letter for the 'Route 234 at Brentsville Rd Interchange' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Danielle Gresham:

The U.S. Fish and Wildlife Service (Service) received on January 29, 2020 your effects determination for the 'Route 234 at Brentsville Rd Interchange' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Harperella, *Ptilimnium nodosum* (Endangered)

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Route 234 at Brentsville Rd Interchange

2. Description

The following description was provided for the project 'Route 234 at Brentsville Rd Interchange':

> The project will include the construction of a bridge to grade separate the intersection of Prince William Parkway and Brentsville Road. The project will convert the intersection of Prince William Parkway at Bradley Cemetery Way to a continuous green-T intersection and will include the realigning of Brentsville Road to provide a through roadway to Dumfries Road.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.715860011323144N77.4673132104148W

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service’s PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   Yes

8. Will the action only remove hazardous trees for the protection of human life or property?

   No

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

    No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

58.91

2. If known, estimated acres of forest conversion from April 1 to October 31

58.91

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?
0

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: January 29, 2020

Self-Certification Letter

Project Name: Route 234 at Brentsville Road Interchange Project

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in:

- "no effect" determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o) [as determined through the Information, Planning, and Consultation System (IPaC) northern long-eared bat assisted determination key]; and/or
- "may affect, not likely to adversely affect" determinations for proposed/listed species and/or proposed/designated critical habitat.

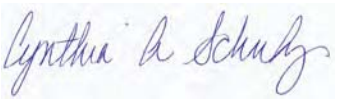
We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the determinations described above for proposed and listed species and proposed and designated critical habitat. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat becomes available, this determination may be reconsidered. This certification letter is valid for 1 year.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Troy Andersen of this office at (804) 824-2428.

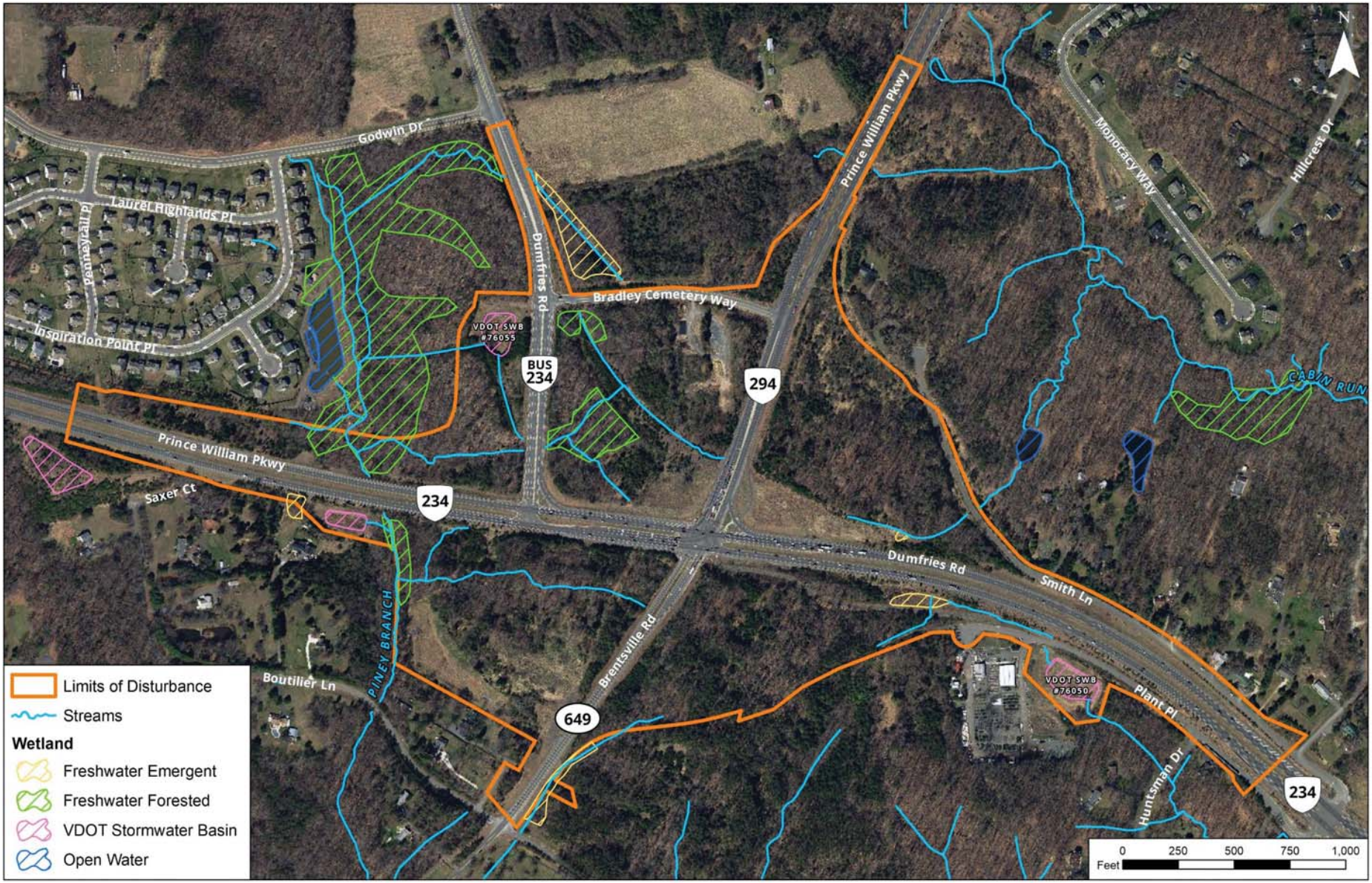
Sincerely,



Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

ATTACHMENT 3
DETAILED WATER RESOURCES MAP


N
Godwin Dr
Laurel Highlands Pl
Pennyrail Pl
Inspiration Point Pl
Dumfries Rd
Bradley Cemetery Way
Prince William Pkwy
Monocacy Way
Hillcrest Dr
VDOT SWB #76055
BUS 234
294
CABIN RUN
Prince William Pkwy
Saxer Ct
234
Dumfries Rd
Smith Ln
PINEY BRANCH
Brentsville Rd
Boutilier Ln
649
VDOT SWB #76050
Plant Pl
Huntsman Dr
234
Limits of Disturbance
Streams
Wetland
Freshwater Emergent
Freshwater Forested
VDOT Stormwater Basin
Open Water
0 250 500 750 1,000
Feet

ATTACHMENT 4

PHASE I ESA

Phase I Environmental Site Assessment (ESA)

Prince William Parkway-Dumfries Road-Brentsville Road Interchange

Manassas, Virginia

July 23, 2020

Cardno

Phase I Environmental Site Assessment (ESA) Report

Prince William Parkway-Dumfries Road-Brentsville Road Interchange
Manassas, Prince William County, Virginia

Prepared for:
Parsons
Attn: Surbhi P. Ashton, PE
Surbhi.Ashton@parsons.com

Prepared by:
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Reviewed By:
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Sr. Project Manager
John.Voorhees@cardno.com
Phone: (804) 412-6558

Date:
July 23, 2020

Table of Contents

Commonly Used Acronyms

AAI	All Appropriate Inquiry
ABCA	Analysis of Brownfield Cleanup Alternatives
ACM	Asbestos Containing Material
AST	Aboveground Storage Tank
ASTM	American Society for Testing & Materials
BLS	Below Land Surface
Cardno	Cardno Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CREC	Controlled Recognized Environmental Condition
EP	Environmental Professional
ERNS	Emergency Response Notification System
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
ESI	Expanded Site Inspection
FOIA	Freedom of Information Act
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
HREC	Historical Recognized Environmental Condition
IC	Institutional Controls
LBP	Lead-Based Paint
LST	Leaking Storage Tank
LUST	Leaking Underground Storage Tank
MSL	Mean Sea Level
NFRAP	No Further Remedial Action Plan
NPL	National Priority List
PA/SI	Preliminary Assessment/Site Inspection
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PPB	Parts per Billion
PPM	Parts Per Million
PRG	Preliminary Remediation Goal
RACM	Regulated Asbestos Containing Material
RBC	Risk Based Concentrations
RBSL	Risk Based Screening Level
RCRA	Resource Conservation and Recovery Act
RCRA CORRACT	RCRA Information Systems
RCRA GEN	RCRA System Generators
RCRA TSD	RCRA Treatment, Storage, and Disposal Facilities
REC	Recognized Environmental Condition
SHWS	State Hazardous Waste Site
SWL	Solid Waste Facilities List
TAL	Target Analyte List
TMS	Tax Map Serial
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VDEQ	Virginia Department of Environmental Quality
VCC	Voluntary Cleanup Contract
VCP	Voluntary Cleanup Program

1 Executive Summary

At the request of Parsons and Prince William County, Virginia, Cardno Inc. (Cardno) has conducted a Phase I Environmental Site Assessment (ESA) of the limits of disturbance (LOD) for the Prince William Parkway-Dumfries Road-Brentsville Road Interchange (the site), Manassas, Virginia. The site appears to include tracts owned by Prince William County or Commonwealth of Virginia roughly totaling approximately 120 acres.

This Phase I ESA was performed in accordance with the American Society for Testing & Materials (ASTM) Practice E-1527-13 “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process” developed by ASTM Subcommittee E50.02 for Commercial Real Estate Transactions. ASTM E-1527-13 also meets the All Appropriate Inquiries (AAI) standards set forth by the United States Environmental Protection Agency (EPA) in 40 CFR Part 312.

The objective of this Phase I ESA was to identify Recognized Environmental Conditions (RECs) as defined in ASTM Practice E-1527-13 with regard to the site and to evaluate potential future liability associated with past or current practices on the site.

This Phase I ESA included the following types of investigation:

- A records review of pertinent regulatory agency databases and applicable local records;
    - An ERIS environmental database search report;
    - Aerial photographs from 1937, 1952, 1963, 1971, 1981, 1994, 2003, 2005, 2006, 2008, 2009, 2011, 2012, 2014, 2016 and 2018;
    - Historic topographical maps dated 1927, 1940, 1943, 1944, 1951, 1956, 1957, 1966, 1971, 1977, 1979, 1984, 1994, and 2016;
- Interview(s) with persons familiar with the site; and
- Site reconnaissance to inspect the site for evidence of RECs was conducted by Mr. Eric R. Powers of Cardno on June 10, 2020.

Cardno has performed this Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527-13. Any exceptions to, or deletions from, this practice are described in Sections 2.4 and 9.0 of this report.

This assessment found no evidence of RECs in connection with the subject property.

Although several leaking underground storage tanks (LSTs) have been removed and remediated on abutting properties, we find no evidence of associated impacts on the subject property. In some cases closure activities documented release of petroleum products to the environment. Three USTs cases were closed by the DEQ without further investigation and are not considered RECs.

Two petroleum spills have occurred on properties. Both were immediately remediated and the cases closed by DEQ.

2 Introduction

Cardno has conducted a Phase I ESA of the limits of disturbance (LOD) for the Prince William Parkway (*PWP*)-Dumfries Road-Brentsville Road Interchange (the site) located in Manassas, Prince County, Virginia. The site appears to include tracts owned by Prince William County or Commonwealth of Virginia roughly totaling approximately 120 acres.

PIN/Tax Map ID	Address	Acreage
7594-85-3121	10930 Dumfries Road	2.77
7594-85-3121	10930 Dumfries Road	0.48
7594-85-3121	10930 Dumfries Road	0.95
7594-84-3848	10931 Dumfries Road	1.62
Unlisted	Unlisted	Approximately 120

Source: Prince William County Geographic Information Systems (GIS) https://gisweb.pwcgov.org/webapps/CountyMapper/

The site consists of almost entirely undeveloped and wooded land bisected by arterial and minor public roadways. An apparent Commonwealth of Virginia equipment and material laydown area with gravel driveways is located on the north side of the site along Bradley Cemetery Way. Other than the bisecting roadways and supporting stormwater infrastructure, there are no other improvements or development on the property.

2.1 Purpose

The purpose of this Phase I ESA is to identify to the extent possible any RECs, Controlled RECs, or Historical RECs (HRECs) on the property.

> *Recognized Environmental Condition (REC) – The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.*
>
> *Controlled Recognized Environmental Condition (CREC) – A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).*
>
> *Historical Recognized Environmental Condition (HREC) – A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).*

This assessment is completed with respect to the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner defense to CERCLA liability; that is, the practices that constitute 'all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice' as defined in 42 USC§9601(35(B)).

2.2 Detailed Scope of Services

The Phase I ESA is a general characterization of possible RECs present on a property. This ESA was completed in accordance with ASTM E-1527-13 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." ASTM E-1527-13 meets the standard set forth by the USEPA in the AAI Rule. The services provided are detailed below:

- Review of federal and state lists of environmentally regulated sites to determine if the subject property or nearby properties are listed as having a present or past environmental problem, are under investigation, or are regulated by state or federal environmental regulatory agencies;
- Review of site background information, including aerial photographs, title records, and interviews with persons familiar with the subject property to evaluate present and past land uses;
- Physical inspection and photographic documentation of the subject property and adjacent properties to identify obvious indications of present or past activities that have or could have environmentally impacted the subject property; and,
- Development of a report documenting Cardno's findings.

2.3 Significant Assumptions

No significant assumptions were made prior to the initiation of this Phase I ESA.

2.4 Limitations and Exceptions

The findings of this assessment are based on the following inherent limitations and/or exceptions:

- The representations contained herein are based on the available data and on the contracted scope of the work. Cardno and the Environmental Professional (E.P.) make no representations or conclusions on information beyond the scope of this assessment.
- Cardno derived the data in this report primarily through visual inspections, examination of records in the public domain, and interviews with informed individuals about the subject property. The passage of time, manifestation of latent conditions, or the occurrence of future events may require further study at the subject property, analysis of the data, and revaluation of the findings, observations, and conclusions in the report.
- The data reported and the findings, observations, and conclusions expressed in this report are limited by the scope of work prescribed by ASTM E-1527-13.
- No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions in existence at the time of the investigation.

- Cardno presents professional opinions and findings of a scientific and technical nature. The report shall not be construed to offer legal opinion or legal representations as to the requirements of, nor compliance with, environmental laws, rules, regulations, or policies of federal, state, or local governmental agencies. Any use of the Phase I ESA report constitutes acceptance of the limits of Cardno's liability. Cardno's liability extends only to its client and not to any other parties who may obtain the Phase I ESA Report.
- The conclusions presented in this report are professional opinions based on data described in this report. They are intended only for the purpose, site location, and the project indicated. This report is not a definitive study of contamination at the subject property and should not be interpreted as such. An evaluation of the subsurface soil and groundwater conditions was not performed as part of this investigation. No sampling or chemical analyses of structural material or other media was completed as part of this study unless explicitly stated.
- This report is based, in part, on unverified information supplied to Cardno by third party sources. While efforts have been made to substantiate this third party information, Cardno cannot guarantee its completeness or accuracy.

2.5 Special Terms and Conditions

Cardno performed this assessment for the users as part of their environmental due diligence on the site.

2.6 User Reliance

This report, including supporting field data and notes (collectively referred to hereinafter as "information"), was prepared or collected by Cardno for the benefit of the users, Parsons, Prince William County, Virginia, and the property owners. The report is not intended for use by any other party.

3 Site Description

3.1 Site Location and Description

The site is an approximately 120-acre property which consists of four Commonwealth of Virginia parcels and several unlisted parcels located at the intersection of PWP, Dumfries Road and Brentsville Road, south of Manassas, in Prince William County, Virginia. Remnants of a destroyed barn and the Limstrong Dwelling are located in the wooded area on the north side of the site, between PWP (Route 294) and Dumfries Road (Business Route 234). A destroyed farmstead and two cemetery areas: One located in the wooded area located northeast of the intersection of PWP (Route 294) and Dumfries Road (Route 234) and another on the north side of Bradley Cemetery Way. A Site Location Map, consisting of the relevant portion of the United States Geological Survey (USGS) topographic map, Manassas, Virginia Quadrangle, is included as **Figure 1**. The aerial layout of the site and surrounding properties are depicted on **Figure 2**.

3.2 Site and Vicinity General Characteristics

The site appears to consist of almost entirely undeveloped and wooded land located adjacent to roadways. An apparent Commonwealth of Virginia equipment and material laydown area with gravel driveways is located on the north side of the site along Bradley Cemetery Way. The site is accessed from the northwest via Dumfries Road (Business Route 234), from the northeast via PWP (Route 294), from the east via Dumfries Road (Route 234), from the south via Brentsville Road (Route 694) and from the west via PWP (Route 234). Bradley Cemetery Way extends between Dumfries Road (Business Route 234) and PWP (Route 294) along the north boundary of the site. Smith Lane extends north of Dumfries Road (Route 234) along the northeast border of the site.

3.3 Current Use of the Property

At the time of the site inspection, the site had the following uses:

PIN/Tax Map ID	Current Use of Site
7594-85-3121	Undeveloped woods
7594-85-3121	Undeveloped woods
7594-85-3121	Undeveloped woods
7594-84-3848	Undeveloped woods
Unlisted	Except a Commonwealth of Virginia equipment and material laydown area, remains of the Limstrong Dwelling and barn, overgrown remains of a farmstead, and two cemetery areas, the unlisted parcels are largely undeveloped woods along roadways.

Figure 2 provides an aerial view of the site in its condition in October of 2019.

3.4 Descriptions of Structures, Roads, Other Improvements on the Site

Buildings were not observed anywhere on the site. Gravel driveways and parking areas were observed at the Commonwealth of Virginia property located on the north side of the site accessed via Bradley Cemetery Way. There is a bike trail running parallel to Dumfries Road from just east of the Brentsville Road junction east to the Meadows Farms nursery on Plant Place.

3.5 Current Uses of the Adjoining Properties

North Bradley Cemetery Way and undeveloped forested area.

Northeast Smith Lane, undeveloped forested areas and residential.

Southeast Plant Place, Meadows Farms Nurseries, residences and undeveloped forested areas.

Southwest	Residential and undeveloped forested areas.
West	Residential and undeveloped forested areas.

4 User Provided Information

4.1 Title Records

No title review was conducted as a part of this Phase I ESA.

4.2 Environmental Liens or Activity and Use Limitations

Neither Cardno nor the users were aware of any environmental liens or use restrictions (other than zoning) encumbering the subject site. According to records provided by ERIS, there are no environmental liens or limits associated with the subject property.

4.3 Specialized Knowledge

Cardno was not provided with any form of specialized knowledge regarding the subject site.

4.4 Commonly Known or Easily Ascertainable Information

The User provided information regarding current use and history of the subject property as being formerly residential, agricultural and forest.

4.5 Valuation Reduction for Environmental Issues

The purchase price to fair market value of the site is not applicable to this assessment.

4.6 Owner, Property Manager, and Occupant Information

The following table provides information on the current owner and occupant information.

PIN/Tax Map ID	Owner	Occupants
7594-85-3121	Commonwealth of Virginia	Vacant
7594-85-3121	Commonwealth of Virginia	Vacant
7594-85-3121	Commonwealth of Virginia	Vacant
7594-84-3848	Commonwealth of Virginia	Vacant
Unlisted		Vacant except for VDOT storage lot

Source: Prince William County Geographic Information Systems (GIS) https://gisweb.pwcgov.org/webapps/CountyMapper/

4.7 Reason for Performing Phase I ESA

This Phase I ESA was performed for the users to plan for the eventual Prince William Parkway-Dumfries Road-Brentsville Road Interchange project.

4.8 AAI User Questionnaire

Mr. Stuart Tyler, Project Manager / Senior Environmental Planner for Parsons, completed the All Appropriate Inquiry (AAI) User Questionnaire. A copy of this questionnaire is included in **Appendix A**.

4.9 Other

No other information was provided.

5 Records Review

5.1 Standard Environmental Record Sources

The records review obtains and reviews records that will help identify RECs in connection with the subject property. Federal and state regulatory databases were reviewed to further identify any known sources of contamination on or within designated research radii of the subject property. The federal records searched during this assessment included sites which handle or dispose of hazardous materials and sites which otherwise have been identified to have air, soil, or groundwater contamination. The state records reviewed included hazardous waste sites, landfills, and sites with registered or leaking underground storage tanks (LUSTs).

Cardno contracted with Environmental Risk Information Services (ERIS), to perform the regulatory review (**Appendix B**). The results are discussed below, and the regulatory databases reviewed and corresponding research distances are summarized in the report in **Appendix B**. Review of the federal and state databases was conducted according to ASTM E-1527-13 and AAI standards for Phase I ESAs. Figures illustrating the locations of the sites identified during the database search (relative to the site and depicting the appropriate designated research radii corresponding to each database) are also included in **Appendix B**.

The ERIS database identifies the subject property from the parcel boundaries. The subject property is listed in three database under a previous address.

Federal and state reporting lists are summarized in the following table. Listings requiring further discussion are described below.

Federal Reporting Lists	Listings Reported
Bulk Terminal	0
Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS)	0
Drycleaners	0
Emergency Response Notification System (ERNS)	0
Facility Index System/Facility Registry System (FRS/FINDS)	0
Federal institutional controls / engineering controls registries	0
Federal Brownfields	0
Federal Engineering and Institutional Controls (IC/EC)	0
National Priority List (NPL) and NPL Delisted	0
RCRA Corrective Action Reports (RCRA CORRACTS) Facilities	0
RCRA non-CORRACTS Treatment, Storage, and Disposal (TSD) Facilities	0
RCRA Generators Lists – Large Quantity Generators (LQG)	0
RCRA Small Quantity Generators (SQG)	0
RCRA Conditionally Exempt Small Quantity Generator (CESQG)	0
Superfund Enterprise Management System (SEMS), SEMS Archive, SEMS Lien	0
Toxic Substances Control Act (TSCA), Historical TSCA	0

State/Local/Tribal Reporting Lists	Listings Reported
State – Institutional Controls (INST)	0
State – Delisted Leaking Petroleum Storage Tanks (Delisted LST)	0
State Solid Waste Facilities List (SWF/LF) and Old Landfill Inventory (OLI)	0
State Aboveground Storage Tank (AST)	0
State Leaking Petroleum Storage Tanks (LST)	**17**
Tribal Leaking Underground Storage Tanks (LUST)	0
State Underground Storage Tank (UST)	**3**
Tribal UST	0
State Voluntary Cleanup Program (VCP)	0
State Brownfields	0
State SPILLS	**2**

5.1.1 Leaking Storage Tank (LST)

LST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data comes from the Virginia Department of Environmental Quality (VDEQ) leaking UST database. A review of the LST database findings provided by ERIS reveals the 17 listings shown in the following table summarizing the LST sites located in the vicinity of the subject property.

LST Listings		
Higher Elevation	**Address**	**Direction/Distance (mile)**
Leith Wilkie Smith Property	8700 Smith Lane	NE / 0.03 miles
Lower Elevation	**Address**	**Direction/Distance (mile)**
Elaine Patterson Residence	8818 Smith Lane	SW / 0.01
James Rice Residence	8650 Smith Lane	E / 0.00 (18 feet)
Richard and Teresa Gilbert Residence	8830 Brentsville Road	SW / 0.04
Jeremy and Leslie Rodenhizer Residence	8766 Bradley Forge Drive	S / 0.14
Mary C. Sigl Residence	8834 Brentsville Road	SW / 0.08
William T. Mohn Residence	8520 Smith Lane	ESE / 0.00 (0.00 feet)
Cornwells Inc.	10621 Dumfries Road	NNW / 0.27
Mitchell Whittaker Residence	8392 Briarmont Lane	E / 0.29
Allen Residence	11304 Dumfries Road	ESE / 0.13
Fries & Sons Tire Center	11319 Dumfries Road	ESE / 0.13
New Dominion Holdings Property	10613 Dumfries Road	NNW / 0.34
Former Lake Jackson Volunteer Fire Department	11301 Coles Drive	ESE / 0.22
Absolute Plumbing Property	10607 Dumfries Road	NNW / 0.38
Absolute Plumbing Property	10607 Dumfries Road	NNW / 0.38
Lake Jackson Volunteer Fire Department	11310 Coles Drive	ESE / 0.31
Elaine Pitt Residence	9492 Fostern Lane	W / 0.41

Leaks are reported for the following residential heating oil USTs on or adjacent to the site:

- On November 17, 1997, a release from a heating oil UST was reported at the Elaine Patterson Residence at 8818 Smith Lane, located on the southwest side of the site. The release was remediated under the VDEQ responsible party (RP) lead program. On January 19, 2000, the VDEQ closed this environmental case.
- On May 23, 2003, a release from a heating oil UST was reported at the William T. Mohn Residence at 8520 Smith Lane, located on the east-southeast side of the site. The release was remediated under the VDEQ responsible party (RP) lead program. On April 16, 2004, the VDEQ closed this environmental case.
- On April 2, 2013, a release from a heating oil UST was reported at the James Rice Residence at 8650 Smith Lane, located on the East side of the site. The release was remediated under the VDEQ responsible party (RP) lead program. On August 8, 2013, the VDEQ closed this environmental case.
- On October 18, 2013, a release from a heating oil UST was reported at the Leith Wilkie Smith Property at 8700 Smith Lane, located northeast of the site. The release was remediated under the VDEQ responsible party (RP) lead program. On January 24, 2018, the VDEQ closed this environmental case.
- On June 20, 2013, a release from a heating oil UST was reported at the Richard G. and Teresa M. Gilbert Residence at 8830 Brentsville Road, located southwest of the site. The release was remediated under the VDEQ responsible party (RP) lead program. On April 18, 2018, the VDEQ closed this environmental case.
- On October 13, 2011, a release from a heating oil UST was reported at the Mary C. Sigl Residence at 8834 Brentsville Road, located southwest of the site. The release was remediated under the VDEQ responsible party (RP) lead program. On April 18, 2018, the VDEQ closed this environmental case.
- On November 26, 1996, a release from a heating oil UST was reported at the Fries and Sons Tire Center at 11319 Dumfries Road, located east-southeast of the site. The release was remediated under the VDEQ responsible party (RP) lead program. On September 8, 1997, the VDEQ closed this environmental case.

Based on their VDEQ case closed status, these leaking heating oil USTs are not considered RECs for the site. Based on their VDEQ case closed status, distance and relative topographic down-gradient locations, other LSTs identified in the databases are not considered RECs for the site.

A review of the information provided for the listings indicated that they are of a direction, of sufficient distance away, a “closed” case, and/or at a relative elevation that they do not constitute RECs.

5.1.2 Underground Storage Tanks (USTs)

The Underground Storage Tank database, as provided by ERIS, reveals three (3) UST listings within approximately 0.25-mile of the site. One (1) UST facility was identified at the site.

The database indicated that a 500-gallon diesel UST was identified at the Bryant H. Whitfield III Property at 8813 Brentsville Road, located on the southwest side of the site. According to the database, the asphalt/bare steel UST was installed on April 30, 1978 and classified as inactive on March 26, 2007. Cardno requested records for this facility through a Freedom of Information Act (FOIA) request to the Virginia Department of Environmental Quality (VDEQ) on June 15, 2020. Records received from the VDEQ on June 18, 2020, show that no violations were identified for this UST. Although the UST remains off site, it is considered a de minimis condition and is therefore not an REC.

The database indicated two nearby UST facilities. Four USTs were located at Fries Garage at 11319 Dumfries Road, located 727 feet to the east-southeast at a lower elevation relative to the site. Two 2,000-gallon diesel USTs, one 3,000-gallon diesel UST and one 1,000-gallon used oil UST were closed by removal from the ground on January 1, 1980. Two USTs were closed by removal from the ground at the Lake Jackson Volunteer Fire Department at 11301 Coles Drive, located 1,165 feet to the east-southeast at a lower elevation relative to the site. The tanks including a 1,000-gallon gasoline UST and a 500-gallon diesel UST were closed on February 1, 1995. The distance and relative topographic gradient of the off-site UST facilities indicate that they do not represent an REC to the site.

5.1.3 SPILLS

The SPILLS database lists the following two (2) releases at the site:

- Approximately 35 gallons of diesel fuel was released in a tractor trailer accident at the intersection of PWP and Dumfries Road (Business State Route 234) on August 12, 2008. The incident was remediated by APEX Environmental and the VDEQ environmental case was closed on August 25, 2008.
- Approximately six gallons of gasoline fuel was released in the grass median of PWP and Dumfries Road in an automobile accident on February 20, 2013. The incident was remediated and the VDEQ environmental case closed on February 22, 2013.

As the status of both SPILLS incidents received VDEQ closure and involved relatively small volumes that were quickly remediated, these incidents are not considered RECs for the site.

5.2 Physical Setting

5.2.1 Topography

Cardno has reviewed the most current USGS Topographic Map (2016 Independent Hill, Virginia 7.5 Minute Quadrangle) covering the subject property (**Figure 1**). The purpose of this review is to evaluate the hydraulic conditions on the subject property and surrounding properties. It is not the purpose of this report to evaluate the geotechnical condition of the subject property; therefore, no geotechnical documents were examined.

According to the Independent Hill, Virginia 7.5 Minute Quadrangle, the site topography is gently rolling, with elevations ranging from approximately 235 feet to 315 feet above Mean Sea Level (*MSL*). Apparent stormwater flow is radial away from hill tops located north and south of PWP (State Route 234), east of Brentsville Road. The area northeast of the intersection of PWP and Brentsville Road appears to drain northeastward to Cabin Run. The area southeast of the intersection of PWP and Brentsville Road appears to drain southward toward Piney Branch. The area west of Brentsville Road appears to drain westward to a swampy area that drains southward to Piney Branch. Both Piney Branch and Cabin Run flow south and eastward before emptying to the east flowing Occoquan River.

5.2.2 Regional and Local Geology

According to the 1993 Commonwealth of Virginia, Department of Mines, Minerals and Energy, Geologic Map of Virginia, the site is located in the Culpeper Basin, west of the fall zone along the eastern flank of the Piedmont physiographic province. The Culpeper Basin is an elongate, fault-bounded trough that trends north-northeastward. The Culpeper Basin is a Mesozoic basin that developed east of the Blue Ridge as a result of tensional stress during the separation of the North American and African plates as the Atlantic Ocean formed. These basins are roughly half-graben, down faulted features with normal faults generally present only along their western flanks. Mesozoic sedimentary rocks including conglomerate, sandstone, shale and coal compose most of the basin fill. Igneous dikes and other small plutons intruded within the basins.

The Piedmont physiographic province extends from the fall zone westward to the Blue Ridge Mountains. This province is typically characterized by gently rolling hills which increase from east to west in elevation and topographic slope. Uplift of the region has resulted in stream dissection of bedrock and subsequent deposition of Quaternary fluvial deposits with stream valleys. Thick (up to 60 or more feet thick) saprolite zones have been developed by weathering in bedrock across the Piedmont. Bedrock is composed of Pre-Cambrian to Paleozoic igneous and metamorphic rocks with some areas of sedimentary rocks.

The site is underlain by the Upper Triassic Newark Supergroup Conglomerate which is rounded to subangular pebbles, cobbles, and boulders of mixed lithologies including quartz, phyllite, quartzite, gneiss, schist, greenstone, and marble in a matrix of medium- to very-coarse-grained, reddish-brown to gray, locally arkosic, sandstone.

5.2.3 Hydrogeology

According to the USGS Groundwater Atlas of the United States, the site is in an area underlain by Mesozoic basin aquifers. Non-carbonate conglomerates tend to be mediocre aquifers yielding around 8 gallons per minute (*gpm*), while sandstones tent to yield around 15 gpm and thin-bedded siltstones tend to yield around 75 gpm. According to the 1986 United States Geological Survey (*USGS*) Open-File Report 87-0759, Virginia Ground-Water Quality by John D. Powell and Pixie A. Hamilton, Mesozoic basin aquifers are composed of sandstone, siltstone, limestone, and igneous intrusive rocks, are used for industrial, public, and domestic supply. Water from at least 20 percent of the wells sampled exceeded the secondary drinking water standards of 500 milligrams per liter (*mg/L*) for dissolved solids and 250 mg/L sulfate. The water is very hard (median concentration was 190 mg/L), and the largest concentrations of hardness in Virginia are found in these aquifers. Water from deep

wells completed in this aquifer contains the largest concentrations of dissolved solids and sulfate of any Virginia aquifers.

Groundwater flow direction in the area of the site is expected to be radial away from hill tops located east of the center of the site. Groundwater flow beneath the northeast area of the site is anticipated to be northeast toward Cabin Run. Flow beneath the southeast area of the site is anticipated to be southward toward Piney Branch. Groundwater flow beneath the western side of the site is anticipated to be westward and southward toward Piney Branch. However, it is noted that groundwater flow directions can only be accurately evaluated through the installation and survey of groundwater monitoring wells. Estimated groundwater levels and/or flow direction(s) may vary due to seasonal fluctuations in precipitation, local usage demands, geology, underground structures, or dewatering operations, none of which were considered for this assessment.

5.2.4 Wetlands and Floodplains

According to the U.S Fish and Wildlife Service National Wetlands Inventory, the site includes approximately 4.5 acres of Freshwater Forested/Shrub Wetland (PFO1B) located on the northwest side of the site; approximately 0.13 acre of Freshwater Emergent Wetland (PEM1B) located on the southwest side of the site; and an approximately 0.35-acre Freshwater Pond located on the west side of the site.

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) 51153C0176D, 51153C0177D, 51153C0178D and 51153C0179D, Effective Dates 01/05/1995, the site is located almost entirely in “Zone X – Areas of minimal flooding”. A small area located on the north side of the site where Brentsville Road crosses Cabin Run is in Flood Zone A, which has a 1% annual chance of flooding.

5.3 Historical Use Information on the Property

The following sources of information were reviewed to determine the historical use of the subject site: historic topographic maps and aerial photography. Historical research documentation is included in **Appendix C**.

Historic Topographic Maps

The historic topographic maps consisting of the Independent Hill, Virginia, VA 7.5 Minute Quadrangle, dated 1927, 1940, 1943, 1944, 1951, 1956, 1957, 1966, 1971, 1977, 1979, 1984, 1994 and 2016; and the Quantico, Virginia 15 Minutes series dated 1927, 1940, 1943 and 1944, were reviewed in conjunction with this Phase I ESA.

According to the topographic maps, the site was initially developed prior to 1927 where Dumfries Road (northwest to southeast trending) intersects with the terminus of Brentsville Road. The initial development appears to have been agricultural but with several small structures located south of Limstrong Corner. Between 1943 and 1951 the Dumfries Road appears straightened, additional roads appear on the north side of the site and additional structures have been constructed on the central and east side of the site. Between 1994 and 2016, two new sections of PWP were constructed at the site. A northeast section of the PWP (State Route 294) appears to be an extension from Brentsville Road (State Route 694), northeast of Dumfries Road and a west section of PWP (State Route 234) was constructed

across the west side of the site to connect between Dumfries Road (State Route 234 to the southeast and Business Route 234 to the northwest) and Interstate 66.

No RECs were identified as a result of the historic topographic map review.

Aerial Photographs

Aerial photographs provided by ERIS depicting the site dated 1937, 1952, 1963, 1971, 1981, 1994, 2003, 2005, 2006, 2008, 2009, 2011, 2012, 2014, 2016 and 2018 were reviewed in conjunction with this Phase I ESA. In addition, online aerial photographs published on Google Earth were also reviewed for the years 1994, 2002, 2003, 2005, 2006, 2008, 2009, 2010, 2011, 2012, 2014, 2015, 2016, 2017, 2018 and 2019.

The site is depicted as farm fields from 1937 until 1963, with the first structures appearing near the crossroads near what is now the intersection of Dumfries Road and Prince William Parkway. Both roads were aligned differently at the time. Most of the land surrounding the intersection is open agricultural fields with patches of forest. At least seven clusters of buildings – probably residential are visible. By 1971 additional residences appear in the southern half of the property along Brentsville Road. Mush of the land remains open fields.

The 1981 photograph indicates progressively more residential development in the southern half along Brentsville Road and the open fields are shrinking in size. The trend continues through the 1994 photograph, which shows most of the open fields becoming forested.

The 2005 through 2018 photographs indicate little change within the property bounds which remain free of any development. The VDOT maintenance lot remains visible with varying degrees of activity evident. All of the wooded areas continue to mature until only small isolated areas remain as open fields, mainly north of the Dumfries Road/Prince William Parkway intersection.

The Google Earth photographs indicate that the Dumfries Road and Prince William Parkway corridors were realigned between 1994 and 2002. Prior to this period, the property was occupied by what appears to be a combination of residential and agricultural areas with the residential areas occupied by homes and out buildings. What are now mostly wooded areas were mostly open fields at that time. By 2002 the highway realignment was complete and the roadways arranged in the current configuration. The former roadbeds are still visible and it is clear numerous buildings in the southern half of the property were demolished in the realignment. The VDOT storage yard and both stormwater retention ponds appear in their current locations in the 2002 photograph. By 2003, nearly all structures on the subject property have been demolished and the off road areas are becoming revegetated with forest land. The site remains essentially unchanged up through the 2019 photograph.

No RECs were identified as a result of the historic aerial map review.

City Directories

City directories were not reviewed as part of this ESA.

Fire Insurance Maps

According to ERIS, Fire Insurance Maps do not exist for the vicinity of the subject property. A copy of the "No Coverage" letter is included in **Appendix C**.

5.4 Historical Use Information on Adjoining Properties

The following sources were reviewed to determine the historical use information of the adjoining properties: historical topographic maps and historical aerial photographs.

City Directories

City directories were not reviewed as a part of this ESA.

Fire Insurance Maps

According to ERIS, Fire Insurance Maps do not exist for the target and adjoining properties. A copy of the "No Coverage" letter is included in **Appendix C**.

6 Site Reconnaissance

A primary objective in a site inspection for a Phase I ESA is to determine if there is any obvious evidence of hazardous substances or petroleum products that were disposed of or used on the subject property at any time in the past that may create potential liability for an owner of the property. This evidence can be circumstantial, such as the observation of stressed vegetation, staining, unlabeled or suspicious containers or structures, unidentified oily substances, pooled liquids, and/or odors.

6.1 Methodology and Limiting Conditions

On June 10, 2020, Mr. Eric R. Powers, Principal/Senior Geologist with Cardno, performed a site reconnaissance of the site and surrounding properties. The observations made during the site reconnaissance are provided in the following sections. Photographs of the site taken during the site visit are included in **Appendix D**. Additional photographs will be made available upon request.

6.2 Site Visit/Reconnaissance

For the purposes of the site inspection, the site was divided into four sectors using the east-west Dumfries Road/Prince William Parkway corridor to bisect the northern and southern halves of the site and the north-south Brentsville Road/Prince William Parkway (Old Route 3000) corridors to divide the eastern and western halves of the site. References in the photographs refer to the four quadrants defined by these corridors along with the bounds of the project LOD.

The following general observations were made during the site visit:

On-site:

- Most of the property is heavily wooded with large hardwoods and evergreens. Several drainage courses with broad floodplains and poorly-drained hardwood bottoms occupy portions of the property.

- The property is bisected by two major arterial highways (Prince William Parkway and Dumfries Road). A secondary road (Brentsville Road) exits from the southern edge of the property. All of the roads crossing the property or adjacent to the property are VDOT-maintained public roads. There are numerous VDOT maintained stormwater management structures along the margins of these roadways.
- There are two large stormwater retention ponds on site: one located along the southwest edge of the property and a second along the northwest edge of the property adjacent to Dumfries Road. Both are VDOT maintained structures.
- There is only minor evidence of human activity anywhere on the property except around the VDOT stormwater retention ponds and on the VDOT storage lot located near the intersection of Prince William Parkway and Bradley Cemetery Way.
- There are indications of several former structures on the property including one in the wooded area northeast of the Brentsville Road/Bradley Forge Drive intersection; another in the wooded area southwest of the Prince William Parkway/Dumfries Road intersection and another just south of the VDOT storage lot near the corner of Prince William Parkway and Bradley Cemetery Way. In all cases, little remains of the structures other than scattered building materials and domestic debris. There is no indication these were historic structures but further evaluation would be required to verify this.
- Two cemeteries were noted in the site reconnaissance: one on-site in the heavily wooded area between Smith Lane and Prince William Parkway and a second located off site just north of the VDOT storage lot on Bradley Cemetery Way.
- The nearest commercial activity is the Meadows Farms nursery located near the eastern edge of the corridor.

Off-site:

- The immediate surrounding properties are primarily undeveloped forested areas, with some off-site commercial development along the eastern edge and off-site residential development along the northeast and southwest edges.
- The nearest occupied properties are residences located along Smith Lane (northeast), Boutilier Lane (southwest) and the large residential subdivision (Mayfield Trace) located along the northwest edge off of Godwin Drive.

6.3 Hazardous Substances in Connection with Identified Uses

No hazardous substances or evidence of hazardous substances were identified on the subject property.

6.4 Petroleum Products and Containers

Although several empty 55-gallon steel drums were noted disposed on the property, none of these appeared to have been used from storing petroleum or other liquid products.

6.5 Unidentified Substance Containers

Though several unlabeled empty drums, metal cans and glass bottles were noted at a few locations, none appeared to have been recently used for storing liquid products or wastes.

6.6 Storage Tanks – USTs / ASTs

The ERIS database report identified 17 leaking tanks and three UST facilities within the specified search radii. Of these, two (one LST and one UST) are recorded as being located on the subject property but on further investigation were found to be on abutting properties. Of the LSTs only one (Leith Wilke Smith – 8700 Smith Lane) was located at an equal or higher elevation than the subject property. Only one UST facility (H. Bryant Whitfield III – 8813 Brentsville Road) was located at an equal or higher elevation.

A leaking domestic heating oil tank was closed on the Leith Wilke Smith property at 8700 Smith Lane in 2013. This location is near the northeast edge of the subject property but is off site. Although a release was detected, the DEQ NRO closed the case with no further action. The incident was off site and is not considered to have an impact. Therefore the site is not considered an REC.

The H. Bryant Whitfield UST facility at 8813 Brentsville Road was reported by DEQ as a 500-gallon diesel tank serving what appeared to be a private residence. Although the report provides no closure date, it was evidently (based on aerial photography) removed from service in 2003 when the buildings were demolished and the property transferred to state ownership as a part of the realignment of Prince William Parkway. There was no report of a release. DEQ closed the tank registration in January 2004. There are no buildings or evidence of a tank remaining at the former location. The site is not considered an REC.

Copies of the DEQ records are included in **Appendix C**.

6.7 Solid Waste Disposal

Solid waste generated at the site is accumulated on open pads observed at the VDOT storage yard. The wastes include debris removed from nearby roadways by VDOT and its contractors.

6.8 Evidence of Polychlorinated Biphenyls (PCBs)

No evidence of PCB use or storage was observed on the site.

6.9 Floor Drains / Sumps

There are no buildings on the property. No evidence of floor drains or sumps was observed at the site.

6.10 Other Environmental Concerns

No other environmental concerns were noted.

6.11 ASTM 1527-13 Non-Scope Considerations

A family cemetery was identified in the northeast quadrant of the site in the wooded area between Smith Lane and Prince William Parkway. The Florance cemetery contains a dozen or more graves dating to the early 19th century including one belonging to a Revolutionary War soldier. Most of the grave sites, which occupy a high knoll in the wooded area, are enclosed in an iron fence although some, marked with un-engraved headstones lie outside the barrier.

6.12 Interview with Mr. Stuart Tyler, P.E. of Parsons

Cardno conducted a telephone interview with Mr. Stuart Tyler, P.E. of Parsons on July 23, 2020 regarding the history of the Site. He responded to the questionnaire presented in **Appendix A**. In summary, Mr. Tyler knew of no conditions or incidents on the property that would have resulted in an REC.

6.13 Correspondence with Local Fire Department – Matthew K. Adkins, CHMM

Mr. Matthew Adkins, the Prince William County Fire Department Hazardous Materials Coordinator responded to an email request for information regarding records concerning spills, the former USTs, or other environmental incidents at the site. Mr. Adkins indicated there was no department information concerning pollution incidents at the subject property or adjoining locations.

7 Conclusions

Cardno has performed this Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527-13. Any exceptions to, or deletions from, this practice are described in Sections 2.4 and 9.0 of this report.

This assessment has revealed no evidence of RECs associated with the subject property.

We also note that during the removal of previous USTs on abutting residential properties, closure activities documented release of petroleum products to the environment. The USTs were closed by the DEQ without further investigation. However, these sites are not considered RECs for the subject property.

8 Deviations

City Directories were not reviewed as a part of this ESA. Otherwise no significant deviations or deletions were made to the scope as defined by ASTM E-1527-13.

9 Significant Data Gaps

Cardno was able to access all property sites. Based on the owner's representations and the observations of the subject property conditions, no significant data gaps were identified that, in the opinion of the EP, would hinder the proper determination of potential RECs.

10 Additional Services

No additional services were requested by the user(s) or provided for this assessment.

11 References

American Society for Testing and Materials, 2013, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Flood Insurance Rate Map Number 51153C0087D Effective Date 01/05/1995. FEMA. https://msc.fema.gov/portal

Geologic Map of Virginia. Commonwealth of Virginia Department of Mines, Minerals, and Energy, 1993

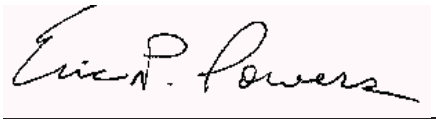
US Fish and Wildlife Service National Wetlands Inventory. http://www.fws.gov/wetlands/Data/Mapper.html

Groundwater Atlas of the United States. February 9, 2009. United States Geological Survey. < http://pubs.usgs.gov/ha/ha730/index.html>.

12 Signature of Environmental Professional

This Phase I ESA was overseen and/or performed by Cardno Project Scientist, Mr. Eric R. Powers. Mr. Powers is a Principal and Virginia Certified Professional Geologist with over 30 years of experience in environmental practice. He has managed and/or otherwise been directly involved in a large number of environmental site assessments during this period (**Appendix E**).

