

Georgetown Pike
Footpath Feasibility Study



PREPARED FOR:

U.S. Department of Transportation
Federal Highway Administration

EASTERN FEDERAL LANDS HIGHWAY DIVISION

NATIONAL PARK SERVICE

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Footpath Feasibility Study

Prepared for:

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Federal Highway Administration

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Georgetown Pike
Footpath Feasibility Study

Executive Summary

INTRODUCTION

This Georgetown Pike Footpath Feasibility Study has been completed to assess the feasibility of constructing a footpath in the Georgetown Pike corridor, from the Difficult Run Trail in Great Falls Park to the Madeira School frontage along Georgetown Pike in McLean, Virginia. Such a footpath would provide an opportunity to complete a connection within the Potomac Heritage National Scenic Trail (PHNST) network, while also providing a connection to surrounding local trails and to neighborhoods in the McLean and Great Falls areas of Fairfax County. Building segments of this footpath within the park and along Georgetown Pike, including building a foot bridge over Difficult Run, would benefit the many people who want to travel by foot, bicycle, or horse within this popular trail network.

This study has been led by the Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division (EFLHD), in partnership with the National Park Service (NPS), with assistance from Kimley-Horn through a professional services contract with EFLHD. This study has also involved key stakeholders:

- **Local agencies**: Fairfax County Board of Supervisors, Dranesville District (Supervisor John W. Foust); Fairfax County Department of Transportation (FCDOT); and Fairfax County Park Authority (FCPA)
- **Local school**: The Madeira School
- **State and regional agencies**: Virginia Department of Transportation (VDOT), NOVA Parks (formerly Northern Virginia Regional Park Authority), and Northern Virginia Regional Commission (NVRC)
- **Citizen groups**: McLean Citizens Association and Great Falls Citizens Association
- **Advocacy groups**: Potomac Heritage Trail Association (PHTA), Mid-Atlantic Off-Road Enthusiasts (MORE), and Fairfax Trails and Streams

SITE ANALYSES AND ENVIRONMENTAL REVIEW

In coordination with these stakeholders, the FHWA study team examined the feasibility of options for the foot path, consistent with the goals of each stakeholder and in the historic context of the corridor. The feasibility analysis first involved the development of mapping, review of traffic data, conducting field investigations, and performing a detailed environmental review of the study area to support concept design. From site analyses and environmental reviews, the study team concluded that there do not appear to be any showstoppers to implementing a

footpath in the project area with respect to field conditions and environmental permitting processes. While Georgetown Pike is listed on the National Register and other resources are eligible for listing, a footpath could be constructed in this corridor by following processes required by the permitting agencies

CONCEPTUAL ALIGNMENTS, CROSS SECTIONS, AND BRIDGES

With this conclusion, the study team examined various footpath alignments, including alignments considered but dismissed, as well as design elements of footpath cross sections and bridge crossings. The field visits, desktop analyses, and conceptual design effort resulted in four footpath alignments, each with two bridge crossing options, as shown in **Figure ES-1**. These alignments were presented and discussed at the workshops with the stakeholders.

The study team researched the appropriate typical cross sections for segments of the footpath within Great Falls Park and along Georgetown Pike. In all locations, the recommended width of the footpath is 6 feet, with shoulders 1-foot shoulders. A typical section for the proposed footpath in Great Falls Park is shown in **Figure ES-2**. Typical sections of the footpath along Georgetown Pike will vary depending on existing topography and the need for drainage improvements and utility relocations.

A foot bridge will be needed to provide the connection between the Difficult Run Trail and the footpath alignments to the south and east. Consistent with the desire of NPS and the other project stakeholders, the clear width of the bridge crossing is recommended to be 6 feet (consistent with the 6-foot-wide trail). The length of the bridge would be dependent upon its location and whether the bridge spans the floodplain or is designed to withstand occasional flooding of Difficult Run.

Several crossing locations and many types of bridges were considered in this footpath feasibility study. FCPA also provided excellent information on their experience with constructing and maintaining trail bridges. A steel truss bridge is recommended as the longer-term solution for carrying the Georgetown Pike Footpath over Difficult Run. This type of bridge will maximize accessibility for users of all abilities. The bridge can be constructed and maintained within the floodplain and should survive most storms. **Figure ES-3** shows a rendering of a steel truss footbridge over Difficult Run.

For the near-term, the study team concluded that fair-weather crossings could be constructed. These crossings could include small timber bridges linking the banks of Difficult Run with the mid-channel island or boulders placed in appropriate locations for stepping across Difficult Run.

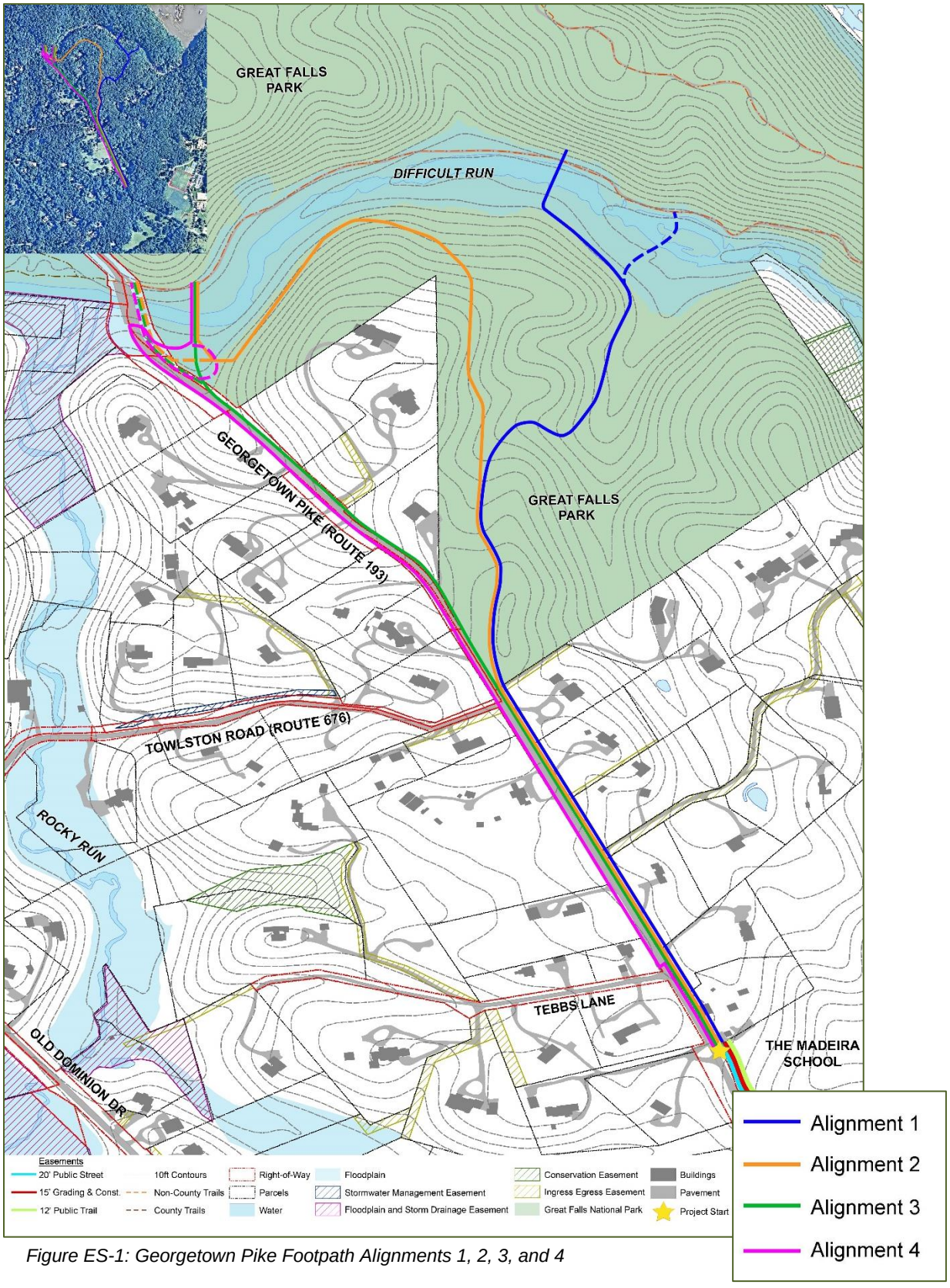


Figure ES-1: Georgetown Pike Footpath Alignments 1, 2, 3, and 4

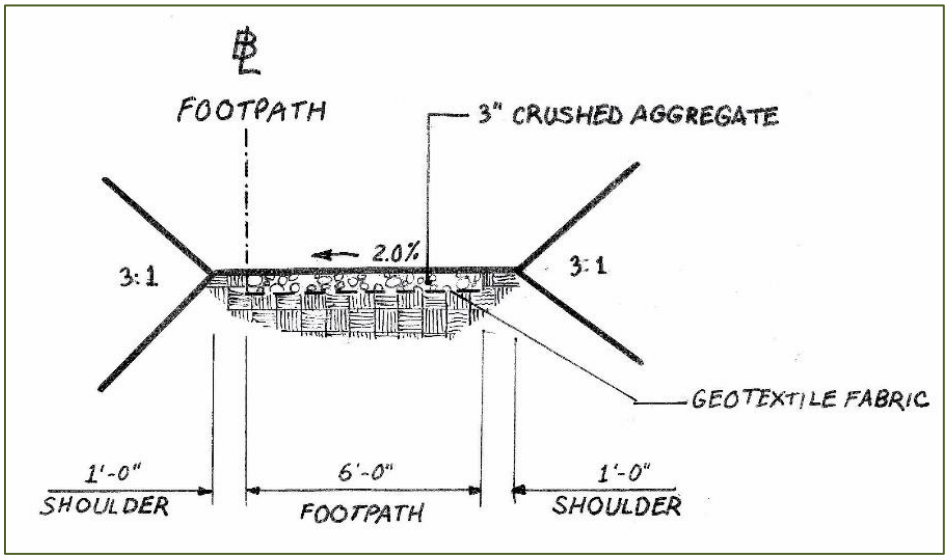


Figure ES-2: Typical section for footpath in Great Falls Park



Figure ES-3: Potential Difficult Run crossing location and rendering of possible steel truss bridge

Following the development of preliminary concepts for the alignments, the typical sections, and bridge locations and types, as well as the presentation and discussion these design elements with the project stakeholders, the study team completed their analyses, drawing conclusions, and finalizing 30% plans. The desired outcome of the conceptual design effort was an alignment that will result in a complete, functioning footpath project meeting the goals of FHWA, NPS, and the other project stakeholders.

Given the conceptual design (30% plans) and considering the possible near- and longer-term footbridge options, the study team concluded that each of the Alignments 1 through 4 could be feasibly constructed. When comparing the pros and cons of each alignment, the study team vetted the following conclusions with the stakeholders:

- Construction challenges for all alignments will include:
  - Grading along the steep slopes within Great Falls Park and along Georgetown Pike
  - Developing drainage solutions that fit within the context of the park and the corridor and are maintainable
  - Relocating and/or avoiding overhead and underground utilities
- According to GIS records, there is not sufficient right-of-way along Georgetown Pike for any of the alignments to be built without acquiring right-of-way or easements from private property owners.
- A more detailed survey will better quantify amount of land needed as right-of-way or public use easement for the footpath.
  - Within Great Falls Park, a footpath can be constructed with minimal impact to drainage, slopes, and existing vegetation.
  - Alignments 1 and 2 have more of the footpath in Great Falls Park and would require the least amount of new right-of-way or new easements from private property owners, as compared with Alignments 3 and 4.
- All of the alignments will need to overcome the “pinch point” (narrow space between edge of roadway and existing building called “Drover’s Rest”) along the east side of Georgetown Pike; a solution may involve a narrower trail through this area.

POTENTIAL PROJECT COSTS

A preliminary opinion of probable cost (OPC) was prepared for each potential footpath alignment to aid in evaluating the alignments and bridge crossing options. Each alignment was evaluated with a steel-truss bridge spanning Difficult Run, partially within the flood plain. The total estimated project costs included engineering design, right-of-way acquisition, utility relocation, permitting, construction, construction-related services (18.5%), and contingency (30%). These costs are summarized in **Table ES-1**.

Table ES-1: Estimated Project Cost of Each Alignment

Alignment 1	*Alignment 2*	*Alignment 3*	*Alignment 4*
$ 3,940,000	$ 4,550,000	$ 5,300,000	$ 5,570,000

The lowest cost option for both options was Alignment 1, despite the additional bridge mobilization cost included due to the more difficult access at that bridge location. Alignment 1 had a lower cost compared to Alignment 2 due to the shorter overall length and decreased amount of grading within steep slopes. Alignments 1 and 2 had a lower comparative cost due to avoiding additional roadway construction and right-of-way acquisition. Alignments 3 and 4 had similar costs given they both run adjacent to Georgetown Pike for their entire lengths.

EVALUATION OF ALIGNMENTS

The four alignments were evaluated using seven evaluation criteria or factors developed by the study team and confirmed with FHWA, NPS, and the other stakeholders. These criteria and the scoring of the alignments are shown in **Table ES-2**.

Table ES-2: Evaluation of Footpath Alignments

Criteria	*Alignment 1*	*Alignment 2*	*Alignment 3*	*Alignment 4*
General walking quality	●	●	◎	◎
Fewer visual impacts	●	○	○	○
Protection from traffic	●	●	◎	○
Fewer right-of-way impacts	◎	◎	○	○
Ease of trail construction	●	◎	◎	○
Ease of bridge construction	○	◎	◎	◎
Preliminary project cost	●	◎	○	○
Scores	**19**	**17**	**14**	**13**

Key: ● = Best (3 points) ◎ = Good (2 points) ○ = Fair (1 point)

The study team drew several conclusions on the scoring of the alignments:

- Alignment 1 ranked highest compared to the other alignments, which was consistent with the stakeholders' preference discussed at the workshops that as much of the trail as possible should be in Great Falls Park. More of the footpath in the park would result in a better experience for trail users, more protection from traffic, less need for right-of-way, an "easier" trail to construct, and lower cost.

- Alignment 1 edged out Alignment 2 due to its relative ease of constructing the trail and fewer visual impacts. Much of Alignment 2 in Great Falls Park would need to be constructed by cutting a bench into a steep side slope, which would mean a wider swath of clearing through the woods.
- Constructing the bridge for Alignments 2, 3 and 4 should be slightly easier than doing so for the more distant Alignment 1 location, but there will likely not be a great deal of difference in price for each location.
- Construction of the footpath in the park is anticipated to be easier than construction along Georgetown Pike, which would require roadside grading, one-way flagging operations, daytime peak period restrictions, nighttime operations (if allowed by the residents), and barriers, as well as avoidance or relocation utilities. In contrast, a natural surface footpath in a forest would follow natural grades and have the need for minor drainage improvements.

PREFERRED ALIGNMENT

Alignment 1 is the preferred alignment, as concluded by the study team and confirmed with the stakeholder. This alignment would start within Great Falls Park along the Difficult Run Trail approximately a quarter mile east of the Georgetown Pike bridge over Difficult Run. The trail would cross Difficult Run at one of two places—upstream of the falls in the area of boulders and bedrock or downstream of the falls making use of the sandy, mid-channel island. The footpath would then follow the natural grade through Great Falls Park up the hill to Georgetown Pike opposite the intersection with Towlston Road. The path would emerge from the park then proceed along the east side of Georgetown Pike, through the pinch point at Drover's Rest, and to the west end of the Public Access (Trail) Easement on the Madeira School property.