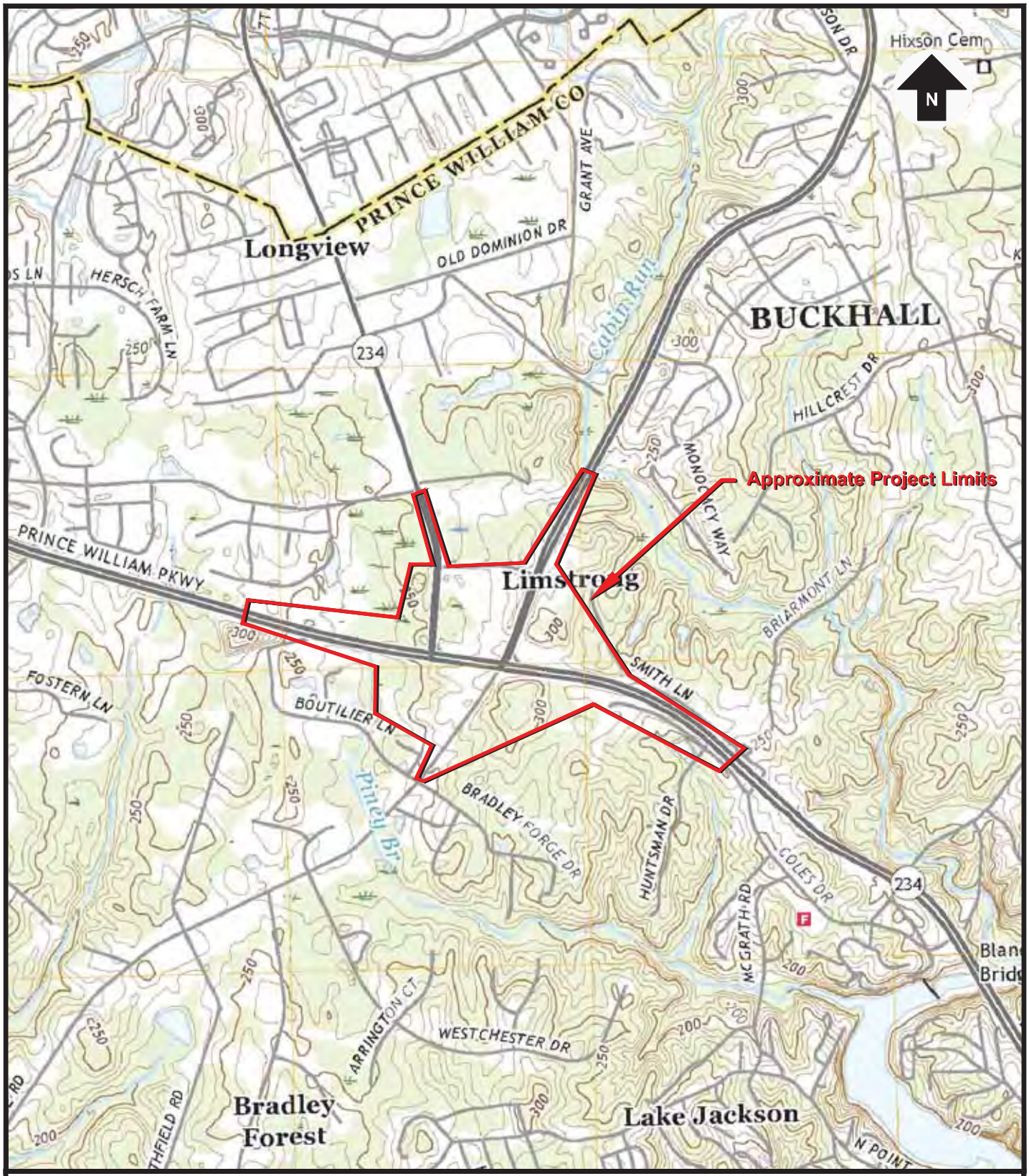
I declare that, to the best of my professional knowledge and belief, I meet the definition of an EP as defined in 40 CFR § 312.10. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312 and ASTM 1527-13.



Eric R. Powers, C.P.G

7/23/2020
Date

FIGURES



USGS 7.5' INDEPENDENT HILL, VA QUADRANGLE - 2019
CONTOUR INTERVAL=10'

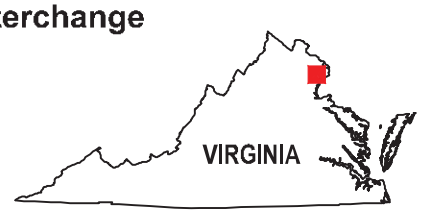
Figure 1 - Site Location

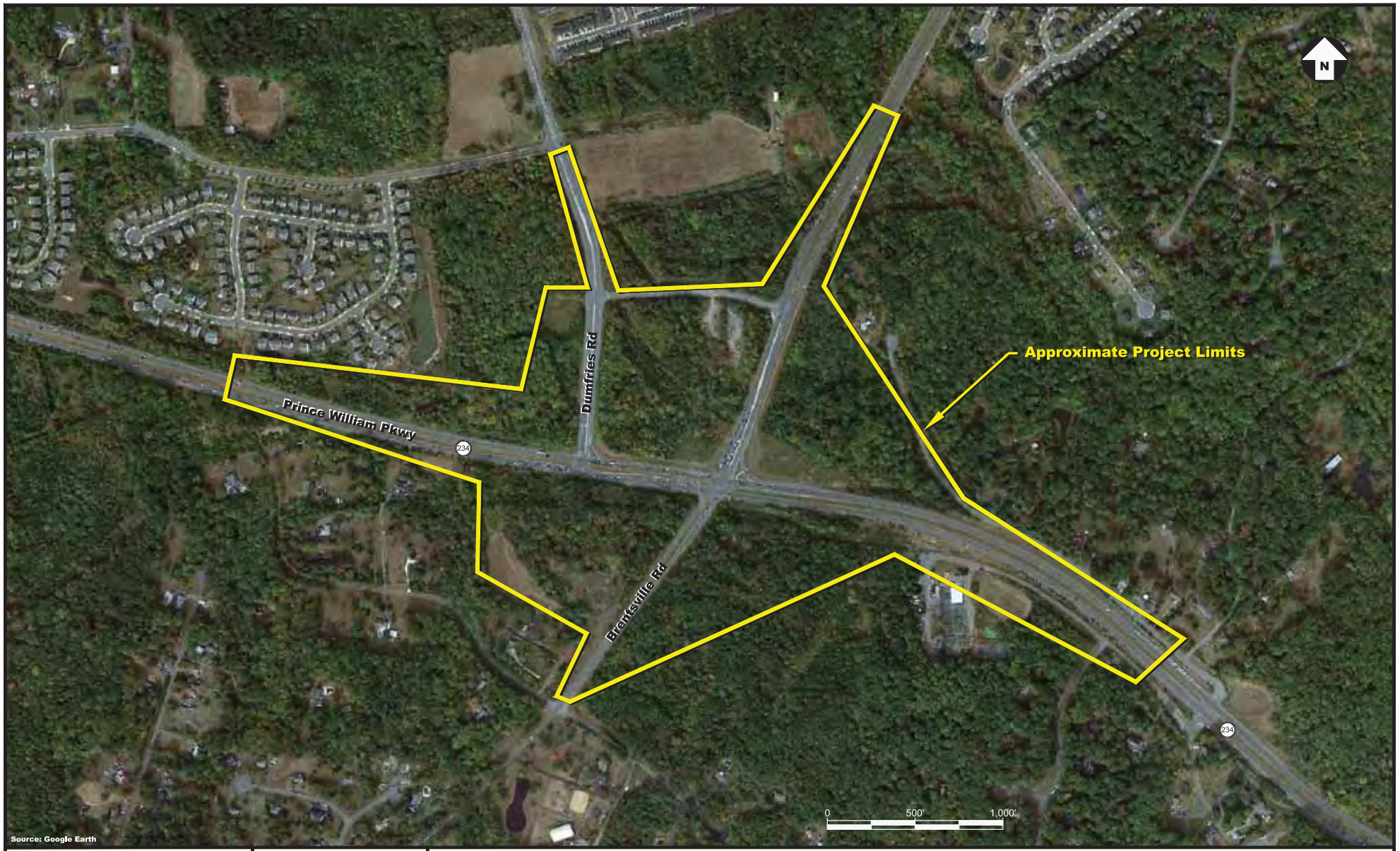
PAR003
7/18/2020

Brentsville Road/Prince William Parkway Interchange
Prince William County, Virginia

Cardno
ASHLAND, VA.

0 1,500' 3,000'
Approximate Scale (ft)





Cardno
ASHLAND, VA

DRAWN:	DES
CHECKED:	ERP
DATE:	7/18/2020
SCALE:	1" = 500'
PROJECT NO.:	PAR003

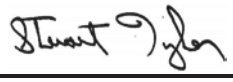
Brentsville Road/Prince William Parkway Interchange
Prince William County, Virginia
Figure 2 - Aerial Photograph

APPENDIX A: AAI User Questionnaire & Environmental Site Assessment Questionnaire

ALL APPROPRIATE INQUIRY (AAI)
PHASE I ENVIRONMENTAL SITE ASSESSMENT (ESA)
USER QUESTIONNAIRE

Prince William Parkway-Dumfries Road-
Brentsville Road Interchange
Manassas, Prince William County, Virginia

Completed By: Stuart Tyler **Date:** 7/22/20
(Please Print)

Signature: 

Representing: Parsons (Consultant to Prince William County)

ASTM Questions to Address User Responsibilities:

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfield's Revitalization Act of 2001 (the "Brownfields Amendments") the user should provide the following information (if available) to the environmental professional (EP). Failure to provide this information could result in a determination that All Appropriate Inquiry (AAI) is not complete.

1) Environmental cleanup liens that are file or recorded against the site (40 CFR 312.25).
Based on the results of a **chain of title and title restriction** review, are there any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law? no

2) Activity and land use limitation (AUL) that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26). Based on the results of a **chain of title and title restriction review**, are there any activity and land use limitations, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? If yes, explain: no

3) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28). As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business? If yes, please explain: no

4) The relationship of the purchase price to the fair market value of the property if it were not contaminated (40 CFR 312.29). Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property? NA

5) Commonly known or reasonably ascertainable information about the property (40 CFR 312.30). Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? yes

If yes, please answer the following questions:

a) What were the past uses of the property? Residential, agriculture, forest, construction materials storage (on land on south side of Bradley Cemetery Way)
b) What chemicals are present or once were present at the property? unknown

c) What spills or other chemical releases that have taken place at the property? unknown
d) Explain any environmental cleanups that have taken place at the property. unknown

6) The degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31). As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property? no

Other Questions:

7) What is the purpose for this Phase I ESA? Information for use in Environmental Studies document.

8) As the user of this ESA, are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property? If so, explain: no

9) As the user of this ESA, are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property? If yes, explain: no

10) As the user of this ESA, are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability related to hazardous substances or petroleum products? If yes, explain: no

11) As the user of this ESA, do you have any of the following reports in your possession. Please place an "X" next to each report that is available. Please provide copies of each report or make these reports available for inspection.

_____ Environmental site assessment reports
_____ Environmental compliance audit reports
_____ Environmental permits
_____ Underground storage tank notification forms
_____ Registrations for underground injection systems
_____ Material safety data sheets
_____ Community right to know plans
_____ Safety plans, preparedness and prevention plans, spill prevention, countermeasure and control plans
_____ Reports regarding hydrogeologic conditions on the property or surrounding area
_____ Notices or other correspondence from any governmental agency relating to past or current violations of environmental laws
_____ Hazardous waste generator notices or reports
_____ Geotechnical studies
_____ Risk assessments
_____ Activity and use restrictions

Cardno
Shaping the Future

ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE

INSTRUCTIONS: As soon as possible, please complete to the best of your knowledge and return to:

Cardno, Inc.
10988 Richardson Road
Ashland, VA 23005

Project Number: PAR003

GENERAL INFORMATION

Property Name: BRENTSVILLE ROAD/PRINCE WILLIAM PARKWAY

Address: AROUND INTERSECTION SHOWN ABOVE

City, State, Zip: MANASSAS, VA 20112

PROPERTY INFORMATION

Property Size (in acres): 136

# of Buildings: 0

Gross Building Square Footage: NO BLDGS.

# of Tenant Spaces: 0

Net Rentable Square Footage: N/A

# of Parking Spaces: 0

Date of Construction: N/A

# of ADA Parking Spaces: 0

Please attach a Property Site Plan and a current Tenant List or Rent Roll to the returned Questionnaire

UTILITY AND SERVICE PROVIDERS

Electric: DOMINION

Yard Cleanup: N/A

Gas	WASHINGTON/COLUMBIA	HVAC Maintenance	N/A
Drinking Water	SA - PWC	Roof Maintenance	N/A
Sanitary Sewer	SA - PWC	Fire Systems	N/A
Storm Water	VDOT	Security Systems	N/A
Solid Waste	SA- MUEHLE	Elevator (if applicable)	N/A
Landscaping	N/A	Other	

The questionnaire information was provided by:

Name: STUART TYLER Title: PROJ. MGR/SEN ENV. PLANNER

Signature: _____

Date: _____

ENVIRONMENTAL INFORMATION

PREVIOUS REPORTS, DOCUMENTS AND OWNERS

1. Are you aware if a previous Environmental Assessment has ever been performed on the subject property? If yes, are you aware of the recommendations made in the report or please provide a copy of the report?

(Yes) No Do not Know

ORIGINAL EIS EARLY 80s & 90s - 1994 FINAL CONDUCTED ON BEHALF OF VDOT

2. Do you have any other environmentally associated documents, such as compliance audits, environmental permits (such as an NPDES permit, boiler permit, wastewater permit), registrations (such as for a underground storage tank) or material safety data sheets? If yes, please provide a copy of the document(s)

Yes No (Do not Know)

3. Can you provide contact information (name and phone number) of the previous owner of the property? If yes, please provide below.

Yes No (Do not Know)

HISTORICAL & PRESENT USAGE/SITE CONDITIONS – SUBJECT AND ADJOINING PROPERTIES

1. Are you aware of the prior use of the subject property i.e., any previous development, undeveloped? If so, please describe.

FORMER RESIDENTIAL, AGRICULTURAL, FOREST CEMETARY

2. Has fill dirt ever been brought onto the subject property that originated from a contaminated site or from an unknown source?

└ Yes ┘ No └ Do not Know

3. Are there currently or have there ever been any pits, ponds or lagoons on the subject property utilized in connection with waste treatment or waste disposal?

└ Yes ┘ No └ Do not Know

4. Are you currently aware of or have there ever been any hazardous substances, petroleum products, tires, car or industrial batteries, pesticides or other chemicals or waste materials that have been dumped, buried or burned on the subject property?

└ Yes ┘ No └ Do not Know

5. Have any of the adjoining properties ever been used for industrial purposes? (including but not limited to a gas station, dry cleaner, auto repair facility, landfill, waste treatment, printing facility etc.) If yes, please describe.

└ Yes ┘ No └ Do not Know

6. Are any of the adjoining properties currently being used for industrial purposes? If yes, please describe

└ Yes ┘ No └ Do not Know

7. Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

└ Yes ┘ No └ Not Applicable

8. If the subject property is served by a private well or non-public water system, is there evidence or do you have prior knowledge that contaminants have been identified in the well or system that exceed guidelines applicable to the water system or that the well has been designated as contaminated by any government environmental/health agency? If an on-site well is present, please attach a copy of the most recent water quality testing report.

└ Yes ┘ No └ Not Applicable

AAI and REGULATORY QUESTIONS

In order to qualify for one of the Landowner Liability Protections offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, you must provide the following information (if available). Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

1. Are you aware of any past or current existence of hazardous substances, specific chemicals, or petroleum products on the subject property or any facility located on the property?

└ Yes ┘ No └ Do not Know

2. Are you aware of any past or current spills or other chemical releases that have taken place at the property?

└ Yes ┘ No └ Do not Know

3. Do you know of any clean ups (with respect to hazardous substances, specific chemicals, or petroleum products) that have occurred at the property?

└ Yes └ No └ Do not Know

4. Are you aware, based on your knowledge of the property, if there are any obvious indicators that point to the presence or likely presence of contamination at the property?

└ Yes └ No └ Do not Know

5. Do you have any knowledge of filed or recorded environmental cleanup liens under federals, state or local law or governmental notification relating to past or recurrent violations of environmental laws with respect to the subject property or any facility located on the property?

└ Yes └ No └ Do not Know

6. Are there any potential or pending lawsuits or administrative actions concerning a release or threatened release of hazardous substances or petroleum product involving the subject property or any facility located on the property?

└ Yes └ No └ Do not Know

7. Are you aware of any areas of activity or use limitations (AULs) such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been recorded or filed in a registry under federal, state or tribal law?

└ Yes └ No └ Do not Know

8. (Answer this question only if this is an acquisition) Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If there is a difference, have you considered or determined whether the lower price is because contamination is known or believed to be present at the property?

└ Yes └ No └ Do not Know N/A

STORAGE TANKS AND DRAINS

1. Are there currently or are you aware if there have ever previously been any registered or unregistered storage tanks, aboveground or underground, located on the subject property? If so, please attach copies of documentation such as tank closure/removal reports, tank tightness tests or registration/regulatory information.

└ Yes └ No └ Do not Know

2. Are there currently or are you aware if there have ever previously been any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the subject property?

└ Yes └ No └ Do not Know

3. Are there currently or are you aware if there have ever previously been any current evidence of leaks, spills, or staining by substances other than water, or foul odors, associated with any flooring, drains, walls, ceilings, or exposed grounds on the subject property?

└ Yes └ No └ Do not Know

TRANSFORMERS AND HYDRAULIC EQUIPMENT

1. Are there are any transformers, capacitors, and/or hydraulic equipment on the subject property?

└ Yes └ No └ Do not Know

2. If yes, are there any records indicating the presence or absence of PCBs in this equipment. If so, please attach copies of the documents.

└ Yes └ No └ Do not Know

3. Are the transformers owned by the subject property or by the local utility? If owned by the utility, please note the name of the utility.

DOMINION

ASBESTOS CONTAINING MATERIALS

1. Has the subject property ever been tested for the presence of asbestos containing materials (ACM)?
└ Yes └ No └ Do not Know

2. If yes, are you aware if asbestos containing materials were identified? If so, please note what asbestos containing materials were identified and their locations or please attach a copy of the test results?
└ Yes └ No └ Not Applicable

3. Is there an Asbestos Operations and Maintenance Program in place at the subject property?
└ Yes └ No └ Do not Know

RADON

1. Has the subject property ever been tested for the presence of radon?
└ Yes └ No └ Do not Know

2. If yes, do you have the results of the testing? Please attach
└ Yes └ No └ Not Applicable

LEAD BASED PAINT

1. Has the subject property ever been tested for the presence of lead based paint (LBP)?
└ Yes └ No └ Do not Know

2. If yes, are you aware if lead based paint was identified? If so, please note where it was identified or please attach a copy of the test results?
└ Yes └ No └ Not Applicable

3. Is there a Lead Based Paint Operations and Maintenance Program in place at the subject property?
└ Yes └ No └ Do not Know

4. If the property was constructed prior to 1979, do you provide Lead Based Paint Notification to the tenants? If yes, please attach a copy of the notification.
└ Yes └ No └ Not Applicable

MOLD

1. Is there any evidence of mold and/or mildew on the subject property? If yes, please provide information as to the location, extent and the cause of the mold/mildew. Please note what actions are currently or have formerly been taken to address this concern.
└ Yes └ No

2. Is there a Mold and Moisture Minimization Program in place at the subject property?
└ Yes └ No └ Do not Know

COMMENTS/ADDITIONAL INFORMATION (If necessary, please provide any additional relevant environmental information that has not been discussed above.)

SUPPLEMENTAL EIS COULD CONTAIN OTHER RELEVANT INFORMATION

APPENDIX B: ERIS Radius Report

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*Brentsville Road/Prince William Parkway Interchange* *Brentsville Road/Prince William Parkway* *Manassas VA*
Project No:	*PAR003*
Report Type:	*Database Report*
Order No:	*20200608199*
Requested by:	*Cardno Inc.*
Date Completed:	*June 9, 2020*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Table of Contents

Executive Summary

Property Information:

Project Property:	*Brentsville Road/Prince William Parkway Interchange* *Brentsville Road/Prince William Parkway Manassas VA*
Project No:	*PAR003*

Coordinates:

Latitude:	*38.71502631*
Longitude:	*-77.46480855*
UTM Northing:	*4,288,037.51*
UTM Easting:	*285,699.88*
UTM Zone:	*UTM Zone 18S*

Elevation: *281 FT*

Order Information:

Order No:	*20200608199*
Date Requested:	*June 8, 2020*
Requested by:	*Cardno Inc.*
Report Type:	*Database Report*

Historicals/Products:

Aerial Photographs	*Historical Aerials (Boundaries)*
City Directory Search	*CD - 2 Street Search*
ERIS Xplorer	*ERIS Xplorer*
Excel Add-On	*Excel Add-On*
Fire Insurance Maps	*US Fire Insurance Maps*
Physical Setting Report (PSR)	*Physical Setting Report (PSR)*
Topographic Map	*Topographic Maps*
Vapor Screening Tool	*Vapor Screening Tool*

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	0.5	0	0	0	0	-	0
SEMS	Y	0.5	0	0	0	0	-	0
ODI	Y	0.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	0.5	0	0	0	0	-	0
CERCLIS	Y	0.5	0	0	0	0	-	0
IODI	Y	0.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	0.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	0.5	0	0	0	0	-	0
RCRA LQG	Y	0.25	0	0	0	-	-	0
RCRA SQG	Y	0.25	0	0	0	-	-	0
RCRA CESQG	Y	0.25	0	0	0	-	-	0
RCRA NON GEN	Y	0.25	0	0	0	-	-	0
FED ENG	Y	0.5	0	0	0	0	-	0
FED INST	Y	0.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	0.5	0	0	0	0	-	0
FEMA UST	Y	0.25	0	0	0	-	-	0
REFN	Y	0.25	0	0	0	-	-	0
BULK TERMINAL	Y	0.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
State								
SWF/LF	Y	0.5	0	0	0	0	-	0
LST	Y	0.5	**1**	**5**	**4**	**7**	-	**17**
DELISTED LST	Y	0.5	0	0	0	0	-	0
UST	Y	0.25	**1**	0	**2**	-	-	**3**
AST	Y	0.25	0	0	0	-	-	0
DELISTED TANK	Y	0.25	0	0	0	-	-	0
INST	Y	0.5	0	0	0	0	-	0
VRP	Y	0.5	0	0	0	0	-	0
BROWNFIELDS	Y	0.5	0	0	0	0	-	0
Tribal								
INDIAN LUST	Y	0.5	0	0	0	0	-	0
INDIAN UST	Y	0.25	0	0	0	-	-	0
DELISTED ILST	Y	0.5	0	0	0	0	-	0
DELISTED IUST	Y	0.25	0	0	0	-	-	0
County	***No County standard environmental record sources available for this State.***							
Additional Environmental Records								
Federal								
PFAS NPL	Y	0.5	0	0	0	0	-	0
FINDS/FRS	Y	PO	0	-	-	-	-	0
TRIS	Y	PO	0	-	-	-	-	0
PFAS TRI	Y	0.5	0	0	0	0	-	0
PFAS WATER	Y	0.5	0	0	0	0	-	0
HMIRS	Y	0.125	0	0	-	-	-	0
NCDL	Y	0.125	0	0	-	-	-	0
TSCA	Y	0.125	0	0	-	-	-	0
HIST TSCA	Y	0.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	0.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0
FED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED FED DRY	Y	0.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
FUDS	Y	1	0	0	0	0	0	0
PIPELINE INCIDENT	Y	PO	0	-	-	-	-	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	0.25	0	0	0	-	-	0
ALT FUELS	Y	0.25	0	0	0	-	-	0
SSTS	Y	0.25	0	0	0	-	-	0
PCB	Y	0.5	0	0	0	0	-	0
State								
SPILLS	Y	0.125	**2**	0	-	-	-	**2**
PC SPILLS	Y	0.125	0	0	-	-	-	0
DRYCLEANERS	Y	0.25	0	0	0	-	-	0
Tribal	***No Tribal additional environmental record sources available for this State.***							
County	***No County additional environmental record sources available for this State.***							
	Total:		**4**	**5**	**6**	**7**	0	**22**

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	SPILLS	Prince William Parkway & Dumfries Rd - MVA	Prince William Parkway & Dumfries Rd VA ***Incident ID | Status | Closure Date:*** *286792 | Closed | 8/25/2008*	SE	0.00 / 0.00	2	18
2	UST	WHITFIELD H BRYANT III	8813 Brentsville Rd Manassas VA 22111 ***Facility ID | Active UST | Inactive UST | Facility Active:*** *3011656 | 0 | 1 | No* ***Tank No | Tank Status:*** *1 | PERM OUT OF USE*	SSW	0.00 / 0.00	-5	18
3	SPILLS	MVA	DUMFRIES RD AND PRINCE WILLIAM PARKWAY VA ***Incident ID | Status | Closure Date:*** *18101 | Closed | 2/22/2013*	W	0.00 / 0.00	-20	20
10	LST	Mohn William T Residence	8520 Smith Ln Manassas VA 20112 ***CEDS Fac ID | Case Status:*** *200000211038 | Closed* ***Rst Status Ind:*** *Closed*	ESE	0.00 / 0.00	-7	21

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
4	LST	Leith Wilkie Smith Property	8700 Smith Ln Manassas VA 20112	NE	0.03 / 175.81	7	21
			***CEDS Fac ID	Case Status:*** 200000872787	Closed ***Rst Status Ind:*** Closed			
5	LST	Patterson Elaine Residence	8818 Brentsville Run Ct Manassas VA 20112-4542	SW	0.01 / 30.83	-26	22
			***CEDS Fac ID	Case Status:*** 200000185820	Closed ***Rst Status Ind:*** Closed			
6	LST	Rice James MacDougal Residence	8650 Smith Ln Manassas VA 20112-5840	E	0.00 / 17.51	-28	22
			***CEDS Fac ID	Case Status:*** 200000859298	Closed ***Rst Status Ind:*** Closed			
7	LST	Gilbert Richard G and Teresa M Residence	8830 Brentsville Rd Manassas VA 20112-4526	SW	0.04 / 227.12	-38	23
			***CEDS Fac ID	Case Status:*** 200000859850	Closed ***Rst Status Ind:*** Closed			
8	LST	Rhodenhizer Jeremy and Leslie Residence	8766 Bradley Forge Dr Manassas VA 20112	S	0.14 / 763.37	-27	23
			***CEDS Fac ID	Case Status:*** 200000885518	Closed ***Rst Status Ind:*** Closed			
9	LST	Sigl Mary Catherine Residence	8834 Brentsville Rd Manassas VA 20112-4526	SW	0.08 / 446.36	-46	24
			***CEDS Fac ID	Case Status:*** 200000856251	Closed ***Rst Status Ind:*** Closed			
11	LST	Cornwells Incorporated	10621 Dumfries Rd Manassas VA 20112-2721	NNW	0.27 / 1,417.34	-16	25
			***CEDS Fac ID	Case Status:*** 200000073997	Closed ***Rst Status Ind:*** Closed			
12	LST	Whittaker Mitchell Property	8392 Briarmont Ln Manassas VA 20112	E	0.29 / 1,509.77	-72	25
			***CEDS Fac ID	Case Status:*** 200000185791	Closed ***Rst Status Ind:*** Closed			
13	LST	Allen Property	11304 Dumfries Rd Manassas VA 20112	ESE	0.13 / 688.88	-56	26
			***CEDS Fac ID	Case Status:*** 200000078072	Closed ***Rst Status Ind:*** Closed			
14	UST	FRIES GARAGE	11319 Dumfries Rd Manassas VA 22111	ESE	0.14 / 727.31	-59	26
			***Facility ID	Active UST	Inactive UST	Facility Active:*** 3004622	0	4	No ***Tank No	Tank Status:*** R2	REM FROM GRD, R3	REM FROM GRD, R1	REM FROM GRD, R4	REM FROM GRD			
14	LST	Fries and Sons Tire Center	11319 Dumfries Rd Manassas VA 22111	ESE	0.14 / 727.31	-59	30
			***CEDS Fac ID	Case Status:*** 200000198789	Closed ***Rst Status Ind:*** Closed			
15	LST	New Dominion Holdings Property	10613 Dumfries Rd Manassas VA 20112	NNW	0.34 / 1,798.95	-17	30
			***CEDS Fac ID	Case Status:*** 200000222290	Closed ***Rst Status Ind:*** Closed			

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
16	UST	LAKE JACKSON VOL FIRE DEPT	11301 Coles Dr Manassas VA 20112	ESE	0.22 / 1,164.89	-30	31
			***Facility ID	Active UST	Inactive UST	Facility Active:*** 3000159 | 0 | 2 | No ***Tank No	Tank Status:*** 1 | REM FROM GRD, 2 | REM FROM GRD			
16	LST	Lake Jackson VFD former	11301 Coles Dr Manassas VA 20112	ESE	0.22 / 1,164.89	-30	33
			***CEDS Fac ID	Case Status:*** 200000077057 | Closed ***Rst Status Ind:*** Closed			
17	LST	Absolute Plumbing Property	10607 Dumfries Rd Manassas VA 20112	NNW	0.38 / 1,986.18	-13	33
			***CEDS Fac ID	Case Status:*** 200000218001 | Closed ***Rst Status Ind:*** Closed			
17	LST	Absolute Plumbing Limited Liability Corporation	10607 Dumfries Rd Manassas VA 20112	NNW	0.38 / 1,986.18	-13	34
			***CEDS Fac ID	Case Status:*** 200000218001 | Closed ***Rst Status Ind:*** Closed			
18	LST	Lake Jackson Volunteer Fire Department	11310 Coles Dr Manassas VA 20112	ESE	0.31 / 1,625.92	-25	35
			***CEDS Fac ID	Case Status:*** 200000222661 | Closed ***Rst Status Ind:*** Closed			
19	LST	Pitt Elaine Residence	9492 Fostern Ln Manassas VA 20112	W	0.41 / 2,146.78	-18	35
			***CEDS Fac ID	Case Status:*** 200000201407 | Closed ***Rst Status Ind:*** Closed			

Executive Summary: Summary by Data Source

Standard

State

LST - Leaking Petroleum Storage Tanks

A search of the LST database, dated Apr 6, 2020 has found that there are 17 LST site(s) within approximately 0.50 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
Leith Wilkie Smith Property	8700 Smith Ln Manassas VA 20112	NE	0.03 / 175.81	4
	***CEDS Fac ID | Case Status**: 200000872787 | Closed* ***Rst Status Ind**: Closed*			

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Patterson Elaine Residence	8818 Brentsville Run Ct Manassas VA 20112-4542	SW	0.01 / 30.83	5
	***CEDS Fac ID | Case Status**: 200000185820 | Closed* ***Rst Status Ind**: Closed*			
Rice James MacDougal Residence	8650 Smith Ln Manassas VA 20112-5840	E	0.00 / 17.51	6
	***CEDS Fac ID | Case Status**: 200000859298 | Closed* ***Rst Status Ind**: Closed*			
Gilbert Richard G and Teresa M Residence	8830 Brentsville Rd Manassas VA 20112-4526	SW	0.04 / 227.12	7
	***CEDS Fac ID | Case Status**: 200000859850 | Closed* ***Rst Status Ind**: Closed*			
Rhodenhizer Jeremy and Leslie Residence	8766 Bradley Forge Dr Manassas VA 20112	S	0.14 / 763.37	8
	***CEDS Fac ID | Case Status**: 200000885518 | Closed* ***Rst Status Ind**: Closed*			
Sigl Mary Catherine Residence	8834 Brentsville Rd Manassas VA 20112-4526	SW	0.08 / 446.36	9
	***CEDS Fac ID | Case Status**: 200000856251 | Closed* ***Rst Status Ind**: Closed*			
Mohn William T Residence	8520 Smith Ln Manassas VA 20112	ESE	0.00 / 0.00	10
	***CEDS Fac ID | Case Status**: 200000211038 | Closed* ***Rst Status Ind**: Closed*			
Cornwells Incorporated	10621 Dumfries Rd Manassas VA 20112-2721	NNW	0.27 / 1,417.34	11
	***CEDS Fac ID | Case Status**: 200000073997 | Closed* ***Rst Status Ind**: Closed*			

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Whittaker Mitchell Property	8392 Briarmont Ln Manassas VA 20112	E	0.29 / 1,509.77	12
	***CEDS Fac ID | Case Status**: 200000185791 | Closed* ***Rst Status Ind**: Closed*			
Allen Property	11304 Dumfries Rd Manassas VA 20112	ESE	0.13 / 688.88	13
	***CEDS Fac ID | Case Status**: 200000078072 | Closed* ***Rst Status Ind**: Closed*			
Fries and Sons Tire Center	11319 Dumfries Rd Manassas VA 22111	ESE	0.14 / 727.31	14
	***CEDS Fac ID | Case Status**: 200000198789 | Closed* ***Rst Status Ind**: Closed*			
New Dominion Holdings Property	10613 Dumfries Rd Manassas VA 20112	NNW	0.34 / 1,798.95	15
	***CEDS Fac ID | Case Status**: 200000222290 | Closed* ***Rst Status Ind**: Closed*			
Lake Jackson VFD former	11301 Coles Dr Manassas VA 20112	ESE	0.22 / 1,164.89	16
	***CEDS Fac ID | Case Status**: 200000077057 | Closed* ***Rst Status Ind**: Closed*			
Absolute Plumbing Limited Liability Corporation	10607 Dumfries Rd Manassas VA 20112	NNW	0.38 / 1,986.18	17
	***CEDS Fac ID | Case Status**: 200000218001 | Closed* ***Rst Status Ind**: Closed*			
Absolute Plumbing Property	10607 Dumfries Rd Manassas VA 20112	NNW	0.38 / 1,986.18	17
	***CEDS Fac ID | Case Status**: 200000218001 | Closed* ***Rst Status Ind**: Closed*			
Lake Jackson Volunteer Fire Department	11310 Coles Dr Manassas VA 20112	ESE	0.31 / 1,625.92	18
	***CEDS Fac ID | Case Status**: 200000222661 | Closed* ***Rst Status Ind**: Closed*			
Pitt Elaine Residence	9492 Fostern Ln Manassas VA 20112	W	0.41 / 2,146.78	19
	***CEDS Fac ID | Case Status**: 200000201407 | Closed* ***Rst Status Ind**: Closed*			

UST - Underground Storage Tanks

A search of the UST database, dated Apr 6, 2020 has found that there are 3 UST site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
WHITFIELD H BRYANT III	8813 Brentsville Rd Manassas VA 22111	SSW	0.00 / 0.00	2
	***Facility ID | Active UST | Inactive UST | Facility Active**: 3011656 | 0 | 1 | No* ***Tank No | Tank Status**: 1 | PERM OUT OF USE*			

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
FRIES GARAGE	11319 Dumfries Rd Manassas VA 22111	ESE	0.14 / 727.31	14
	***Facility ID	Active UST	Inactive UST	Facility Active***: *3004622	0	4	No* ***Tank No	Tank Status***: *R2	REM FROM GRD, R3	REM FROM GRD, R1	REM FROM GRD, R4	REM FROM GRD*			
LAKE JACKSON VOL FIRE DEPT	11301 Coles Dr Manassas VA 20112	ESE	0.22 / 1,164.89	16
	***Facility ID	Active UST	Inactive UST	Facility Active***: *3000159	0	2	No* ***Tank No	Tank Status***: *1	REM FROM GRD, 2	REM FROM GRD*			

Non Standard

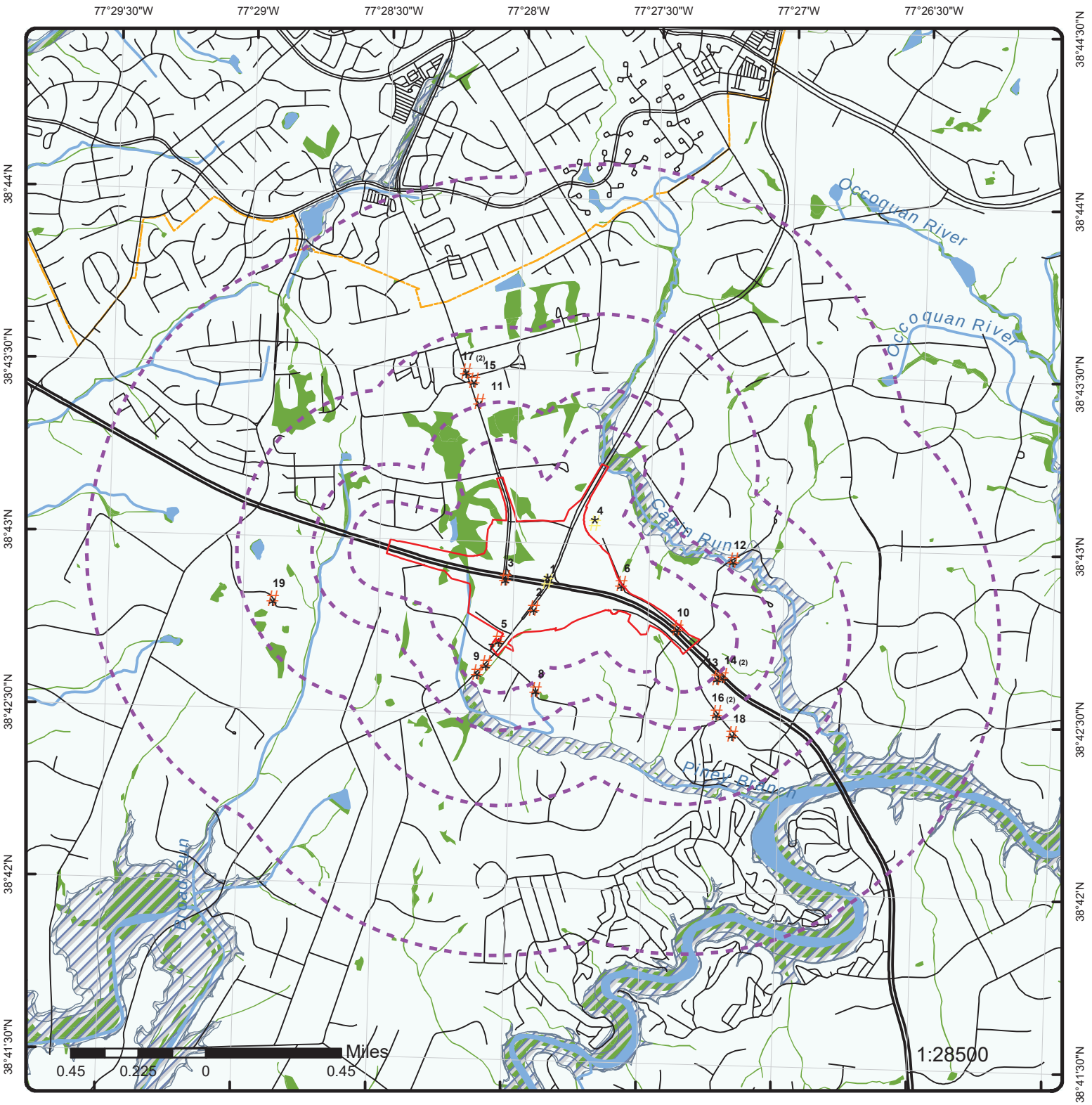
State

SPILLS - Spills

A search of the SPILLS database, dated Apr 1, 2020 has found that there are 2 SPILLS site(s) within approximately 0.12 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
Prince William Parkway & Dumfries Rd - MVA	Prince William Parkway & Dumfries Rd VA	SE	0.00 / 0.00	1
	***Incident ID	Status	Closure Date***: *286792	Closed	8/25/2008*			

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
MVA	DUMFRIES RD AND PRINCE WILLIAM PARKWAY VA	W	0.00 / 0.00	3
	***Incident ID	Status	Closure Date***: *18101	Closed	2/22/2013*			

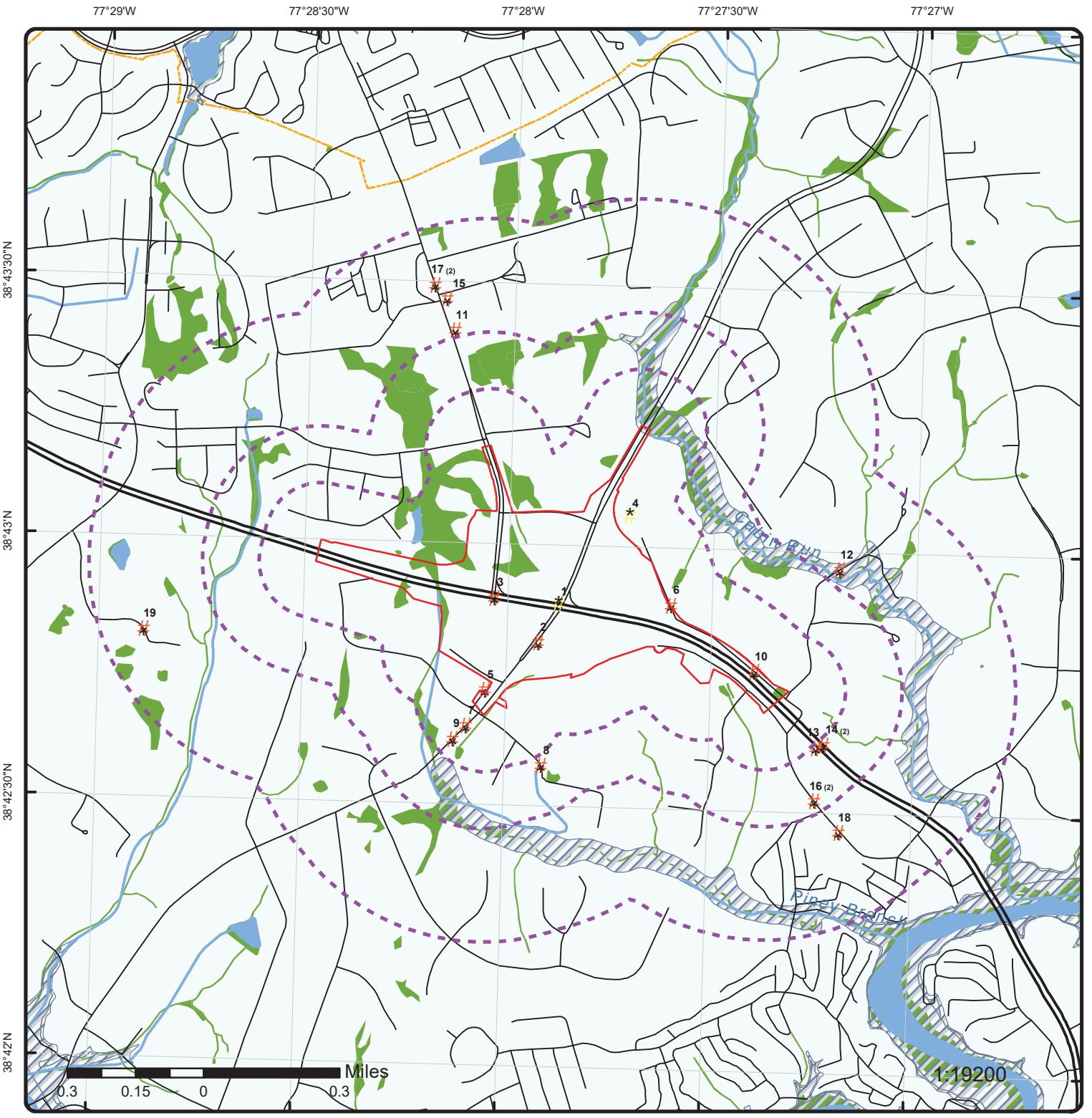


Map : 1.0 Mile Radius

Order Number: 20200608199

Address: Brentsville Road/Prince William Parkway, Manassas, VA

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		



Map : 0.5 Mile Radius

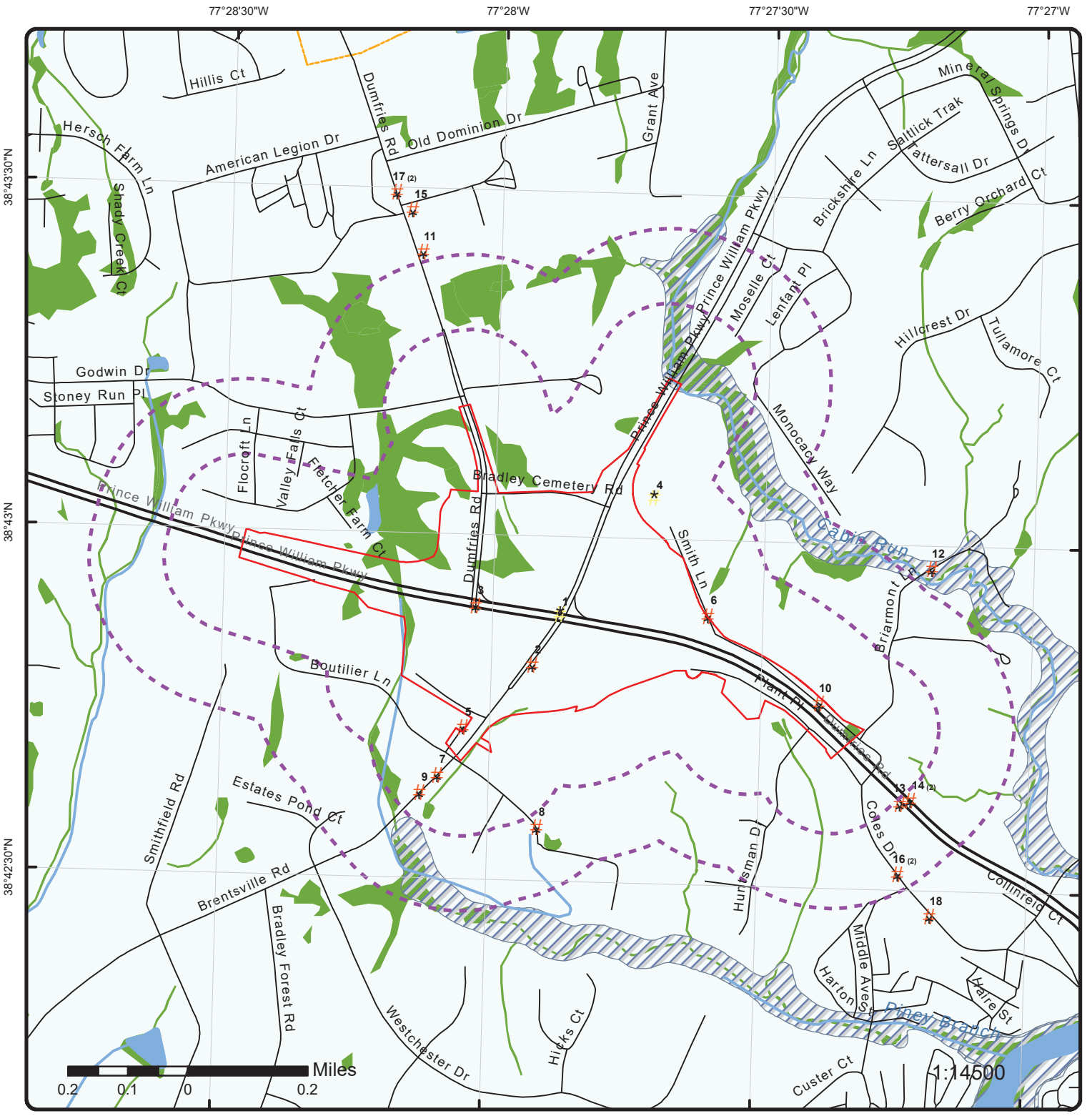
Order Number: 20200608199

Address: Brentsville Road/Prince William Parkway, Manassas, VA

ERIS

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI



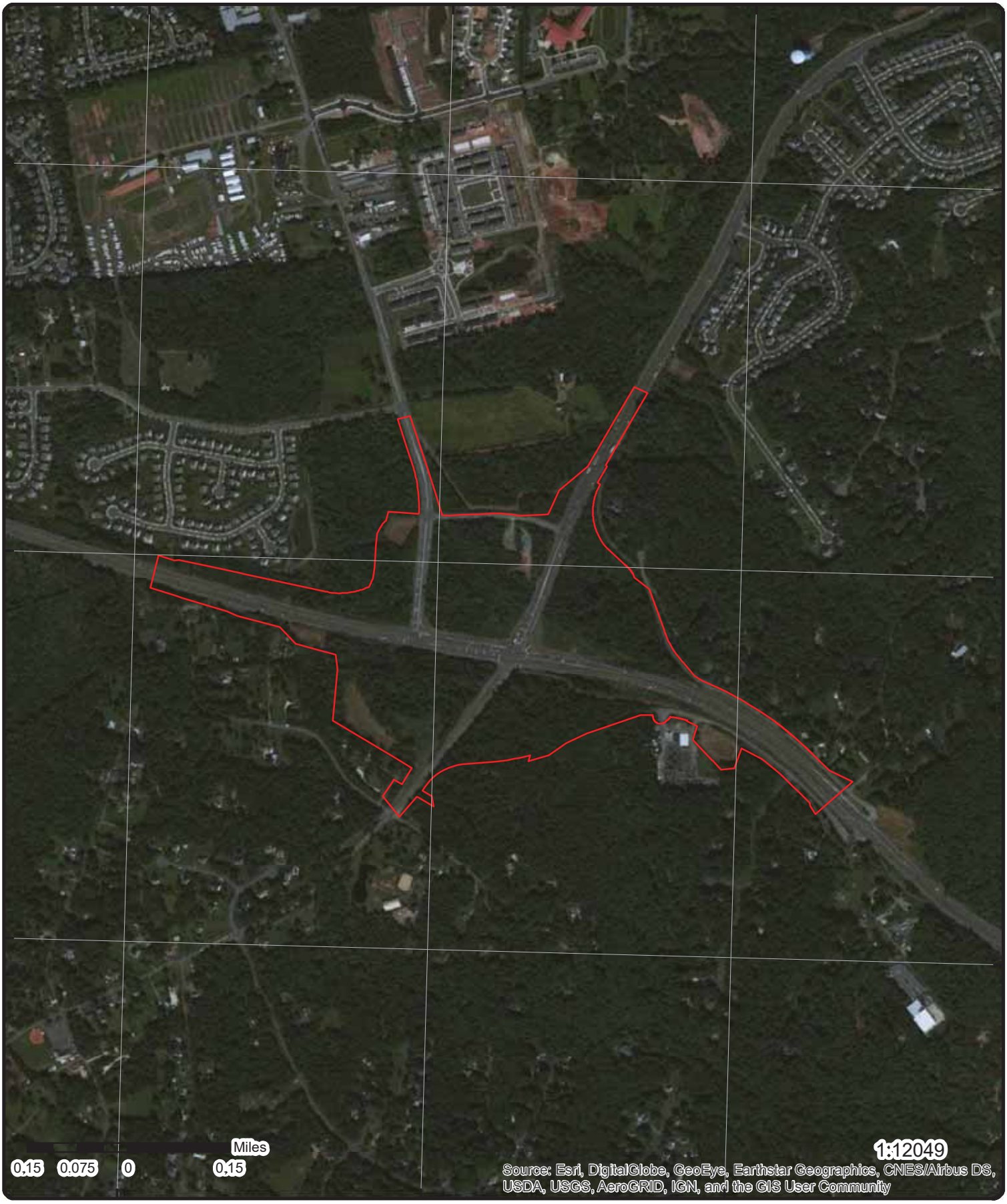
Map : 0.25 Mile Radius

Order Number: 20200608199

Address: Brentsville Road/Prince William Parkway, Manassas, VA

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI



Aerial **Year: 2017**

Address: Brentsville Road/Prince William Parkway, Manassas, VA

Order Number: 20200608199

Source: ESRI World Imagery

Topographic Map

Year: 2016

Order Number: 20200608199

Address: Brentsville Road/Prince William Parkway, VA

Quadrangle(s): Independent Hill,VA; Nokesville,VA

Source: USGS Topographic Map

Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	SE	0.00 / 0.00	282.89 / 2	Prince William Parkway & Dumfries Rd - MVA Prince William Parkway & Dumfries Rd VA	SPILLS