PATH FORWARD

The study team recommends advancing Alignment 1, the stakeholders' preferred alignment, in a phased approach.

***Near-term*: Build portion of Alignment 1, with fair weather crossing of Difficult Run**

1. Build a fair-weather crossing of Difficult Run with stepping stones or smaller timber bridges at the mid-channel crossing (old ford site) of Difficult Run
2. Construct footpath along Alignment 1 within Great Falls Park; terminate this segment of trail at Georgetown Pike, opposite the intersection with Towlston Road
3. Maintain this new footpath
4. Continue advocacy and planning activities for implementing the longer-term stream crossing and footpath alignment

***Longer-term*: Build all of Alignment 1, with steel truss bridge crossing of Difficult Run**

1. Construct the entirety of Alignment 1 to provide access for people of all abilities.

2. Install a one- or two-span steel truss bridge upstream of the mid-channel island in the boulder/bedrock area.
3. Construct a 6-foot-wide trail (wherever possible) along Georgetown Pike from Towlston Road to the western edge of The Madeira School property, including through the “pinch point” at Drover’s Rest.
4. Maintain this new footpath
5. Advocate for other parties (e.g., FCDOT or FCPA) build the connecting trail on The Madeira School property within the existing Public Use (Trail) Easement

A phased approach would serve to accomplish the goals of this project more quickly and to build community support and momentum for the longer-term solution. Near-term improvements could be constructed by NPS contractors and/or by other agencies such as FCPA or FCDOT, as well as local volunteer groups with permission from NPS. A near-term project could present educational opportunities about the construction and maintenance of a trail and about the history and characteristics of Great Falls Park and Difficult Run. Longer-term improvements will require additional advocacy, planning, design, and programming—which could be initiated in the near term.

CLOSING

A Georgetown Pike Footpath has the opportunity to embrace the historical context of the corridor, build on previous studies and ongoing advocacy efforts, and provide connections to a variety of trails, parks, and neighborhoods. This study report is intended to be a tool for use by the stakeholders for moving forward with the next steps in project development, including environmental compliance, for the design, construction, and maintenance of footpath segments in the near-, mid-, and longer-term. The report’s appendices, including the 30% Concept Plans, are intended to provide a foundation implementing the footpath in the near- and longer-term.

Building upon this feasibility study, the stakeholders can realize the vision of a Georgetown Pike Footpath providing a connection within the Potomac Heritage National Scenic Trail network. With the continued leadership and collaboration, as well as creative approaches to funding and design, the stakeholders can construct and maintain this footpath so that it is usable for persons of all abilities for generations to come.

Acknowledgements

The Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division (EFLHD) and the National Park Service (NPS) gratefully acknowledge the following stakeholder organizations for their contributions to the Georgetown Pike Footpath Feasibility Study:

- Fairfax County Board of Supervisors, Dranesville District (Supervisor John W. Foust)
- McLean Citizens Association
- Great Falls Citizens Association
- The Madeira School
- Virginia Department of Transportation (VDOT)
- Fairfax County Department of Transportation (FCDOT)
- Fairfax County Park Authority (FCPA)
- NOVA Parks (formerly Northern Virginia Regional Park Authority)
- Northern Virginia Regional Commission (NVRC)
- Potomac Heritage Trail Association (PHTA)
- Mid-Atlantic Off-Road Enthusiasts (MORE)
- Fairfax Trails and Streams

Representatives from each of these stakeholder groups actively participated in the three study workshops and provided helpful background information and critical input on findings and recommendations. Of note, representatives from PHTA participated with the FHWA/NPS study team in the initial site visit after the first workshop and in a follow-up site visit after the third workshop.

Representatives from Supervisor Foust's office hosted each of the workshops at the McLean Governmental Center Community Room. This location east of the study area benefitted the study greatly by providing a convenient and practical meeting space for the workshops.

FHWA EFLHD and NPS thank the stakeholder representatives for their valuable input to this study. This final report is a result of this input. The report is intended to be used by the stakeholders for continued collaboration in moving forward with project development and implementation.

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Georgetown Pike
Footpath Feasibility Study

1. Introduction

A footpath in the Georgetown Pike corridor, from the Difficult Run Trail in Great Falls Park to the Madeira School frontage along Georgetown Pike in McLean, Virginia, would provide an opportunity to complete a connection within the Potomac Heritage National Scenic Trail (PHNST) network, while also providing a connection to surrounding local trails and to neighborhoods in the McLean and Great Falls areas of Fairfax County. Building segments of this footpath within the park and along Georgetown Pike, including building a foot bridge over Difficult Run, would benefit the many people who want to travel by foot, bicycle, or horse within this popular trail network.

This Georgetown Pike Footpath Feasibility Study has been completed to help advance the design and construction of this trail connection. The study was led by the Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division (EFLHD), in partnership with the National Park Service (NPS), with assistance from Kimley-Horn through a professional services contract with EFLHD.



Potential footpath locations across Difficult Run, in Great Falls Park, and along Georgetown Pike

The scope of the study was to assess the feasibility of options for a footpath or trail connection in the Georgetown Pike corridor within the study area shown in **Figure 1**. This study report discusses the background for this footpath connection and documents the analyses, reviews, findings, concept designs, potential costs, funding sources, and recommendations for moving forward with implementation.

Stakeholder involvement was a key component of this study. A series of stakeholder workshops and follow-up input is also documented in this report. Appendices include references, documentation of the workshops, easement information, an environmental review of the project area, 30% concept plans and details, and opinions of probable cost for the various footpath alignments. This report is intended to be a tool for use by the stakeholders for moving forward with the next steps in project development, including environmental compliance, for the implementation of footpath segments in the near-, mid-, and longer-term.

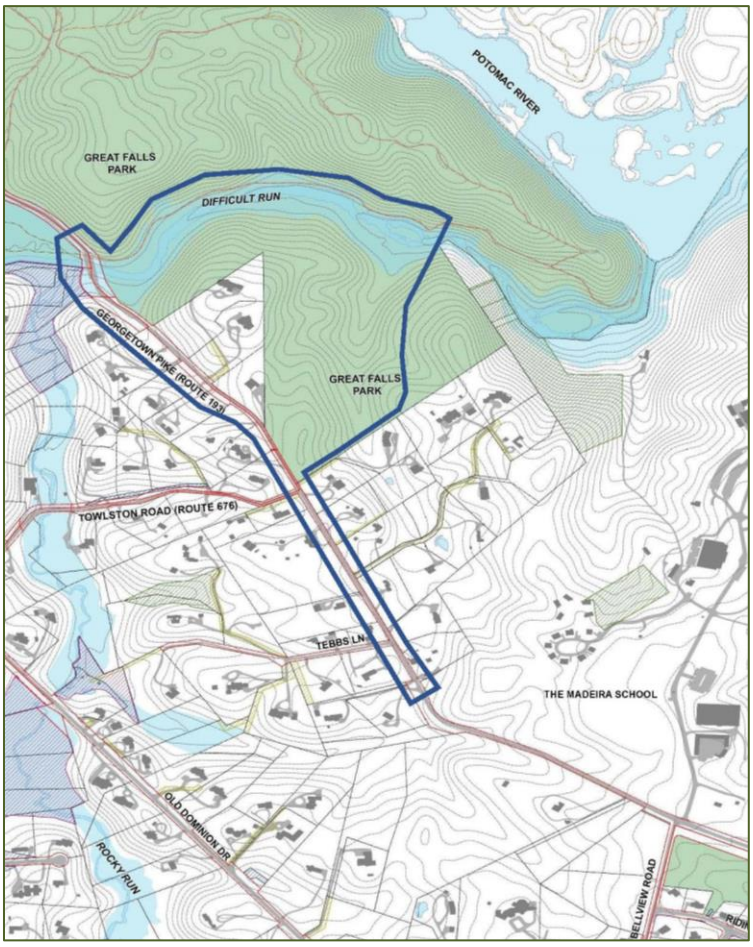


Figure 1: Study Area

1.1 Project Vision

The vision or overarching theme of the Georgetown Pike Footpath project is ***connections***. These connections include completing a segment of the regional PHNST and connecting it to other trails and pedestrian, bicycle, and equestrian facilities in the local area. An example of such a trail is Fairfax County's Gerry Connolly Cross-County Trail (CCT), the northern end of which terminates in Great Falls Park.

In addition to trail connections, this study has also served to make connections among people representing stakeholder organizations, many of whom came together in the study's workshops in April 2018, and in May and June 2019. These collaborative connections will be beneficial to establishing partnerships for obtaining funding and for moving forward with implementation.

1.2 Purpose of Study

The purpose of this study was to investigate the feasibility of establishing a footpath or trail in the Georgetown Pike corridor in Fairfax County, Virginia—from the Difficult Run Trail within Great Falls Park over Difficult Run and to the intersection of Georgetown Pike and Towlston Road (Route 676), then along Georgetown Pike to the west end of the Public Access (Trail) Easement located along The Madeira School property parallel to Georgetown Pike. This study also examined the feasibility of options for a pedestrian bridge over Difficult Run within Great Falls Park or within Virginia Department of Transportation (VDOT) right-of-way along Georgetown Pike Bridge (either just north of the bridge or attached to the bridge).

1.3 Goals and Objectives

1.3.1 Project Goal

The goal of this project is to provide a footpath within Great Falls Park and the Georgetown Pike corridor that would link to the larger network of PHNST trails. This network connects the Potomac River at the Chesapeake Bay to the Allegheny Highlands in western Pennsylvania through a series of trails and routes for travel by foot, bicycle, horse, or boat. This national scenic trail incorporates both existing and planned trails managed by federal, state, local, and nonprofit entities. There are several gaps within the PHNST network, and this proposed Georgetown Pike footpath would help to close one of those gaps between Great Falls Park and Scotts Run Nature Preserve.

Figure 2 shows a portion of the PHNST network and the general area of this missing link to be partially completed by this footpath project. The map is courtesy of NPS, as noted in **Appendix A – References**.

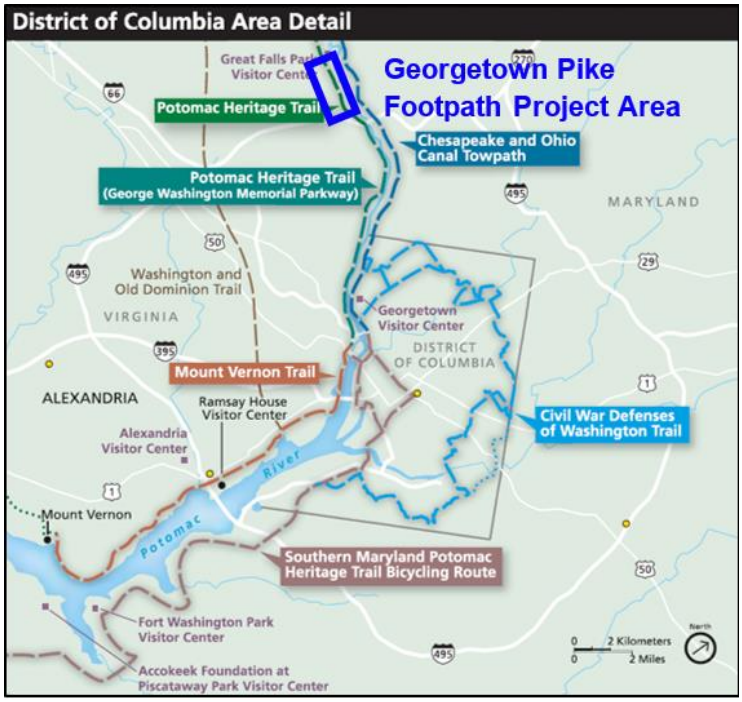


Figure 2: Project Area within Potomac Heritage National Scenic Trail Network

1.3.2 National Park Service Goal of Connecting People to Parks

This project is consistent with the NPS goal of connecting people with parks across the nation. This goal was established in 2016 with the centennial of the Park Service and the National Park Foundation's "Find Your Park" campaign. Great Falls Park is one of the most visited parks in the region. Similarly, Scott's Run Nature Preserve (a Fairfax County facility) also is a frequently visited park. The current PNHST network is heavily

traveled but needs better connections, especially between Great Falls Park and Scott's Run Nature Preserve. In addition, this project is consistent with the recent policies of the Department of Interior to expand recreational opportunities on public lands and waterways.

1.3.3 Public Health Goals

This project supports NPS goals related to improving the health of people and communities through better access to public parks and trails. As discussed in the publication "Improving Public Health through Public Parks and Trails: Eight Common Measures":

"The public health benefits of parks and trails are broad and cross-cutting. For individuals, benefits include providing places for physical activity, improving mental health, reducing stress, providing connections to nature, and increasing social interactions. Parks and trails can simultaneously provide venues for community events, activities, and public health programs and improve the environment."



Hikers in Great Falls Park

Further, parks and trails can provide health benefits by:

- Providing opportunities to practice healthy lifestyles
- Creating destinations and venues for physical activity
- Reducing stress and improving mental wellness
- Fostering community interaction and social support networks
- Providing beneficial, low impact use of sensitive areas, reducing injury and property loss that could occur if the land was used for other functions
- Reducing air and water pollution
- Mitigating urban heat islands
- Preserving important habitat, environmental, and cultural sites

As this Georgetown Pike footpath project moves forward, there also is the opportunity for NPS to evaluate, plan, and promote the project with respect its public health aspects.

1.3.4 Fairfax County Goals

The goals for this project also are consistent with the Fairfax County Comprehensive Plan, specifically, the Countywide Trails Plan, adopted by the Fairfax County Board of Supervisors on October 28, 2014 and amended through July 1, 2018. The trails plan identifies the County's planned trail system and is an element of the transportation section of the Comprehensive Plan.

The most recent version of the trails plan shows this Georgetown Pike footpath connection as a planned segment within the County's "Major Regional Trail System" and labeled as the Potomac Heritage National Scenic Trail. The trails plan notes that the trail may have surface materials that will vary from "paved, natural surface, to stone dust." (It also is interesting to note that the alignment shown on the Countywide Trails Plan for the Georgetown Pike Footpath project mimics the recommended Alignment 1 discussed in Section 4 of this report.)

1.3.5 VDOT Goals

This footpath project also is consistent with VDOT's "Policy for Integrating Bicycle and Pedestrian Accommodations," which provides a framework for VDOT to accommodate bicyclists and pedestrians in the planning, funding, design, construction, operation, and maintenance of Virginia's transportation network. As stated in the policy:

> *"Appropriate bicycle and pedestrian accommodations provide the public, including the disabled community, with access to the transportation network; connectivity with other modes of transportation; and independent mobility regardless of age, physical constraints, or income. Effective bicycle and pedestrian accommodations enhance the quality of life and health, strengthen communities, increase safety for all highway users, reduce congestion, and can benefit the environment."*

1.3.6 Advocacy Groups

This project is consistent with the goals and the advocacy efforts of the Potomac Heritage Trail Association (PHTA), Mid-Atlantic Off-Road Enthusiasts (MORE), and Fairfax Trails and Streams. Representatives of these groups provided valuable stakeholder input for this study.