Legacy IR No:	2009-N-0110	**PRP Name:**	
Incident ID:	286792	**Impacts:**	
Status:	Closed	**Other Impacts:**	
Incident Type:	Petroleum(Petroleum)	**Steps Taken:**	
Incident Subtype:		**System Structure:**	
Effect to Receptor:		**Othr Sys Structure:**	
Associated IR:		**Weather Status:**	
Incident Dte Time:	08/12/2008 12:00	**Wet Weather Event:**	No
Call Recvd Dte Time:	08/12/2008 12:00	**Precipitation Inch:**	
Closure Date:	8/25/2008	**Discharge Type:**	
EPA ID:		**Discharge Vol Gallon:**	
SSORS ID:		**Discharge Treated:**	
HMVA No:		**Unkwn Discharge?:**	
NRC ID:		**Sewage Related?:**	No
Programs:		**Permitted?:**	No
Agencies Notified?:		**Facility Name:**	
Other Agencies:		**Property Owner:**	
Threat to:		**Prprty Ownr Orgnztn:**	
Terrorism?:		**Event Duration Hrs:**	
Charactriz Incdnt:		**Water Body:**	
Quantity Units:		**Region:**	Northern
Other Receptors:		**FIPS City County:**	153/Prince William County
PRP Organization:			
Low Quantity to Water:			
High Quantity to Water:			

Incdnt Ongoing at time of Call:	No
Call Reported Anonymous:	
Call PRP Unknown?:	
Call Property Owner Unknown?:	
Call Reprtd by Name:	
Call Reported by Organization:	Chris of Prince William County FD to VDEM
Call PRP Organization:	
Call PRP Name:	
Call Prprty Ownr Organization:	
Call Prpty Owner Name:	
Received By:	
Steps taken Desc:	
Materials:	Oil (Fuel-Diesel)
Corrective Action Taken:	
Incident Summary:	
Original Call Incident Desc:	TT accident. RP contacted APEX for cleanup. Finish Line Towing removed TT.
Originial Call Loc Desc:	Pr Wm Pkwy & Dumfries Rd - MVA-Prince William Pkwy & Dumfries Rd--VA--Prince William County
Cause of Event:	
Closure Reason Comments:	See Site Comments for details
Original Call Material Desc:	Diesel Fuel (Qty=35)
Incident Address 1:	Prince William Parkway & Dumfries Rd
Incident Address 2:	
Incident Name:	Prince William Parkway & Dumfries Rd - MVA

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	1 of 1	SSW	0.00 /	275.66 /	WHITFIELD H BRYANT III	UST

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
			0.00	-5	8813 Brentsville Rd Manassas VA 22111	

Facility ID:	3011656	**Name:**	WHITFIELD H BRYANT III
CEDS Facility ID:	200000088184	**Address1:**	8813 Brentsville Rd
Facility Type:	UNKNOWN	**Address2:**	
Active UST:	0	**City:**	Manassas
Inactive UST:	1	**Zip:**	22111
Active AST:	0	**County:**	Prince William County
Inactive AST:	0	**Region:**	NVRO
Facility Active:	No	**Parent Region:**	Northern
Federally Regulated:	Yes	**State:**	VA

Facility Name (GIS):	WHITFIELD H BRYANT III
Facility Addr 1 (GIS):	8813 Brentsville Rd
Facility Addr 2 (GIS):	
Facility City (GIS):	Manassas
County Name (GIS):	Prince William
Facility State (GIS):	VA
Facility Zip5 (GIS):	22111
Latitude (GIS):	38.71412545503318
Longitude (GIS):	-77.46446521224169
Facility Location (GIS):	8813 Brentsville Rd.
Source:	Registered petroleum storage tanks; Registered Tanks Facilities (MapServer)

Tank Details

Tank Owner ID:	34791	**Install Date:**	4/30/1978
Tank No:	1	**Date Closed:**	
Tank Status:	PERM OUT OF USE	**Capacity:**	500
Tank Type:	UST	**Contents:**	DIESEL
Fed Regulated Tank:	Yes	**Other Contents:**	

Tank Materials

Asphalt/Bare Steel:	Yes	**Impressed Current:**	No
CCP/STI-P3:	No	**Polyethyl Jacket:**	No
Composite:	No	**Concrete:**	No
Fiberglass:	No	**Excavation Liner:**	No
Lined Interior:	Yes	**Secondary Contain:**	No
Double Walled:	No	**Repaired:**	No
Other:	No	**Unknown:**	No
Other Specify:			

Pipe Materials

Piping Type:	UNKNOWN	**Impressed Current:**	
Asphalt/Bare Steel:	Yes	**Double Walled:**	No
Galvanized Steel:	No	**Polyflexible:**	No
Fiberglass:	No	**Unknown:**	No
Copper:	No	**Secondary Contain:**	No
Cathodic Protected:	No	**Other:**	No
Repaired:	No	**Other Specify:**	

Tank/Pipe Release Detection

Manual Gauging:	No	**Overfill Type:**	
Tank RD Tight Test:	No	**Overfill Spec:**	
Inventory Controls:	No	**Pipe RD MTG:**	No
Tank RD ATG:	No	**Pipe RD ATG:**	
Tank RD Vapor Mntr:	No	**Pipe RD GW Monitor:**	No
Tank RD GW Monitor:	No	**Pipe RD Vapor Mntr:**	No
Tnk RD IM Dbl Wall:	No	**Pipe IM Dbl Wall:**	No
Tnk RD IM Sec Cont:	No	**Pipe IM Sec Cont:**	No
Tank RD SIR:	No	**Pipe RD ALLD:**	No

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Tank RD Leak Defer:	No	**Pipe RD Tight Test:**	No
Tank RD Other:	No	**Pipe RD SIR:**	No
Tank RD Other Spec:		**Pipe RD Leak Defer:**	
Spl Device Install:	No	**Pipe RD Other:**	No
Overfill Dev Inst:	No	**Pipe RD Other Spec:**	

Owner

Tank Owner ID:	34791	**Owner Address 1:**	8813 BRENTSVILLE RD.
No of Active AST:	0	**Owner Address 2:**	PRINCE WILLIAM
No of Active UST:	0	**Owner City:**	MANASSAS
No of Inactive AST:	0	**Owner State:**	VA
No of Inactive UST:	1	**Owner Zip 5:**	22111
Federal Regulated:	Yes	**Owner Zip 4:**	
Region:	NVRO	**Owner Type:**	UNKNOWN
Owner Name:	H BRYANT WHITFIELD III	**Facility Active?:**	No
Name:	WHITFIELD H BRYANT III		

MapServer Tanks Facilities Detail

Fac ID:	3011656	**Changed By:**	jrmodliszewski
Ceds Fac ID:	200000088184	**Changed Date:**	3/26/2007
Inserted By:		**Verified By:**	
Inserted Date:		**Verify Date:**	
Reference Point:			

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3 | ***1 of 1*** | ***W*** | ***0.00 / 0.00*** | ***261.10 / -20*** | ***MVA DUMFRIES RD AND PRINCE WILLIAM PARKWAY VA*** | ***SPILLS***

Legacy IR No:	2013-N-2171	**PRP Name:**	
Incident ID:	18101	**Impacts:**	
Status:	Closed	**Other Impacts:**	
Incident Type:	Petroleum(Petroleum), Surface Spill (Petroleum)	**Steps Taken:**	
Incident Subtype:		**System Structure:**	
Effect to Receptor:		**Othr Sys Structure:**	
Associated IR:		**Weather Status:**	
Incident Dte Time:	02/20/2013 04:53	**Wet Weather Event:**	No
Call Recvd Dte Time:	02/20/2013 12:01	**Precipitation Inch:**	0
Closure Date:	2/22/2013	**Discharge Type:**	
EPA ID:		**Discharge Vol Gallon:**	0
SSORS ID:		**Discharge Treated:**	
HMVA No:		**Unkwn Discharge?:**	
NRC ID:		**Sewage Related?:**	No
Programs:		**Permitted?:**	No
Agencies Notified?:		**Facility Name:**	
Other Agencies:		**Property Owner:**	
Threat to:		**Prprty Ownr Orgnztn:**	
Terrorism?:		**Event Duration Hrs:**	0
Charactriz Incdnt:	Accidental	**Water Body:**	
Quantity Units:		**Region:**	Northern
Other Receptors:		**FIPS City County:**	153/Prince William County
PRP Organization:			
Low Quantity to Water:			
High Quantity to Water:			
Incdnt Ongoing at time of Call:	No		
Call Reported Anonymous:			
Call PRP Unknown?:			
Call Property Owner Unknown?:			
Call Reprtd by Name:	KIEB		
Call Reported by Organization:	Prince Willaim Fire Dept		
Call PRP Organization:			
Call PRP Name:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Call Prprty Ownr Organization:
Call Prpty Owner Name:
Received By: Mark Miller
Steps taken Desc:
Materials: Gasoline
Corrective Action Taken:
Incident Summary: MOTOR VEHICLE ACCIDENT. 2 VEHICLES LOST APPROX. 6 GALLONS GASOLINE TO GRASSY MEDIAN. NO WATERWAYS INVOLVED. ATLAS WILL BE DOING CLEANUP AT NOON...THE AREA WAS ROPED OFF BY FIRE DEPT.
Original Call Incident Desc: MOTOR VEHICLE ACCIDENT. 2 VEHICLES LOST APPROX. 6 GALLONS GASOLINE TO GRASSY MEDIAN. NO WATERWAYS INVOLVED. ATLAS WILL BE DOING CLEANUP AT NOON...THE AREA WAS ROPED OFF BY FIRE DEPT.
Originial Call Loc Desc: DUMFRIES RD AND PRINCE WILLIAM PARKWAY MANASSAS
Cause of Event:
Closure Reason Comments: NFA
Original Call Material Desc: gasoline
Incident Address 1: DUMFRIES RD AND PRINCE WILLIAM PARKWAY
Incident Address 2:
Incident Name: MVA

10	1 of 1	ESE	0.00 / 0.00	274.09 / -7	**Mohn William T Residence** **8520 Smith Ln** **Manassas VA 20112**	LST

PC No: 20033281
CEDS Fac ID: 200000211038
Case Status: Closed
Case Closed Date: 4/16/2004
Release Reported: 5/23/2003
Fed Regulated UST?: No
Program: RP Lead
Reg Petrol UST1: No
Excluded UST1: No
Deferred UST1: No
Partial Defer UST1: No
Heat Oil Category: Category 2
Exmpt1 UST2: No
Exmpt2 Ht Oil UST2: Yes
Small Ht Oil AST2: No
Regulated AST3: No
Unregulated AST3: No
Other Tank Type?: No
Oth Tank Type Desc:
Unknown Tank Type?: No
County: Prince William County
Region: NRO
Source: Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID: 200000211038
Rst Complaint No: 20033281
Rst Status Ind: Closed
Rst Rec Code: NVRO
Rst Priority: 3
Rst Fed Reg Tank: N
Rst Case Closed: 1082073600000
Rst Name: Mohn William T Residence
Rst Release Report: 1053648000000
Rst Responsibility: RP Lead
Rst Suspect Confirm: Confirmed
Fic Description: Prince William County
Reference Point:
Fac Location: 8520 Smith Ln
Fac Addr: 8520 Smith Ln
Fac City: Manassas
Fac State: VA
Fac Zip5: 20112
Des First Name: Kurt
Des Last Name: Kochan
Changed by: kwkochan
Changed Date: 3/28/2006
Inserted by:
Inserted Date:
Verified by:
Verify Date:

4	1 of 1	NE	0.03 / 175.81	287.93 / 7	**Leith Wilkie Smith Property** **8700 Smith Ln** **Manassas VA 20112**	LST

PC No: 20143069
CEDS Fac ID: 200000872787
Case Status: Closed
Case Closed Date: 1/24/2018
Release Reported: 10/18/2013
Fed Regulated UST?: No
Program: RP Lead
Heat Oil Category: Category 2
Exmpt1 UST2: No
Exmpt2 Ht Oil UST2: Yes
Small Ht Oil AST2: No
Regulated AST3: No
Unregulated AST3: No
Other Tank Type?: No

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000872787	**Fac Addr:**	8700 Smith Ln
Rst Complaint No:	20143069	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	2	**Des First Name:**	Susan
Rst Fed Reg Tank:	N	**Des Last Name:**	Tiffany
Rst Case Closed:	1516752000000	**Changed by:**	Joseph.Glassman
Rst Name:	Leith Wilkie Smith Property	**Changed Date:**	10/6/2015
Rst Release Report:	1382054400000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	8700 Smith Ln		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
5	1 of 1	SW	0.01 / 30.83	254.59 / -26	**Patterson Elaine Residence** **8818 Brentsville Run Ct** **Manassas VA 20112-4542**	LST

PC No:	19983603	**Heat Oil Category:**	
CEDS Fac ID:	200000185820	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	1/19/2000	**Small Ht Oil AST2:**	No
Release Reported:	11/17/1997	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000185820	**Fac Addr:**	8818 Brentsville Run Ct
Rst Complaint No:	19983603	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	William (Randy)
Rst Fed Reg Tank:	N	**Des Last Name:**	Chapman
Rst Case Closed:	948240000000	**Changed by:**	jwcheatham
Rst Name:	Patterson Elaine Residence	**Changed Date:**	4/10/2007
Rst Release Report:	879724800000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	8818 Brentsville Run Ct		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
6	1 of 1	E	0.00 / 17.51	253.16 / -28	**Rice James MacDougal Residence** **8650 Smith Ln** **Manassas VA 20112-5840**	LST

PC No:	20133158	**Heat Oil Category:**	Category 2
CEDS Fac ID:	200000859298	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	8/8/2013	**Small Ht Oil AST2:**	No

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Release Reported:	4/2/2013	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000859298	**Fac Addr:**	8650 Smith Ln
Rst Complaint No:	20133158	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	William (Randy)
Rst Fed Reg Tank:	N	**Des Last Name:**	Chapman
Rst Case Closed:	1375920000000	**Changed by:**	Randy.Chapman
Rst Name:	Rice James MacDougal Residence	**Changed Date:**	12/18/2013
Rst Release Report:	1364860800000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	8650 Smith Ln		

7	1 of 1	SW	0.04 / 227.12	243.08 / -38	**Gilbert Richard G and Teresa M Residence** **8830 Brentsville Rd** **Manassas VA 20112-4526**	LST

PC No:	20133215	**Heat Oil Category:**	Category 1
CEDS Fac ID:	200000859850	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	4/18/2018	**Small Ht Oil AST2:**	No
Release Reported:	6/20/2013	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000859850	**Fac Addr:**	8830 Brentsville Rd
Rst Complaint No:	20133215	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	Susan
Rst Fed Reg Tank:	N	**Des Last Name:**	Tiffany
Rst Case Closed:	1524009600000	**Changed by:**	Randy.Chapman
Rst Name:	Gilbert Richard G and Teresa M Residence	**Changed Date:**	12/18/2013
Rst Release Report:	1371686400000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	8830 Brentsville Rd		

8	1 of 1	S	0.14 / 763.37	254.07 / -27	**Rhodenhizer Jeremy and Leslie Residence** **8766 Bradley Forge Dr** **Manassas VA 20112**	LST

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

PC No:	20183029	**Heat Oil Category:**	Category 1
CEDS Fac ID:	200000885518	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	12/28/2017	**Small Ht Oil AST2:**	No
Release Reported:	8/15/2017	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000885518	**Fac Addr:**	8766 Bradley Forge Dr
Rst Complaint No:	20183029	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	Joseph
Rst Fed Reg Tank:	N	**Des Last Name:**	Glassman
Rst Case Closed:	1514419200000	**Changed by:**	JLGLASSMAN
Rst Name:	Rhodenhizer Jeremy and Leslie Residence	**Changed Date:**	12/18/2017
Rst Release Report:	1502755200000	**Inserted by:**	JLGLASSMAN
Rst Responsibility:	RP Lead	**Inserted Date:**	12/18/2017
Rst Suspect Confirm:	Confirmed	**Verified by:**	JLGLASSMAN
Fic Description:	Prince William County	**Verify Date:**	12/18/2017
Reference Point:	PG		
Fac Location:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
9	1 of 1	SW	0.08 / 446.36	235.35 / -46	Sigl Mary Catherine Residence 8834 Brentsville Rd Manassas VA 20112-4526	LST

PC No:	20123056	**Heat Oil Category:**	Category 1
CEDS Fac ID:	200000856251	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	4/18/2018	**Small Ht Oil AST2:**	No
Release Reported:	10/13/2011	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000856251	**Fac Addr:**	8834 Brentsville Rd
Rst Complaint No:	20123056	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	Susan
Rst Fed Reg Tank:	N	**Des Last Name:**	Tiffany
Rst Case Closed:	1524009600000	**Changed by:**	Randy.Chapman
Rst Name:	Sigl Mary Catherine Residence	**Changed Date:**	12/18/2013
Rst Release Report:	1318464000000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	8834 Brentsville Rd		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
11	1 of 1	NNW	0.27 / 1,417.34	265.17 / -16	Cornwells Incorporated 10621 Dumfries Rd Manassas VA 20112-2721	LST

PC No:	20023030	**Heat Oil Category:**	
CEDS Fac ID:	200000073997	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	No
Case Closed Date:	7/30/2001	**Small Ht Oil AST2:**	No
Release Reported:	12/4/2000	**Regulated AST3:**	No
Fed Regulated UST?:	Yes	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	Yes	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO

Source: Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000073997	**Fac Addr:**	10621 Dumfries Rd
Rst Complaint No:	20023030	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	William (Randy)
Rst Fed Reg Tank:	Yes	**Des Last Name:**	Chapman
Rst Case Closed:	996451200000	**Changed by:**	Randy.Chapman
Rst Name:	Cornwells Incorporated	**Changed Date:**	9/3/2013
Rst Release Report:	975888000000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	10621 Dumfries Rd		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
12	1 of 1	E	0.29 / 1,509.77	209.18 / -72	Whittaker Mitchell Property 8392 Briarmont Ln Manassas VA 20112	LST

PC No:	19963097	**Heat Oil Category:**	Category 1
CEDS Fac ID:	200000185791	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	8/6/1998	**Small Ht Oil AST2:**	No
Release Reported:	1/29/1996	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO

Source: Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000185791	**Fac Addr:**	8392 Briarmont Ln
Rst Complaint No:	19963097	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	Thomas
Rst Fed Reg Tank:	N	**Des Last Name:**	Lancaster
Rst Case Closed:	902361600000	**Changed by:**	jwcheatham
Rst Name:	Whittaker Mitchell Property	**Changed Date:**	4/9/2007
Rst Release Report:	822873600000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Fac Location:	8392 Briarmont Ln					

13	1 of 1	ESE	0.13 / 688.88	225.38 / -56	Allen Property 11304 Dumfries Rd Manassas VA 20112	LST

PC No:	19973032	**Heat Oil Category:**	
CEDS Fac ID:	200000078072	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	No
Case Closed Date:	9/8/1997	**Small Ht Oil AST2:**	No
Release Reported:	9/6/1996	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Manassas Park City
Partial Defer UST1:	No	**Region:**	NRO

Source: Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000078072	**Fac Addr:**	11304 Dumfries Rd
Rst Complaint No:	19973032	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	James
Rst Fed Reg Tank:	N	**Des Last Name:**	Green
Rst Case Closed:	873676800000	**Changed by:**	jwcheatham
Rst Name:	Allen Property	**Changed Date:**	1/31/2007
Rst Release Report:	841968000000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Manassas Park City	**Verify Date:**	
Reference Point:			
Fac Location:	11304 Dumfries Rd		

14	1 of 2	ESE	0.14 / 727.31	221.51 / -59	FRIES GARAGE 11319 Dumfries Rd Manassas VA 22111	UST

Facility ID:	3004622	**Name:**	FRIES GARAGE
CEDS Facility ID:	200000198789	**Address1:**	11319 Dumfries Rd
Facility Type:	COMMERCIAL	**Address2:**	
Active UST:	0	**City:**	Manassas
Inactive UST:	4	**Zip:**	22111
Active AST:	0	**County:**	Prince William County
Inactive AST:	0	**Region:**	NVRO
Facility Active:	No	**Parent Region:**	Northern
Federally Regulated:	Yes	**State:**	VA
Facility Name (GIS):	FRIES GARAGE		
Facility Addr 1 (GIS):	11319 Dumfries Rd		
Facility Addr 2 (GIS):			
Facility City (GIS):	Manassas		
County Name (GIS):	Prince William		
Facility State (GIS):	VA		
Facility Zip5 (GIS):	22111		
Latitude (GIS):	38.710749585711476		
Longitude (GIS):	-77.45362995157525		
Facility Location (GIS):	11319 Dumfries Rd		

Source: Registered petroleum storage tanks; Registered Tanks Facilities (MapServer)

Tank Details

Tank Owner ID:	28724	**Install Date:**	4/18/1971
Tank No:	R2	**Date Closed:**	1/1/1980

Tank Status:	REM FROM GRD	**Capacity:**	2000
Tank Type:	UST	**Contents:**	DIESEL
Fed Regulated Tank:	Yes	**Other Contents:**	

Tank Materials

Asphalt/Bare Steel:	Yes	**Impressed Current:**	No
CCP/STI-P3:	No	**Polyethyl Jacket:**	No
Composite:	No	**Concrete:**	No
Fiberglass:	No	**Excavation Liner:**	No
Lined Interior:	No	**Secondary Contain:**	No
Double Walled:	No	**Repaired:**	No
Other:	No	**Unknown:**	No
Other Specify:			

Pipe Materials

Piping Type:	UNKNOWN	**Impressed Current:**	
Asphalt/Bare Steel:	No	**Double Walled:**	No
Galvanized Steel:	No	**Polyflexible:**	No
Fiberglass:	No	**Unknown:**	Yes
Copper:	No	**Secondary Contain:**	No
Cathodic Protected:	No	**Other:**	No
Repaired:	No	**Other Specify:**	

Tank/Pipe Release Detection

Manual Gauging:	No	**Overfill Type:**	
Tank RD Tight Test:	No	**Overfill Spec:**	
Inventory Controls:	No	**Pipe RD MTG:**	No
Tank RD ATG:	No	**Pipe RD ATG:**	
Tank RD Vapor Mntr:	No	**Pipe RD GW Monitor:**	No
Tank RD GW Monitor:	No	**Pipe RD Vapor Mntr:**	No
Tnk RD IM Dbl Wall:	No	**Pipe IM Dbl Wall:**	No
Tnk RD IM Sec Cont:	No	**Pipe IM Sec Cont:**	No
Tank RD SIR:	No	**Pipe RD ALLD:**	No
Tank RD Leak Defer:	No	**Pipe RD Tight Test:**	No
Tank RD Other:	No	**Pipe RD SIR:**	No
Tank RD Other Spec:		**Pipe RD Leak Defer:**	
Spl Device Install:	No	**Pipe RD Other:**	No
Overfill Dev Inst:	No	**Pipe RD Other Spec:**	

Tank Details

Tank Owner ID:	28724	**Install Date:**	4/18/1971
Tank No:	R3	**Date Closed:**	1/1/1980
Tank Status:	REM FROM GRD	**Capacity:**	3000
Tank Type:	UST	**Contents:**	DIESEL
Fed Regulated Tank:	Yes	**Other Contents:**	

Tank Materials

Asphalt/Bare Steel:	Yes	**Impressed Current:**	No
CCP/STI-P3:	No	**Polyethyl Jacket:**	No
Composite:	No	**Concrete:**	No
Fiberglass:	No	**Excavation Liner:**	No
Lined Interior:	No	**Secondary Contain:**	No
Double Walled:	No	**Repaired:**	No
Other:	No	**Unknown:**	No
Other Specify:			

Pipe Materials

Piping Type:	UNKNOWN	**Impressed Current:**	
Asphalt/Bare Steel:	No	**Double Walled:**	No
Galvanized Steel:	No	**Polyflexible:**	No
Fiberglass:	No	**Unknown:**	Yes
Copper:	No	**Secondary Contain:**	No
Cathodic Protected:	No	**Other:**	No
Repaired:	No	**Other Specify:**	

Tank/Pipe Release Detection

Manual Gauging:	No	**Overfill Type:**	
Tank RD Tight Test:	No	**Overfill Spec:**	
Inventory Controls:	No	**Pipe RD MTG:**	No
Tank RD ATG:	No	**Pipe RD ATG:**	
Tank RD Vapor Mntr:	No	**Pipe RD GW Monitor:**	No
Tank RD GW Monitor:	No	**Pipe RD Vapor Mntr:**	No
Tnk RD IM Dbl Wall:	No	**Pipe IM Dbl Wall:**	No
Tnk RD IM Sec Cont:	No	**Pipe IM Sec Cont:**	No
Tank RD SIR:	No	**Pipe RD ALLD:**	No
Tank RD Leak Defer:	No	**Pipe RD Tight Test:**	No
Tank RD Other:	No	**Pipe RD SIR:**	No
Tank RD Other Spec:		**Pipe RD Leak Defer:**	
Spl Device Install:	No	**Pipe RD Other:**	No
Overfill Dev Inst:	No	**Pipe RD Other Spec:**	

Tank Details

Tank Owner ID:	28724	**Install Date:**	4/18/1971
Tank No:	R1	**Date Closed:**	1/1/1980
Tank Status:	REM FROM GRD	**Capacity:**	2000
Tank Type:	UST	**Contents:**	DIESEL
Fed Regulated Tank:	Yes	**Other Contents:**	

Tank Materials

Asphalt/Bare Steel:	Yes	**Impressed Current:**	No
CCP/STI-P3:	No	**Polyethyl Jacket:**	No
Composite:	No	**Concrete:**	No
Fiberglass:	No	**Excavation Liner:**	No
Lined Interior:	No	**Secondary Contain:**	No
Double Walled:	No	**Repaired:**	No
Other:	No	**Unknown:**	No
Other Specify:			

Pipe Materials

Piping Type:	UNKNOWN	**Impressed Current:**	
Asphalt/Bare Steel:	No	**Double Walled:**	No
Galvanized Steel:	No	**Polyflexible:**	No
Fiberglass:	No	**Unknown:**	Yes
Copper:	No	**Secondary Contain:**	No
Cathodic Protected:	No	**Other:**	No
Repaired:	No	**Other Specify:**	

Tank/Pipe Release Detection

Manual Gauging:	No	**Overfill Type:**	
Tank RD Tight Test:	No	**Overfill Spec:**	
Inventory Controls:	No	**Pipe RD MTG:**	No
Tank RD ATG:	No	**Pipe RD ATG:**	
Tank RD Vapor Mntr:	No	**Pipe RD GW Monitor:**	No
Tank RD GW Monitor:	No	**Pipe RD Vapor Mntr:**	No

Tnk RD IM Dbl Wall:	No	***Pipe IM Dbl Wall:***	No
Tnk RD IM Sec Cont:	No	***Pipe IM Sec Cont:***	No
Tank RD SIR:	No	***Pipe RD ALLD:***	No
Tank RD Leak Defer:	No	***Pipe RD Tight Test:***	No
Tank RD Other:	No	***Pipe RD SIR:***	No
Tank RD Other Spec:		***Pipe RD Leak Defer:***	
Spl Device Install:	No	***Pipe RD Other:***	No
Overfill Dev Inst:	No	***Pipe RD Other Spec:***	

Tank Details

Tank Owner ID:	28724	***Install Date:***	4/18/1971
Tank No:	R4	***Date Closed:***	1/1/1980
Tank Status:	REM FROM GRD	***Capacity:***	1000
Tank Type:	UST	***Contents:***	USED OIL
Fed Regulated Tank:	Yes	***Other Contents:***	

Tank Materials

Asphalt/Bare Steel:	Yes	***Impressed Current:***	No
CCP/STI-P3:	No	***Polyethyl Jacket:***	No
Composite:	No	***Concrete:***	No
Fiberglass:	No	***Excavation Liner:***	No
Lined Interior:	No	***Secondary Contain:***	No
Double Walled:	No	***Repaired:***	No
Other:	No	***Unknown:***	No
Other Specify:			

Pipe Materials

Piping Type:	UNKNOWN	***Impressed Current:***	
Asphalt/Bare Steel:	No	***Double Walled:***	No
Galvanized Steel:	No	***Polyflexible:***	No
Fiberglass:	No	***Unknown:***	Yes
Copper:	No	***Secondary Contain:***	No
Cathodic Protected:	No	***Other:***	No
Repaired:	No	***Other Specify:***	

Tank/Pipe Release Detection

Manual Gauging:	No	***Overfill Type:***	
Tank RD Tight Test:	No	***Overfill Spec:***	
Inventory Controls:	No	***Pipe RD MTG:***	No
Tank RD ATG:	No	***Pipe RD ATG:***	
Tank RD Vapor Mntr:	No	***Pipe RD GW Monitor:***	No
Tank RD GW Monitor:	No	***Pipe RD Vapor Mntr:***	No
Tnk RD IM Dbl Wall:	No	***Pipe IM Dbl Wall:***	No
Tnk RD IM Sec Cont:	No	***Pipe IM Sec Cont:***	No
Tank RD SIR:	No	***Pipe RD ALLD:***	No
Tank RD Leak Defer:	No	***Pipe RD Tight Test:***	No
Tank RD Other:	No	***Pipe RD SIR:***	No
Tank RD Other Spec:		***Pipe RD Leak Defer:***	
Spl Device Install:	No	***Pipe RD Other:***	No
Overfill Dev Inst:	No	***Pipe RD Other Spec:***	

Owner

Tank Owner ID:	28724	***Owner Address 1:***	11319 DUMFRIES ROAD
No of Active AST:	0	***Owner Address 2:***	
No of Active UST:	0	***Owner City:***	MANASSAS
No of Inactive AST:	0	***Owner State:***	VA
No of Inactive UST:	4	***Owner Zip 5:***	22110
Federal Regulated:	Yes	***Owner Zip 4:***	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Region:	NVRO	**Owner Type:**	COMMERCIAL
Owner Name:	FRIES GARAGE	**Facility Active?:**	No
Name:	FRIES GARAGE		

MapServer Tanks Facilities Detail

Fac ID:	3004622	**Changed By:**	jrmodliszewski
Ceds Fac ID:	200000198789	**Changed Date:**	3/26/2007
Inserted By:		**Verified By:**	
Inserted Date:		**Verify Date:**	
Reference Point:			

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14 | **2 of 2** | **ESE** | **0.14 / 727.31** | **221.51 / -59** | **Fries and Sons Tire Center**
11319 Dumfries Rd
Manassas VA 22111 | **LST**

PC No:	19973099	**Heat Oil Category:**	
CEDS Fac ID:	200000198789	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	No
Case Closed Date:	9/8/1997	**Small Ht Oil AST2:**	No
Release Reported:	11/26/1996	**Regulated AST3:**	No
Fed Regulated UST?:	Yes	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	Yes	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000198789	**Fac Addr:**	11319 Dumfries Rd
Rst Complaint No:	19973099	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	22111
Rst Priority:	3	**Des First Name:**	James
Rst Fed Reg Tank:	Yes	**Des Last Name:**	Green
Rst Case Closed:	873676800000	**Changed by:**	jwcheatham
Rst Name:	Fries and Sons Tire Center	**Changed Date:**	4/9/2007
Rst Release Report:	848966400000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	11319 Dumfries Rd		

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15 | **1 of 1** | **NNW** | **0.34 / 1,798.95** | **263.90 / -17** | **New Dominion Holdings Property**
10613 Dumfries Rd
Manassas VA 20112 | **LST**

PC No:	20063080	**Heat Oil Category:**	
CEDS Fac ID:	200000222290	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	No
Case Closed Date:	7/30/2007	**Small Ht Oil AST2:**	No
Release Reported:	10/5/2005	**Regulated AST3:**	No
Fed Regulated UST?:	Yes	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	Yes	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Rst Fac ID:	200000222290	**Fac Addr:**	10613 Dumfries Rd
Rst Complaint No:	20063080	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	William (Randy)
Rst Fed Reg Tank:	Yes	**Des Last Name:**	Chapman
Rst Case Closed:	1185753600000	**Changed by:**	jrmodliszewski
Rst Name:	New Dominion Holdings Property	**Changed Date:**	2/1/2006
Rst Release Report:	1128470400000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	10613 Dumfries Rd		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
16	1 of 2	ESE	0.22 / 1,164.89	251.08 / -30	LAKE JACKSON VOL FIRE DEPT 11301 Coles Dr Manassas VA 20112	UST

Facility ID:	3000159	**Name:**	LAKE JACKSON VOL FIRE DEPT
CEDS Facility ID:	200000077057	**Address1:**	11301 Coles Dr
Facility Type:	UNKNOWN	**Address2:**	
Active UST:	0	**City:**	Manassas
Inactive UST:	2	**Zip:**	20112
Active AST:	0	**County:**	Prince William County
Inactive AST:	0	**Region:**	NVRO
Facility Active:	No	**Parent Region:**	Northern
Federally Regulated:	Yes	**State:**	VA
Facility Name (GIS):	LAKE JACKSON VOL FIRE DEPT		
Facility Addr 1 (GIS):	11301 Coles Dr		
Facility Addr 2 (GIS):			
Facility City (GIS):	Manassas		
County Name (GIS):	Prince William		
Facility State (GIS):	VA		
Facility Zip5 (GIS):	20112		
Latitude (GIS):	38.70891138081162		
Longitude (GIS):	-77.45389730637349		
Facility Location (GIS):	11301 Coles Dr		
Source:	Registered petroleum storage tanks; Registered Tanks Facilities (MapServer)		

Tank Details

Tank Owner ID:	32459	**Install Date:**	1/20/1980
Tank No:	1	**Date Closed:**	2/1/1995
Tank Status:	REM FROM GRD	**Capacity:**	1000
Tank Type:	UST	**Contents:**	GASOLINE
Fed Regulated Tank:	Yes	**Other Contents:**	

Tank Materials

Asphalt/Bare Steel:	Yes	**Impressed Current:**	No
CCP/STI-P3:	No	**Polyethyl Jacket:**	No
Composite:	No	**Concrete:**	No
Fiberglass:	No	**Excavation Liner:**	No
Lined Interior:	Yes	**Secondary Contain:**	No
Double Walled:	No	**Repaired:**	No
Other:	No	**Unknown:**	No
Other Specify:			

Pipe Materials

Piping Type:	UNKNOWN	**Impressed Current:**	
Asphalt/Bare Steel:	No	**Double Walled:**	No
Galvanized Steel:	Yes	**Polyflexible:**	No

Fiberglass:	No	***Unknown:***	No
Copper:	No	***Secondary Contain:***	No
Cathodic Protected:	No	***Other:***	No
Repaired:	No	***Other Specify:***	

Tank/Pipe Release Detection

Manual Gauging:	No	***Overfill Type:***	
Tank RD Tight Test:	No	***Overfill Spec:***	
Inventory Controls:	No	***Pipe RD MTG:***	No
Tank RD ATG:	No	***Pipe RD ATG:***	
Tank RD Vapor Mntr:	No	***Pipe RD GW Monitor:***	No
Tank RD GW Monitor:	No	***Pipe RD Vapor Mntr:***	No
Tnk RD IM Dbl Wall:	No	***Pipe IM Dbl Wall:***	No
Tnk RD IM Sec Cont:	No	***Pipe IM Sec Cont:***	No
Tank RD SIR:	No	***Pipe RD ALLD:***	No
Tank RD Leak Defer:	No	***Pipe RD Tight Test:***	No
Tank RD Other:	No	***Pipe RD SIR:***	No
Tank RD Other Spec:		***Pipe RD Leak Defer:***	
Spl Device Install:	No	***Pipe RD Other:***	No
Overfill Dev Inst:	No	***Pipe RD Other Spec:***	

Tank Details

Tank Owner ID:	32459	***Install Date:***	1/20/1967
Tank No:	2	***Date Closed:***	2/1/1995
Tank Status:	REM FROM GRD	***Capacity:***	500
Tank Type:	UST	***Contents:***	DIESEL
Fed Regulated Tank:	Yes	***Other Contents:***	

Tank Materials

Asphalt/Bare Steel:	Yes	***Impressed Current:***	No
CCP/STI-P3:	No	***Polyethyl Jacket:***	No
Composite:	No	***Concrete:***	No
Fiberglass:	No	***Excavation Liner:***	No
Lined Interior:	Yes	***Secondary Contain:***	No
Double Walled:	No	***Repaired:***	No
Other:	No	***Unknown:***	No
Other Specify:			

Pipe Materials

Piping Type:	UNKNOWN	***Impressed Current:***	
Asphalt/Bare Steel:	No	***Double Walled:***	No
Galvanized Steel:	Yes	***Polyflexible:***	No
Fiberglass:	No	***Unknown:***	No
Copper:	No	***Secondary Contain:***	No
Cathodic Protected:	No	***Other:***	No
Repaired:	No	***Other Specify:***	

Tank/Pipe Release Detection

Manual Gauging:	No	***Overfill Type:***	
Tank RD Tight Test:	No	***Overfill Spec:***	
Inventory Controls:	No	***Pipe RD MTG:***	No
Tank RD ATG:	No	***Pipe RD ATG:***	
Tank RD Vapor Mntr:	No	***Pipe RD GW Monitor:***	No
Tank RD GW Monitor:	No	***Pipe RD Vapor Mntr:***	No
Tnk RD IM Dbl Wall:	No	***Pipe IM Dbl Wall:***	No
Tnk RD IM Sec Cont:	No	***Pipe IM Sec Cont:***	No
Tank RD SIR:	No	***Pipe RD ALLD:***	No
Tank RD Leak Defer:	No	***Pipe RD Tight Test:***	No

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Tank RD Other:	No	**Pipe RD SIR:**	No
Tank RD Other Spec:		**Pipe RD Leak Defer:**	
Spl Device Install:	No	**Pipe RD Other:**	No
Overfill Dev Inst:	No	**Pipe RD Other Spec:**	

Owner

Tank Owner ID:	32459	**Owner Address 1:**	11301 COLES DR.
No of Active AST:	0	**Owner Address 2:**	PRINCE WILLIAM
No of Active UST:	0	**Owner City:**	MANASSAS
No of Inactive AST:	0	**Owner State:**	VA
No of Inactive UST:	2	**Owner Zip 5:**	22111
Federal Regulated:	Yes	**Owner Zip 4:**	
Region:	NVRO	**Owner Type:**	COMMERCIAL
Owner Name:	LAKE JACKSON VOL FIRE DEPARTMENT	**Facility Active?:**	No
Name:	LAKE JACKSON VOL FIRE DEPT		

MapServer Tanks Facilities Detail

Fac ID:	3000159	**Changed By:**	jrmodliszewski
Ceds Fac ID:	200000077057	**Changed Date:**	3/22/2007
Inserted By:		**Verified By:**	
Inserted Date:		**Verify Date:**	
Reference Point:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
16	2 of 2	ESE	0.22 / 1,164.89	251.08 / -30	Lake Jackson VFD former 11301 Coles Dr Manassas VA 20112	LST

PC No:	19954199	**Heat Oil Category:**	
CEDS Fac ID:	200000077057	**Exmpt1 UST2:**	Yes
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	No
Case Closed Date:	12/13/1996	**Small Ht Oil AST2:**	No
Release Reported:	2/15/1995	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000077057	**Fac Addr:**	11301 Coles Dr
Rst Complaint No:	19954199	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	Thomas
Rst Fed Reg Tank:	N	**Des Last Name:**	Lancaster
Rst Case Closed:	850435200000	**Changed by:**	jwcheatham
Rst Name:	Lake Jackson VFD former	**Changed Date:**	4/16/2007
Rst Release Report:	792806400000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	11301 Coles Dr		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
17	1 of 2	NNW	0.38 / 1,986.18	267.77 / -13	Absolute Plumbing Property 10607 Dumfries Rd Manassas VA 20112	LST

PC No:	20053143	**Heat Oil Category:**	Category 2

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

CEDS Fac ID:	200000218001	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	3/30/2005	**Small Ht Oil AST2:**	No
Release Reported:	11/11/2004	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000218001	**Fac Addr:**	10607 Dumfries Rd
Rst Complaint No:	20053143	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	Jeffrey
Rst Fed Reg Tank:	N	**Des Last Name:**	Modliszewski
Rst Case Closed:	1112140800000	**Changed by:**	jrmodliszewski
Rst Name:	Absolute Plumbing Property	**Changed Date:**	2/1/2006
Rst Release Report:	1100131200000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	10607 Dumfries Rd		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
17	2 of 2	NNW	0.38 / 1,986.18	267.77 / -13	**Absolute Plumbing Limited Liability Corporation** **10607 Dumfries Rd** **Manassas VA 20112**	LST

PC No:	20073229	**Heat Oil Category:**	
CEDS Fac ID:	200000218001	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	No
Case Closed Date:	11/29/2010	**Small Ht Oil AST2:**	No
Release Reported:	5/16/2007	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	Yes
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO
Source:	Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)		

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000218001	**Fac Addr:**	10607 Dumfries Rd
Rst Complaint No:	20073229	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	1	**Des First Name:**	William (Randy)
Rst Fed Reg Tank:	N	**Des Last Name:**	Chapman
Rst Case Closed:	1290988800000	**Changed by:**	wrchapman
Rst Name:	Absolute Plumbing Limited Liability Corporation	**Changed Date:**	6/5/2007
Rst Release Report:	1179273600000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	10607 Dumfries Rd		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
18	1 of 1	ESE	0.31 / 1,625.92	256.35 / -25	Lake Jackson Volunteer Fire Department 11310 Coles Dr Manassas VA 20112	LST

PC No:	20063043	**Heat Oil Category:**	
CEDS Fac ID:	200000222661	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	No
Case Closed Date:	12/12/2005	**Small Ht Oil AST2:**	No
Release Reported:	8/17/2005	**Regulated AST3:**	No
Fed Regulated UST?:	Yes	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	Yes	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO

Source: Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000222661	**Fac Addr:**	11310 Coles Dr
Rst Complaint No:	20063043	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	William (Randy)
Rst Fed Reg Tank:	Yes	**Des Last Name:**	Chapman
Rst Case Closed:	1134345600000	**Changed by:**	wrchapman
Rst Name:	Lake Jackson Volunteer Fire Department	**Changed Date:**	2/24/2006
Rst Release Report:	1124236800000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	
Reference Point:			
Fac Location:	11310 Coles Dr		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
19	1 of 1	W	0.41 / 2,146.78	262.99 / -18	Pitt Elaine Residence 9492 Fostern Ln Manassas VA 20112	LST