FHWA, VDOT, PHTA, and other stakeholders at Workshop #1, followed by the study's initial site visit

1.4 Study Process

This feasibility study for a footpath in Great Falls Park and the Georgetown Pike corridor has progressed through a logical planning process to set up the next steps in implementation.

1.4.1 Project Area

As shown in Figure 1, the area for the feasibility analysis of the footpath project encompasses both sides of Georgetown Pike from northwest of Difficult Run to the west end of the Madeira School Public Access (Trail) Easement. The project area within Great Falls Park is bounded by the Difficult Run Trail and the portion of the park southeast of Difficult Run.

1.4.2 Study Tasks

Tasks within the scope of the feasibility study included stakeholder outreach, mapping, concept planning, environmental reviews, constructability and cost analyses, and summary report with recommendations on next steps. Throughout the completion of the tasks, the study team of FHWA EFLHD, NPS, and Kimley-Horn coordinated extensively within the team and with the stakeholders discussed in Section 1.5.

1.4.3 Study Schedule

The study began in the spring of 2018 with stakeholder outreach and Workshop #1, the initial planning workshop. The mapping used for concept planning was developed using Fairfax County geographic information system (GIS) data converted to MicroStation base files. With the mapping of the project area, the study team conducted field investigations in May 2018 and in October 2018.

As concepts were developed, the study team also conducted a “desktop” environmental review. The concepts were refined and a draft 30% design package was submitted to EFLHD in January 2019. This package included plans, profiles, typical sections, details, and supporting information for three trail alignments.

Following the review of these plans by EFLHD, NPS, VDOT, and Fairfax County, the study team facilitated Workshop #2 on May 2, 2019 to present findings from the analyses and to present and discuss the three possible alignments. Following this workshop, a fourth alignment was added to the study, and the team refined the plans and facilitated Workshop #3 on June 13, 2019.

While consensus was achieved on a preferred alignment at this workshop, the study team continued to receive additional input from stakeholders in July and August 2019 related to details on the trail itself, as well as bridge crossing locations and bridge types. This stakeholder input was invaluable in informing this study and providing recommendations for moving this project forward into implementation.

The study process and schedule are summarized in **Figure 3**.

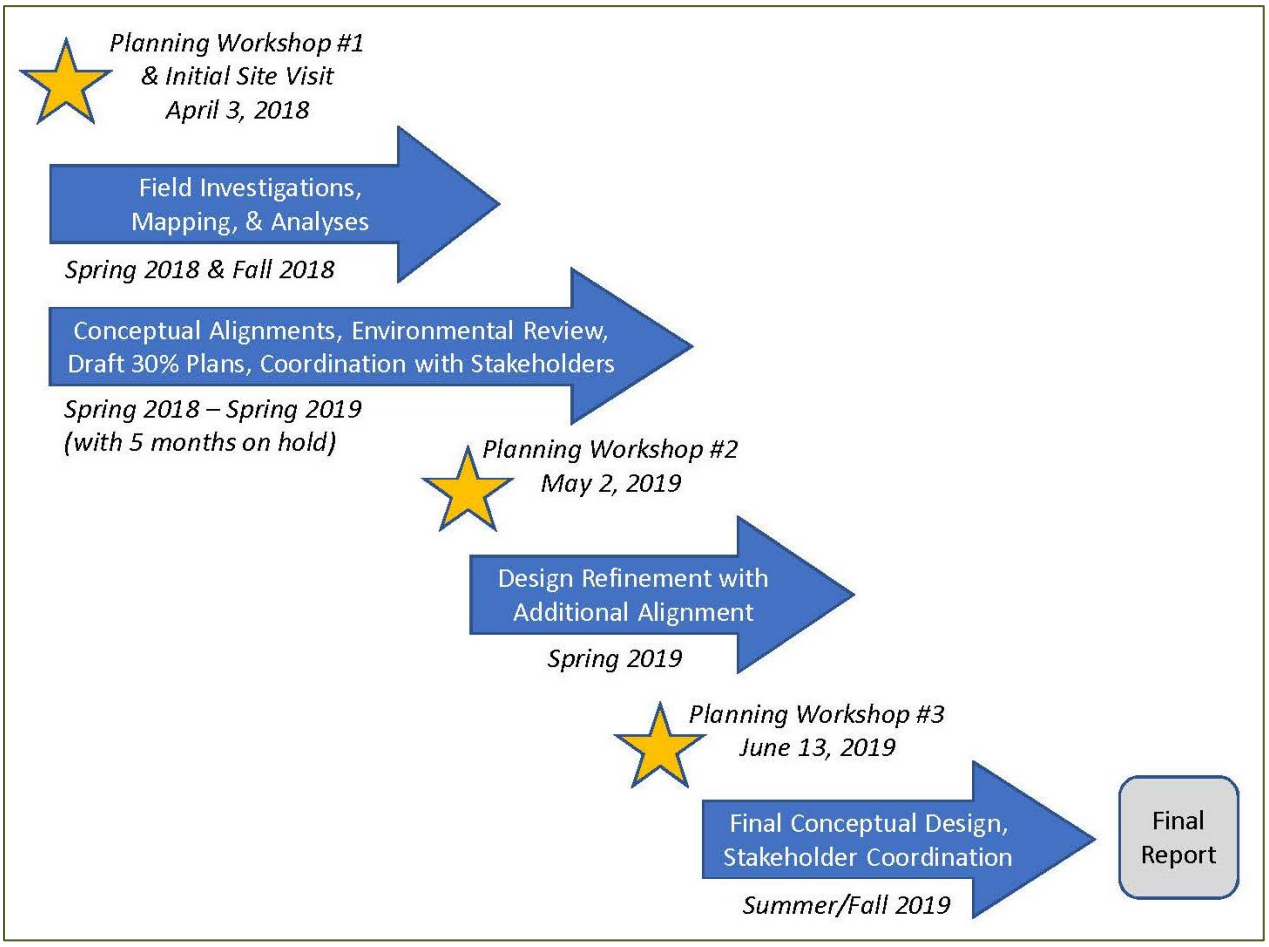


Figure 3: Study Process

1.5 Stakeholders and Workshops

Stakeholder input was a key component of this study—leading to consensus on a preferred alignment for implementing the Georgetown Pike Footpath Project. These stakeholders and their connections with this project are discussed in **Table 1**. During the course of this feasibility study, FHWA's study team facilitated three workshops. Outcomes of these workshops are briefly discussed below. Minutes and presentation materials for these workshops are included in **Appendix B – Workshop Summaries**.

- **Workshop #1, April 3, 2018**: Stakeholders gathered to confirm the purpose of the project as a trail study and to discuss background of the study area and the project. Of note was the input provided by The Madeira School on their easement along Georgetown Pike to be used for a future trail. In addition to a discussion aided by a PowerPoint presentation, stakeholders used markers to draw possible footpath alignments, as shown in **Figure 4**.

  A major outcome of this workshop was consensus on the need to study the feasibility of adding a 0.3-mile-segment to the scope of this project, i.e., the segment from Towlston Road to the west end of the existing easement along The Madeira School property. This segment was subsequently added to the scope of the study.