PC No:	20013235	**Heat Oil Category:**	Category 2
CEDS Fac ID:	200000201407	**Exmpt1 UST2:**	No
Case Status:	Closed	**Exmpt2 Ht Oil UST2:**	Yes
Case Closed Date:	8/24/2001	**Small Ht Oil AST2:**	No
Release Reported:	3/28/2001	**Regulated AST3:**	No
Fed Regulated UST?:	No	**Unregulated AST3:**	No
Program:	RP Lead	**Other Tank Type?:**	No
Reg Petrol UST1:	No	**Oth Tank Type Desc:**	
Excluded UST1:	No	**Unknown Tank Type?:**	No
Deferred UST1:	No	**County:**	Prince William County
Partial Defer UST1:	No	**Region:**	NRO

Source: Virginia DEQ- Petroleum Database- Petroleum Releases; Petroleum_Releases (DataPortal- MapServer)

Petroleum Releases (DataPortal- MapServer)

Rst Fac ID:	200000201407	**Fac Addr:**	9492 Fostern Ln
Rst Complaint No:	20013235	**Fac City:**	Manassas
Rst Status Ind:	Closed	**Fac State:**	VA
Rst Rec Code:	NVRO	**Fac Zip5:**	20112
Rst Priority:	3	**Des First Name:**	William (Randy)
Rst Fed Reg Tank:	N	**Des Last Name:**	Chapman
Rst Case Closed:	998611200000	**Changed by:**	jwcheatham
Rst Name:	Pitt Elaine Residence	**Changed Date:**	2/1/2007
Rst Release Report:	985737600000	**Inserted by:**	
Rst Responsibility:	RP Lead	**Inserted Date:**	
Rst Suspect Confirm:	Confirmed	**Verified by:**	
Fic Description:	Prince William County	**Verify Date:**	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Reference Point:						
Fac Location:		9492 Fostern Ln				

Unplottable Summary

Total: 10 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
HMIRS		GODWIN DRIVE	MANASSAS VA		818350093
SPILLS	Micron Treatment Pond	Godwin Drive Area	Manassas VA		876310201
		Incident ID* | *Status* | *Closure Date: 13372 | Closed | 3/1/2012			
SPILLS	Gasoline Leak	Dumfries Road	VA		825961035
		Incident ID* | *Status* | *Closure Date: 35014 | Closed | 5/5/2015			
SPILLS	Transmission Fluid Leak Norfolk Southern	Godwin Dr @ Railpost B1.9	Manassas VA		812589939
		Incident ID* | *Status* | *Closure Date: 15063 | Closed | 7/3/2012			
SPILLS	BJ's	Prince William Pkwy	VA		876328312
		Incident ID* | *Status* | *Closure Date: 15816 | Closed | 10/5/2012			
SPILLS	Occoquan River	Prince William Parkway overpass	Manassas VA		876310787
		Incident ID* | *Status* | *Closure Date: 263451 | Closed | 7/1/2004			
SPILLS	DTA Diesel - KCB Trucking*	Monocacy Way	Manassas VA		879623924
		Incident ID* | *Status* | *Closure Date: 292247 | Closed | 9/30/2019			
SPILLS	Brentsville Rd	Brentsville Rd	VA		876301208
		Incident ID* | *Status* | *Closure Date: 262526 | Closed | 5/17/2006			
SPILLS	Banks Auto Parts, Inc	Route 234 Dumfries Rd	Manassas VA		876299786
		Incident ID* | *Status* | *Closure Date: 254963 | Closed | 5/26/2005			
SPILLS	Hydraulic Oil Discharge	CSX, MP CFP 82.38, Prince William,	VA		828916279
		Incident ID* | *Status* | *Closure Date: 43930 | Closed | 1/7/2016			

Unplottable Report

Site:

GODWIN DRIVE MANASSAS VA

HMIRS

Incident County: MANASSAS (CITY)

HMIR Incident Reports

Report No:	I-1998061067	***Fed DOT Agency Nm:***	
Report Type:	A hazardous material incident	***Fed DOT Report No:***	
Date of Incident:	1998-05-15	***Report Submit Src:***	Paper
Time of Incident:	1400	***Inc Multiple Rows:***	No
Haz Class Code:		***Inc Non US State:***	
Hazardous Class:	8	***Mode Transport:***	Highway
Commodity Short Nm:	SULFURIC ACID	***Transport Phase:***	Unloading
Commodity Long Nm:	SULFURIC ACID	***Incident Occrrnce:***	
Trade Name:	SULFURIC ACID	***Mat Ship Approval?:***	No
ID No:	UN1830	***Mat Ship Approv No:***	
Haz Waste Ind:	No	***Undecl Hazmat Ship?:***	No
Haz Waste EPA No:		***Packaging Type:***	Non-Bulk
HMIS Tox Inhalation?:	No	***Packing Group:***	
TIH Hazard Zone:		***Carrier Reporter:***	MARYLAND CHEMICAL COMPANY INC
Qty Released:	0.125	***CR Street Name:***	3310 CHILDS ST
Unit of Measure:	Liquid - Gallon	***CR City:***	BALTIMORE
What Failed:		***CR State:***	MD
What Failed Desc:		***CR Postal Code:***	21226-1016
How Failed Code:		***CR Non US State:***	
How Failed Desc:		***CR Fed DOT ID:***	65205
Failure Cause Code:	526	***CR Hazmat Reg ID:***	
Failure Cause Desc:	Loose Closure, Component, or Device	***CR Country:***	US
Ident. Markings:		***Shipper Name:***	MARYLAND CHEMICAL COMPANY INC
Cont1 Pkging Type:		***Shipper Street Name:***	3310 CHILDS ST
Cont1 Const Mat:		***Shipper City:***	BALTIMORE
Cont1 Head Type:		***Shipper State:***	MD
Cont1 Pkg Capacity:	55	***Shipper Postal:***	21226-1016
C1 Capacity UOM:	LGA	***Shipper Non US St:***	
Cont1 Pkg Amt:	0	***Shipper Country:***	US
C1 Pkg Amt UOM:		***Shipper Waybill:***	59484
Cont1 Pkg No:	4	***Ship Hazmat Reg ID:***	
C1 Pkg NO Failed:	1	***Origin City:***	BALTIMORE
Cont1 Pkg Mnfctr:	RUSSELL-STANLEY CORP	***Origin State:***	MARYLAND
Cont1 Pkg Mnfct Dt:	0-00-00 00:00:00	***Origin Postal:***	21230
Cont1 Pkg Serial NO:		***Origin Non US St:***	
C1 Pkg Last Test Dt:	0-00-00 00:00:00	***Origin Country:***	US
C1 Test Const Mat:		***Destination City:***	MANASSAS
C1 Pkg Dsign Pres.:	0	***Destination State:***	VIRGINIA
C1 Dsign Press UOM:		***Destination Postal:***	20110
C1 Pkg Shell Thick:	0	***Destination Non US:***	
C1 Shell Thick UOM:		***Destination Country:***	US
C1 Head Thickness:	0	***Cont2 Package Type:***	
C1 Head Thick UOM:		***Cont2 Const Mat:***	
C1 Pkg Srvc Pres.:	0	***Cont2 Pkg Capacity:***	0
C1 Srvc Press UOM:		***Cont2 Capacity UOM:***	
C1 Valve/Device Fail?:	No	***Cont2 Pkg Amount:***	0
C1 Device Type:		***Cont2 Pkg Amt UOM:***	
C1 Device Mnfctr:		***Cont2 Pkg No:***	0
C1 Device Model:		***Cont2 Pkg No Failed:***	0
NRC No:			
RAM Pkg Category:		***Haz NonHosp Public:***	0
RAM Pkg Cert.:	FALSE	***Haz NonHosp Old:***	

RAM Pkg Cert. NBR:		***Tot Haz Non Hosp Inj:***	
RAM Nuclide S:		***Total Hazmat Injuries:***	0
RAM Transport Index:		***Evacuation Indicator:***	No
RAM UOM:		***Public Evacuated:***	0
RAM Activity Rpted:	0	***Employees Evac:***	0
RAM UOM Rpted:		***Total Evacuated:***	0
RAM Activity:	0	***Total Evacuation Hrs:***	0
RAM Activity UOM:		***Major Artery Closed:***	No
RAM Mat Safety:		***Mjr Artery Hrs Closed:***	0
Spillage Result:	Yes	***Material Involved:***	No
Fire Result:	No	***Estimated Speed:***	0
Explosion Result:	No	***Weather Conditions:***	
Water Sewer Result:	No	***Vehicle Overturn:***	No
Gas Dispersion:	No	***Vehicle Left Roadway:***	No
Environment Damage:	No	***Passenger Aircraft:***	No
No Release Result:	No	***Cargo Baggage:***	
Fire EMS Report:	No	***Ship Non Transport:***	No
Fire EMS EMS Report:		***Ship Air First Flight:***	No
Police Report:	No	***Ship Air Subflight:***	No
Police Report No:		***Ship Init Transport:***	No
In House Cleanup:	No	***Ship Phase Transfer:***	No
Other Cleanup:	No	***Contact Name:***	JEANETTE G. PARTLOW
Damage > 500:	No	***Contact Title:***	HOUSE COUNSEL
Material Loss:	1	***Contact Business:***	
Carrier Damage:	0	***Contact Street:***	
Property Damage:	0	***Contact City:***	
Response Cost:	0	***Contact State:***	
Remediation Cost:	5	***Contact Postal:***	
Damage Old Form:	0	***Contact Non US St:***	
Total Damages Amt:	6	***Contact Country:***	US
Hazmat Fatality:	No	***Inc. Report Prepared:***	
Haz Fatal Employees:	0	***HMIS Serious Incidnt:***	No
Haz Fatal Respndrs:	0	***HMIS Serious Fatality:***	No
Haz Fatal Gen Public:	0	***HMIS Serious Injury:***	No
Tot Hazmat Fatalities:	0	***HMIS Flight Plan:***	No
Non Hazmat Fatality:	No	***HMIS Serious Evacs:***	No
Non Hazmat Fatals:	0	***HMIS Major Artery:***	No
Hazmat Injury:	No	***HMIS Bulk Release:***	No
Haz Hospital Empl:	0	***HMIS Marine Pollutnt:***	No
Haz Hospital Resp:	0	***HMIS Radioactive:***	No
Haz Hosp Gen Public:	0	***HMIS Gen Pkg Type:***	DRUM NON-METAL
Haz Hosp Old Form:	0	***HMIS Container Code:***	1H1
Total Haz Hosp Inj:	0	***HMIS Container Desc:***	Non-removable head plastic drum
Haz Non Hosp Empl:	0	***HMIS Bulk Incident:***	No
Haz Non Hosp Resp:	0	***Undeclared Shipment:***	No

Description of Events: DRIVER NOTICED LEAK FROM BUNG WHILE TILTING DRUM BACK ONTO DRUM TRUCK. DRIVER RIGHTED DRUM AND CHECKED AND TIGHTENED ALL BUNGS ON EACH DRUM. CUSTOMER CLEANED UP SPILLED ACID. DRIVER COMPLETED DELIVERY.

Recommend Actions Taken:

Site: ***Micron Treatment Pond***
Godwin Drive Area Manassas VA

SPILLS

Legacy IR No:		***PRP Name:***	
Incident ID:	13372	***Impacts:***	
Status:	Closed	***Other Impacts:***	
Incident Type:	Air(Air), Odor(Air)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:		***Wet Weather Event:***	No
Call Recvd Dte Time:	02/15/2012 12:14	***Precipitation Inch:***	0
Closure Date:	3/1/2012	***Discharge Type:***	
EPA ID:		***Discharge Vol Gallon:***	0
SSORS ID:		***Discharge Treated:***	
HMVA No:		***Unkwn Discharge?:***	
NRC ID:		***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	
Other Agencies:		***Property Owner:***	

Threat to:		***Prprty Ownr Orgnztn:***	
Terrorism?:		***Event Duration Hrs:***	0
Charactriz Incdnt:	Unknown	***Water Body:***	
Quantity Units:		***Region:***	Northern
Other Receptors:		***FIPS City County:***	683/Manassas City
PRP Organization:			
Low Quantity to Water:			
High Quantity to Water:			
Incdnt Ongoing at time of Call:	Yes		
Call Reported Anonymous:			
Call PRP Unknown?:			
Call Property Owner Unknown?:			
Call Reprtd by Name:	Martha Aveni		
Call Reported by Organization:			
Call PRP Organization:			
Call PRP Name:			
Call Prprty Ownr Organization:			
Call Prpty Owner Name:			
Received By:	Mark Miller		
Steps taken Desc:			
Materials:			
Corrective Action Taken:			
Incident Summary:	Caller stated Micron treatment pond is emitting hydrogen sulfide like odors. Odors are strong today. Issue w/ odors from the pond have been going on for an extenddded period of time. Odors have been detectable in the area since last week. Odors have been periodic over this time frame.		
Original Call Incident Desc:	Caller stated Micron treatment pond is emitting hydrogen sulfide like odors. Odors are strong today. Issue w/ odors from the pond have been going on for an extenddded period of time. Odors have been detectable in the area since last week. Odors have been periodic over this time frame.		
Originial Call Loc Desc:	Micron Treatment Pond. Godwin Dr area		
Cause of Event:			
Closure Reason Comments:	NFA at this time. City was addressing odor issue.		
Original Call Material Desc:	hydrogen sulfide odors		
Incident Address 1:	Godwin Drive Area		
Incident Address 2:			
Incident Name:	Micron Treatment Pond		

Site: ***Gasoline Leak***
Dumfries Road ***VA***

SPILLS

Legacy IR No:	2015-N-2609	***PRP Name:***	
Incident ID:	35014	***Impacts:***	
Status:	Closed	***Other Impacts:***	
Incident Type:	Petroleum(Petroleum), Surface Spill (Petroleum)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:	05/02/2015 11:56	***Wet Weather Event:***	No
Call Recvd Dte Time:	05/05/2015 09:58	***Precipitation Inch:***	0
Closure Date:	5/5/2015	***Discharge Type:***	
EPA ID:		***Discharge Vol Gallon:***	0
SSORS ID:		***Discharge Treated:***	
HMVA No:		***Unkwn Discharge?:***	
NRC ID:		***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	
Other Agencies:		***Property Owner:***	
Threat to:		***Prprty Ownr Orgnztn:***	
Terrorism?:		***Event Duration Hrs:***	0
Charactriz Incdnt:	Unknown	***Water Body:***	
Quantity Units:		***Region:***	Northern
Other Receptors:		***FIPS City County:***	153/Prince William County
PRP Organization:			
Low Quantity to Water:			
High Quantity to Water:			
Incdnt Ongoing at time of Call:	No		
Call Reported Anonymous:			
Call PRP Unknown?:			

Call Property Owner Unknown?:	
Call Reprtd by Name:	Bob Kieb
Call Reported by Organization:	
Call PRP Organization:	
Call PRP Name:	
Call Prprty Ownr Organization:	
Call Prpty Owner Name:	
Received By:	Shirley Tirch
Steps taken Desc:	
Materials:	Gasoline
Corrective Action Taken:	
Incident Summary:	MVA Gasoline leaked from car when it was pulled on to rollback; cleanup complete.
Original Call Incident Desc:	MVA Gasoline leaked from car when it was pulled on to rollback; cleanup complete.
Originial Call Loc Desc:	Highway, Dumfries Road
Cause of Event:	
Closure Reason Comments:	Cleanup completed.
Original Call Material Desc:	Gasoline
Incident Address 1:	Dumfries Road
Incident Address 2:	
Incident Name:	Gasoline Leak

Site: ***Transmission Fluid Leak Norfolk Southern***
Godwin Dr @ Railpost B1.9 Manassas VA

SPILLS

Legacy IR No:	2013-N-0028	***PRP Name:***	
Incident ID:	15063	***Impacts:***	
Status:	Closed	***Other Impacts:***	
Incident Type:	Petroleum(Petroleum), Surface Spill (Petroleum)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:	07/02/2012 09:30	***Wet Weather Event:***	No
Call Recvd Dte Time:	07/03/2012 04:30	***Precipitation Inch:***	0
Closure Date:	7/3/2012	***Discharge Type:***	
EPA ID:		***Discharge Vol Gallon:***	0
SSORS ID:		***Discharge Treated:***	
HMVA No:		***Unkwn Discharge?:***	
NRC ID:		***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	
Other Agencies:		***Property Owner:***	
Threat to:		***Prprty Ownr Orgnztn:***	
Terrorism?:		***Event Duration Hrs:***	0
Charactriz Incdnt:	Unknown	***Water Body:***	
Quantity Units:		***Region:***	Northern
Other Receptors:		***FIPS City County:***	683/Manassas City
PRP Organization:			
Low Quantity to Water:			
High Quantity to Water:			

Incdnt Ongoing at time of Call:	No
Call Reported Anonymous:	
Call PRP Unknown?:	
Call Property Owner Unknown?:	
Call Reprtd by Name:	Ravi
Call Reported by Organization:	Norfolk Southern
Call PRP Organization:	Norfolk Southern
Call PRP Name:	
Call Prprty Ownr Organization:	
Call Prpty Owner Name:	
Received By:	Shirley Tirch
Steps taken Desc:	
Materials:	
Corrective Action Taken:	
Incident Summary:	Norfolk Southern reported a leak of transmission fluid, approx 5 gal due to malfunction of a Lead Tamper. Local FD applied absorbent; Norfolk Southern Environmental will conduct futher clean up.
Original Call Incident Desc:	Norfolk Southern reported a leak of transmission fluid, approx 5 gal due to malfunction of a Lead Tamper. Local FD

applied absorbent; Norfolk Southern Environmental will conduct futher clean up.

Originial Call Loc Desc:	Godwin Drive @ Railpost B1.9, Manassas
Cause of Event:	
Closure Reason Comments:	Notification Only
Original Call Material Desc:	Transmission Fluid
Incident Address 1:	Godwin Dr @ Railpost B1.9
Incident Address 2:	
Incident Name:	Transmission Fluid Leak Norfolk Southern

Site: ***BJ's***
Prince William Pkwy VA

SPILLS

Legacy IR No:		***PRP Name:***	
Incident ID:	15816	***Impacts:***	
Status:	Closed	***Other Impacts:***	
Incident Type:	Air(Air), Odor(Air)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:	09/05/2012 11:33	***Wet Weather Event:***	No
Call Recvd Dte Time:	09/08/2012 01:35	***Precipitation Inch:***	0
Closure Date:	10/5/2012	***Discharge Type:***	
EPA ID:		***Discharge Vol Gallon:***	0
SSORS ID:		***Discharge Treated:***	
HMVA No:		***Unkwn Discharge?:***	
NRC ID:		***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	
Other Agencies:		***Property Owner:***	
Threat to:		***Prprty Ownr Orgnztn:***	
Terrorism?:		***Event Duration Hrs:***	0
Charactriz Incdnt:	Unknown	***Water Body:***	
Quantity Units:		***Region:***	Northern
Other Receptors:		***FIPS City County:***	153/Prince William County
PRP Organization:			
Low Quantity to Water:			
High Quantity to Water:			

Incdnt Ongoing at time of Call:	No
Call Reported Anonymous:	
Call PRP Unknown?:	
Call Property Owner Unknown?:	
Call Reprtd by Name:	ANONYMOUS ANONYMOUS
Call Reported by Organization:	
Call PRP Organization:	
Call PRP Name:	
Call Prprty Ownr Organization:	
Call Prpty Owner Name:	
Received By:	Public Website
Steps taken Desc:	
Materials:	
Corrective Action Taken:	
Incident Summary:	Smelled like sewage mixed with vomit around some machines at location.
Original Call Incident Desc:	Smelled like sewage mixed with vomit around some machines at location.
Originial Call Loc Desc:	At the Woodbridge BJs gas enterance, side closest to post office.
Cause of Event:	
Closure Reason Comments:	NFA
Original Call Material Desc:	
Incident Address 1:	Prince William Pkwy
Incident Address 2:	
Incident Name:	BJ's

Site: ***Occoquan River***
Prince William Parkway overpass Manassas VA

SPILLS

Legacy IR No:	2004-N-1090	***PRP Name:***	
Incident ID:	263451	***Impacts:***	

Status:	Closed	***Other Impacts:***	
Incident Type:	Solid Waste(Waste)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:	06/29/2004 12:00	***Wet Weather Event:***	No
Call Recvd Dte Time:	06/30/2004 12:00	***Precipitation Inch:***	
Closure Date:	7/1/2004	***Discharge Type:***	
EPA ID:		***Discharge Vol Gallon:***	
SSORS ID:		***Discharge Treated:***	
HMVA No:		***Unkwn Discharge?:***	
NRC ID:		***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	
Other Agencies:		***Property Owner:***	
Threat to:		***Prprty Ownr Orgnztn:***	
Terrorism?:		***Event Duration Hrs:***	
Charactriz Incdnt:		***Water Body:***	Occoquan River
Quantity Units:	Drum	***Region:***	Northern
Other Receptors:		***FIPS City County:***	153/Prince William County
PRP Organization:			
Low Quantity to Water:	-1		
High Quantity to Water:	-1		
Incdnt Ongoing at time of Call:	No		
Call Reported Anonymous:			
Call PRP Unknown?:			
Call Property Owner Unknown?:			
Call Reprtd by Name:			
Call Reported by Organization:	David Mallory		
Call PRP Organization:			
Call PRP Name:			
Call Prprty Ownr Organization:			
Call Prpty Owner Name:			
Received By:			
Steps taken Desc:			
Materials:	Chemicals (Not Otherwise Specified)		
Corrective Action Taken:			
Incident Summary:			
Original Call Incident Desc:	discovered 55-gal drum floating in river, recovered and citizen called FCWA who arranged for removal		
Original Call Loc Desc:	Occoquan River-Prince William Parkway overpass-Manassas-VA--Prince William County		
Cause of Event:			
Closure Reason Comments:	See Site Comments for details		
Original Call Material Desc:	teat guard 50 (Qty=1)		
Incident Address 1:	Prince William Parkway overpass		
Incident Address 2:			
Incident Name:	Occoquan River		

Site: ***DTA Diesel - KCB Trucking****
Monocacy Way Manassas VA

SPILLS

Legacy IR No:		***PRP Name:***	
Incident ID:	292247	***Impacts:***	
Status:	Closed	***Other Impacts:***	
Incident Type:	Surface Spill(Petroleum)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:	09/25/2019 01:17	***Wet Weather Event:***	No
Call Recvd Dte Time:	09/25/2019 07:33	***Precipitation Inch:***	
Closure Date:	9/30/2019	***Discharge Type:***	
EPA ID:	N/A	***Discharge Vol Gallon:***	
SSORS ID:	N/A	***Discharge Treated:***	
HMVA No:	N/A	***Unkwn Discharge?:***	
NRC ID:	N/A	***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	N/A
Other Agencies:	Local Fire/EMS, VA Department of Emergecy Management (VDEM)	***Property Owner:***	

Threat to:
Terrorism?:
Charactriz Incdnt: Accidental
Quantity Units:
Other Receptors: spill did not reach surface water
PRP Organization:
Low Quantity to Water:
High Quantity to Water:
Incdnt Ongoing at time of Call: No
Call Reported Anonymous:
Call PRP Unknown?: UNKNOWN
Call Property Owner Unknown?:
Call Reprtd by Name:
Call Reported by Organization: Prince William Co Fire and Rescue
Call PRP Organization:
Call PRP Name:
Call Prprty Ownr Organization: VDOT
Call Prpty Owner Name:
Received By: Alan Lacy
Steps taken Desc:
Materials: Diesel, Engine Oil
Corrective Action Taken:
Incident Summary: PRINCE WILLIAM FIRE AND RESCUE RESPONDED TO AN OVERTURNED DUMP TRUCK WHICH LEAKED 25-30 GALS OF DIESEL FUEL AND 3 GALS OF ENGINE OIL...ALL CONTAINED IN SOIL, AREA 14 BY 28 FEET...TOW COMPANY - REDMAN OWNED BY ATLAS, WAS CONDUCTING CLEANUP...NO WATERWAYS AFFECTED.
Original Call Incident Desc: SAU Officer: Stacy McKinley State Mission Number: HMVA- 38038
Hazard Class: Class 3 - Flammable Liquid Mode Facility: 09 Misc. Highway
Jurisdiction: Prince William Co Facility Name/Incident Location: PRINCE WILLIAM PKWY / MONOCACY WAY, PRINCE WILLIAM, VA 20110
Incident Address: PRINCE WILLIAM PKWY / MONOCACY WAY, PRINCE WILLIAM, VA 20110 Origin: Local Jurisdiction
Incident Lat/Long: 38.7515193420004 / -77.4772168139996 Callback Number: 703-792-5006
VDEM Region: 7 OIC On Scene:
(old hazard area):
Caller Name: LT NICKEL W/ PRINCE WILLIAM FIRE AND RESCUE Incident Date: 09/25/2019
Contact Name: LT NICKEL W/ PRINCE WILLIAM FIRE AND RESCUE Incident Time: 1317HRS

Details: PRINCE WILLIAM FIRE AND RESCUE RESPONDED TO AN OVERTURNED DUMP TRUCK WHICH LEAKED 25-30 GALS OF DIESEL FUEL AND 3 GALS OF ENGINE OIL...ALL CONTAINED IN SOIL, AREA 14 BY 28 FEET...TOW COMPANY - REDMAN OWNED BY ATLAS, WAS CONDUCTING SOME CLEANUP...NO WATERWAYS AFFECTED.
Products Involved: DIESEL FUEL / ENGINE OIL Quantity Lost: 25-30 - Gallons
UN #: EHS:
Water Affected: No Which Water?
Fish Kill: DEQ Notified?: No
DEQ Office/Email: NRO DEQ On Scene:

Container Type: Vehicle Fluids Other (Specify): DUMP TRUCK
Evacuation?: Distance:
Injuries: How Many?:
RHMO 1: Higginbotham Actions: Notification Only
Originial Call Loc Desc: public highway intersection
Cause of Event:
Closure Reason Comments: Appropriate compliance actions completed and verified by DEQ Prince William Co Fire Dept conducted investigation and issued LEPC brochure (RCA)
KCB Trucking was compliant and hired Redmans Towing/Atlas Environmental for spill cleanup
Spill did not reach surface water
Original Call Material Desc:
Incident Address 1: Monocacy Way
Incident Address 2:
Incident Name: DTA Diesel - KCB Trucking*

Site: ***Brentsville Rd***
Brentsville Rd VA

SPILLS

Legacy IR No: 2006-N-0907
Incident ID: 262526
Status: Closed
PRP Name:
Impacts:
Other Impacts:

Incident Type:	Petroleum(Petroleum)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:	05/15/2006 12:00	***Wet Weather Event:***	No
Call Recvd Dte Time:	05/15/2006 12:00	***Precipitation Inch:***	
Closure Date:	5/17/2006	***Discharge Type:***	
EPA ID:		***Discharge Vol Gallon:***	
SSORS ID:		***Discharge Treated:***	
HMVA No:		***Unkwn Discharge?:***	
NRC ID:		***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	
Other Agencies:		***Property Owner:***	
Threat to:		***Prprty Ownr Orgnztn:***	
Terrorism?:		***Event Duration Hrs:***	
Charactriz Incdnt:		***Water Body:***	
Quantity Units:		***Region:***	Northern
Other Receptors:		***FIPS City County:***	153/Prince William County
PRP Organization:			
Low Quantity to Water:			
High Quantity to Water:			
Incdnt Ongoing at time of Call:	No		
Call Reported Anonymous:			
Call PRP Unknown?:			
Call Property Owner Unknown?:			
Call Reprtd by Name:			
Call Reported by Organization:	Gene Barrett		
Call PRP Organization:			
Call PRP Name:			
Call Prprty Ownr Organization:			
Call Prpty Owner Name:			
Received By:			
Steps taken Desc:			
Materials:			
Corrective Action Taken:			
Incident Summary:			
Original Call Incident Desc:	Suspect truck responsible for puddles; stains observed on Brentsville Rd. Did not observe truck, only followed trail.		
Originial Call Loc Desc:	Brentsville Rd-Brentsville Rd--VA--Prince William County		
Cause of Event:			
Closure Reason Comments:	See Site Comments for details		
Original Call Material Desc:			
Incident Address 1:	Brentsville Rd		
Incident Address 2:			
Incident Name:	Brentsville Rd		

Site: ***Banks Auto Parts, Inc***
Route 234 Dumfries Rd Manassas VA

SPILLS

Legacy IR No:	2000-N-0769	***PRP Name:***	
Incident ID:	254963	***Impacts:***	
Status:	Closed	***Other Impacts:***	
Incident Type:	Solid Waste(Waste)	***Steps Taken:***	
Incident Subtype:		***System Structure:***	
Effect to Receptor:		***Othr Sys Structure:***	
Associated IR:		***Weather Status:***	
Incident Dte Time:	05/20/2000 12:00	***Wet Weather Event:***	No
Call Recvd Dte Time:	05/23/2000 12:00	***Precipitation Inch:***	
Closure Date:	5/26/2005	***Discharge Type:***	
EPA ID:		***Discharge Vol Gallon:***	
SSORS ID:		***Discharge Treated:***	
HMVA No:		***Unkwn Discharge?:***	
NRC ID:		***Sewage Related?:***	No
Programs:		***Permitted?:***	No
Agencies Notified?:		***Facility Name:***	
Other Agencies:		***Property Owner:***	
Threat to:		***Prprty Ownr Orgnztn:***	
Terrorism?:		***Event Duration Hrs:***	

Charactriz Incdnt:
Quantity Units:
Other Receptors:
PRP Organization: Banks Auto Parts
Low Quantity to Water:
High Quantity to Water:
Incdnt Ongoing at time of Call: No
Call Reported Anonymous:
Call PRP Unknown?:
Call Property Owner Unknown?:
Call Reprtd by Name:
Call Reported by Organization: Mrs Hargett
Call PRP Organization: Banks Auto Parts
Call PRP Name:
Call Prprty Ownr Organization:
Call Prpty Owner Name:
Received By:
Steps taken Desc:
Materials:
Corrective Action Taken:
Incident Summary:
Original Call Incident Desc: On Saturdagy (5/20/00) Mrs. Hargett went to the junk ygards along route 234 to find a vehicle part. While at banks she observed an individual pouring antifreeze, oil and fuel on the ground. She is concerned that the activities at these junk gyards are going to contaminate her well water
Originial Call Loc Desc: Banks Auto Parts, Inc-Route 234 Dumfries Rd-Manassas-VA--Prince William County
Cause of Event:
Closure Reason Comments: See Site Comments for details
Original Call Material Desc: (Qty=0)
Incident Address 1: Route 234 Dumfries Rd
Incident Address 2:
Incident Name: Banks Auto Parts, Inc

Water Body:
Region: Northern
FIPS City County: 153/Prince William County

Site: ***Hydraulic Oil Discharge***
CSX, MP CFP 82.38, Prince William, VA

SPILLS

Legacy IR No: 2016-N-0702
Incident ID: 43930
Status: Closed
Incident Type: Petroleum(Petroleum), Surface Spill (Petroleum)
Incident Subtype:
Effect to Receptor:
Associated IR:
Incident Dte Time: 09/03/2015 04:36
Call Recvd Dte Time: 09/08/2015 03:15
Closure Date: 1/7/2016
EPA ID:
SSORS ID:
HMVA No:
NRC ID:
Programs:
Agencies Notified?:
Other Agencies:
Threat to:
Terrorism?:
Charactriz Incdnt: Unknown
Quantity Units:
Other Receptors:
PRP Organization:
Low Quantity to Water:
High Quantity to Water:
Incdnt Ongoing at time of Call: No
Call Reported Anonymous:
Call PRP Unknown?:
Call Property Owner Unknown?:
Call Reprtd by Name: Myrtie Hackney
Call Reported by Organization: CSX Railroad

PRP Name:
Impacts:
Other Impacts:
Steps Taken:
System Structure:
Othr Sys Structure:
Weather Status:
Wet Weather Event: No
Precipitation Inch: 0
Discharge Type:
Discharge Vol Gallon: 0
Discharge Treated:
Unkwn Discharge?:
Sewage Related?: No
Permitted?: No
Facility Name:
Property Owner:
Prprty Ownr Orgnztn:
Event Duration Hrs: 0
Water Body:
Region: Northern
FIPS City County: 153/Prince William County

Call PRP Organization:	K C Constructors
Call PRP Name:	Matt Hemsath
Call Prprty Ownr Organization:	
Call Prpty Owner Name:	
Received By:	Shirley Tirch
Steps taken Desc:	
Materials:	Hydraulic oil
Corrective Action Taken:	
Incident Summary:	Caller reported a discharge of Hydraulic Oil from a Power Pack on a crane due to unknown causes. Remedial actions included collecting soil & removing it from the site. No waterways were affected & no request for assistance.
Original Call Incident Desc:	Caller reported a discharge of Hydraulic Oil from a Power Pack on a crane due to unknown causes. Remedial actions included collecting soil & removing it from the site. No waterways were affected & no request for assistance.
Originial Call Loc Desc:	RFP; MP CFP 82.38, Prince William, VA
Cause of Event:	
Closure Reason Comments:	NFA
Original Call Material Desc:	Hydraulic Oil
Incident Address 1:	CSX, MP CFP 82.38, Prince William,
Incident Address 2:	
Incident Name:	Hydraulic Oil Discharge

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List: NPL

National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.

Government Publication Date: Apr 27, 2020

National Priority List - Proposed: PROPOSED NPL

Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

Government Publication Date: Apr 27, 2020

Deleted NPL: DELETED NPL

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Government Publication Date: Apr 27, 2020

SEMS List 8R Active Site Inventory: SEMS

The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.

Government Publication Date: Jan 30, 2020

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

SEMS List 8R Archive Sites: SEMS ARCHIVE

The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.

Government Publication Date: Jan 30, 2020

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Feb 10, 2020

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Feb 10, 2020

RCRA Generator List: RCRA LQG

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Feb 10, 2020

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Feb 10, 2020

RCRA Conditionally Exempt and Very Small Quantity Generators List: RCRA CESQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Conditionally Exempt and Very Small Quantity Generators (VSQG and CESQG) generate 100 kilograms or less per month of hazardous waste, or one kilogram or less per month of acutely hazardous waste. Additionally, VSQG and CESQG may not accumulate more than 1,000 kilograms of hazardous waste at any time.

Government Publication Date: Feb 10, 2020

RCRA Non-Generators: RCRA NON GEN

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Feb 10, 2020

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Feb 26, 2020

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Feb 26, 2020

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Nov 25, 2019

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Sep 3, 2019

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

Petroleum Refineries: REFN

List of petroleum refineries from the U.S. Energy Information Administration (EIA) Refinery Capacity Report. Includes operating and idle petroleum refineries (including new refineries under construction) and refineries shut down during the previous year located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and other U.S. possessions. Survey locations adjusted using public data.

Government Publication Date: Oct 8, 2019

Petroleum Product and Crude Oil Rail Terminals: BULK TERMINAL

List of petroleum product and crude oil rail terminals made available by the U.S. Energy Information Administration (EIA). Includes operable bulk petroleum product terminals located in the 50 States and the District of Columbia with a total bulk shell storage capacity of 50,000 barrels or more, and/or the ability to receive volumes from tanker, barge, or pipeline; also rail terminals handling the loading and unloading of crude oil that were active between 2017 and 2018. Petroleum product terminals comes from the EIA-815 Bulk Terminal and Blender Report, which includes working, shell in operation, and shell idle for several major product groupings. Survey locations adjusted using public data.

Government Publication Date: Jan 13, 2020

LIEN on Property: SEMS LIEN

The EPA Superfund Enterprise Management System (SEMS) provides LIEN information on properties under the EPA Superfund Program.

Government Publication Date: Jan 30, 2020

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Apr 27, 2020

State

Solid Waste Landfills: SWF/LF

The solid waste program in the Department of Environmental Quality (DEQ) is designed to encourage the reuse and recycling of solid waste and to regulate the disposal and treatment of solid waste, including regulated medical waste, and to ensure that hazardous waste is properly managed. Standards are designed to protect human health and the environment and driven by regulatory requirements.

Government Publication Date: Jan 2, 2020

Leaking Petroleum Storage Tanks: LST

When a release occurs from an aboveground or underground storage tank, the owner and/or operator of the tank is required to report the release to the Department of Environmental Quality (DEQ). This database contains a listing of releases from tanks both above and underground.

Government Publication Date: Apr 6, 2020

Delisted Leaking Petroleum Storage Tanks: DELISTED LST

Facilities which have been removed from the list of leaking petroleum storage tanks made available by the Virginia Department of Environmental Quality (DEQ). Facilities may be removed from the lists of leaking petroleum tanks when it is determined that the release reported is not an actual release, or the released substance is not petroleum - these sites may still have endured non-petroleum hazardous substance releases.

Government Publication Date: Apr 6, 2020

Underground Storage Tanks: UST

A listing of registered underground storage tanks. This list is maintained by The Department of Environmental Quality (DEQ).

Government Publication Date: Apr 6, 2020

Aboveground Storage Tanks: AST

A listing of registered aboveground storage tanks. This list is maintained by The Department of Environmental Quality (DEQ).

Government Publication Date: Apr 6, 2020

Delisted Tanks: DELISTED TANK

Facilities which have been removed from the list of registered aboveground and/or underground storage tanks made available by the Virginia Department of Environmental Quality (DEQ). Facilities may be removed from the lists of registered tanks when it is determined that the tank does not require registration, for example, due to capacity or contents.

Government Publication Date: Apr 6, 2020

Institutional Controls: INST

Institutional controls are legal or contractual restrictions on property use that remain effective after remediation is completed and are used to satisfy remediation levels. This list is maintained by the Department of Environmental Quality (DEQ).

Government Publication Date: Apr 15, 2020

Voluntary Remediation Program: VRP

The Voluntary Remediation Program is to encourage hazardous substance cleanups that might not otherwise take place. The program is a streamlined mechanism for site owners or operators to voluntarily address contamination at sites with concurrence from the Department of Environmental Quality (DEQ).

Government Publication Date: Apr 15, 2020

Brownfields Site Specific Assessments: BROWNFIELDS

Brownfields are idled, underutilized, or abandoned industrial or commercial properties where expansion or redevelopment is complicated by real or perceived environmental contamination. Examples include factories, railyards, landfills, dry cleaners, etc. This list is maintained by the Department of Environmental Quality (DEQ).

Government Publication Date: Mar 6, 2020

Tribal

Leaking Underground Storage Tanks (LUSTs) on Tribal/Indian Lands: INDIAN LUST

Leaking Underground Storage Tanks (LUSTs) on Tribal/Indian Lands in EPA Region 3, which includes Virginia. There are no LUST records in Virginia at this time.

Government Publication Date: Apr 12, 2019

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

Listing of Underground Storage Tanks (USTs) on Tribal/Indian Lands in EPA Region 3, which includes Virginia. There are no UST records in Virginia at this time.

Government Publication Date: May 4, 2018

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Leaking Underground Storage Tank facilities which have been removed from the Regional Tribal LUST lists made available by the EPA.

Government Publication Date: Oct 10, 2019

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Oct 10, 2019

County

No County standard environmental record sources available for this State.

Additional Environmental Record Sources

Federal

PFOA/PFOS Contaminated Sites: PFAS NPL

List of sites where PFOA or PFOS contaminants have been found in drinking water or soil. Made available by the Federal Environmental Protection Agency (EPA).

Government Publication Date: Mar 2, 2020

Facility Registry Service/Facility Index: FINDS/FRS

The US Environmental Protection Agency (EPA)'s Facility Registry System (FRS) is a centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, data collected from EPA's Central Data Exchange registrations and data management personnel.

Government Publication Date: Mar 25, 2020

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U. S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Feb 19, 2020

Perfluorinated Alkyl Substances (PFAS) Releases: PFAS TRI

List of Toxics Release Inventory (TRI) facilities at which the reported chemical is a Per- or polyfluorinated alkyl substance (PFAS) included in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances. The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment.

Government Publication Date: Feb 19, 2020

Perfluorinated Alkyl Substances (PFAS) Water Contamination: PFAS WATER

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the National Water Quality Monitoring Council (NWQMC). This listing includes records from the Water Quality Portal where the characteristic (environmental measurement) is in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances.

Government Publication Date: Dec 20, 2019

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: Jan 8, 2020

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.

Government Publication Date: Mar 19, 2020

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Jun 30, 2017

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.

Government Publication Date: Mar 25, 2020

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.

Government Publication Date: Nov 18, 2016

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: May 29, 2018

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: May 29, 2018

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DoD) is responsible for an environmental restoration. This list is published by the U.S. Army Corps of Engineers.

Government Publication Date: Jan 28, 2020

PHMSA Pipeline Safety Flagged Incidents: PIPELINE INCIDENT

A list of flagged pipeline incidents made available by the U.S. Department of Transportation (US DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA regulations require incident and accident reports for five different pipeline system types.

Government Publication Date: Oct 31, 2019

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: Nov 1, 2018

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) contains mine identification numbers issued by the Department of Labor Mine Safety and Health Administration (MSHA) for mines active or opened since 1971. Note that addresses may or may not correspond with the physical location of the mine itself.

Government Publication Date: Nov 6, 2019

Alternative Fueling Stations: ALT FUELS

List of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE). The National Renewable Energy Laboratory (NREL) obtains information about new stations from trade media, Clean Cities coordinators, a Submit New Station form on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.

Government Publication Date: Mar 30, 2020

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: May 31, 2019

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Oct 9, 2019

State

Spills: SPILLS

The Department of Environmental Quality (DEQ) Pollution Response Program (PREP), provides for responses to air, water and waste pollution incidents in order to protect human health and the environment. PREP staff often work to assist local emergency responders, other state agencies, federal agencies, and responsible parties, as may be needed, to manage pollution incidents. Oil spills, fish kills, and hazardous materials spills are examples of incidents that may involve the DEQ's PREP Program.

Government Publication Date: Apr 1, 2020

Pollution Complaint: PC SPILLS

The database contains a listing of Pollution Complaints from 1986 to 1994 that include petroleum releases and other releases on state land and waters. This list is maintained by the Department of Environmental Quality (DEQ).

Government Publication Date: 1986-1994

Dry Cleaning Facilities: DRYCLEANERS

A listing of registered drycleaners maintained by the Department of Environmental Quality.

Government Publication Date: Apr 16, 2020

Tribal

No Tribal additional environmental record sources available for this State.

County

No County additional environmental record sources available for this State.

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

APPENDIX C: Historic Research Documentation

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

HISTORICAL AERIALS

Project Property:	Brentsville Road/Prince William Parkway Interchange Brentsville Road/Prince William Parkway Manassas VA
Requested By:	Cardno Inc.
Order No:	20200608199
Data Completed:	June 23,2020

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Date	Source	Source Scale	Comments
2018	National Agriculture Information Program	1" to 800'	
2016	National Agriculture Information Program	1" to 800'	
2014	National Agriculture Information Program	1" to 800'	
2012	National Agriculture Information Program	1" to 800'	
2011	National Agriculture Information Program	1" to 800'	
2009	National Agriculture Information Program	1" to 800'	
2008	National Agriculture Information Program	1" to 800'	
2006	National Agriculture Information Program	1" to 800'	
2005	National Agriculture Information Program	1" to 800'	
2003	National Agriculture Information Program	1" to 800'	
1994	US Geological Survey	1" to 800'	
1981	National High Altitude Photography	1" to 800'	
1971	US Geological Survey	1" to 800'	
1963	US Geological Survey	1" to 800'	
1952	US Geological Survey	1" to 800'	
1937	Agriculture and Soil Conservation Service	1" to 800'	

Year:2018
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2016
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2014
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2012
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2011
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2009
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2008
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2006
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2005
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:2003
Source:NAIP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1994
Source:USGS
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1981
Source:NHAP
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1971
Source:USGS
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1963
Source:USGS
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1952
Source:USGS
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

ENVIRONMENTAL RISK INFORMATION SERVICES

Year:1937
Source:ASCS
Scale:1" to 800'
Comment:

Address:Brentsville Road/Prince William Parkway, Manassas, VA
Approx Center:38.71492686/-77.46481322

Order No:20200608199

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ENVIRONMENTAL RISK INFORMATION SERVICES

ENVIRONMENTAL RISK INFORMATION SERVICES

FIRE INSURANCE MAPS

Project Property:	Brentsville Road/Prince William Parkway Interchange Brentsville Road/Prince William Parkway Manassas VA
Project No:	PAR003
Requested By:	Cardno Inc.
Order No:	20200608199
Date Completed:	June 09, 2020

Please note that no information was found for your site or adjacent properties.

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

PSR
PHYSICAL SETTING REPORT

Property Information

Order Number:		20200608199p
Date Completed:		June 9, 2020
Project Number:		PAR003
Project Property:		Brentsville Road/Prince William Parkway Interchange Brentsville Road/Prince William Parkway Manassas VA
Coordinates:		
	Latitude:	38.71502631
	Longitude:	-77.46480855
	UTM Northing:	4288037.50801 Meters
	UTM Easting:	285699.878862 Meters
	UTM Zone:	UTM Zone 18S
	Elevation:	280.89 ft
	Slope Direction:	SSW

The ERIS ***Physical Setting Report - PSR*** provides comprehensive information about the physical setting around a site and includes a complete overview of topography and surface topology, in addition to hydrologic, geologic and soil characteristics. The location and detailed attributes of oil and gas wells, water wells, public water systems and radon are also included for review.

The compilation of both physical characteristics of a site and additional attribute data is useful in assessing the impact of migration of contaminants and subsequent impact on soils and groundwater.

Disclaimer

This Report does not provide a full environmental evaluation for the site or adjacent properties. Please see the terms and disclaimer at the end of the Report for greater detail.