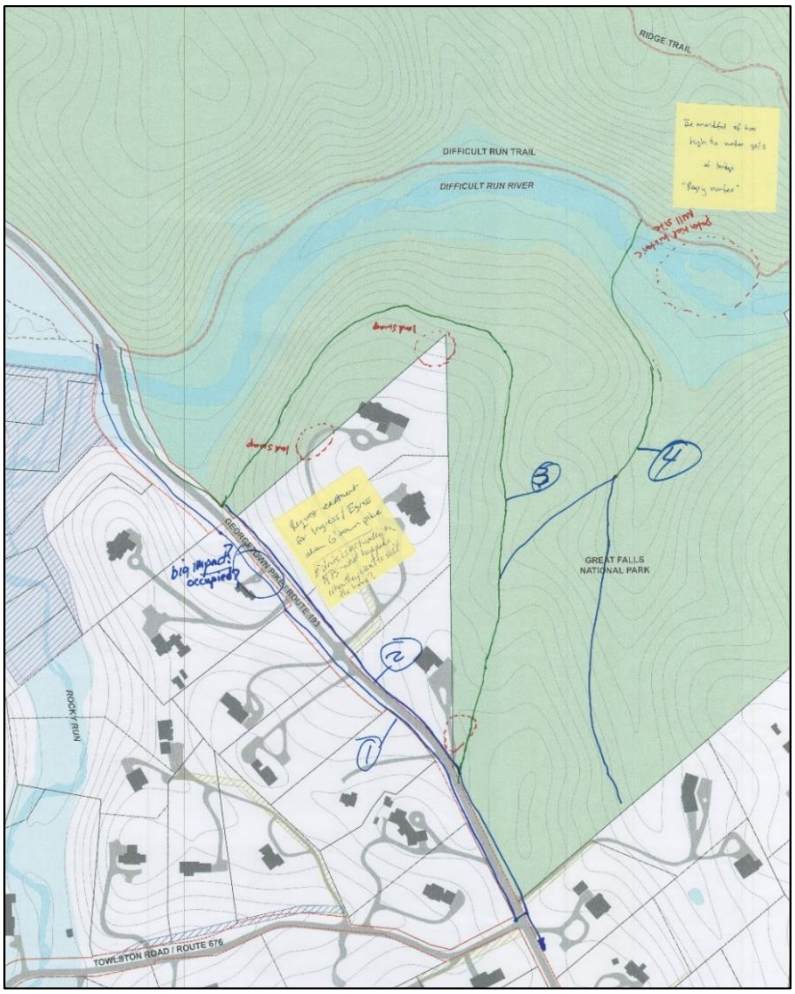


Figure 4: Sketch of Possible Footpath Alignments from Workshop #1

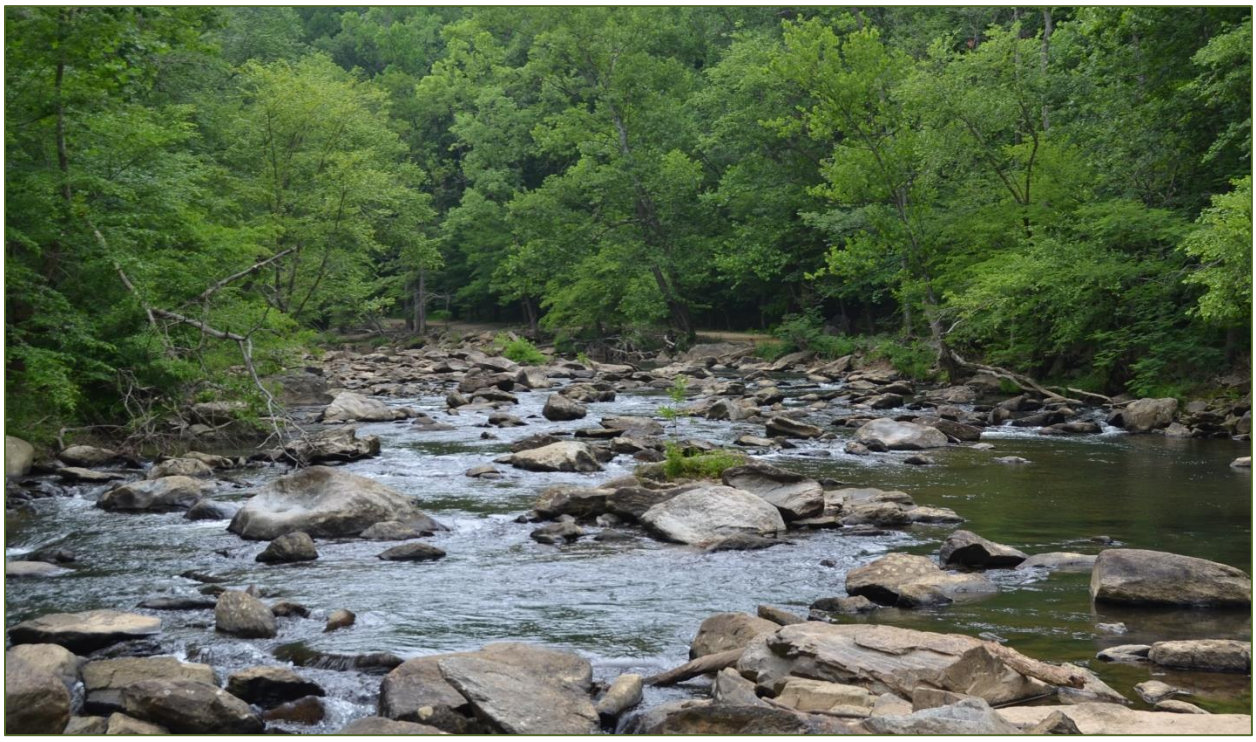
Table 1: Project Stakeholders

Stakeholder	Connection to Project
Fairfax County Board of Supervisors, Dranesville District (Supervisor John W. Foust)	District in which project is located and where nearby citizens reside
McLean Citizens Association	Group representing citizens in the greater McLean area
Great Falls Citizens Association	Group representing citizens in the Great Falls area
The Madeira School	Private girls school established in 1931, located adjacent to project area, with a Public Access (Trail) Easement donated to Fairfax County in 1991 for the construction of future trail along Georgetown Pike by the County or others
FHWA Eastern Federal Lands Highway Division (EFLHD)	Lead agency for this feasibility study; EFLHD contract used for consultant support
National Park Service (NPS)	Lead coordinating agency for this feasibility study; landowner of Great Falls Park. Two groups within NPS connected with this study: – Region 1 – National Capital Area – George Washington Memorial Parkway (GWMP)
Virginia Department of Transportation (VDOT)	State agency that owns and maintains Georgetown Pike (Route 193)
Fairfax County Department of Transportation (FCDOT)	Local agency that plans, designs, constructs, and maintains trails (pedestrian and bicycle facilities) throughout the County
Fairfax County Park Authority (FCPA)	Local agency that plans, designs, constructs, and maintains trails in County parks and coordinates closely with FCDOT, VDOT, and NPS properties
NOVA Parks (formerly Northern Virginia Regional Park Authority)	Regional agency that plans, designs, constructs, and maintains trails in regional parks throughout Northern Virginia in coordination with local jurisdictions, state and federal agencies, and NPS
Northern Virginia Regional Commission (NVRC)	Regional agency that provides funding and assists with implementation of multimodal projects in Northern Virginia, including trails
Potomac Heritage Trail Association (PHTA)	Advocacy group for the PHNST and its connections to local and regional trails
Mid-Atlantic Off-Road Enthusiasts (MORE)	Advocacy group for trails with emphasis on mountain biking
Fairfax Trails and Streams	Advocacy group in Fairfax County for trails

- **Workshop #2, May 2, 2019**: Stakeholders reviewed and discussed preliminary findings from field visits, the environmental review, and the design analyses; three potential trail alignments; and concepts for the alignments, cross sections, and bridges over Difficult Run. The group discussed pros and cons of each alignment and their various cross sections, as well as accessibility and potential funding programs to consider. One outcome was the addition of a fourth trail alignment (i.e., Alignment 2 discussed in Section 4). Overall, the stakeholders provided feedback on the analyses, findings, and initial recommendations, which informed the refinement of concepts for the next workshop.

- **Workshop #3, June 13, 2019**: Stakeholders reviewed and discussed the four potential trail alignments, as well as the pros and cons of each. The discussion also included options for bridge types and the potential location of the bridges along Difficult Run and the potential elevation of the bridges above the water level. Consensus was reached on a preferred alignment (discussed in Sections 4 and 5).

Following the third workshop, representatives from NPS and PHTA participated in subsequent field visits in July 2019, and stakeholders provided additional input on the concepts, as well as information to support the final report.



Difficult Run looking upstream toward Difficult Run Trail

2. History and Context

The Georgetown Pike Footpath has the opportunity to embrace history in the corridor, build on previous studies, and provide connections to a variety of trails, parks, and neighborhoods.

2.1 History of Corridor

Georgetown Pike generally follows a trail originally used by Native Americans and by grazing herds of eastern buffalo that passed by the falls as they roamed the area between the Chesapeake Bay and west of the Blue Ridge Mountains. In the 1700s, as European settlers moved into the region, trails and wagon roads traversed the area known today as Great Falls Park and the Georgetown Pike corridor. Remnants of these early roads are evident in the woods south of Difficult Run and north of the Difficult Run Trail.



Remnants of an early road and culvert

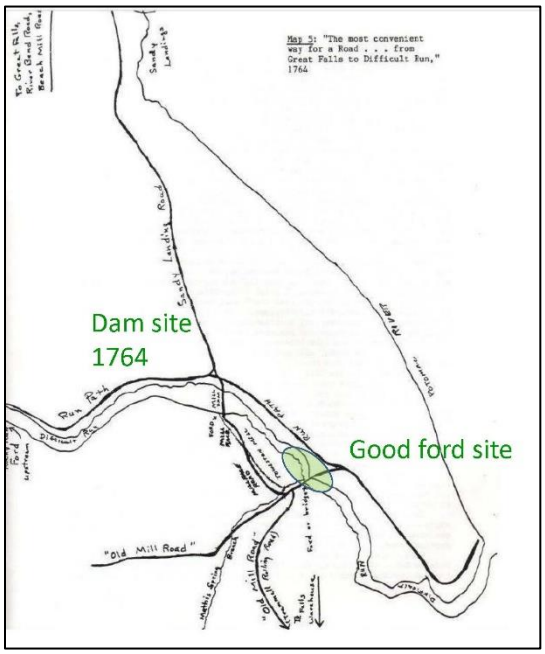


Figure 5: Map by Winslow R. Hatch with annotation by Bill Niedringhaus, PHTA

Evidence of the existence of these early roads is further provided in the 1764 Fairfax Court order for a road be opened “the most convenient way” from the Great Falls to Difficult Run and on to the Falls Warehouse at the mouth of Pimmit Run, which is south of the today’s Chain Bridge crossing of the Potomac River. Likely candidate locations for where an early road would have crossed Difficult Run are downstream of the present-day Georgetown Pike bridge crossing and upstream of the gorge leading to the Potomac River, i.e., at the midstream island and just upstream of this location. The present-day mid-channel could have been the ford used to cross Difficult Run, as shown in **Figure 5**.

These early roads accessed the Potomac River, which was a trading place for American Indians and early colonists. In the late 1700s, these roads supported commerce north and south of Difficult Run, including providing access to the Patowmack Canal and to the canal-side town of Matildaville.

The Patowmack Company was organized in 1784 and by 1802, it opened a canal on the Virginia side of the Potomac River. In 1790, the Town of Matildaville was founded by Henry “Light-Horse Harry” Lee, a major general in the Continental Army, congressman, and ninth Governor of Virginia. Located near Great Falls and along the Patowmack Canal, the town flourished for nearly 30 years but declined in the late 1820s with the advent of the Chesapeake and Ohio (C&O) Canal.

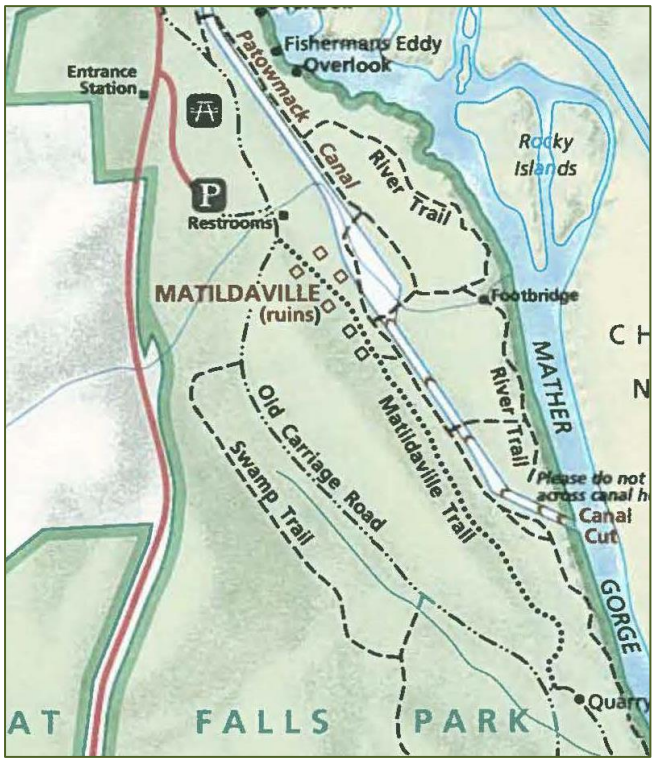


Figure 6: Excerpt of Great Falls Park Map from NPS showing the location of the Town Matildaville and Patowmack Canal

In 1828, the C&O Canal Company bought the Patowmack Canal and its rights and began construction of a canal on the Maryland side of the river that would link Washington, DC with Pittsburg, PA. By 1850, while operating as intended, the C&O Canal began to lose its effectiveness as railroads and newer modes of transportation began hauling larger loads much faster than the canal boats. Still the canal operated until 1924. Today, as shown in **Figure 6**, footpaths in Great Falls Park lead to remnants of Matildaville and the Patowmack Canal.

By 1830, Georgetown Pike had been constructed in its present-day alignment by the Falls Bridge Turnpike Company, which had extended the road to Drane’s Tavern on Leesburg Pike, establishing a direct connection between Leesburg and the milling and shipping center of Georgetown. In 1973, at the request of the Fairfax County Board of Supervisors, the Commonwealth Transportation Board, in cooperation with the Virginia Department of Conservation and Recreation (DCR), designated Georgetown Pike as the Commonwealth’s first scenic byway.



Georgetown Pike near Difficult Run (looking west)



Georgetown Pike near Difficult Run (looking west)

While considerable growth and development has occurred throughout the corridor, Georgetown Pike still retains many of the natural and scenic characteristics for which it was designated a scenic byway. Today, Georgetown Pike functions as the primary access to Great Falls Park, as a "main street" in Great Falls, and as a major commuting route for thousands of people every day. Members of the communities in the corridor have expressed support for a trail protecting users from the traffic and providing connections to the history and natural settings of the Great Falls Park area.

2.2 Previous Studies and Related Projects

This Georgetown Pike Footpath Feasibility Study builds upon previous studies conducted by various groups over the past dozen years. These studies addressed trail connections, as well as building upon the historic routes of the 18th century trails and wagon roads. These studies are summarized below.

2.2.1 Georgetown Pike Trail Feasibility Summary Findings (2007)

This study was completed by the Northern Virginia Regional Commission (NVRC) in June 2007 and outlined the issues affecting the feasibility of a bicycle or pedestrian trail along Georgetown Pike between the Capital Beltway and Great Falls Park—issues that exist today and are addressed with this current study. This report discussed the unique history and nature of Georgetown Pike as a scenic byway that both provides an opportunity to support trail connections and presents challenges to implementing such a trail. The report also sites a 1999 traffic calming study that examined crossing locations for trails and sidewalks. NVRC will continue to be a stakeholder in the implementation of this footpath project.