Topographic Information

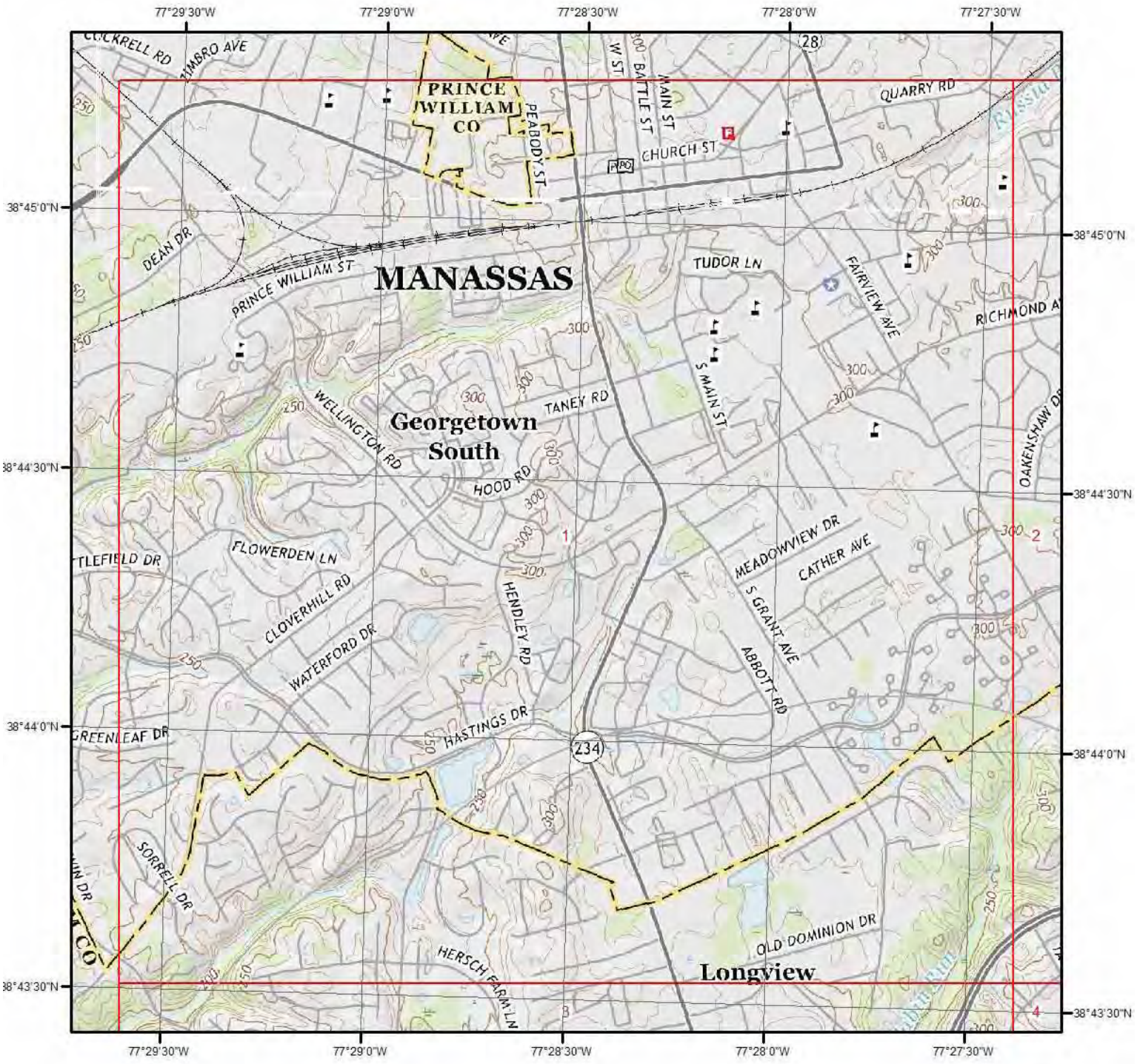
Current USGS Topo

Quadrangle(s): Fairfax,VA; Gainesville,VA; Independent Hill,VA; Manassas,VA; Nokesville,VA; Occoquan,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Topographic Information



Current USGS Topo - Page 1

0 0.2 0.4 0.8 Miles

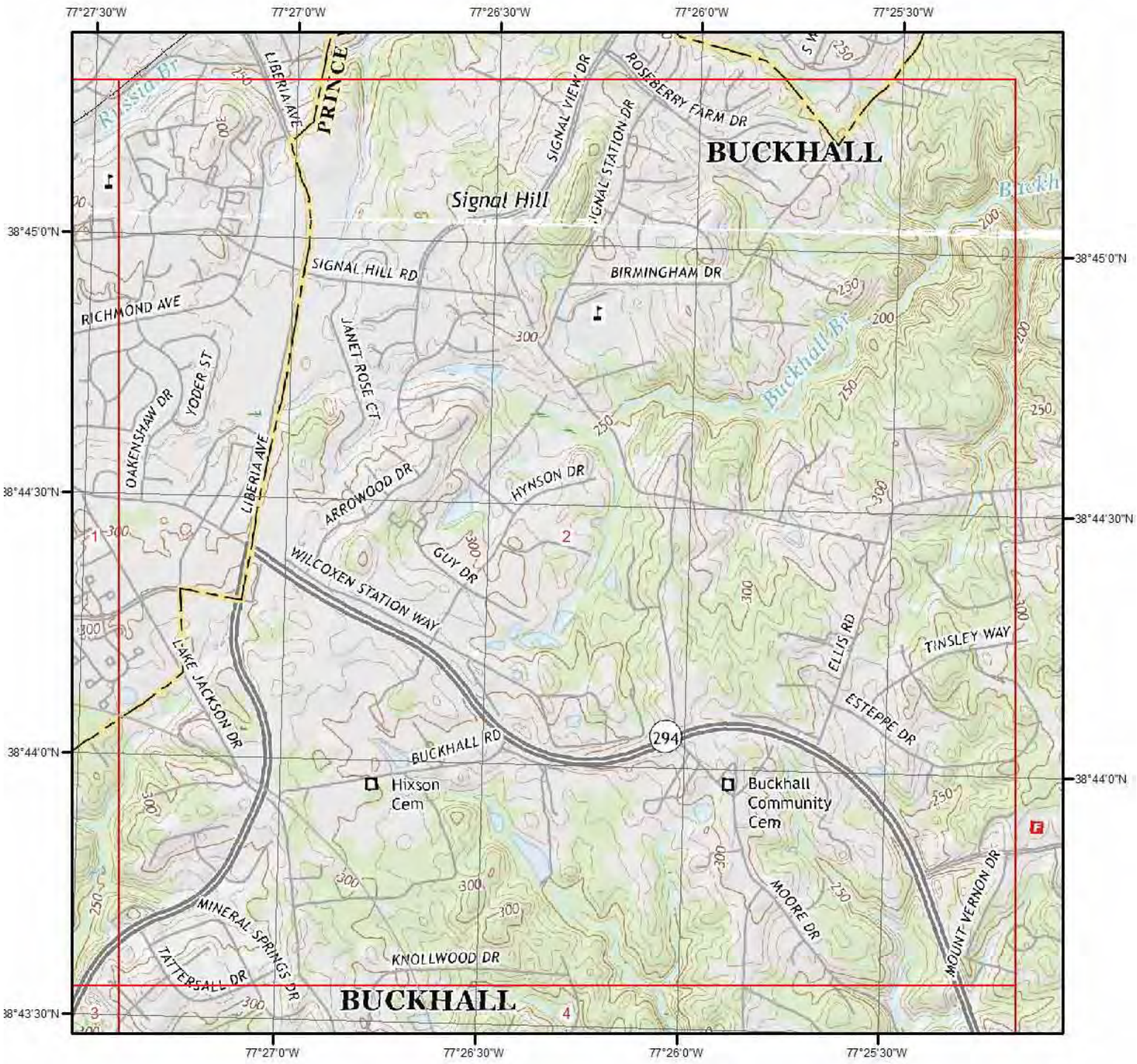
N

Quadrangle(s): Independent Hill,VA; Manassas,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Topographic Information



Current USGS Topo - Page 2

0 0.2 0.4 0.8 Miles

N

Quadrangle(s): Independent Hill,VA; Manassas,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Topographic Information

Current USGS Topo - Page 3

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

Topographic Information

Current USGS Topo - Page 4

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

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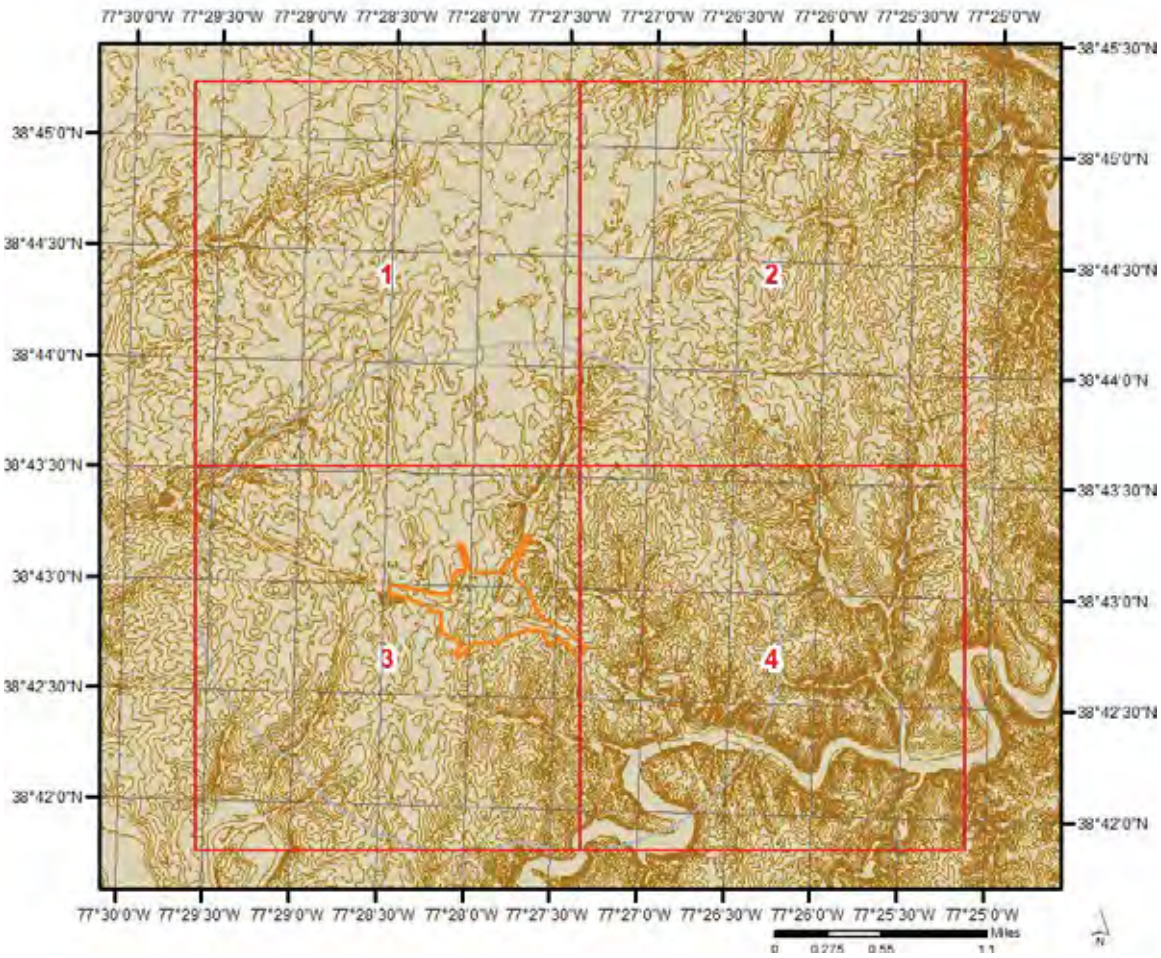
ENVIRONMENTAL RISK INFORMATION SERVICES

Topographic Information

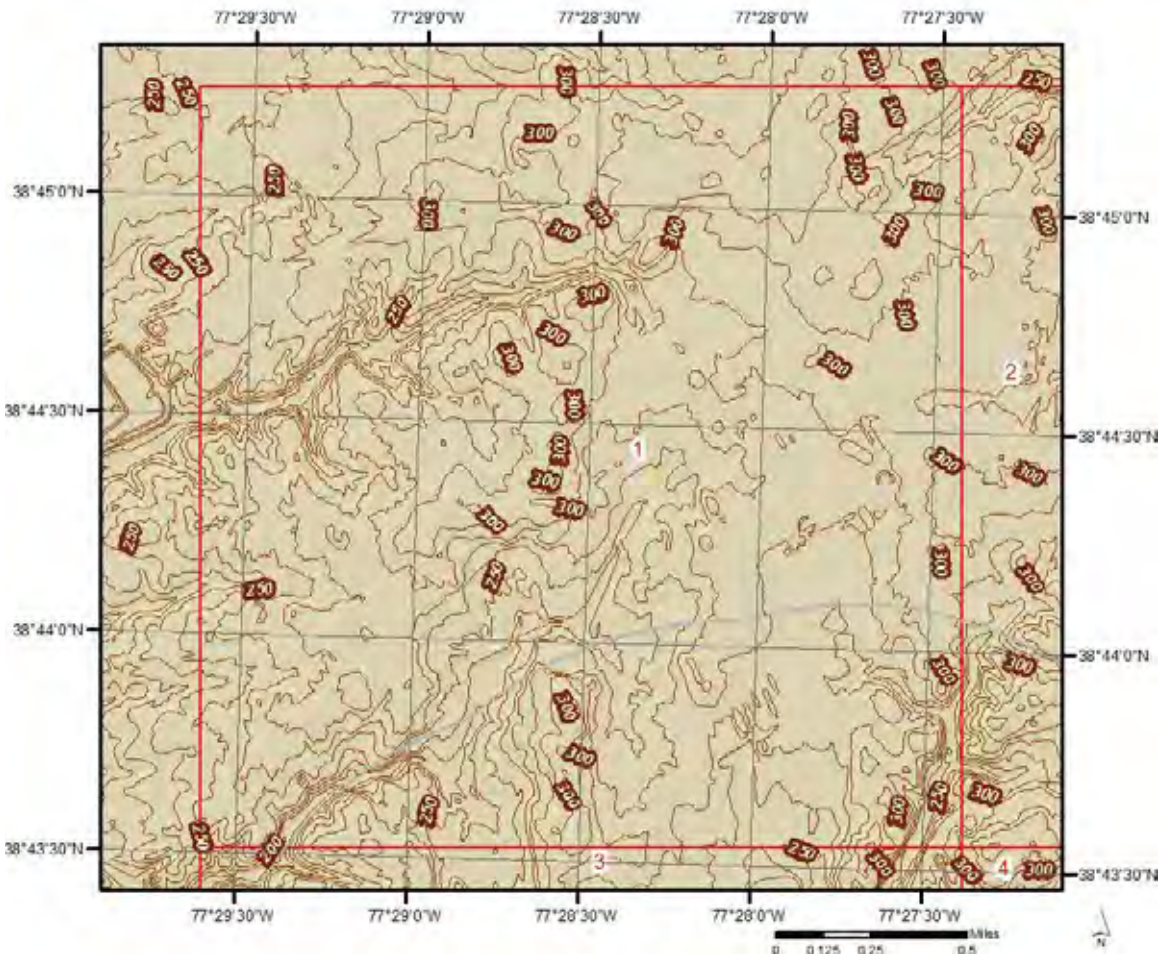
The previous topographic map(s) are created by seamlessly merging and cutting current USGS topographic data. Below are shaded relief map(s), derived from USGS elevation data to show surrounding topography in further detail.

Topographic information at project property:

Elevation:	280.89 ft
Slope Direction:	SSW



Topographic Information



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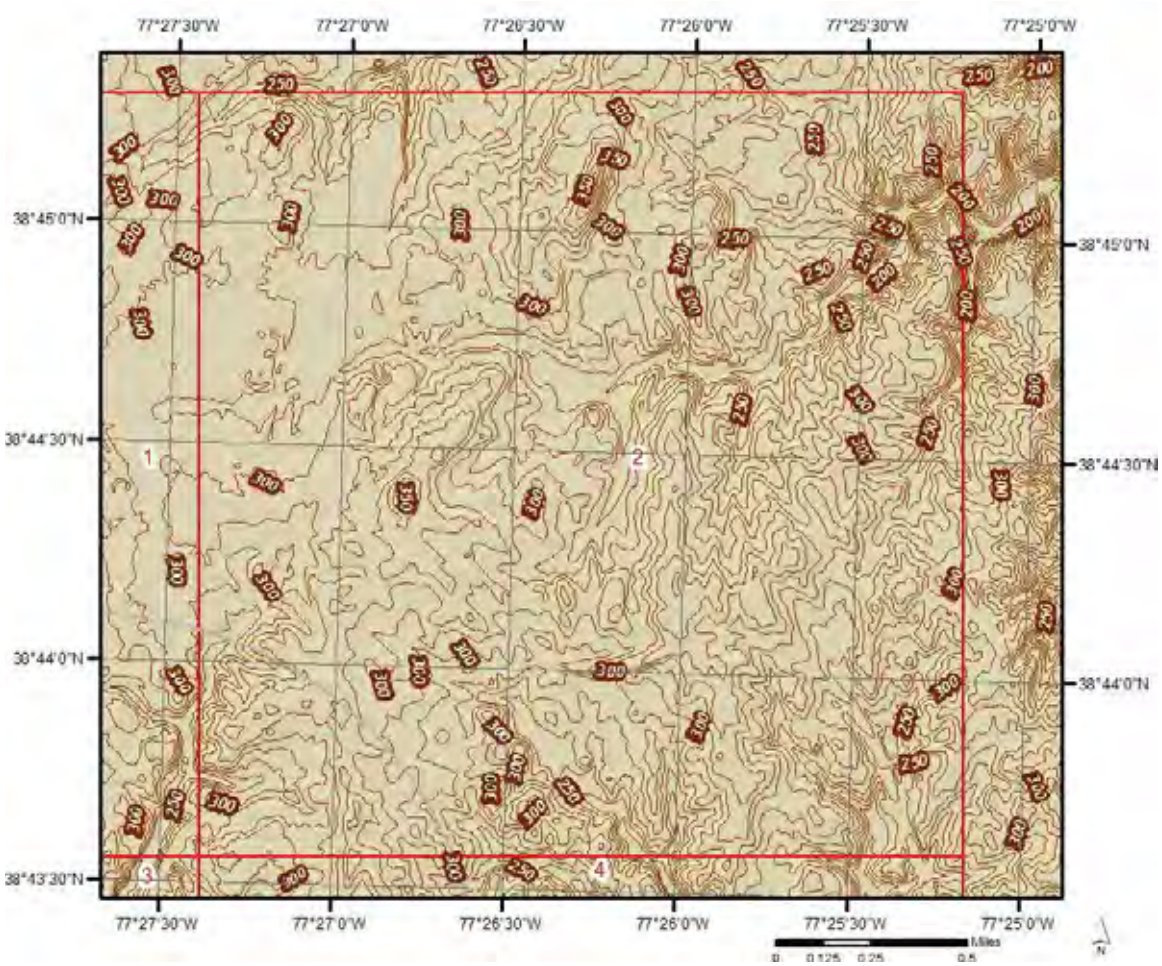

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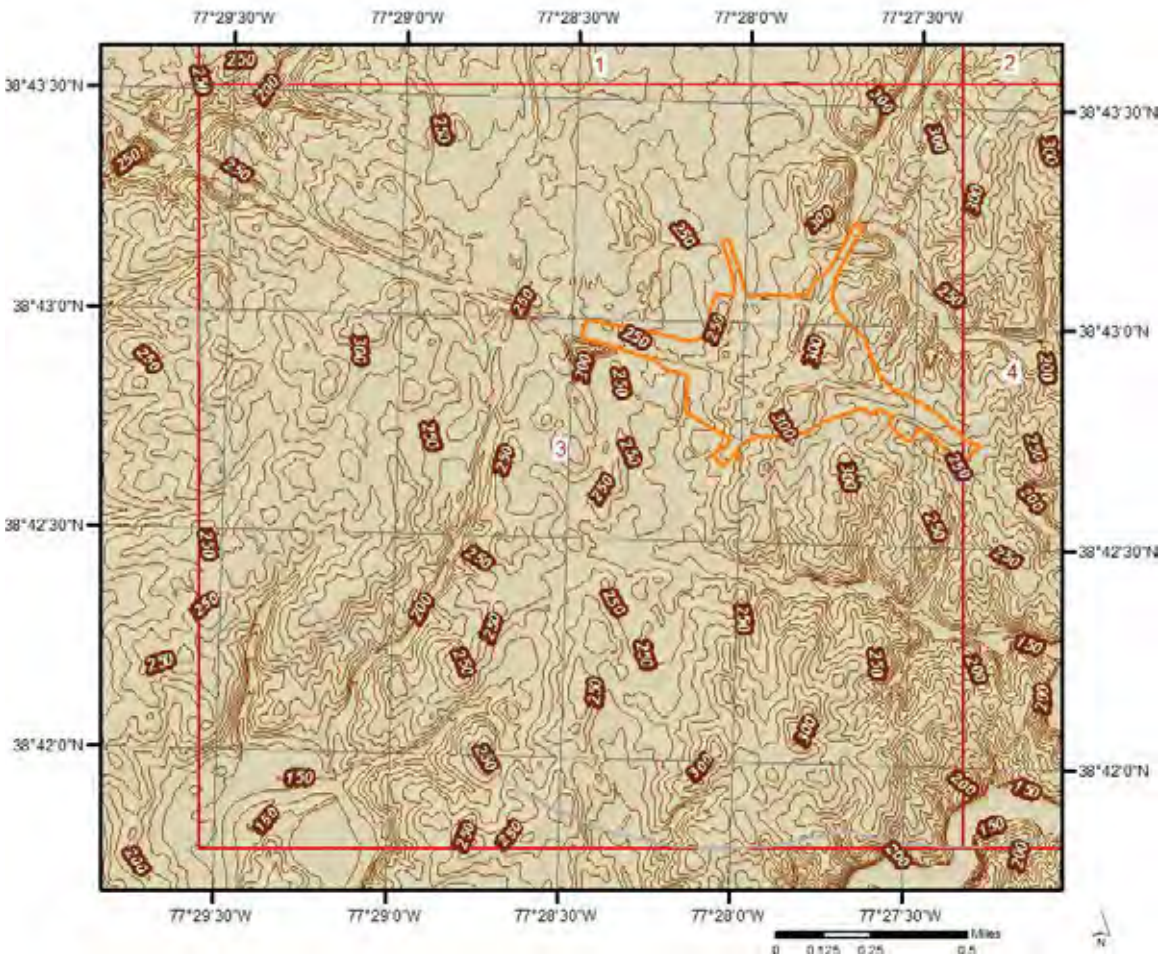
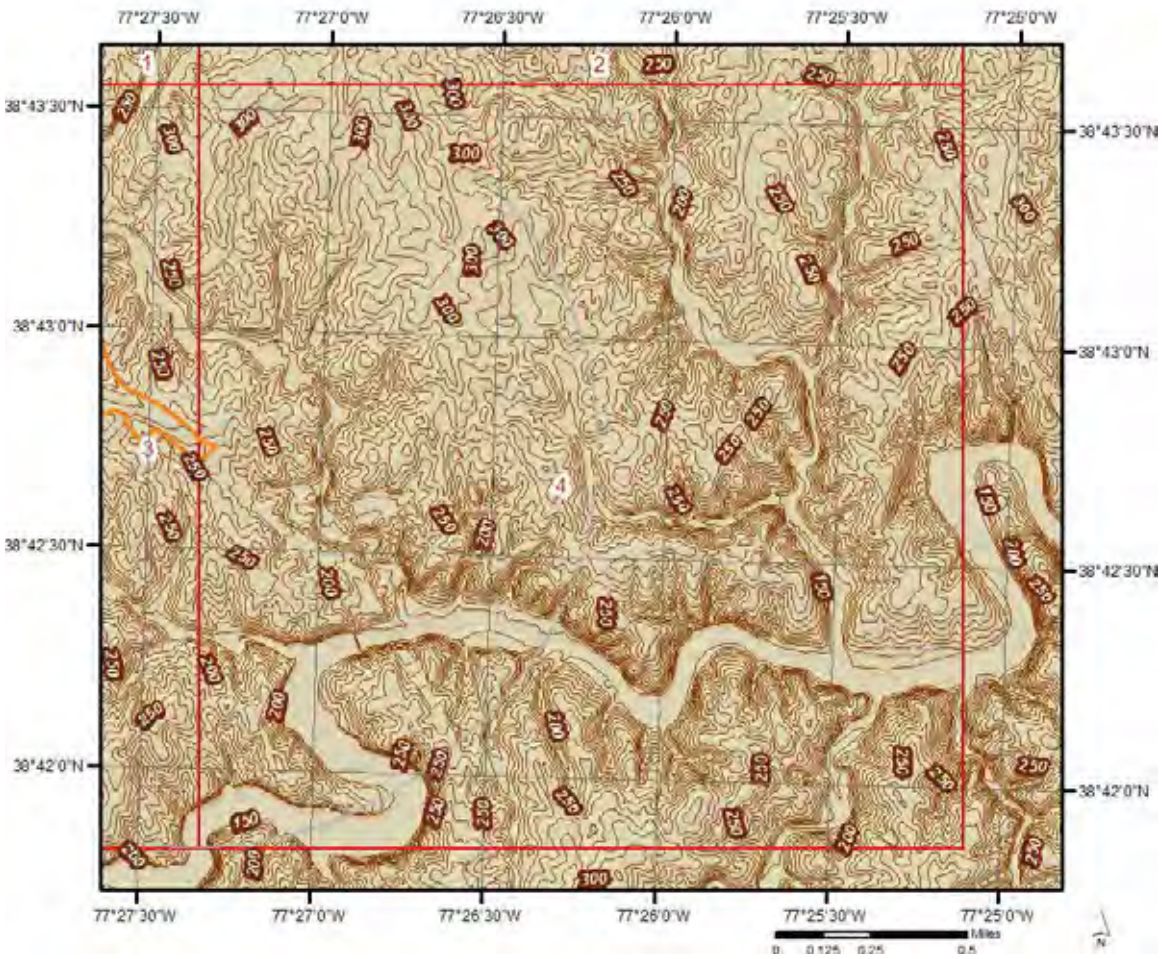
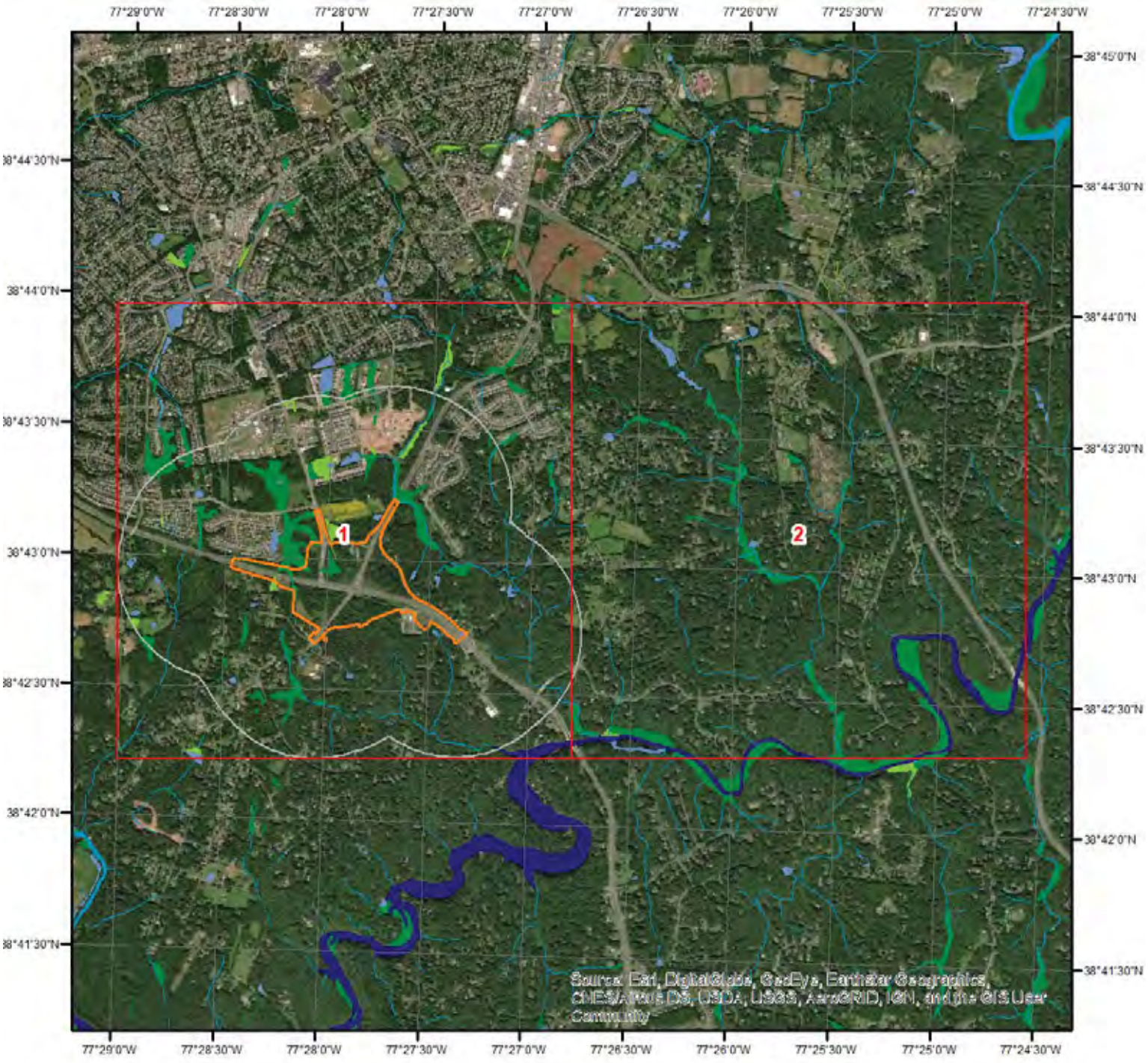


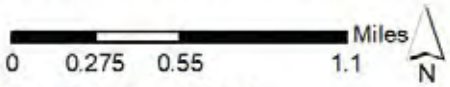
Topographic Information



Hydrologic Information



Wetland

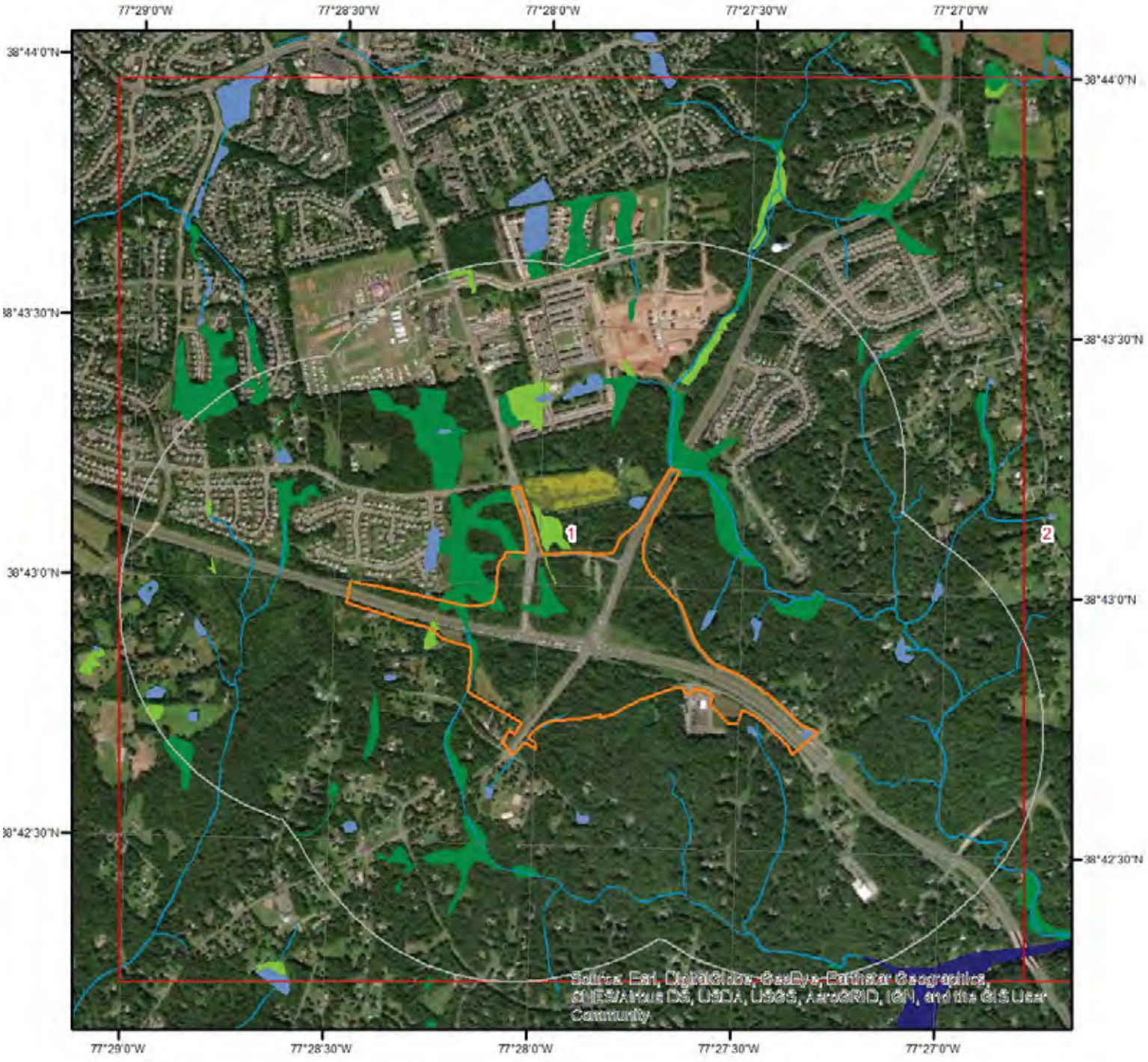


This map shows wetland existence using data from US Fish & Wildlife.
Data coverage is shown to the right. Gray indicates no data available in the area.

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

ERIS

Hydrologic Information



Wetland Type - Page 1

0 0.125 0.25 0.5 Miles

N

This map shows wetland existence using data from US Fish & Wildlife.
Data coverage is shown to the right. Gray indicates no data available in the area.

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Hydrologic Information

Wetland Type - Page 2

Miles
0 0.125 0.25 0.5

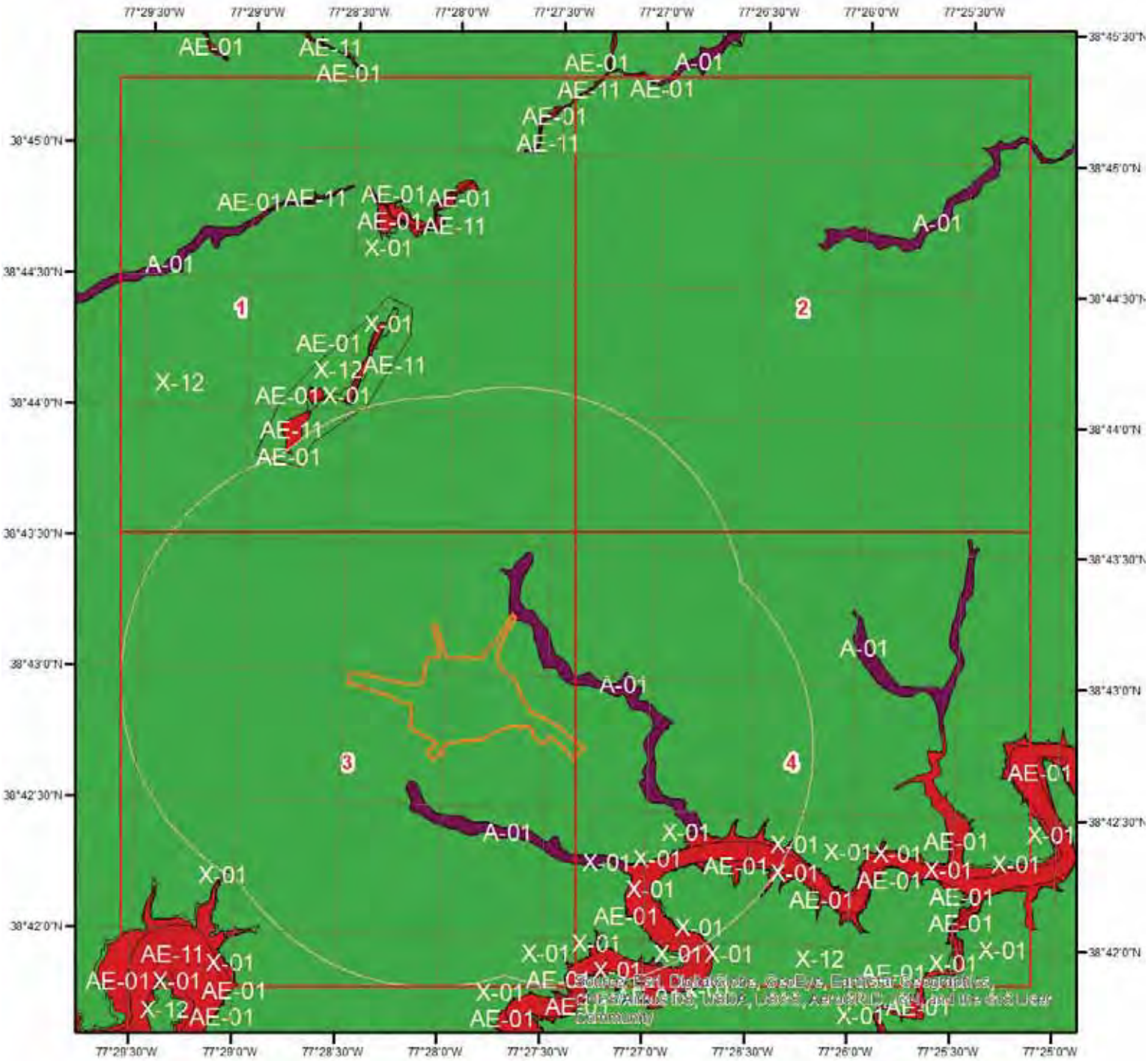
N

This map shows wetland existence using data from US Fish & Wildlife.
Data coverage is shown to the right. Gray indicates no data available in the area.

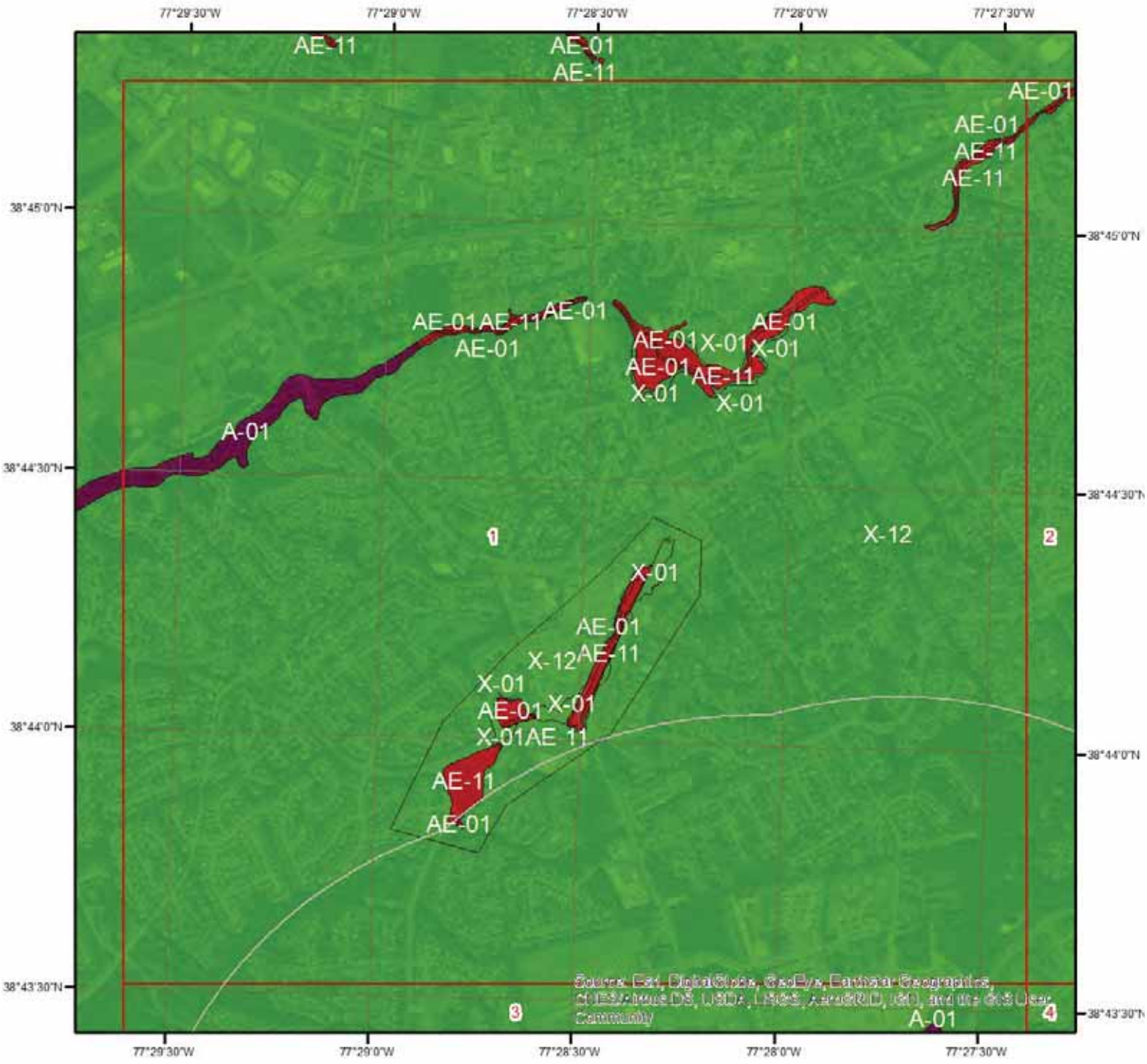
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

ERIS

Hydrologic Information



Hydrologic Information



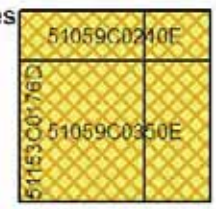
Flood Hazard Zones - Page 1

This map shows FEMA flood hazard zones. FIRM panels are shown to the right, and blank indicates no data is available.

A	AO	X
A99	V	OPEN WATER
AE	VE	NOT POPULATED
AH	D	AREA NOT INCLUDED

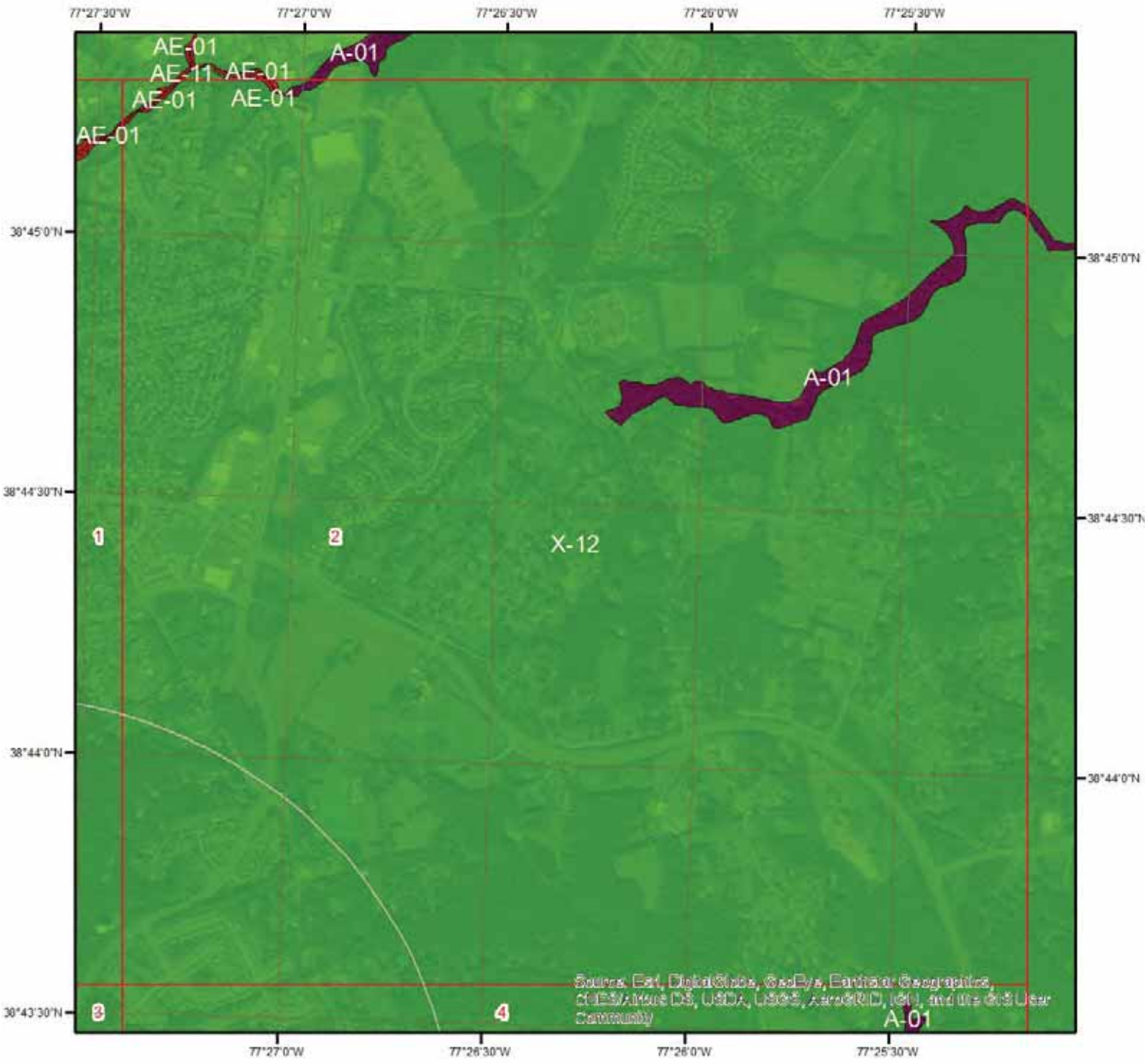
Miles
0 0.2 0.4

N



ERIS

Hydrologic Information



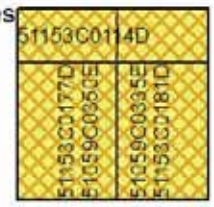
Flood Hazard Zones - Page 2

This map shows FEMA flood hazard zones. FIRM panels are shown to the right, and blank indicates no data is available.

A	AO	X
A99	V	OPEN WATER
AE	VE	NOT POPULATED
AH	D	AREA NOT INCLUDED

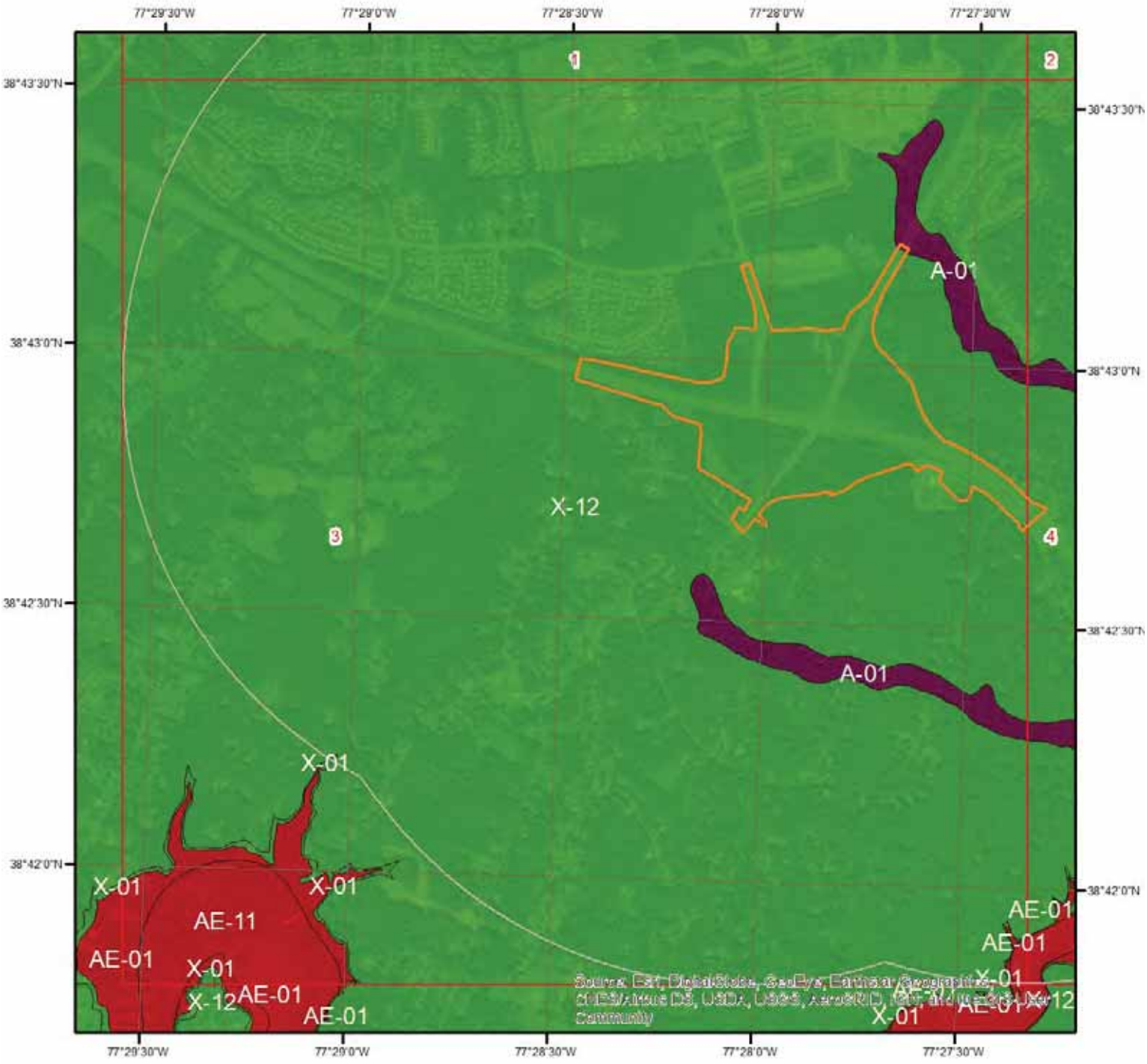
0 0.2 0.4 Miles

N



ERIS

Hydrologic Information



Flood Hazard Zones - Page 3

This map shows FEMA flood hazard zones. FIRM panels are shown to the right, and blank indicates no data is available.

Miles
0 0.2 0.4

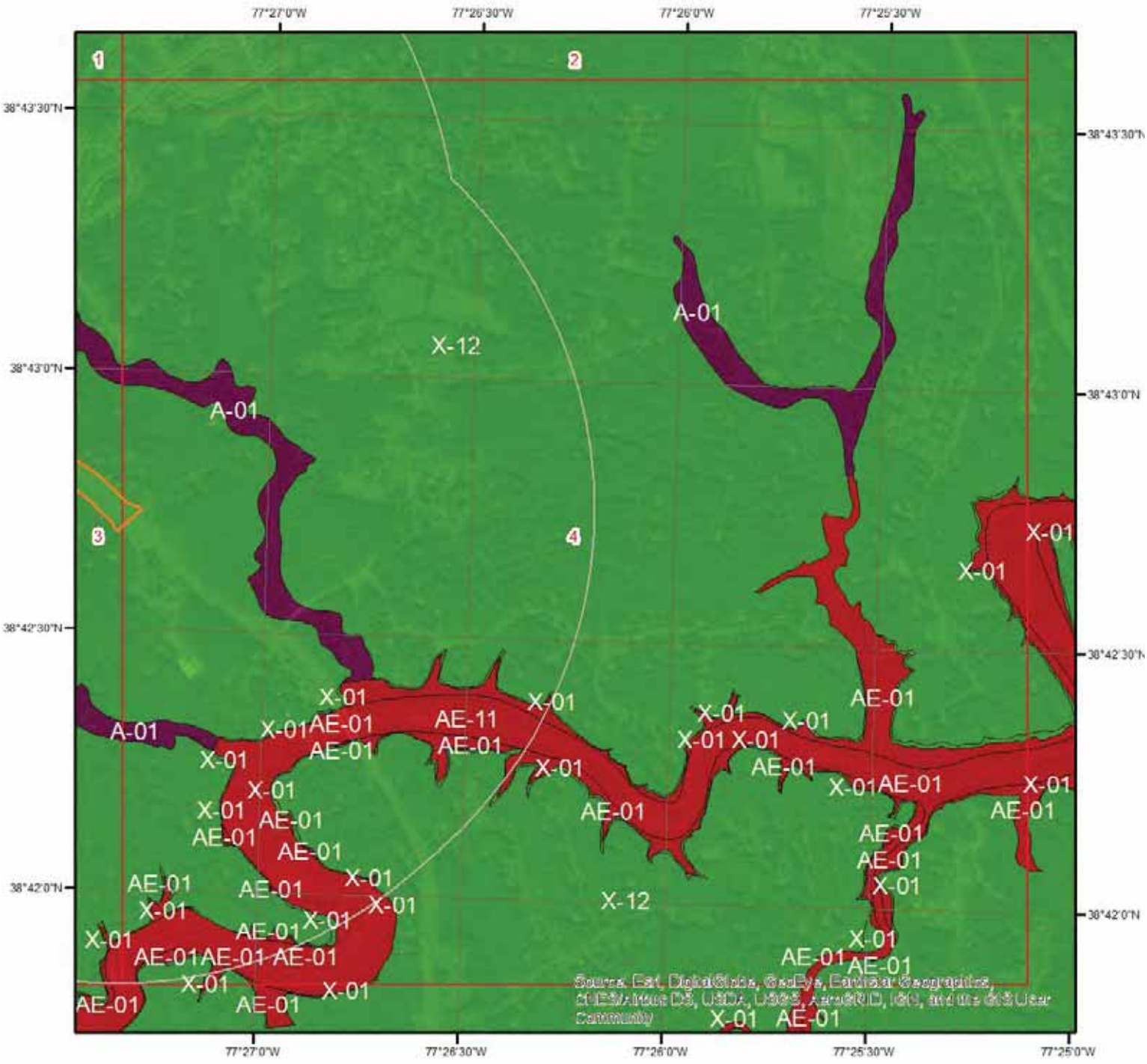
N

51153C0170D
51059C0350E
51153C0178D

A	AO	X
A99	V	OPEN WATER
AE	VE	NOT POPULATED
AH	D	AREA NOT INCLUDED

ERIS

Hydrologic Information



Flood Hazard Zones - Page 4

This map shows FEMA flood hazard zones. FIRM panels are shown to the right, and blank indicates no data is available.

ERIS

Hydrologic Information

The Wetland Type map shows wetland existence overlaid on an aerial imagery. The Flood Hazard Zones map shows FEMA flood hazard zones overlaid on an aerial imagery. Relevant FIRM panels and detailed zone information is provided below.

Available FIRM Panels in area:	51059C0335E(effective:2010-09-17) 51059C0350E(effective:2010-09-17) 51153C0178D(effective:1995-01-05) 51153C0176D(effective:1995-01-05) 51153C0177D(effective:1995-01-05) 51153C0179D(effective:1995-01-05) 51153C0183D(effective:1995-01-05)

Flood Zone A-01

Zone:	A
Zone subtype:	

Flood Zone AE-01

Zone:	AE
Zone subtype:	

Flood Zone AE-11

Zone:	AE
Zone subtype:	FLOODWAY

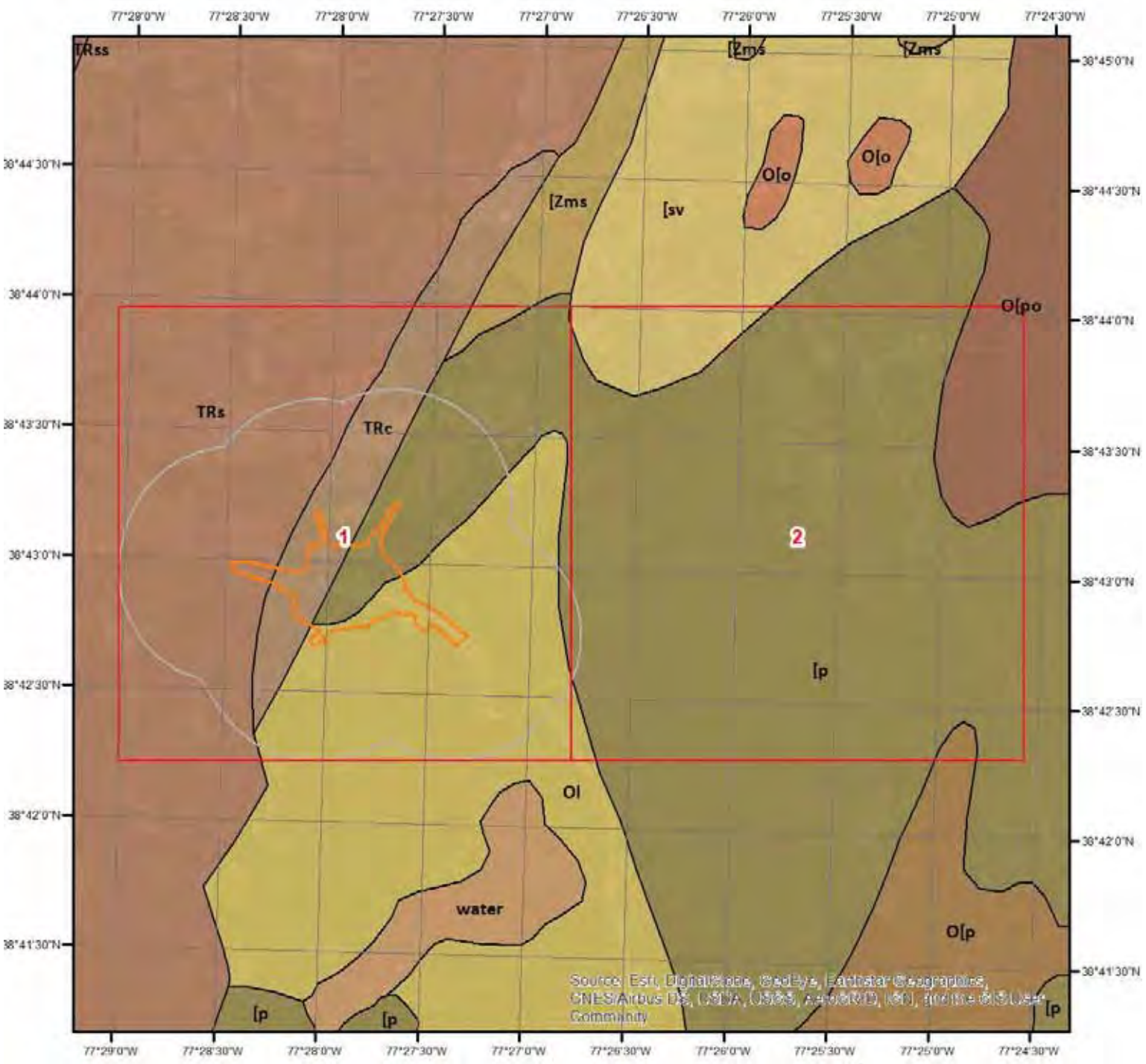
Flood Zone X-01

Zone:	X
Zone subtype:	0.2 PCT ANNUAL CHANCE FLOOD HAZARD

Flood Zone X-12

Zone:	X
Zone subtype:	AREA OF MINIMAL FLOOD HAZARD

Geologic Information

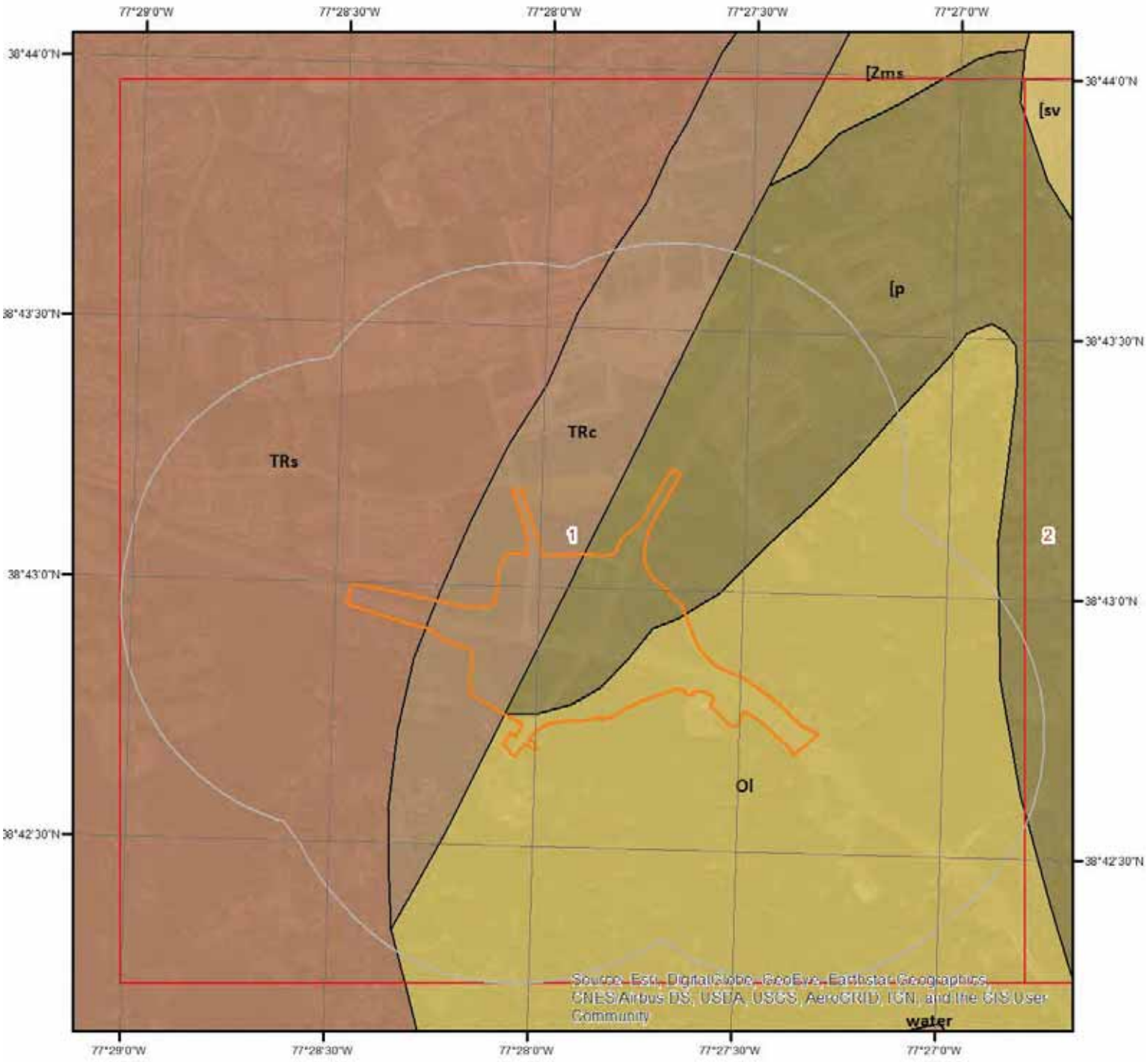


Geologic Units

This maps shows geologic units in the area. Please refer to the report for detailed descriptions.

ERIS

Geologic Information



Miles
0 0.2 0.4

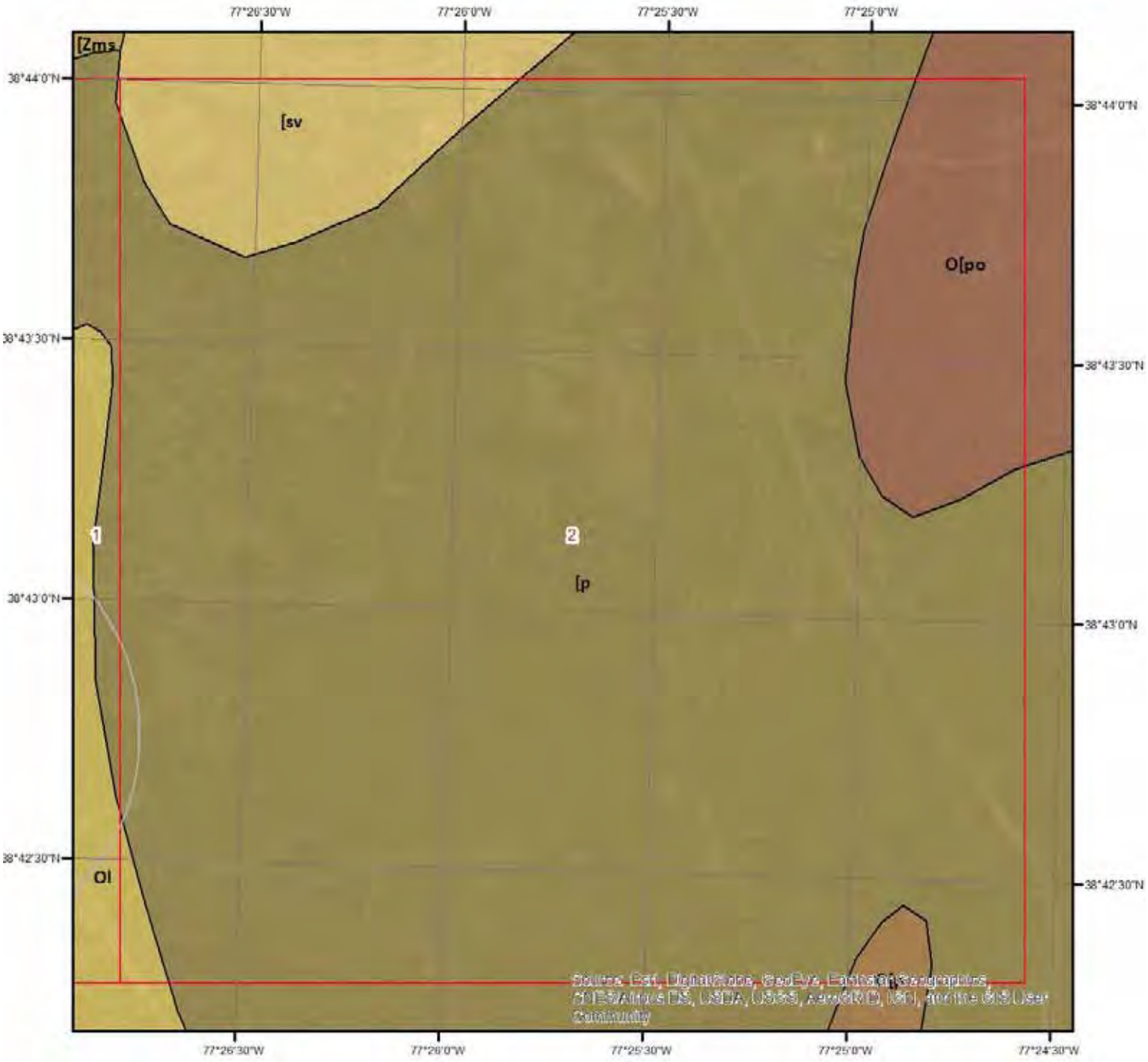
N

Geologic Units - Page 1

This maps shows geologic units in the area. Please refer to the report for detailed descriptions.

ERIS

Geologic Information



Geologic Units - Page 2

This maps shows geologic units in the area. Please refer to the report for detailed descriptions.

ERIS

Geologic Information

The previous page shows USGS geology information. Detailed information about each unit is provided below.

Geologic Unit TRs

Unit Name:	Newark Supergroup; Sandstone, undifferentiated
Unit Age:	Upper Triassic
Primary Rock Type:	sandstone
Secondary Rock Type:	
Unit Description:	Sandstone, undifferentiated

Geologic Unit TRc

Unit Name:	Newark Supergroup; Conglomerate, mixed clasts
Unit Age:	Upper Triassic
Primary Rock Type:	conglomerate
Secondary Rock Type:	
Unit Description:	Conglomerate, mixed clasts

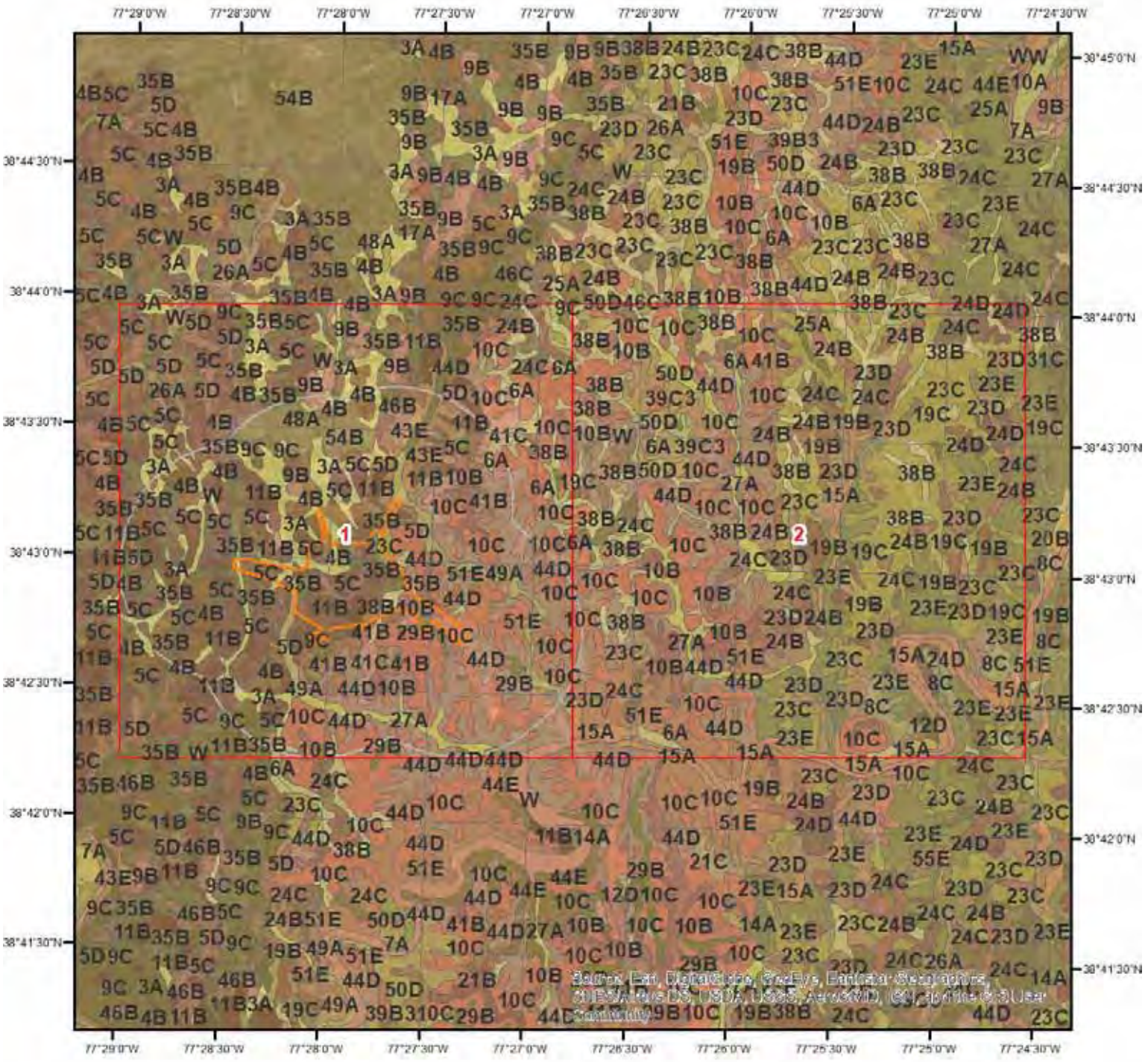
Geologic Unit [p

Unit Name:	Purcell Branch Formation
Unit Age:	Cambrian
Primary Rock Type:	metasedimentary rock
Secondary Rock Type:	meta-conglomerate
Unit Description:	Purcell Branch Formation - Metadiamictite.

Geologic Unit Ol

Unit Name:	Lake Jackson Pluton
Unit Age:	Ordovician
Primary Rock Type:	felsic gneiss
Secondary Rock Type:	
Unit Description:	Lake Jackson Pluton - Micaceous metatonalite.

Soil Information



SSURGO Soils

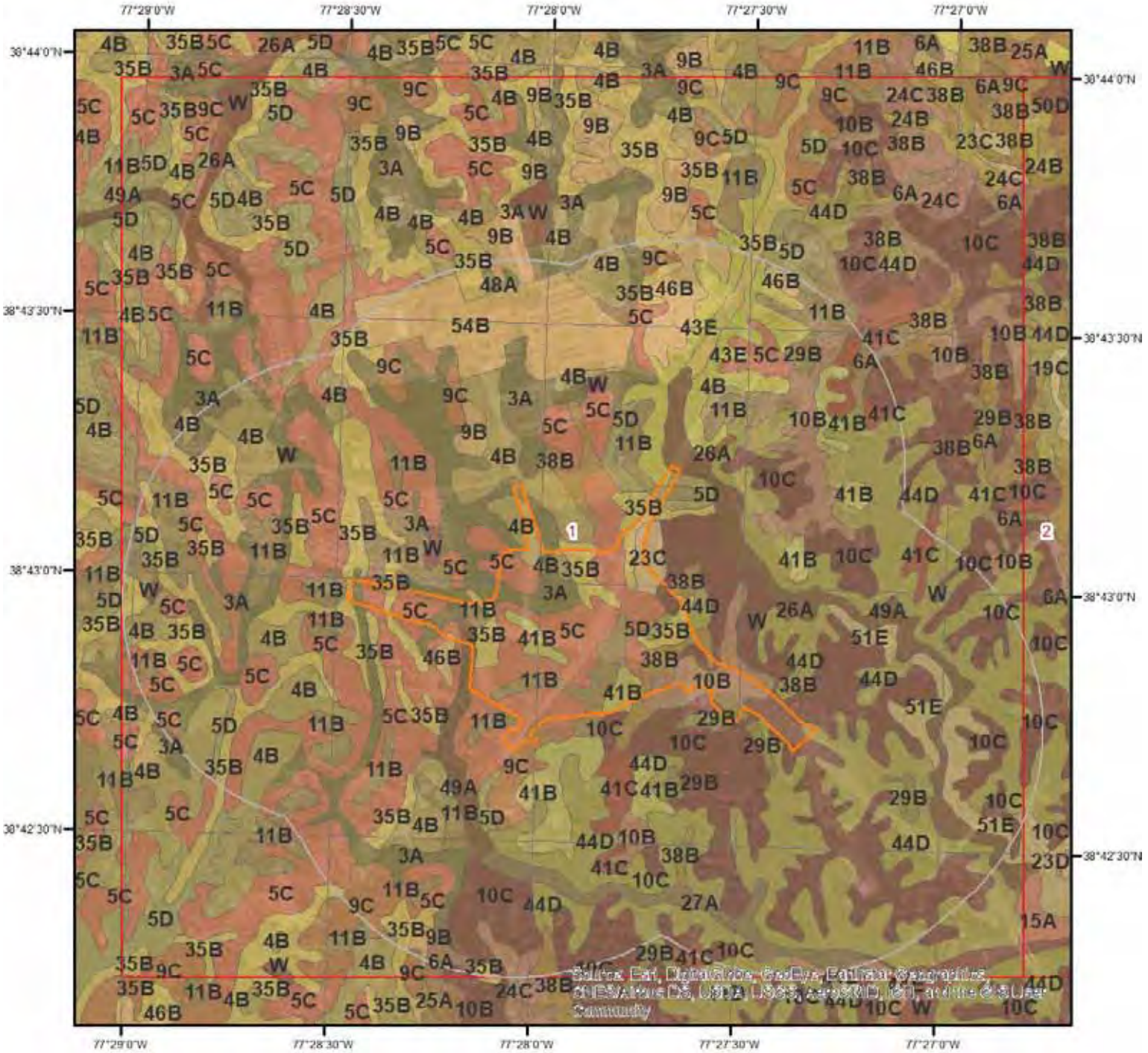
Miles
0 0.2 0.4 0.8 1.2

N

This maps shows SSURGO soil units around the target property. Please refer to the report for detailed soil descriptions.

ERIS

Soil Information



SSURGO Soils - Page 1

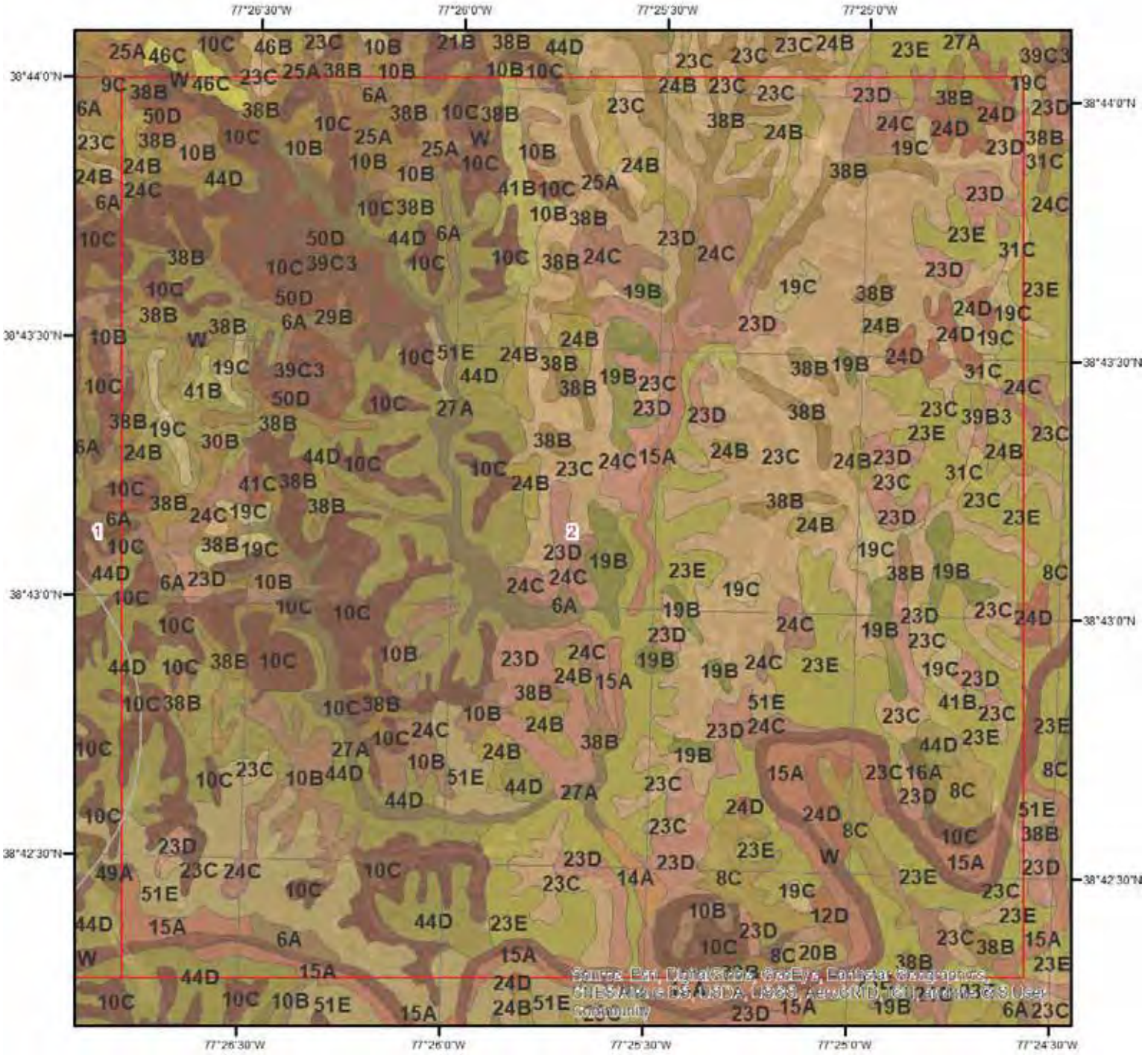
Miles
0 0.2 0.4

N

This maps shows SSURGO soil units around the target property. Please refer to the report for detailed soil descriptions.

ERIS

Soil Information



SSURGO Soils - Page 2

Miles
0 0.2 0.4

N

This maps shows SSURGO soil units around the target property. Please refer to the report for detailed soil descriptions.

ERIS

Soil Information

The previous page shows a soil map using SSURGO data from USDA Natural Resources Conservation Service. Detailed information about each unit is provided below.

Map Unit 10B (0.52%)

Map Unit Name:	Buckhall loam, 2 to 7 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Buckhall(80%)	
horizon H1(0cm to 18cm)	Loam
horizon H2(18cm to 30cm)	Clay loam
horizon H3(30cm to 109cm)	Clay
horizon H4(109cm to 183cm)	Sandy loam

Map Unit 10C (5.4%)

Map Unit Name:	Buckhall loam, 7 to 15 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Buckhall(80%)	
horizon H1(0cm to 18cm)	Loam
horizon H2(18cm to 30cm)	Clay loam
horizon H3(30cm to 109cm)	Clay
horizon H4(109cm to 183cm)	Sandy loam

Map Unit 11B (1.45%)

Map Unit Name:	Calverton silt loam, 0 to 7 percent slopes
Bedrock Depth - Min:	140cm
Watertable Depth - Annual Min:	46cm
Drainage Class - Dominant:	Moderately well drained
Hydrologic Group - Dominant:	D - Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted.
Major components are printed below	
Calverton(80%)	
horizon H1(0cm to 25cm)	Silt loam
horizon H2(25cm to 48cm)	Silty clay loam
horizon H3(48cm to 74cm)	Silt loam
horizon H4(74cm to 140cm)	Silty clay

horizon H5(140cm to 165cm)	Bedrock
horizon H6(165cm to 190cm)	Bedrock

Map Unit 23C (0.07%)

Map Unit Name:	Gaila sandy loam, 7 to 15 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Gaila(80%)	
horizon H1(0cm to 18cm)	Sandy loam
horizon H2(18cm to 38cm)	Sandy clay loam
horizon H3(38cm to 109cm)	Sandy loam
horizon H4(109cm to 183cm)	Loamy sand

Map Unit 24C (0.08%)

Map Unit Name:	Glenelg-Buckhall complex, 7 to 15 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Glenelg(45%)	
horizon H1(0cm to 13cm)	Loam
horizon H2(13cm to 51cm)	Clay loam
horizon H3(51cm to 165cm)	Sandy loam
Buckhall(35%)	
horizon H1(0cm to 18cm)	Loam
horizon H2(18cm to 30cm)	Clay loam
horizon H3(30cm to 109cm)	Clay
horizon H4(109cm to 183cm)	Sandy loam

Map Unit 26A (0.04%)

Map Unit Name:	Hatboro silt loam, 0 to 2 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	8cm
Drainage Class - Dominant:	Poorly drained
Hydrologic Group - Dominant:	B/D - These soils have moderately low runoff potential when drained and high runoff potential when undrained.
Major components are printed below	
Hatboro(70%)	
horizon H1(0cm to 36cm)	Silt loam
horizon H2(36cm to 61cm)	Silty clay loam

horizon H3(61cm to 122cm)	Sandy clay loam
horizon H4(122cm to 152cm)	Loamy sand

Map Unit 27A (0.22%)

Map Unit Name:	Hatboro-Codorus complex, 0 to 2 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	8cm
Drainage Class - Dominant:	Poorly drained
Hydrologic Group - Dominant:	B/D - These soils have moderately low runoff potential when drained and high runoff potential when undrained.
Major components are printed below	
Hatboro(45%)	
horizon H1(0cm to 36cm)	Silt loam
horizon H2(36cm to 61cm)	Silty clay loam
horizon H3(61cm to 122cm)	Sandy clay loam
horizon H4(122cm to 152cm)	Loamy sand
Codorus(35%)	
horizon H1(0cm to 30cm)	Loam
horizon H2(30cm to 107cm)	Loam
horizon H3(107cm to 165cm)	Sandy loam

Map Unit 29B (0.18%)

Map Unit Name:	Hoadly loam, 2 to 7 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	31cm
Drainage Class - Dominant:	Moderately well drained
Hydrologic Group - Dominant:	C/D - These soils have moderately high runoff potential when drained and high runoff potential when undrained.
Major components are printed below	
Hoadly(80%)	
horizon H1(0cm to 28cm)	Loam
horizon H2(28cm to 74cm)	Clay loam
horizon H3(74cm to 104cm)	Sandy clay loam
horizon H4(104cm to 135cm)	Sandy clay
horizon H5(135cm to 183cm)	Sandy loam

Map Unit 35B (2.72%)

Map Unit Name:	Manassas silt loam, 2 to 7 percent slopes
Bedrock Depth - Min:	124cm
Watertable Depth - Annual Min:	76cm
Drainage Class - Dominant:	Moderately well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Manassas(85%)	
horizon H1(0cm to 25cm)	Silt loam

horizon H2(25cm to 109cm)	Silt loam
horizon H3(109cm to 124cm)	Channery sandy loam
horizon H4(124cm to 152cm)	Bedrock

Map Unit 38B (0.57%)

Map Unit Name:	Meadowville loam, 0 to 5 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	122cm
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.
Major components are printed below	
Meadowville(80%)	
horizon H1(0cm to 30cm)	Loam
horizon H2(30cm to 79cm)	Clay loam
horizon H3(79cm to 99cm)	Gravelly loam
horizon H4(99cm to 183cm)	Sandy loam

Map Unit 3A (1.91%)

Map Unit Name:	Albano silt loam, 0 to 4 percent slopes
Bedrock Depth - Min:	109cm
Watertable Depth - Annual Min:	23cm
Drainage Class - Dominant:	Poorly drained
Hydrologic Group - Dominant:	C/D - These soils have moderately high runoff potential when drained and high runoff potential when undrained.
Major components are printed below	
Albano(80%)	
horizon H1(0cm to 18cm)	Silt loam
horizon H2(18cm to 102cm)	Clay
horizon H3(102cm to 109cm)	Extremely gravelly silty clay loam
horizon H4(109cm to 134cm)	Bedrock

Map Unit 41B (0.42%)

Map Unit Name:	Neabsco loam, 0 to 7 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	53cm
Drainage Class - Dominant:	Moderately well drained
Hydrologic Group - Dominant:	D - Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted.
Major components are printed below	
Neabsco(80%)	
horizon H1(0cm to 20cm)	Loam
horizon H2(20cm to 43cm)	Clay loam
horizon H3(43cm to 91cm)	Loam
horizon H4(91cm to 132cm)	Clay loam
horizon H5(132cm to 183cm)	Very gravelly sandy loam

Map Unit 41C (0.32%)

Map Unit Name:	Neabsco loam, 7 to 15 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	53cm
Drainage Class - Dominant:	Moderately well drained
Hydrologic Group - Dominant:	D - Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted.
Major components are printed below	
Neabsco(80%)	
horizon H1(0cm to 20cm)	Loam
horizon H2(20cm to 43cm)	Clay loam
horizon H3(43cm to 91cm)	Loam
horizon H4(91cm to 132cm)	Clay loam
horizon H5(132cm to 183cm)	Very gravelly sandy loam

Map Unit 43E (0.51%)

Map Unit Name:	Nestoria gravelly silt loam, 25 to 50 percent slopes
Bedrock Depth - Min:	46cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	D - Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted.
Major components are printed below	
Nestoria(80%)	
horizon H1(0cm to 20cm)	Channery silt loam
horizon H2(20cm to 36cm)	Very channery silt loam
horizon H3(36cm to 46cm)	Very channery silt loam
horizon H4(46cm to 76cm)	Bedrock
horizon H5(76cm to 101cm)	Bedrock

Map Unit 44D (3.96%)

Map Unit Name:	Occoquan sandy loam, 7 to 25 percent slopes
Bedrock Depth - Min:	135cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.
Major components are printed below	
Occoquan(80%)	
horizon H1(0cm to 23cm)	Sandy loam
horizon H2(23cm to 43cm)	Loam
horizon H3(43cm to 135cm)	Sandy loam
horizon H4(135cm to 145cm)	Bedrock

Soil Information

Map Unit 44E (0.15%)

Map Unit Name:	Occoquan sandy loam, 25 to 50 percent slopes
Bedrock Depth - Min:	135cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.
Major components are printed below	
Occoquan(80%)	
horizon H1(0cm to 23cm)	Sandy loam
horizon H2(23cm to 43cm)	Loam
horizon H3(43cm to 135cm)	Sandy loam
horizon H4(135cm to 145cm)	Bedrock

Map Unit 46B (0.24%)

Map Unit Name:	Panorama silt loam, 2 to 7 percent slopes
Bedrock Depth - Min:	140cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Panorama(75%)	
horizon H1(0cm to 25cm)	Silt loam
horizon H2(25cm to 48cm)	Silty clay loam
horizon H3(48cm to 96cm)	Silty clay loam
horizon H4(96cm to 140cm)	Very channery silty clay loam
horizon H5(140cm to 150cm)	Bedrock

Map Unit 48A (0.02%)

Map Unit Name:	Reaville silt loam, 0 to 4 percent slopes
Bedrock Depth - Min:	76cm
Watertable Depth - Annual Min:	53cm
Drainage Class - Dominant:	Somewhat poorly drained
Hydrologic Group - Dominant:	D - Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted.
Major components are printed below	
Reaville(80%)	
horizon H1(0cm to 30cm)	Silt loam
horizon H2(30cm to 46cm)	Channery silty clay loam
horizon H3(46cm to 79cm)	Very channery silt loam
horizon H4(79cm to 89cm)	Bedrock

Map Unit 49A (0.57%)

Map Unit Name:	Rowland silt loam, 0 to 2 percent slopes
Bedrock Depth - Min:	null

Soil Information

Watertable Depth - Annual Min:	61cm
Drainage Class - Dominant:	Moderately well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.
Major components are printed below	
Rowland(80%)	
horizon H1(0cm to 28cm)	Silt loam
horizon H2(28cm to 71cm)	Silt loam
horizon H3(71cm to 122cm)	Channery silty clay loam
horizon H4(122cm to 165cm)	Silt loam

Map Unit 4B (2.07%)

Map Unit Name:	Arcola silt loam, 2 to 7 percent slopes
Bedrock Depth - Min:	71cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.
Major components are printed below	
Arcola(80%)	
horizon H1(0cm to 23cm)	Silt loam
horizon H2(23cm to 56cm)	Gravelly silt loam
horizon H3(56cm to 71cm)	Very gravelly silt loam
horizon H4(71cm to 122cm)	Bedrock
horizon H5(122cm to 147cm)	Bedrock

Map Unit 51E (1.14%)

Map Unit Name:	Stumptown very flaggy loam, 25 to 50 percent slopes
Bedrock Depth - Min:	69cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Stumptown(80%)	
horizon H1(0cm to 30cm)	Very flaggy loam
horizon H2(30cm to 51cm)	Very flaggy clay loam
horizon H3(51cm to 68cm)	Extremely flaggy sandy loam
horizon H4(68cm to 84cm)	Bedrock
horizon H5(84cm to 109cm)	Bedrock

Map Unit 54B (0.66%)

Map Unit Name:	Urban land-Udorthents complex, 0 to 7 percent slopes
No more attributes available for this map unit	

Soil Information

Map Unit 5C (4.33%)

Map Unit Name:	Arcola-Nestoria complex, 7 to 15 percent slopes
Bedrock Depth - Min:	46cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.
Major components are printed below	
Arcola(50%)	
horizon H1(0cm to 23cm)	Silt loam
horizon H2(23cm to 56cm)	Gravelly silt loam
horizon H3(56cm to 71cm)	Very gravelly silt loam
horizon H4(71cm to 122cm)	Bedrock
horizon H5(122cm to 147cm)	Bedrock
Nestoria(30%)	
horizon H1(0cm to 20cm)	Channery silt loam
horizon H2(20cm to 36cm)	Very channery silt loam
horizon H3(36cm to 46cm)	Very channery silt loam
horizon H4(46cm to 76cm)	Bedrock
horizon H5(76cm to 86cm)	Bedrock

Map Unit 5D (0.31%)

Map Unit Name:	Arcola-Nestoria complex, 15 to 25 percent slopes
Bedrock Depth - Min:	46cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.
Major components are printed below	
Arcola(50%)	
horizon H1(0cm to 23cm)	Silt loam
horizon H2(23cm to 56cm)	Gravelly silt loam
horizon H3(56cm to 71cm)	Very gravelly silt loam
horizon H4(71cm to 122cm)	Bedrock
horizon H5(122cm to 147cm)	Bedrock
Nestoria(30%)	
horizon H1(0cm to 20cm)	Channery silt loam
horizon H2(20cm to 36cm)	Very channery silt loam
horizon H3(36cm to 46cm)	Very channery silt loam
horizon H4(46cm to 76cm)	Bedrock
horizon H5(76cm to 86cm)	Bedrock

Map Unit 6A (0.1%)

Map Unit Name:	Baile loam, 0 to 4 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	8cm

Soil Information

Drainage Class - Dominant:	Poorly drained
Hydrologic Group - Dominant:	C/D - These soils have moderately high runoff potential when drained and high runoff potential when undrained.
Major components are printed below	
Baile(75%)	
horizon H1(0cm to 20cm)	Loam
horizon H2(20cm to 114cm)	Clay loam
horizon H3(114cm to 157cm)	Sandy loam

Map Unit 9B (0.16%)

Map Unit Name:	Brentsville sandy loam, 2 to 7 percent slopes
Bedrock Depth - Min:	86cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.
Major components are printed below	
Brentsville(80%)	
horizon H1(0cm to 28cm)	Sandy loam
horizon H2(28cm to 66cm)	Sandy loam
horizon H3(66cm to 86cm)	Sandy loam
horizon H4(86cm to 96cm)	Bedrock
horizon H5(96cm to 121cm)	Bedrock

Map Unit 9C (0.47%)

Map Unit Name:	Brentsville sandy loam, 7 to 15 percent slopes
Bedrock Depth - Min:	86cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.
Major components are printed below	
Brentsville(80%)	
horizon H1(0cm to 28cm)	Sandy loam
horizon H2(28cm to 66cm)	Sandy loam
horizon H3(66cm to 86cm)	Sandy loam
horizon H4(86cm to 96cm)	Bedrock
horizon H5(96cm to 121cm)	Bedrock

Map Unit W (71.38%)

Map Unit Name:	Water

No more attributes available for this map unit

Wells and Additional Sources

Wells & Additional Sources

- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation

N

0 0.3 0.6 1.2 Miles

ERIS

Wells and Additional Sources

Wells & Additional Sources - Page 1

- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Wells and Additional Sources

Wells & Additional Sources - Page 2

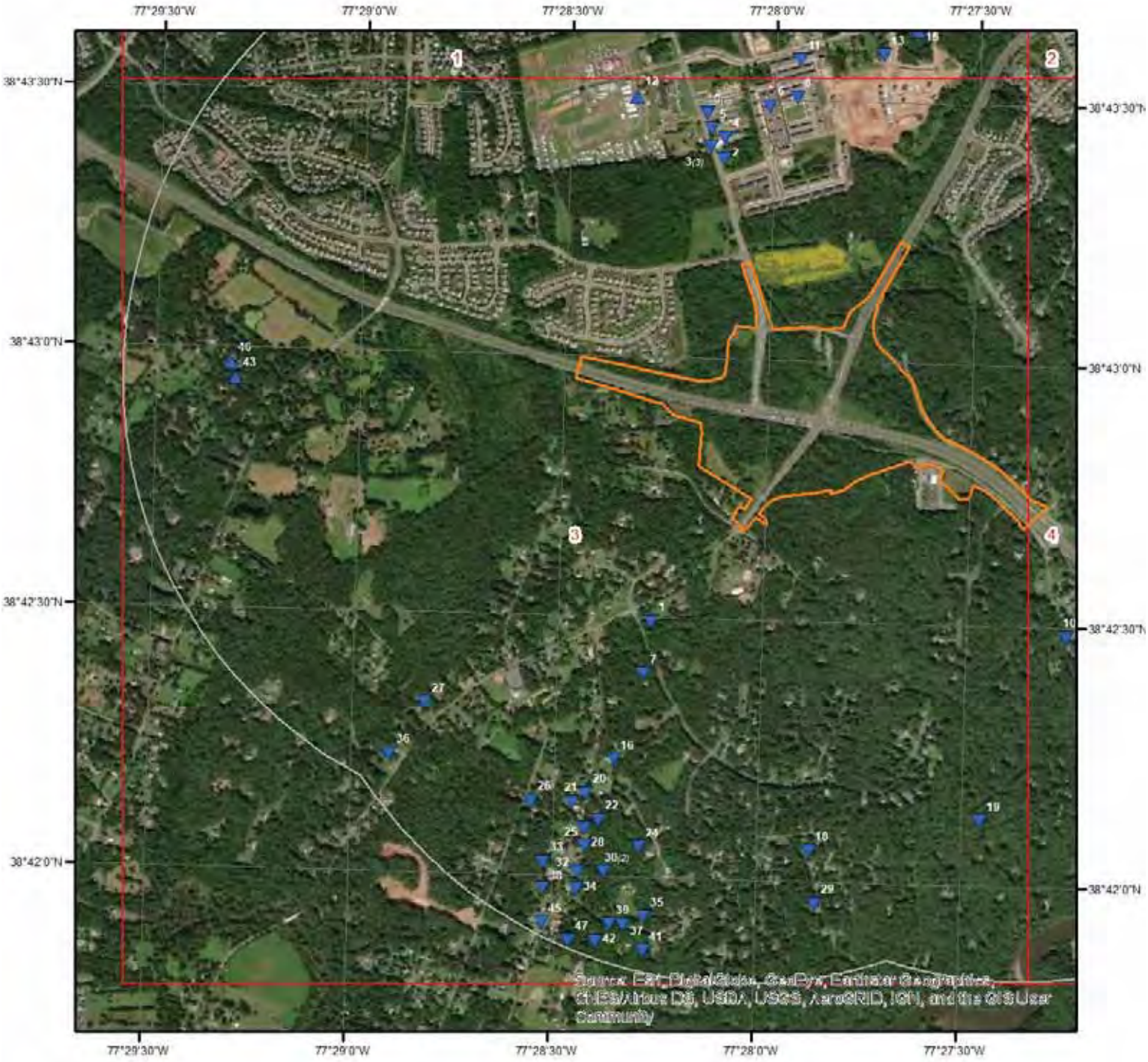
- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Wells and Additional Sources



Wells & Additional Sources - Page 3

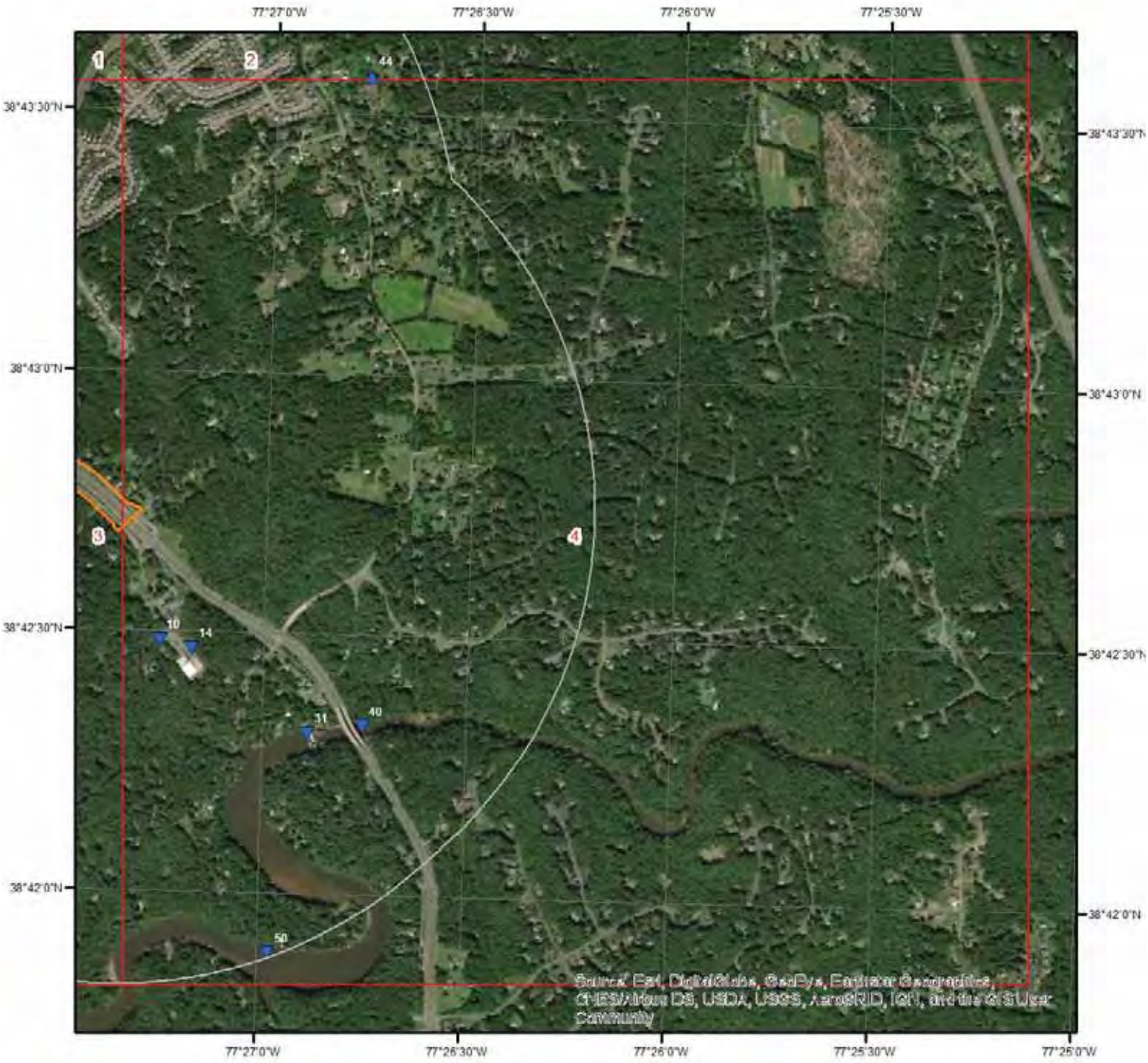
- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Wells and Additional Sources



Wells & Additional Sources - Page 4

- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Federal Sources

Public Water Systems Violations and Enforcement Data

Map Key	PWS ID	Distance (ft)	Direction
3	VA6153610	1,414.36	NNW
3	VA6153611	1,414.36	NNW
9	VA6153685	1,798.95	NNW
14	VA6153443	1,625.92	SE

Safe Drinking Water Information System (SDWIS)

Map Key	PWS ID	Distance (ft)	Direction
3	VA6153610	1,414.36	NNW
9	VA6153685	1,798.95	NNW

USGS National Water Information System

Map Key	Monitoring Loc Identifier	Distance (ft)	Direction
1	USGS-384229077281701	1,509.71	SW
4	USGS-384326077281101	1,469.72	NNW
5	USGS-384326077281001	1,608.41	NNW
7	USGS-384223077281801	2,036.16	SSW
13	USGS-384336077274601	2,184.75	NNE
15	USGS-384339077274301	2,477.57	NNE
16	USGS-384224077282501	3,069.39	SSW
17	USGS-384340077281101	3,057.87	NNW
18	USGS-384202077274401	3,821.66	S
19	USGS-384207077272801	3,452.73	SSE
20	USGS-384209077282601	3,576.66	SSW
21	USGS-384206077282901	3,743.69	SSW
22	USGS-384207077282301	3,774.24	SSW
23	USGS-384342077272501	3,170.56	NNE
24	USGS-384203077281901	3,888.47	SSW
25	USGS-384203077282901	3,934.31	SSW
26	USGS-384207077283001	4,007.81	SW
27	USGS-384219077285001	4,187.94	SW
28	USGS-384245077282601	4,116.40	SSW
29	USGS-384209077275401	4,431.40	S
30	USGS-384156077282601	4,303.35	SSW
30	USGS-384156077282602	4,303.35	SSW
31	USGS-01656697	3,246.08	SE
32	USGS-384159077283001	4,425.15	SSW
33	USGS-384201077282901	4,515.45	SSW
34	USGS-384157077282801	4,610.09	SSW
35	USGS-384154077281801	4,651.00	SSW
36	USGS-384213077285501	4,858.85	SW
37	USGS-384154077282001	4,807.46	SSW
38	USGS-384156077282901	4,781.71	SSW
39	USGS-384154077282201	4,852.08	SSW
40	USGS-01656700	3,610.60	SE
41	USGS-384153077281901	5,046.27	SSW
42	USGS-384154077282202	5,093.17	SSW
43	USGS-384256077291801	3,958.95	W
44	USGS-384334077264701	4,736.47	NE
45	USGS-384124077283001	5,143.13	SSW

46	USGS-384259077292401	4,020.30	W
47	USGS-384155077283101	5,201.33	SSW
48	USGS-384353077271001	4,704.51	NNE
49	USGS-384353077290101	5,231.86	NW

State Sources

Oil and Gas Wells

Map Key	ID	Distance (ft)	Direction
	No records found		

Public Water Supply Wells

Map Key	PWS ID	Distance (ft)	Direction
2	6153084	1,233.39	NNW
6	6153610	1,826.00	N
8	6153610	1,989.97	N
10	6153443	1,369.04	SE
11	6153611	2,419.33	N
12	6153525	2,302.42	NNW
50	6153440	5,235.18	SE

Public Water Systems Violations and Enforcement Data

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
3	NNW	0.27	1,414.36	264.26	PWSV

Address Line 2: 10611 Dumfries Road
State Code: VA
Zip Code: 20112
City Name: MANASSAS
Address Line 1: New Dominion Holdings LLC
PWS ID: VA6153610
PWS Type Code: TNCWS
PWS Type Description: Transient Non-Community Water System
Primary Source Code: GW
Primary Source Desc: Groundwater
PWS Activity Code: I
PWS Activity Description: Inactive
PWS Deactivation Date: 21/12/2012
Phone Number: 703-361-7753

--Details--
Population Served Count: 749
City Served:
County Served: Prince William
State Served: VA
Zip Code Served:

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
3	NNW	0.27	1,414.36	264.26	PWSV

Address Line 2:
State Code: VA
Zip Code: 20112
City Name: MANASSAS
Address Line 1: 10611 Dumfries Road
PWS ID: VA6153611
PWS Type Code: TNCWS
PWS Type Description: Transient Non-Community Water System
Primary Source Code: GW
Primary Source Desc: Groundwater
PWS Activity Code: I
PWS Activity Description: Inactive
PWS Deactivation Date: 15/07/2004
Phone Number: 703-361-7753

Wells and Additional Sources Detail Report

--Details--
Population Served Count: 29
City Served:
County Served: Prince William
State Served: VA
Zip Code Served:

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
9	NNW	0.34	1,798.95	264.70	PWSV

Address Line 2: 10613 DUMFRIES RD
State Code: VA
Zip Code: 22110
City Name: MANASSAS
Address Line 1:
PWS ID: VA6153685
PWS Type Code: TNCWS
PWS Type Description: Transient Non-Community Water System
Primary Source Code: GW
Primary Source Desc: Groundwater
PWS Activity Code: I
PWS Activity Description: Inactive
PWS Deactivation Date: 01/01/1997
Phone Number: 703-

--Details--
Population Served Count: 25
City Served: PRINCE WILLIAM
County Served:
State Served: VA
Zip Code Served:

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
14	SE	0.31	1,625.92	251.30	PWSV

Address Line 2: 11310 COLES DR
State Code: VA
Zip Code: 22111
City Name: MANASSAS
Address Line 1: LAKE JACKSON VFD
PWS ID: VA6153443
PWS Type Code: TNCWS
PWS Type Description: Transient Non-Community Water System
Primary Source Code: GW
Primary Source Desc: Groundwater
PWS Activity Code: I

PWS Activity Description: Inactive
PWS Deactivation Date: 01/03/2003
Phone Number: 703-368-3233

--Details--
Population Served Count: 25
City Served:
County Served:
State Served: VA
Zip Code Served:

Safe Drinking Water Information System (SDWIS)

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
3	NNW	0.27	1,414.36	264.26	SDWIS

PWS ID: VA6153610
PWS Type: Transient non-community system
No of Facilities: 7
No of Violations: 6
No of Site Visits: 5
Cities Served: -
Counties Served: Prince William
Population Served Count: 749
Primacy Agency: Virginia
EPA Region: Region 3

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
9	NNW	0.34	1,798.95	264.70	SDWIS

PWS ID: VA6153685
PWS Type: Transient non-community system
No of Facilities: 1
No of Violations: 1
No of Site Visits: 0
Cities Served: PRINCE WILLIAM
Counties Served: Prince William
Population Served Count: 25
Primacy Agency: Virginia
EPA Region: Region 3

USGS National Water Information System

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
1	SW	0.29	1,509.71	223.05	FED USGS

Organiz Identifier: USGS-VA
Formation Type: Manassas Formation

Wells and Additional Sources Detail Report

Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	130	Aquifer Type:	Unconfined single aquifer
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	130	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7081724
Source Map Scale:	24000	Longitude:	-77.471099
Monitoring Loc Name:	51T 75		
Monitoring Loc Identifier:	USGS-384229077281701		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	235.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
4	NNW	0.28	1,469.72	261.84	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7237275
Source Map Scale:	24000	Longitude:	-77.4685993
Monitoring Loc Name:	51T 10A		
Monitoring Loc Identifier:	USGS-384326077281101		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			

Drainage Area Unit:	
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	10
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	260.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
5	NNW	0.30	1,608.41	264.05	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Manassas Formation
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7240052
Source Map Scale:	24000	Longitude:	-77.4691549
Monitoring Loc Name:	51T105		
Monitoring Loc Identifier:	USGS-384326077281001		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	263.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		

Vert Coord Refer System: NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
7	SSW	0.39	2,036.16	244.91	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Manassas Formation
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	175	Aquifer Type:	Unconfined single aquifer
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	175	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7065058
Source Map Scale:	24000	Longitude:	-77.4713768
Monitoring Loc Name:	51T 79		
Monitoring Loc Identifier:	USGS-384223077281801		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	245.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	NNE	0.41	2,184.75	263.88	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	289	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	289	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7265051

Source Map Scale:	24000	Longitude:	-77.4622103
Monitoring Loc Name:	51T 67A		
Monitoring Loc Identifier:	USGS-384336077274601		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	255.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	NNE	0.47	2,477.57	285.55	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	248	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	248	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7273384
Source Map Scale:	24000	Longitude:	-77.4608214
Monitoring Loc Name:	51T 60A		
Monitoring Loc Identifier:	USGS-384339077274301		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		

Horiz Coord Refer System:	NAD83
Vertical Measure:	280.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
16	SSW	0.58	3,069.39	251.51	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7037281
Source Map Scale:	24000	Longitude:	-77.4724879
Monitoring Loc Name:	51T 27D		
Monitoring Loc Identifier:	USGS-384224077282501		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	250.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
17	NNW	0.58	3,057.87	272.53	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	

Wells and Additional Sources Detail Report

Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	168	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	168	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.727894
Source Map Scale:	24000	Longitude:	-77.4702661
Monitoring Loc Name:	51T 70A		
Monitoring Loc Identifier:	USGS-384340077281101		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	265.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
18	S	0.72	3,821.66	280.54	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	105	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	105	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7009504
Source Map Scale:	24000	Longitude:	-77.464432
Monitoring Loc Name:	51T 9D		
Monitoring Loc Identifier:	USGS-384202077274401		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			

Drainage Area Unit:	
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	10
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	285.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
19	SSE	0.65	3,452.73	260.91	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Intrusive Rocks
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	120	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	120	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:	19791023	Latitude:	38.7020614
Source Map Scale:	24000	Longitude:	-77.4574875
Monitoring Loc Name:	51T167		
Monitoring Loc Identifier:	USGS-384207077272801		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	265.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		

Vert Coord Refer System: NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
20	SSW	0.68	3,576.66	256.50	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7026171
Source Map Scale:	24000	Longitude:	-77.473599
Monitoring Loc Name:	51T 48D		
Monitoring Loc Identifier:	USGS-384209077282601		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	240.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
21	SSW	0.71	3,743.69	267.22	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7023393

Source Map Scale:	24000	Longitude:	-77.4741545
Monitoring Loc Name:	51T 52D		
Monitoring Loc Identifier:	USGS-384206077282901		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	250.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
22	SSW	0.71	3,774.24	236.82	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7017838
Source Map Scale:	24000	Longitude:	-77.4730434
Monitoring Loc Name:	51T 49D		
Monitoring Loc Identifier:	USGS-384207077282301		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		

Horiz Coord Refer System:	NAD83
Vertical Measure:	240.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
23	NNE	0.60	3,170.56	279.31	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Manassas Formation
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	180	Aquifer Type:	Unconfined single aquifer
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	180	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7284494
Source Map Scale:	24000	Longitude:	-77.4566547
Monitoring Loc Name:	51T 81		
Monitoring Loc Identifier:	USGS-384342077272501		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	275.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
24	SSW	0.74	3,888.47	236.87	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	

Wells and Additional Sources Detail Report

Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7009505
Source Map Scale:	24000	Longitude:	-77.4713767
Monitoring Loc Name:	51T 50D		
Monitoring Loc Identifier:	USGS-384203077281901		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	230.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
25	SSW	0.75	3,934.31	244.20	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.701506
Source Map Scale:	24000	Longitude:	-77.4735989
Monitoring Loc Name:	51T 53D		
Monitoring Loc Identifier:	USGS-384203077282901		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			

Drainage Area Unit:	
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	10
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	250.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
26	SW	0.76	4,007.81	233.76	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7023393
Source Map Scale:	24000	Longitude:	-77.4758212
Monitoring Loc Name:	51T 56D		
Monitoring Loc Identifier:	USGS-384207077283001		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	240.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		

Vert Coord Refer System: NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	SW	0.79	4,187.94	227.42	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Manassas Formation
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	140	Aquifer Type:	Unconfined single aquifer
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	140	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7053948
Source Map Scale:	24000	Longitude:	-77.4802658
Monitoring Loc Name:	51T 77		
Monitoring Loc Identifier:	USGS-384219077285001		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	225.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
28	SSW	0.78	4,116.40	238.93	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7009505

Source Map Scale:	24000	Longitude:	-77.4735989
Monitoring Loc Name:	51T 51D		
Monitoring Loc Identifier:	USGS-384245077282601		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	230.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
29	S	0.84	4,431.40	278.12	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	105	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	105	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.6992838
Source Map Scale:	24000	Longitude:	-77.4641543
Monitoring Loc Name:	51T 63D		
Monitoring Loc Identifier:	USGS-384209077275401		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		

Horiz Coord Refer System:	NAD83
Vertical Measure:	280.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
30	SSW	0.82	4,303.35	227.15	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	185	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	185	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7001172
Source Map Scale:	24000	Longitude:	-77.4727656
Monitoring Loc Name:	51T 39D		
Monitoring Loc Identifier:	USGS-384156077282601		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	220.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
30	SSW	0.82	4,303.35	227.15	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	

Wells and Additional Sources Detail Report

Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7001172
Source Map Scale:	24000	Longitude:	-77.4727656
Monitoring Loc Name:	51T 57D		
Monitoring Loc Identifier:	USGS-384156077282602		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	220.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
31	SE	0.61	3,246.08	122.55	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7051168
Source Map Scale:	24000	Longitude:	-77.4480429
Monitoring Loc Name:	OCCOQUAN RIVER AT DAM AT LAKE JACKSON, VA		
Monitoring Loc Identifier:	USGS-01656697		
Monitoring Loc Type:	Stream		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:	343		

Drainage Area Unit:	sq mi
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	1
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	
Vertical Measure Unit:	
Vertical Accuracy:	
Vertical Accuracy Unit:	
Vertical Collection Mthd:	
Vert Coord Refer System:	

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
32	SSW	0.84	4,425.15	247.61	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7001172
Source Map Scale:	24000	Longitude:	-77.4738767
Monitoring Loc Name:	51T 55D		
Monitoring Loc Identifier:	USGS-384159077283001		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	230.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		

Vert Coord Refer System: NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
33	SSW	0.86	4,515.45	248.43	FED USGS

Organiz Identifier: USGS-VA
Organiz Name: USGS Virginia Water Science Center
Well Depth:
Well Depth Unit:
Well Hole Depth:
W Hole Depth Unit:
Construction Date:
Source Map Scale: 24000
Monitoring Loc Name: 51T 54D
Monitoring Loc Identifier: USGS-384201077282901
Monitoring Loc Type: Well
Monitoring Loc Desc:
HUC Eight Digit Code: 02070010
Drainage Area:
Drainage Area Unit:
Contrib Drainage Area:
Contrib Drainage Area Unit:
Horizontal Accuracy: 10
Horizontal Accuracy Unit: seconds
Horizontal Collection Mthd: Interpolated from MAP.
Horiz Coord Refer System: NAD83
Vertical Measure: 220.00
Vertical Measure Unit: feet
Vertical Accuracy: 5
Vertical Accuracy Unit: feet
Vertical Collection Mthd: Interpolated from topographic map.
Vert Coord Refer System: NGVD29
Formation Type:
Aquifer Name:
Aquifer Type:
Country Code: US
Provider Name: NWIS
County: PRINCE WILLIAM
Latitude: 38.7003949
Longitude: -77.4752656

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
34	SSW	0.87	4,610.09	235.96	FED USGS

Organiz Identifier: USGS-VA
Organiz Name: USGS Virginia Water Science Center
Well Depth:
Well Depth Unit:
Well Hole Depth:
W Hole Depth Unit:
Construction Date:
Formation Type:
Aquifer Name:
Aquifer Type:
Country Code: US
Provider Name: NWIS
County: PRINCE WILLIAM
Latitude: 38.6995616

Source Map Scale:	24000	Longitude:	-77.4738767
Monitoring Loc Name:	51T 28D		
Monitoring Loc Identifier:	USGS-384157077282801		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	230.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
35	SSW	0.88	4,651.00	227.95	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	200	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	200	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.6987283
Source Map Scale:	24000	Longitude:	-77.4710988
Monitoring Loc Name:	51T 58D		
Monitoring Loc Identifier:	USGS-384154077281801		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		

Horiz Coord Refer System:	NAD83
Vertical Measure:	230.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
36	SW	0.92	4,858.85	230.08	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Manassas Formation
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	245	Aquifer Type:	Unconfined single aquifer
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	245	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7037282
Source Map Scale:	24000	Longitude:	-77.4816547
Monitoring Loc Name:	51T100		
Monitoring Loc Identifier:	USGS-384213077285501		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	275.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
37	SSW	0.91	4,807.46	220.81	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Manassas Formation

Wells and Additional Sources Detail Report

Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	Confined single aquifer
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.6984505
Source Map Scale:	24000	Longitude:	-77.4719322
Monitoring Loc Name:	51T 24D		
Monitoring Loc Identifier:	USGS-384154077282001		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	220.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
38	SSW	0.91	4,781.71	245.65	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	205	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	205	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.6995616
Source Map Scale:	24000	Longitude:	-77.4752656
Monitoring Loc Name:	51T 42D		
Monitoring Loc Identifier:	USGS-384156077282901		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			

Drainage Area Unit:	
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	10
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	240.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
39	SSW	0.92	4,852.08	221.52	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.6984505
Source Map Scale:	24000	Longitude:	-77.4724877
Monitoring Loc Name:	51T 26D		
Monitoring Loc Identifier:	USGS-384154077282201		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	220.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		

Vert Coord Refer System: NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
40	SE	0.68	3,610.60	120.86	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7053946
Source Map Scale:	24000	Longitude:	-77.4458207
Monitoring Loc Name:	OCCOQUAN RIVER NEAR MANASSAS, VA		
Monitoring Loc Identifier:	USGS-01656700		
Monitoring Loc Type:	Stream		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:	343		
Drainage Area Unit:	sq mi		
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	Unknown		
Horizontal Accuracy Unit:	Unknown		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	119.53		
Vertical Measure Unit:	feet		
Vertical Accuracy:	1		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Unknown.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
41	SSW	0.96	5,046.27	219.90	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.6976172

Source Map Scale:	24000	Longitude:	-77.4710988
Monitoring Loc Name:	51T 25D		
Monitoring Loc Identifier:	USGS-384153077281901		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	220.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
42	SSW	0.96	5,093.17	217.83	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	168	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	168	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.697895
Source Map Scale:	24000	Longitude:	-77.4730433
Monitoring Loc Name:	51T 40D		
Monitoring Loc Identifier:	USGS-384154077282202		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		

Horiz Coord Refer System:	NAD83
Vertical Measure:	220.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
43	W	0.75	3,958.95	286.15	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7156723
Source Map Scale:	24000	Longitude:	-77.4883218
Monitoring Loc Name:	51T 68A		
Monitoring Loc Identifier:	USGS-384256077291801		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	280.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
44	NE	0.90	4,736.47	290.17	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Wissahickon Schist

Wells and Additional Sources Detail Report

Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	230	Aquifer Type:	Unconfined single aquifer
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	230	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7262272
Source Map Scale:	24000	Longitude:	-77.4460989
Monitoring Loc Name:	51T 99		
Monitoring Loc Identifier:	USGS-384334077264701		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	290.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
45	SSW	0.97	5,143.13	256.99	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	125	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	125	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.6984506
Source Map Scale:	24000	Longitude:	-77.4752656
Monitoring Loc Name:	51T 41D		
Monitoring Loc Identifier:	USGS-384124077283001		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			

Drainage Area Unit:	
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	10
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	255.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
46	W	0.76	4,020.30	283.52	FED USGS

Organiz Identifier:	USGS-MD	Formation Type:	Newark Group
Organiz Name:	USGS Maryland Water Science Center	Aquifer Name:	Early Mesozoic basin aquifers
Well Depth:	320	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	320	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:	1983	Latitude:	38.7161583
Source Map Scale:	24000	Longitude:	-77.4885389

Monitoring Loc Name:	51T 177
Monitoring Loc Identifier:	USGS-384259077292401
Monitoring Loc Type:	Well
Monitoring Loc Desc:	
HUC Eight Digit Code:	02070010
Drainage Area:	
Drainage Area Unit:	
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	.01
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Mapping grade GPS unit (handheld accuracy range 12 to 40 ft)
Horiz Coord Refer System:	NAD83
Vertical Measure:	313
Vertical Measure Unit:	feet
Vertical Accuracy:	1
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Global Positioning System.

Vert Coord Refer System: NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
47	SSW	0.99	5,201.33	250.53	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	145	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	145	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.697895
Source Map Scale:	24000	Longitude:	-77.4741544
Monitoring Loc Name:	51T 46D		
Monitoring Loc Identifier:	USGS-384155077283101		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	250.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
48	NNE	0.89	4,704.51	315.91	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	Wissahickon Schist
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	500	Aquifer Type:	Unconfined single aquifer
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	500	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7315049

Source Map Scale:	24000	Longitude:	-77.452488
Monitoring Loc Name:	51T 92		
Monitoring Loc Identifier:	USGS-384353077271001		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	315.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	5.0		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
49	NW	0.99	5,231.86	239.20	FED USGS

Organiz Identifier:	USGS-VA	Formation Type:	
Organiz Name:	USGS Virginia Water Science Center	Aquifer Name:	
Well Depth:	207	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	207	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	PRINCE WILLIAM
Construction Date:		Latitude:	38.7290052
Source Map Scale:	24000	Longitude:	-77.4835997
Monitoring Loc Name:	51T 7A		
Monitoring Loc Identifier:	USGS-384353077290101		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	02070010		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	10		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		

Horiz Coord Refer System:	NAD83
Vertical Measure:	240.00
Vertical Measure Unit:	feet
Vertical Accuracy:	5
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Public Water Supply Wells

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	NNW	0.23	1,233.39	258.11	PWSW

PWS ID:	6153084
PWS Name:	E.L.CORNWELL TEXACO
PWS Actvty Status:	I
Fac Activity Status:	A
PWS Act Stat Desc:	Inactive
Fac Act Stat Desc:	Active
Constructed Date:	
Latitude:	38.723056
Longitude:	-77.468611
Fed Type:	NC

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	N	0.35	1,826.00	259.37	PWSW

PWS ID:	6153610
PWS Name:	OLD DOMINION SPEEDWAY GRANDSTAND
PWS Actvty Status:	I
Fac Activity Status:	A
PWS Act Stat Desc:	Inactive
Fac Act Stat Desc:	Active
Constructed Date:	2/27/2007
Latitude:	38.724782
Longitude:	-77.466808
Fed Type:	NC

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
8	N	0.38	1,989.97	262.01	PWSW

PWS ID:	6153610
PWS Name:	OLD DOMINION SPEEDWAY GRANDSTAND
PWS Actvty Status:	I
Fac Activity Status:	I

PWS Act Stat Desc: Inactive
Fac Act Stat Desc: Inactive
Constructed Date:
Latitude: 38.725081
Longitude: -77.465692
Fed Type: NC

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
10	SE	0.26	1,369.04	237.24	PWSW

PWS ID: 6153443
PWS Name: LK JACKSON VFD
PWS Actvty Status: I
Fac Activity Status: A
PWS Act Stat Desc: Inactive
Fac Act Stat Desc: Active
Constructed Date:
Latitude: 38.708006
Longitude: -77.454167
Fed Type: NC

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	N	0.46	2,419.33	252.59	PWSW

PWS ID: 6153611
PWS Name: OLD DOMINION SPEEDWAY OFFICE
PWS Actvty Status: I
Fac Activity Status: A
PWS Act Stat Desc: Inactive
Fac Act Stat Desc: Active
Constructed Date: 7/15/2004
Latitude: 38.726278
Longitude: -77.465611
Fed Type: NC

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
12	NNW	0.44	2,302.42	282.53	PWSW

PWS ID: 6153525
PWS Name: MANASSAS ARMORY
PWS Actvty Status: I
Fac Activity Status: A
PWS Act Stat Desc: Inactive
Fac Act Stat Desc: Active
Constructed Date:

Wells and Additional Sources Detail Report

Latitude: 38.725
Longitude: -77.472222
Fed Type: NC

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
50	SE	0.99	5,235.18	146.98	PWSW

PWS ID: 6153440
PWS Name: LAKE JACKSON HILLS
PWS Actvty Status: I
Fac Activity Status: A
PWS Act Stat Desc: Inactive
Fac Act Stat Desc: Active
Constructed Date:
Latitude: 38.698056
Longitude: -77.449444
Fed Type: NC

Radon Information

This section lists any relevant radon information found for the target property.

Federal EPA Radon Zone for *PRINCE WILLIAM* County: **2**

Zone 1: Counties with predicted average indoor radon screening levels greater than 4 pCi/L
Zone 2: Counties with predicted average indoor radon screening levels from 2 to 4 pCi/L
Zone 3: Counties with predicted average indoor radon screening levels less than 2 pCi/L

Federal Area Radon Information for *PRINCE WILLIAM* County

No Measures/Homes:	16
Geometric Mean:	1
Arithmetic Mean:	1.5
Median:	1.5
Standard Deviation:	1.1
Maximum:	4.1
% >4 pCi/L:	6
% >20 pCi/L:	0
Notes on Data Table:	TABLE 1. Screening indoor radon data from the EPA/State Residential Radon Survey of Virginia conducted during 1991-92. Data represent 2-7 day charcoal canister measurements from the lowest level of each home tested.

Appendix

Federal Sources

FEMA National Flood Hazard Layer — **FEMA FLOOD**

The National Flood Hazard Layer (NFHL) data incorporates Flood Insurance Rate Map (FIRM) databases published by the Federal Emergency Management Agency (FEMA), and any Letters Of Map Revision (LOMRs) that have been issued against those databases since their publication date. The FIRM Database is the digital, geospatial version of the flood hazard information shown on the published paper FIRMs. The FIRM Database depicts flood risk information and supporting data used to develop the risk data. The FIRM Database is derived from Flood Insurance Studies (FISs), previously published FIRMs, flood hazard analyses performed in support of the FISs and FIRMs, and new mapping data, where available.

Indoor Radon Data — **INDOOR RADON**

Indoor radon measurements tracked by the Environmental Protection Agency(EPA) and the State Residential Radon Survey.

Public Water Systems Violations and Enforcement Data — **PWSV**

List of drinking water violations and enforcement actions from the Safe Drinking Water Information System (SDWIS) made available by the Drinking Water Protection Division of the US EPA's Office of Groundwater and Drinking Water. Enforcement sensitive actions are not included in the data released by the EPA. Address information provided in SWDIS may correspond either with the physical location of the water system, or with a contact address.

Radon Zone Level — **RADON ZONE**

Areas showing the level of Radon Zones (level 1, 2 or 3) by county. This data is maintained by the Environmental Protection Agency (EPA).

Safe Drinking Water Information System (SDWIS) — **SDWIS**

The Safe Drinking Water Information System (SDWIS) contains information about public water systems as reported to US Environmental Protection Agency (EPA) by the states. Addresses may correspond with the location of the water system, or with a contact address.

Soil Survey Geographic database — **SSURGO**

The Soil Survey Geographic database (SSURGO) contains information about soil as collected by the National Cooperative Soil Survey at the Natural Resources Conservation Service (NRCS). Soil maps outline areas called map units. The map units are linked to soil properties in a database. Each map unit may contain one to three major components and some minor components.

U.S. Fish & Wildlife Service Wetland Data — **US WETLAND**

The U.S. Fish & Wildlife Service Wetland layer represents the approximate location and type of wetlands and deepwater habitats in the United States.

USGS Current Topo — **US TOPO**

US Topo topographic maps are produced by the National Geospatial Program of the U.S. Geological Survey (USGS). The project was launched in late 2009, and the term "US Topo" refers specifically to quadrangle topographic maps published in 2009 and later.

USGS Geology — **US GEOLOGY**

Seamless maps depicting geological information provided by the United States Geological Survey (USGS).

USGS National Water Information System — **FED USGS**

The U.S. Geological Survey (USGS)'s National Water Information System (NWIS) is the nation's principal repository of water resources data. This database includes comprehensive information of well-construction details, time-series data for gage height, streamflow, groundwater level, and precipitation and water use data.

State Sources

Oil and Gas Wells — **OGW**

Oil and Gas Wells Data made available by Virginia Department of Mines Minerals and Energy maintained

by the Division of Gas and Oil Data Information Systems.

Public Water Supply Wells **PWSW**

The Public Wells data is provided by the Virginia Department of Health's Office of Drinking Water.

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ENVIRONMENTAL RISK INFORMATION SERVICES

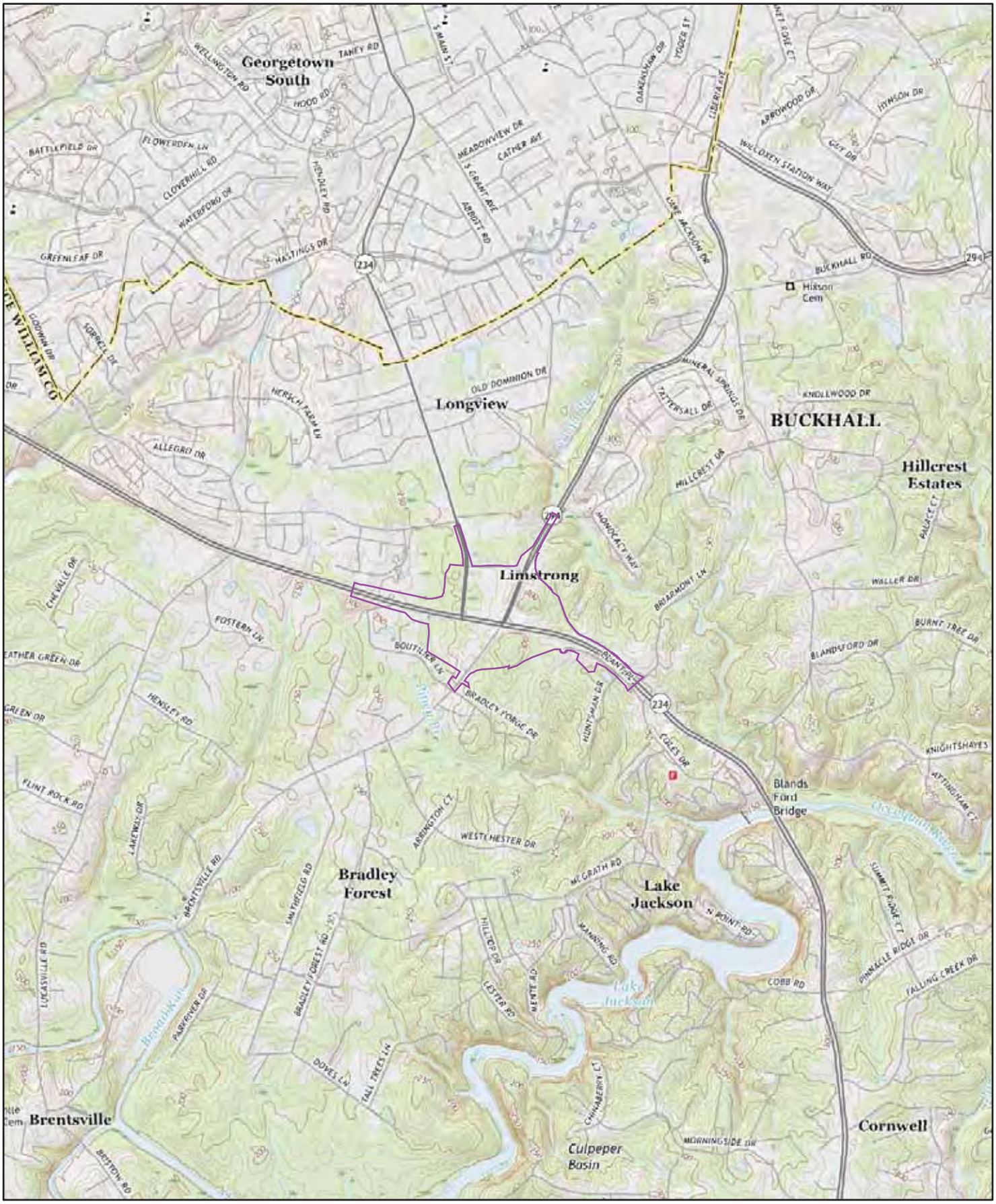
TOPOGRAPHIC MAPS

Project Property:	Brentsville Road/Prince William Parkway Interchange Brentsville Road/Prince William Parkway Manassas VA
Project No:	PAR003
Requested By:	Cardno Inc.
Order No:	20200608199
Date Completed:	June 09, 2020

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

We have searched USGS collections of current topographic maps and historical topographic maps for the project property. Below is a list of maps found for the project property and adjacent area. Maps are from 7.5 and 15 minute topographic map series, if available.

Year	Map Series
2016	7.5
1994	7.5
1984	7.5
1979	7.5
1977	7.5
1971	7.5
1966	7.5
1956	7.5
1951	7.5
1957	15
1944	15
1943	15
1940	15
1927	15



2016

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1994

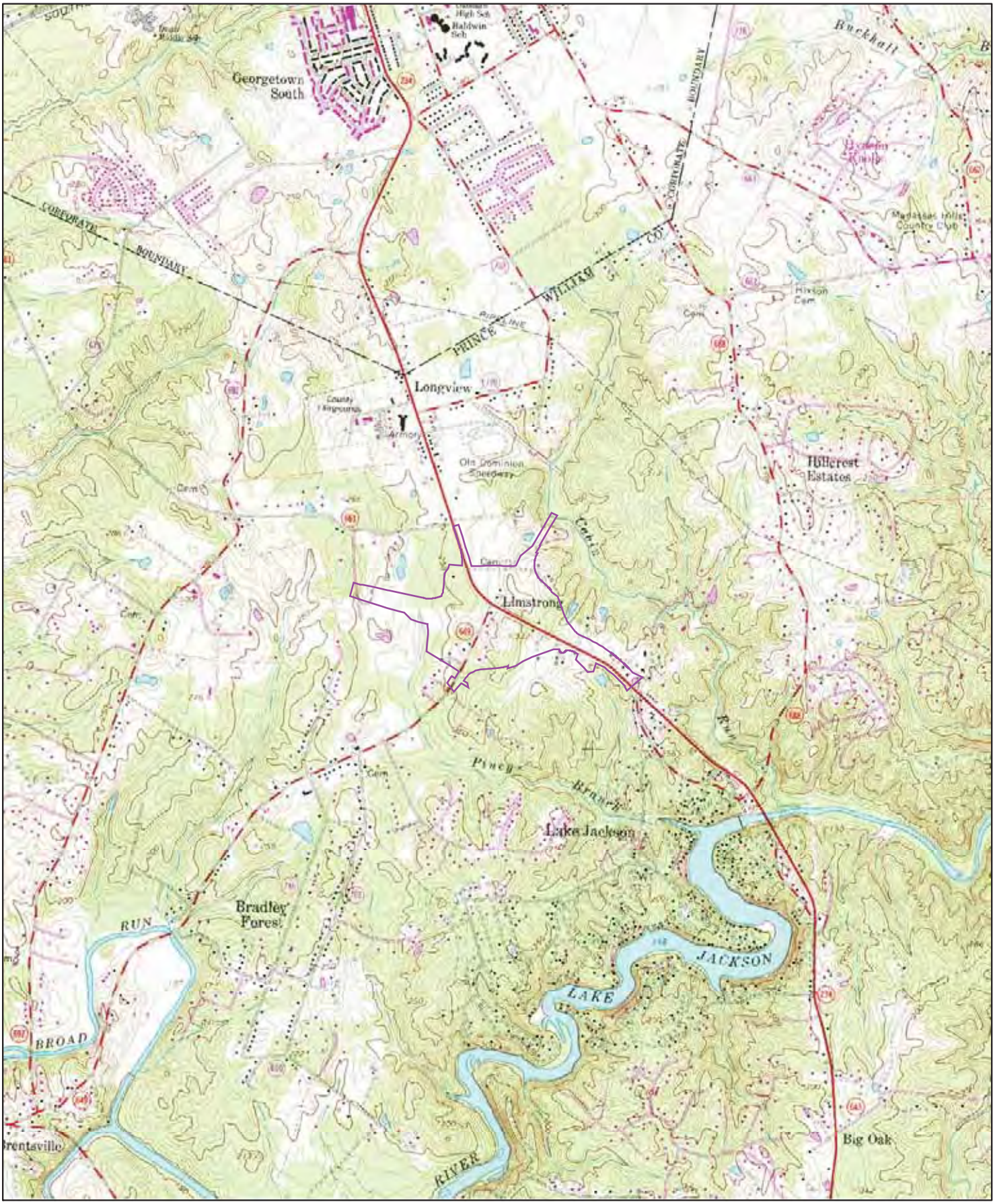
0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1984

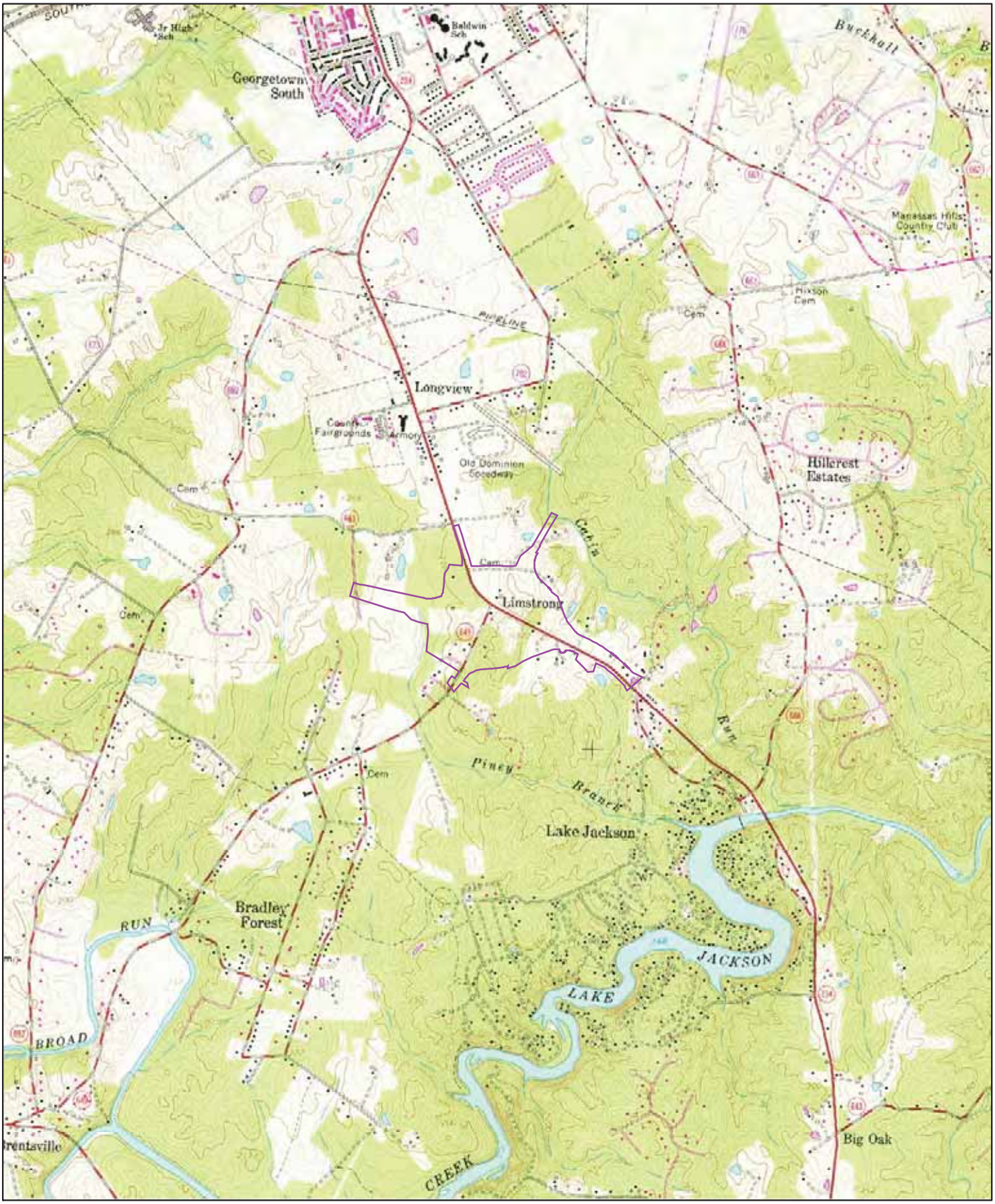
0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1979

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1977

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1971

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1966

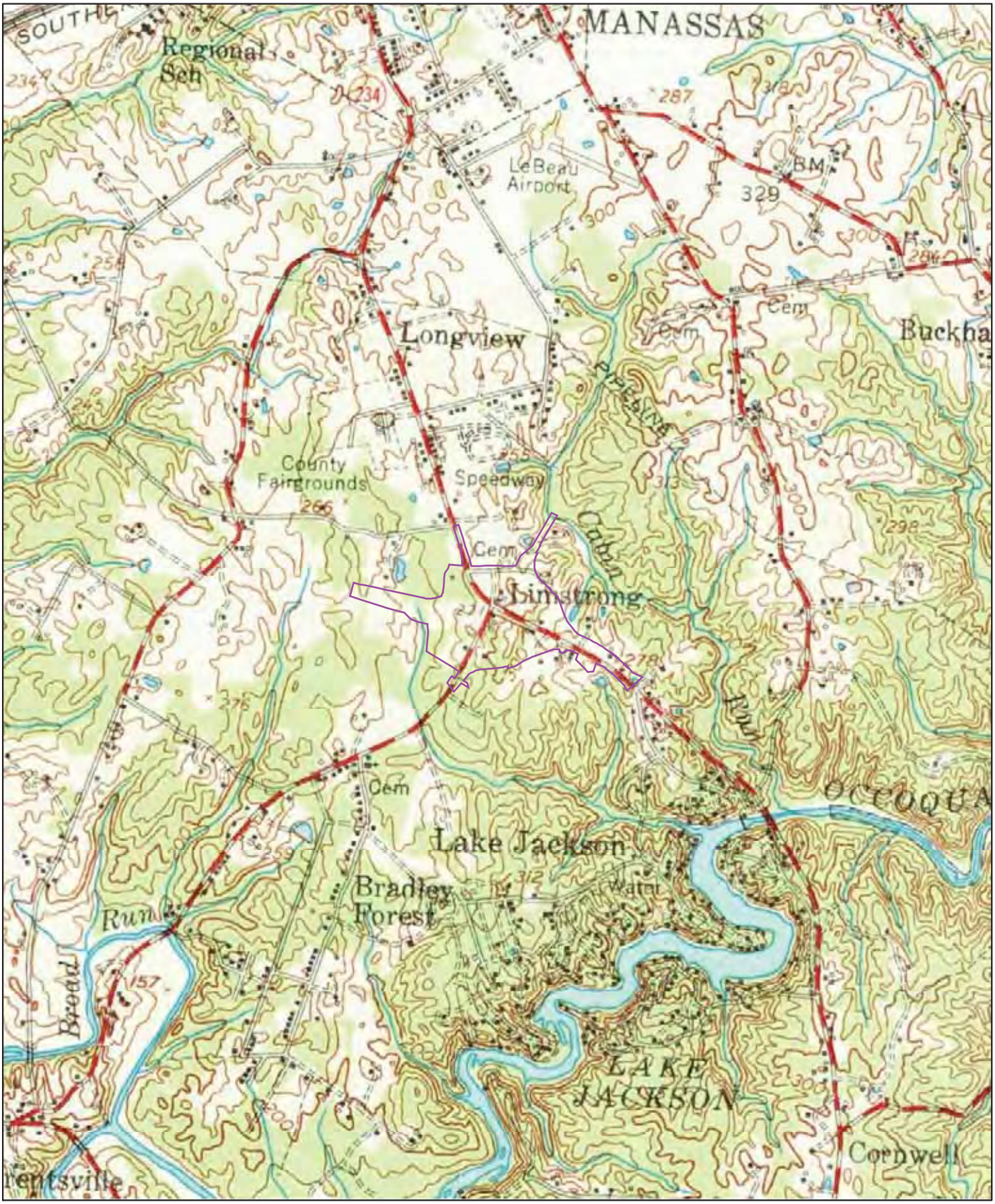
0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1957

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Quantico,VA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1956

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1951

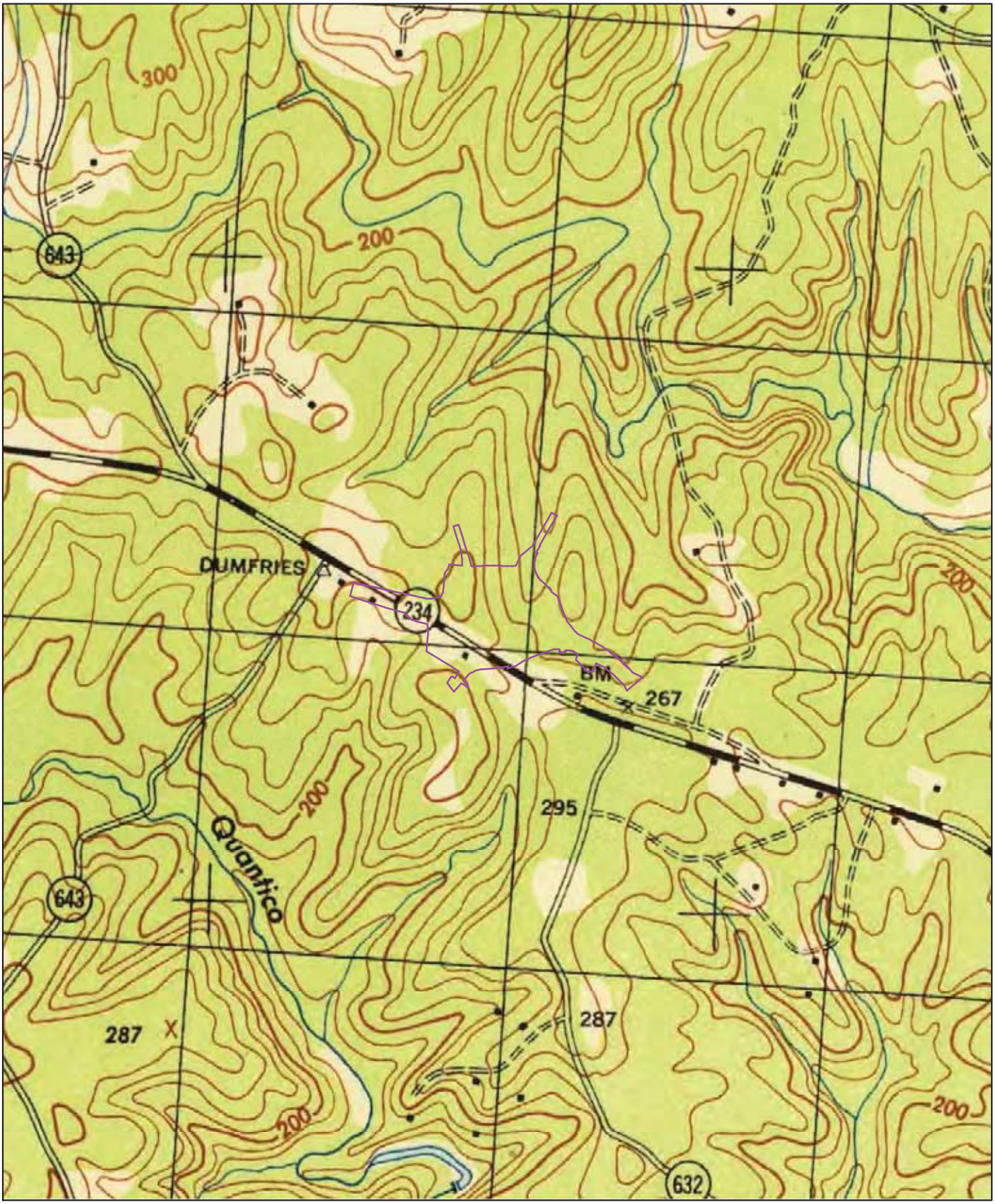
0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Independent Hill,VA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1944

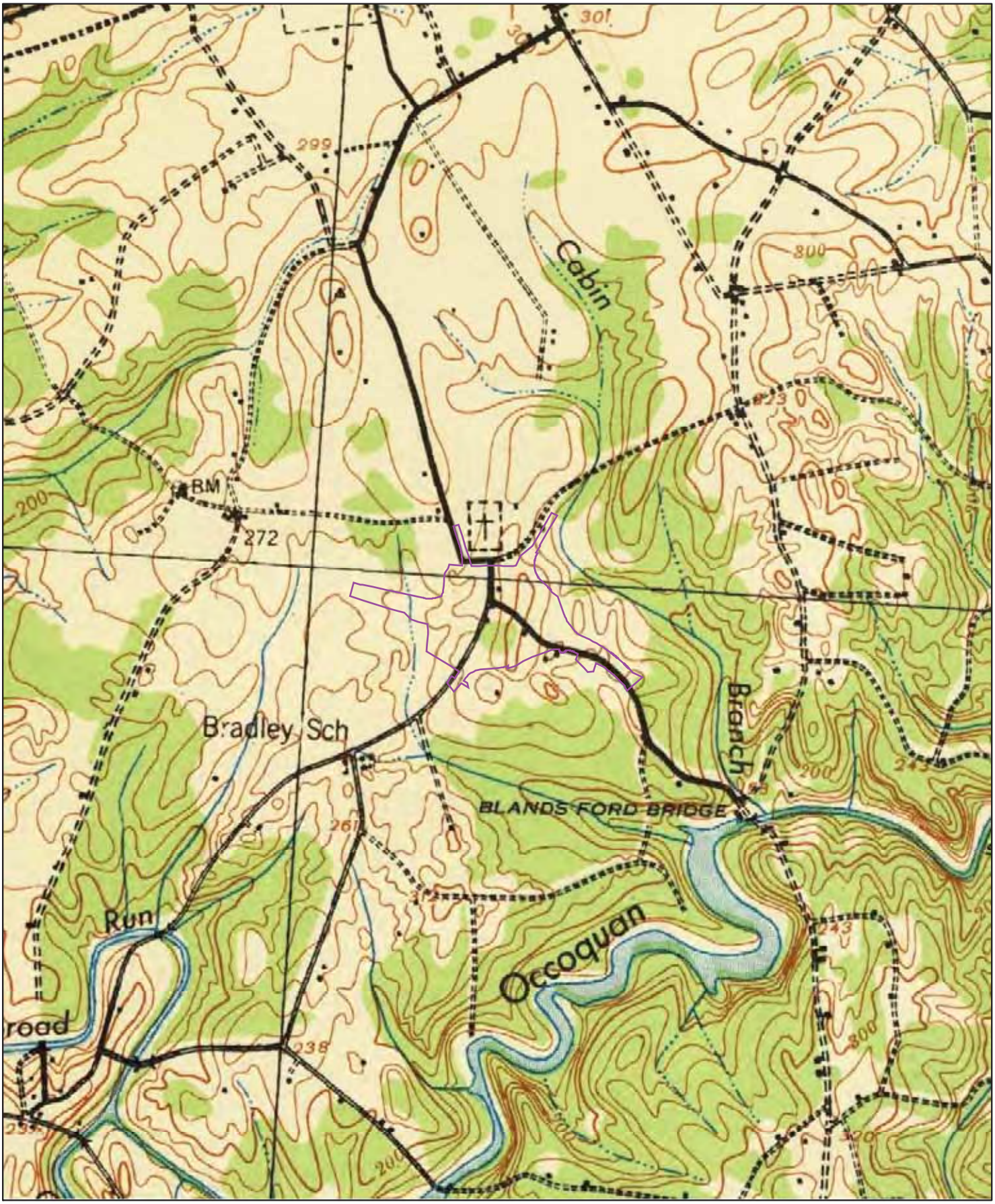
0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Quantico,VA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1943

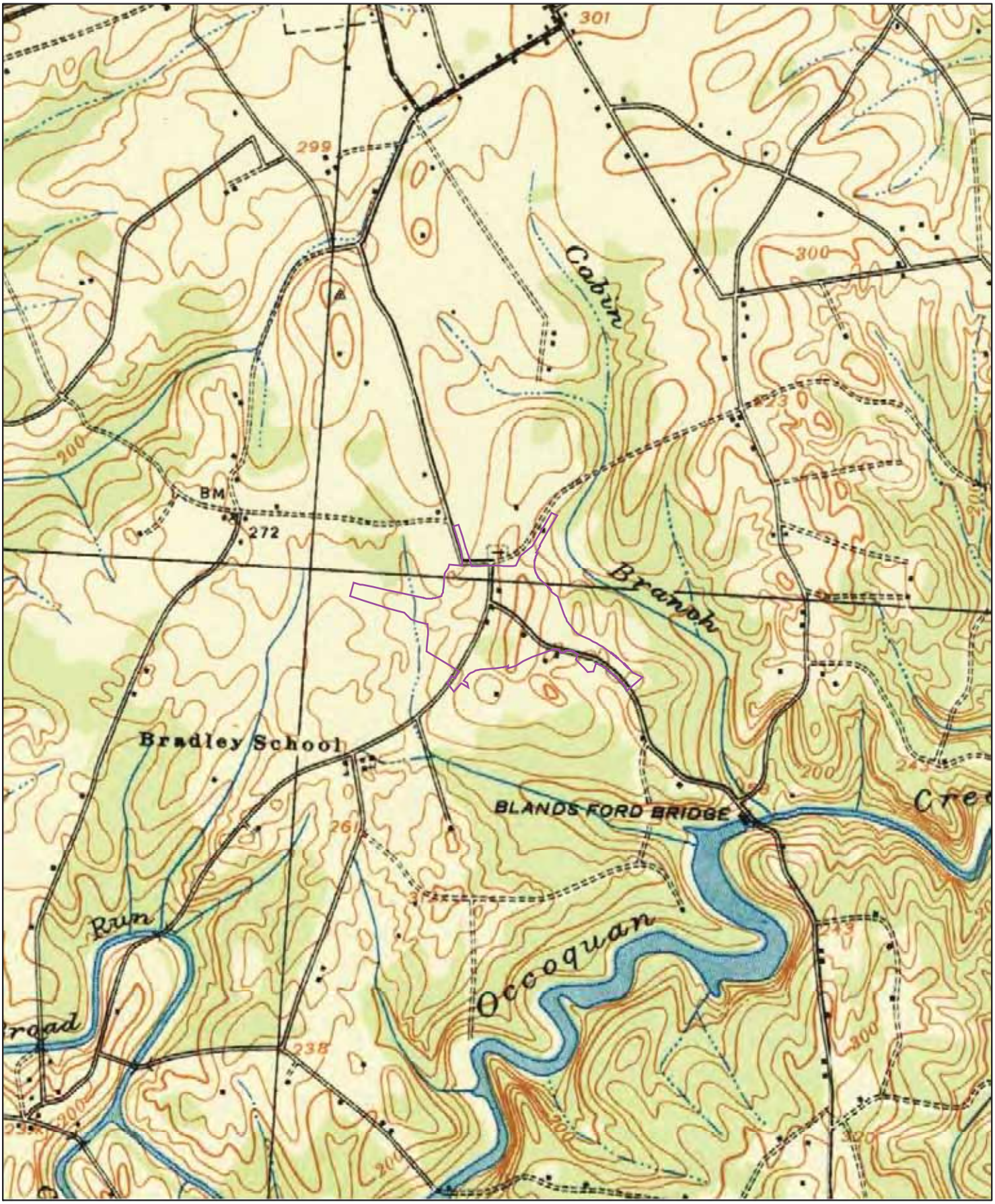
0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Quantico,VA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1940

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Quantico,VA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1927

0 0.2 0.4 0.8 Miles

Order No. 20200608199

Quadrangle(s): Quantico,VA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

APPENDIX D: Site Photographs

Photo 1
Comments: Browns Tavern marker near south end of corridor

Photo 2
Comments: Elaine Patterson LST Site - off project corridor

Photo 3
Comments: Looking towards south end of Corridor at Boutilier/Bradley Forge Drive intersection

Photo 4
Comments: Near reported site of LST off Brentsville Road

Photo 5
Comments: Looking towards VDOT stormwater BMP site

Photo 6
Comments: VDOT stormwater retention pond off Brentsville Road

---

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 7
Comments: Area soils - Triassic basin weathered rock outcrop at VDOT stormwater BMP off Brentsville Road

Photo 8
Comments: VDOT stormwater facility marker off Brentsville Road

Photo 9
Comments: Brown's Tavern historical marker along Brentsville Road

Photo 10
Comments: Brentsville Road looking north towards Dumfries Road

Photo 11
Comments: Brentsville/Dumfries Road intersection looking from south

Photo 12
Comments: Brentsville Road intersection from south

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 13
Comments: Brentsville Road corridor looking south from intersection

Photo 14
Comments: Brentsville/Dumfries Road Intersection looking NW from bike trail

Photo 15
Comments: Bike trail along Dumfries Rd.eastbound

Photo 16
Comments: Bike trail along Dumfries Road looking east

Photo 17
Comments: Meadows Farms Nursery near east end of corridor along Dumfries Road

Photo 18
Comments: Entrance to future home of first Baptist Church next to nursery along Dumfries Rd., Southside

---

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 19
Comments: Future church property along southeast edge of property line

Photo 20
Comments: Southeast edge of property line looking towards Dumfries Road

Photo 21
Comments: Woodland in the middle of southeast sector of property

Photo 22
Comments: Trail along the southeast edge of property

Photo 23
Comments: Fiber optic communications cable along southeast edge of property

Photo 24
Comments: Old home site mound and ground cover in southeast quadrant

---

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 25
Comments: Old home site in southeast quadrant

Photo 26
Comments: Old well site at old home site in southeast quadrant

Photo 27
Comments: Constructed wetland site in southeast quadrant

Photo 28
Comments: Asphalt pad with all the automobile tires and 55 gallon drum in southwest quadrant

Photo 29
Comments: Non-indigenous evergreen tree indicating probable homesite southwest quadrant

Photo 30
Comments: Large area of periwinkle ground cover near old homesite southwest quadrant

Photo 31
Comments: Metal debris near old homesite southwest quadrant

Photo 32
Comments: Miscellaneous debris building blocks old 55 gallon drum in southwest quadrant

Photo 33
Comments: Old wood rail fence southwest quadrant

Photo 34
Comments: North edge of the dock stormwater structure southwest quadrant

Photo 35
Comments: Unusual excavations and soil pile in southwest quadrant

Photo 36
Comments: Unusual excavations and soil pile in southwest quadrant

---

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 37
Comments: Stream crossing beneath Dumfries Rd., southwest quadrant

Photo 38
Comments: Stormwater BMP along the south side of Dumfries Road southwest quadrant

Photo 39
Comments: VDOT stormwater basin southside Dumfries Road southwest quadrant

Photo 40
Comments: Dumfries Road eastbound from west corner of property

Photo 41
Comments: Bed rock rubble pile along the south side of eastbound Dumfries Road

Photo 42
Comments: Eastbound Dumfries Road looking ports intersection

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 43
Comments: Eastbound Dumfries Road before intersection

Photo 44
Comments: Dumfries Road intersection looking east from eastbound lane

Photo 45
Comments: Dumfries Road intersection looking northwest

Photo 46
Comments: Prince William Dumfries Road intersection

Photo 47
Comments: Dumfries Rd., from eastbound lane

Photo 48
Comments: Dumfries Road eastbound lane near nursery

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 49
Comments: Dumfries Road eastbound lane east of intersection

Photo 50
Comments: Dumfries Road eastbound at east end of corridor

Photo 51
Comments: Dumfries Road westbound near east end of corridor

Photo 52
Comments: Dumfries Road westbound looking towards PWP intersection

Photo 53
Comments: Dumfries Road westbound looking towards PWP intersection

Photo 54
Comments: Dumfries Road westbound near PWP intersection

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 55
Comments: Prince William Parkway northbound from Dumfries intersection

Photo 56
Comments: PWP north of Bradley cemetery intersection

Photo 57
Comments: Prince William Parkway north of Bradley cemetery

Photo 58
Comments: Prince William Parkway southbound near north edge of corridor

Photo 59
Comments: Prince William Parkway southbound north of Bradley Cemetery Road

Photo 60
Comments: Prince William Parkway southbound south of Bradley Cemetery Road

Photo 61
Comments: Intersection of Prince William Parkway northbound in Dumfries Road

Photo 62
Comments: Between Prince William Parkway, Dumfries Road and Dumfries Road intersection

Photo 63
Comments: Dumfries Road intersection westbound

Photo 64
Comments: Dumfries Road northbound

Photo 65
Comments: Dumfries Road northbound at Bradley Cemetery Way

Photo 66
Comments: Dumfries Road northbound north of Bradley Cemetery Way

Photo 67
Comments: Dumfries Road southbound south of Godwin Road intersection

Photo 68
Comments: Dumfries Road southbound north of Bradley Cemetery Way intersection

Photo 69
Comments: Dumfries Road southbound north of Prince William intersection

Photo 70
Comments: Prince William Parkway, Westbound

Photo 71
Comments: Prince William Parkway westbound

Photo 72
Comments: Prince William Parkway, Westbound

Project Name: Brentsville Road/Prince William Parkway Interchange
Address: Brentsville Road/Prince William Parkway, Manassas, VA
Project No: PAR003

Photographic Log

Photo 73
Comments: Prince William Parkway westbound at edge of corridor

Photo 74
Comments: Hardwood bottom swap south east of Bradley Cemetery Way and Dumfries Road

Photo 75
Comments: Old farm gate in wooded area north west of Prince William Parkway and Dumfries Road intersection

Photo 76
Comments: VDOT maintenance storage lot

Photo 77
Comments: Construction debris dumps in VDOT maintenance lot

Photo 78
Comments: Construction debris piles in VDOT maintenance lot

Photo 79
Comments: VDOT stormwater BMP west side of Dumfires Road

Photo 80
Comments: Bradley Community Cemetery off Bradley Cemetery Way

Photo 81
Comments: Smith Lane/Briarmont Lane intersection at East end of corridor

Photo 82
Comments: Smith Lane looking north

Photo 83
Comments: Closed LST site at Leith Wilkie Smith property

Photo 84
Comments: Smith Lane looking northeast along edge of subject parcel

Photo 85
Comments: Florence family cemetery northeast edge of corridor

Photo 86
Comments: Florence family cemetery grave sites

Photo 87
Comments: Florence family gravesites

Photo 88
Comments: Florence family gravesites outside iron fence

Photo 89
Comments: Hardwood bottom below Florence family cemetery

Eric Powers, CPG

Current Position
Principal/Senior Geologist

Discipline Areas
> Remediation Consulting
> Environmental Consulting, General Remediation
> Environmental Consulting, Water Resources

Years' Experience
33

Joined Cardno
1999

Education
> MS, Geology, East Carolina University, Greenville, NC
> BA, Geology, University of North Carolina at Wilmington, Wilmington, NC

Professional Registrations
> Professional Geologist: GA, NC, VA
> OSHA 8 Hour HAZWOPER Trained
> MSHA Part 48 Trained
> DMME Miner trained

Summary of Experience

Mr. Eric R. Powers, CPG has extensive experience in, environmental assessment, groundwater investigations, risk assessment and remediation. Over the last 31 years, he has served as a project manager directing environmental assessments and remedial investigations for a wide variety of projects across the mid-Atlantic and Southeastern US. He has managed projects for compliance with RCRA, CERCLA, VRP and UST regulations on behalf of federal and state and local governments as well as private industry and mining. His project experience includes a variety of environmental assessments on commercial, industrial and mining properties, infrastructure, water resources and transportation. As a result of this technical and regulatory experience, Mr. Powers has extensive experience in conducting remedial feasibility studies and risk assessment on a variety of sites including MGPs, USTs and industrial sites impacted by petroleum, chlorinated solvents, coal tar and metals. He has worked with a wide range of remedial technologies including pump and treat, soil vapor extraction, dual-phase recovery, biosparge, in-situ chemical oxidation, surfactant flushing and others.

Mr. Powers is also experienced in the development of water resources for a wide range of interests. His experience ranges from potable water supply replacement for environmentally impacted sites to the exploration, design and construction of industrial water supply systems drawing from surface water and groundwater sources. His technical experience includes aquifer testing and analysis and the use of advanced geophysical technologies including magnetics, electromagnetics, resistivity, ground penetrating radar, seismic refraction, and advanced borehole logging including natural gamma, caliper, single point resistance, SP, acoustic televiewer, heat-pulse flow and video logs. He has also worked with a wide range of drilling technologies including air-rotary, mud-rotary, hollow-stem auger, direct-push (Geoprobe), vibrasonic coring, 94-mm wireline coring and marine vibracoring.

Significant Projects

Alpha Natural Resources: Phase I Assessment of Coal Properties in, WV, VA, KY.

Mr. Powers led a Phase I environmental assessment to identify environmental liabilities associated with the acquisition of coal mining properties located throughout southwest Virginia, southern West Virginia and eastern Kentucky. The assessments focused on all types of potential environmental liabilities resulting from more than 100 years of mining-related activities on more than 100,000 acres of coal lands, coal processing and load-out facilities, maintenance activities and reclamation. The study also assessed environmental permit compliance issues associated with the handling and disposal of mining and industrial wastes and with water quality issues associated with mining discharges form NPDES-permitted outfalls. The assessment served as a critical decision making tool in the acquisition process.

Town Gas-Oronoco Outfall Manufactured Gas Plant (MGP) site.

Since 1999, guided all aspects of remediation at a former Manufactured Gas Plant (MGP) site. Impacted media included soil, sediment, groundwater, surface water and air. Developed and implemented remedial strategies for investigating and remediating all affected media. Served as liaison for the city with residents and businesses impacted by ecological risks, and presented informational seminars to public interest groups, city council and government regulators concerning project activities.

Mineral Sands Mining.

Since 2001, assisted a mineral sands mining company with an extensive array of water, wastewater, mining and environmental-related issues including the treatment of sediment-laden water from the Stony Creek minerals laboratory; development on groundwater supplies for three large mineral sands mines. Significant projects included the development of groundwater and surface water supplies for operations in Virginia and North Carolina. Project work spanned initial scoping studies through detailed design and construction.

City of Alexandria: Alexandria Town Gas Oronoco Outfall VRP Site, Virginia.

Over the last ten years, Mr. Powers has assisted the City of Alexandria in managing environmental impacts associated with coal tar releases from a former Manufactured Gas Plant (MGP) site located in Old Town Alexandria. After having the site admitted to the Virginia Voluntary Remediation Program (VRP), Cardno has confronted many of the challenges faced by the City in managing MGP impacts to soil and groundwater located beneath valuable commercial real estate not owned by the City. Cardno's work has entailed testing and assessing all impacted media including soil, groundwater, surface water, sediment and indoor air; conducting environmental risk assessments and toxicological studies to protect potentially impacted residents and commercial workers, developing, testing, designing and implementing short and long-term remedial designs and assisting the City with public relations and regulatory compliance.

Iluka Resources, Surface Water Intake and Pipeline, Greensville County, VA.

Project Manager for Iluka Resources in the development, design and construction of a river intake and six-mile process water pipeline to supply process water to one of its mining facilities in south side Virginia. Oversight of all stages of the project from identifying alternative alignments, assisting in negotiating easements with landowners, negotiating an intake location with state, city and power company officials, designing and permitting the intake and pipeline structures, supervising the construction of all infrastructure as well as testing and commissioning. Permits were required from The Virginia Marine Resources Commission, U.S. Army Corps of Engineers, Virginia Water Protection program, and all local permitting agencies were obtained on schedule to begin pipeline construction.

Virginia Department of Transportation: St. Louis Area Headquarters, Middleburg, VA.

Mr. Powers managed and coordinated the investigation of road salt run-off impacts at one of VDOT's Area Headquarters. The investigation included sampling of subsurface soils, groundwater and surface water on and off site. The study culminated in the development of a list of recommended remedial actions aimed at re-configuring facility operations to better manage salt storage and handling and active measures to remediate off-site impacts to soil and surface water.

City of Alexandria: Environmental Services Contract Manager, Alexandria, VA.

Whenever the City purchases or sells real estate it is often confronted with legacy environmental issues ranging from soil and groundwater impacts from petroleum fuels and chlorinated solvents to lead and asbestos in building materials. The City often purchases urban properties for the City's Park and Recreation Department. Impacts from various industries including dry cleaners, former gas stations, rail yards and MGPs required investigation, cleanup under Virginia's UST and VRP programs before they could be acquired and utilized by the park system. Over the last 18 years Mr. Powers has led the City's participation in these programs from initial Phase I and Phase II soil and

groundwater assessments to the application process, follow-up investigations, risk assessments, remediation and site closure.

Atlantic Bulk Carrier, RCRA Facility Lead – Groundwater Investigation and Corrective Measures Study, New

The trucking industry must comply with ongoing environmental regulation and sometimes legacy environmental issues associated with its maintenance facilities. Over a three-year period, Mr. Powers has assisted Atlantic Bulk Carrier with its compliance with EPA Region 3's Facility Lead Program (FLA) to assess and remediate solvent-impacted groundwater beneath its maintenance and storage yard. His work included a full soil and groundwater investigation and the development of corrective measures (CMS) as required under the FLA. Mr. Powers' innovative solutions have reduced ABC's compliance costs in complying with their agreement with US EPA.

Virginia Department of Transportation: RCRA Facility Lead Program Corrective Measures, Virginia.

Among his many projects with VDOT, Mr, Powers recently led the development, testing and implementation of Interim Measures at a Resource Conservation and Recovery Act (RCRA) Facility Lead Program (FLA) site in central Virginia. Groundwater beneath the former hazardous waste disposal area had been impacted by the release of chlorinated solvents 1,1,1-TCA, TCE and petroleum-based solvents containing benzene. Mr. Powers developed treatment strategies to remove solvent residues trapped in waste unit sub-liner materials using a combination of dual-phase extraction, in-situ chemical oxidation and surfactant washing. The strategy has resulted in a major reduction in contaminant source concentrations and the contraction of the down-gradient groundwater plume, reducing site risks.

ATTACHMENT 5

DHR CONCURRENCE LETTER

PRINCE WILLIAM COUNTY

Department of Transportation
Ricardo Canizales
Director of Transportation

February 6, 2020

Mr. Marc Holma
Division of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, Virginia 23221

SUBJECT: Project Effects
Prince William Parkway (Route 234) at Brentsville Road Interchange
Prince William County, Virginia
DHR File No. 1990-0911

Dear Mr. Holma:

Prince William County is currently completing environmental studies to reevaluate the environmental consequences of a new interchange at Prince William Parkway (Route 234) and Brentsville Road (Route 649). Prince William County Department of Transportation is developing the interchange to provide free flow movements and eliminate delays at the existing at-grade signalized intersections.[1] An interchange at this location was a component of the Route 234 Bypass (now Prince William Parkway) project, which was evaluated in a Supplemental Environmental Impact Statement (SEIS) prepared by VDOT and the Federal Highway Administration (FHWA) in 1994 in accordance with provisions of the National Environmental Policy Act (NEPA) and 23 CFR 771. Due to funding constraints, the Route 234 Bypass was constructed with at-grade intersections instead of the planned grade-separated interchange.

A working conceptual design has been developed for the proposed interchange (see **Figure 1**) based on studies conducted by VDOT. However, this design may change based on alternative technical concepts that may be developed by a design-build contractor to be procured by Prince William County through a competitive procurement process. Nevertheless, the estimated limits of disturbance footprint (see **Figure 2**) comprised almost entirely of existing right-of-way should be sufficient to accommodate any alternative designs. The area of potential effects (APE) for direct effects is recommended to be the project footprint and any areas used for temporary or permanent construction easements (identified as the existing and proposed right-of-way in Figure 2). The APE for indirect effects is considered to be the project viewshed and includes any areas in which setting and feeling can be impacted by the project. Although it varies, the viewshed is limited by intervening obstructions of buildings, tree lines, and other vegetation. The APE is approximately 130 acres.

[1] Prince William Parkway has two different route designations within the project area, as shown in Figures 1 and 2. It is designated as Route 234 entering the project area from the west and then Route 294 as it continues north and then east beyond the project area. Dumfries Road is designated as Route 234 Business to the north of the project area and then it continues as Route 234 east of the project area.

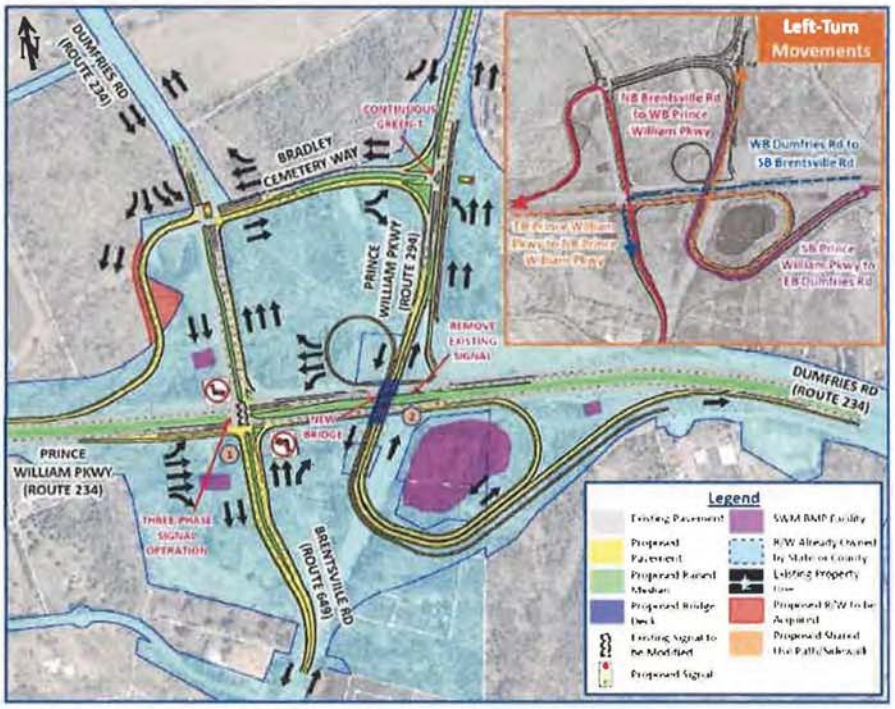


Figure 1. Working Concept Design for Proposed Brentsville Road Interchange

Figure 2. Limits of Disturbance / APE

Previous Coordination and Technical Studies

As part of the 1994 SEIS and the Final Environmental Impact Statement (1981) prepared for the Route 234 Bypass Project, comprehensive archaeological and architectural surveys were conducted, including within a proposed right-of-way footprint for a cloverleaf interchange at Brentsville Road. That work identified two National Register of Historic Places (NRHP)-eligible sites just outside the area that constitutes the direct effects APE for the currently proposed Prince William Parkway Interchange at Brentsville Road (see Figure 2): Bradley (076-0070), consisting of a 1790-1829 brick I-house, braced-frame barn, two cemeteries, and remnants of a garden; and the Bradley domestic archaeological site (44PW0563), the remains of a 1800-1899 dwelling.

In conjunction with the SEIS, a Section 106 Memorandum of Agreement (MOA) was executed in 1994 that provided stipulations (Stipulations 2 and 5) for the resolution of adverse effects to Bradley (076-0070) and the Bradley domestic archaeological site (44PW0563).

Assessment of Effects

We have reviewed previous documentation prepared for the larger Route 234 Bypass Project, and **Figure 3** (from DHR Report Number PW-058, #2 below) shows the cloverleaf interchange design originally studied at this location:

1. DHR Report Number PW-041; *Phase I Cultural Resources Survey of the Proposed Manassas Bypass, Route 234, Prince William County, Virginia* (McLearen and Harbury 1988).
2. DHR Report Number PW-058; *Phase I Archaeological Survey of Cloverleaf Interchanges Located Along the Proposed Manassas Bypass, Route 234 in Prince William County, Virginia: Cloverleaf at Limstrong and Cloverleaf in Vicinity of Rt. 66 and Route 234 Intersection & Phase 2 Archaeological Evaluation of 44Pw561, the Clark and Jones Cemetery, Located in the Vicinity of Limstrong and Phase 2 Archaeological Evaluations of the Monroe House Site (44Pw80)* (Ryder 1990).
3. DHR Report Number PW-067; *Supplemental Phase 1 Archaeological Survey of Design Changes in Ramps and Cloverleafs in Four Locations Along Rt. 234 in Manassas* (Ryder, Bushey and Barker 1992).
4. DHR Report Number PW-086; *Phase 1 Archaeological Survey of the Northern and Southern Segments of Route 234 in Prince William County* (Ryder, Bushey and Barker 1992)
5. DHR Report Number PW-088; *Phase II Architectural and Historical Evaluations of Selected Properties Associated with the Proposed Improvements to Route 234, the Manassas Bypass, in Manassas and Prince William County, Virginia. Architectural and Historical Evaluations of: Bloom Hill (76-149), Bradley (76-70), Pageland I (Honeywood) (76-138), the Old Woodbine Baptist Church (76-237), the Lake Jackson House (76-72), the Proposed Lake Jackson Historic District (76-390), and the Proposed Catharpin Historic District (76-391)* (Bushey 1993).

We also reviewed DHR's online V-CRIS database to identify any additional cultural resources investigations or newly recorded resources. As a result, no additional resources have been recorded within the APE and two additional reports were reviewed:

6. DHR Report Number PW-109; *Phase 1 Archaeological Survey of Proposed Improvements to Route 776, Liberia Avenue Extended, in Prince William County, Virginia* (Ryder, Egghart, Bushey and McLearen 1995).
7. DHR Report Number PW-404; *Phase I Cultural Resources Survey of the Proposed Bradley Square Development, Prince William County, Virginia* (Cooke, O'Donnell and Lay 2005).

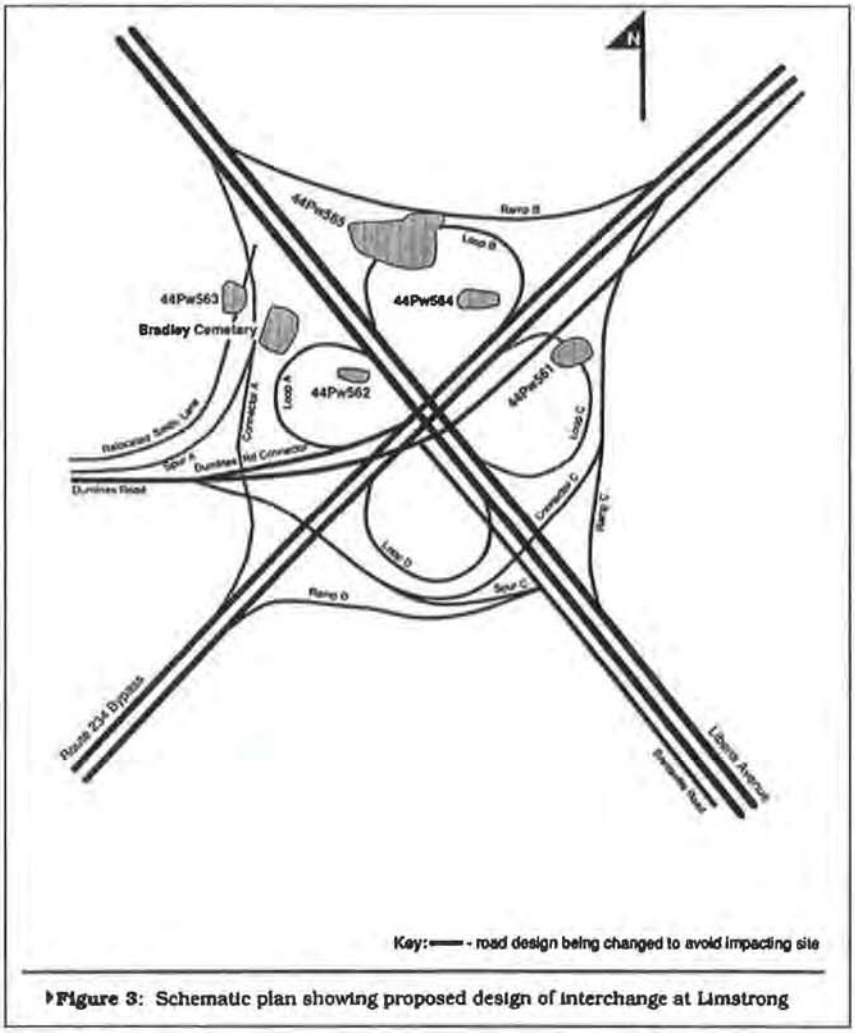


Figure 3. Former Proposed Cloverleaf Interchange at Brentsville Road / Limstrong
(Note that the North arrow is not aligned correctly in this report graphic)

(from DHR Report Number PW-058; *Phase I Archaeological Survey of Cloverleaf Interchanges Located Along the Proposed Manassas Bypass, Route 234 in Prince William County, Virginia: Cloverleaf at Limstrong and Cloverleaf in Vicinity of Rt. 66 and Route 234 Intersection & Phase 2 Archaeological Evaluation of 44Pw561, the Clark and Jones Cemetery, Located in the Vicinity of Limstrong and Phase 2 Archaeological Evaluations of the Monroe House Site* (44Pw80) (Ryder 1990))

Figure 4 shows the sites previously recorded in V-CRIS that are located within or near the APE of the proposed interchange and they are described below:

- **44PW0561 / 076-0227, Clark-Jones Cemetery, Not Eligible, Moved:** This cemetery, along with all of the grave markers, was relocated by VDOT to the Linton Hall Cemetery prior to construction of the existing roadways.
- **44PW0562, Structural Remains of Possible Bank Barn, Not Eligible:** Although the site is within existing right-of-way, it would not be impacted by the current working design.
- **44PW0563, Bradley Domestic Archaeological Site, Eligible:** Outside the direct effects APE; the proposed design of the Prince William Parkway and Brentsville Road interchange avoids this site.
- **44PW0564, Florence Cemetery, Not Eligible:** Although the cemetery is within existing right-of-way, it would not be impacted by the current working design. Should the design change, care will

be taken to avoid the cemetery and orange barrier fencing or other protective measures would be implemented during construction of the project to protect this resource.

- **44PW0565, Farmstead, Not Eligible:** Although the site is within existing right-of-way, it would not be impacted by the current working design.
- **44PW0923, Prehistoric Site, Not Eligible:** Small shallow prehistoric site consisting of a light scatter of non-diagnostic lithic artifacts contained within or just below the humus. Approximately 50 percent of the site has been destroyed by a historic road trace; this site would not be impacted by the current working design.
- **44PW1619, Archaeological Site Associated with Bradley, Not Evaluated:** Outside the direct effects APE; camp, cemetery, and farmstead associated with Bradley.
- **076-0489, Limstrong Historic District, Not Eligible:** With the exception of Bradley (076-0070) and the Bradley domestic archaeological site (44PW0563), the remainder of the resources that were proposed as contributing to the district (44PW0561, 44PW0562, 44PW0564, and 44PW0565) are no longer extant or were previously determined not eligible for listing in the NRHP.
- **076-0070, Bradley, Eligible:** In accordance with the 1994 MOA, the proposed interchange would not physically encroach on the historic property's boundary within right-of-way or construction easements. Although the site is well screened by existing tree cover, landscaping measures may be developed as needed to reduce the visual effect on Bradley and the plans will be submitted for review to the Virginia Department of Historic Resources prior to implementation. Compliance with any other applicable provisions of the MOA will also be achieved during project implementation.

Figure 4. Archaeological and Architectural Sites within APE

Based on the survey results documented in the aforementioned archaeological and architectural surveys that were conducted as part of the technical studies for the cloverleaf interchange previously proposed in this area, as well as the information recorded in V-CRIS, the APE has been thoroughly assessed for cultural resources and no additional surveys are required as part of the current project. Two historic properties, Bradley (076-0070) and archaeological site 44PW0563 are located outside of the direct effects APE.

The previous assessment of effects on historic properties completed along with the SEIS resulted in a determination of adverse effect (DHR letter dated 8/31/93), based in part on visual effects of the project on Bradley. However, we believe that the thick growth of trees since the initial construction of the project (without the grade-separated interchange) now provides sufficient screening that there would no longer be a visual impact on the Bradley historic property. Accordingly, PWC DOT invites you to review the above information and concur with our recommendation of **No Adverse Effect** for the proposed interchange by signing the signature block below and returning to my attention within 30 days of receiving this letter. If you have questions or need additional information, please call me at 703-792-6826 or the County Archaeologist at (703) 792-5729 or jspatton@pwcgov.org with any questions.

Thank you for your assistance.

Sincerely,

Khattab Shammout, PE, DBIA
Division Chief, Capital Projects
Design and Construction

cc: Justin Patton, County Archaeologist, Prince William County Planning Department
David Cuff, Historic Prince William
Helen Ross, VDOT
Stuart Tyler, Parsons

The Virginia Department of Historic Resources concurs with a **No Adverse Effect** determination for the Prince William Parkway (Route 234) Interchange at Brentsville Road Project (DHR File No. 1990-0911).

Ms. Julie V. Langan
Director, Virginia Department of Historic Resources
Virginia State Historic Preservation Officer

10 Feb 2020
Date