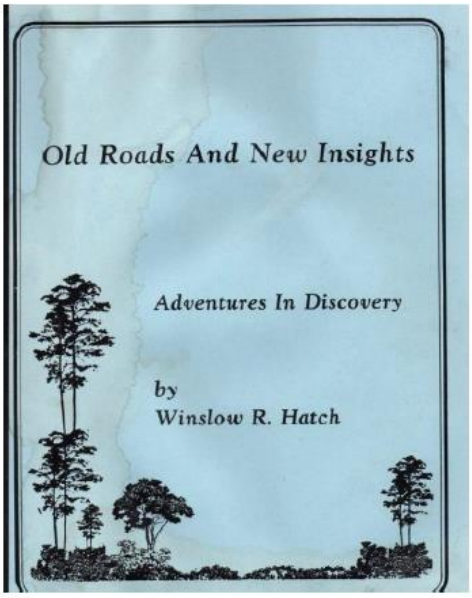
2.2.2 FHWA Field Trip Report (2017)

In March 2017, FHWA EFLHD led a group on a field trip to the current project area to explore potential opportunities for an alignment to close the gap in the PHNST network. This field trip served as the pre-scoping site visit for this current footpath feasibility study. Representatives of both FHWA EFLHD and NPS participated in the field trip. A report documenting the field trip was prepared and is serving as a reference for the current study.

2.2.3 Potomac Heritage Trail Association (PHTA) Efforts

In support of this current study, PHTA provided reports of studies and site visits. These reports helped to provide the history of the corridor (discussed above), as well as to provide context on the connections that this footpath will make. The reports included:

- Summary of the work by Winslow R. Hatch called "Old Roads and New Insights" (ca. 1980), discussing the likely alignments of colonial and early American trails and wagon roads in this study's project area
- Documentation of walking from Great Falls Park to Kimberwicke Road
- Copies of presentations to elected officials and stakeholder groups advocating for the completion of trails to fill gaps in the PHNST network



Cover of Hatch Document, courtesy of PHTA

PHTA continues to advocate for connections in the study area, as well as segments of PHNST to the south. This advocacy group will continue to be a key stakeholder in the implementation of the recommendations of this study.

2.2.4 Fairfax County efforts

Fairfax County is administering the implementation of trail connections east and west of this project's study area:

- Between Leesburg Pike (Route 7) and Great Falls, the County is delivering multiuse path projects in four phases, with federal money being applied to three of these phases. Two phases are complete, and the remaining two phases are nearing completion.
- East of the Capital Beltway (I-495), pedestrian and multiuse path improvements recently have been constructed in the vicinity of the intersection of Georgetown Pike and Dolley Madison Boulevard (Route 123). These improvements help with access to the County's Langley Fork Park and to bus transit stops along Route 123.

In addition, Fairfax County's Comprehensive Plan includes a Countywide Bicycle Master Plan and Countywide Trails Plan that helped to guide this project. The trails plan includes a PHNST connection in the project area. While the general type and location of bicycle facilities and trails are shown on the plan, *specific* types and locations need to be planned and designed for trails to become reality.

2.3 Connecting Trails

At each of the stakeholder workshops, completing connections to existing and planned trails was a discussion topic. **Figure 7** shows these regional trail connections and how this Georgetown

Pike Footpath Project would aid in connecting to various trails, bicycle routes, and future projects to the northwest and the south. These connecting facilities are summarized below.

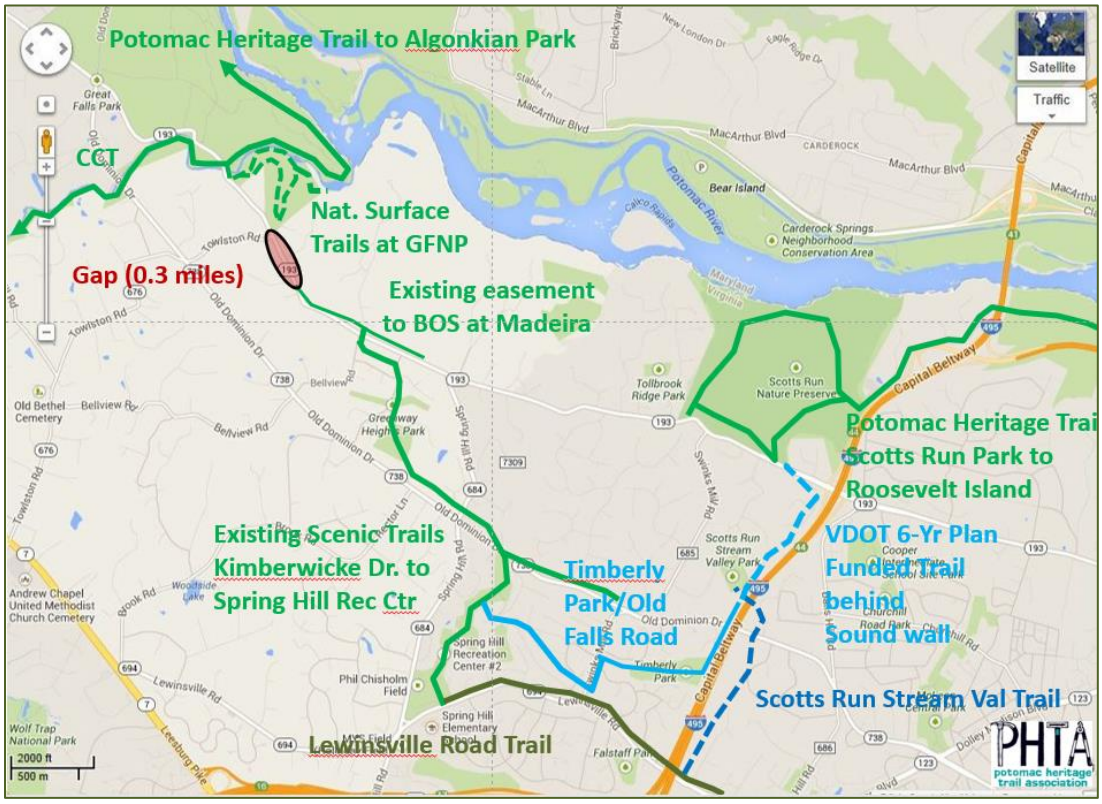


Figure 7: Map of Connecting Trails, courtesy of PHTA

- **Great Falls Park** is crisscrossed with trails along old carriage roads and along the Potomac River Gorge. These trails are part of the PHNST network and extend from the Difficult Run Trail northward to Riverbend Park in Fairfax County and Algonkian Park in Loudoun County.

- **The Madeira School** established a "Public Use (Trail) Easement" for approximately three-quarters of a mile along its frontage parallel to Georgetown Pike. A copy of the easement language, with a plat, is included in **Appendix C – Deed of Reservation and Easement Agreement**. Recorded in October 1991, this easement provides for a 12-foot easement for public use purposes. The edge of this easement closest to Georgetown Pike is 60 feet from the centerline of the Pike, which provides a substantial buffer from the street for a future trail, which will need to be planned, funded, designed, constructed, and maintained by Fairfax County and entities other than The Madeira School.

- **Gerry Connolly Cross County Trail (CCT)** to the northwest of the project area extends approximately 40 miles from Great Falls Park to Lorton, VA across Fairfax County.

- **Existing connections** to the south of the study area include existing designated trails from Kimberwicke Drive to the Spring Hill Recreational Center, a Timberly Park/Old Falls Road trail, Scott's Run Stream Trail, and a trail within the PHNST network from Scott's Run Park to Roosevelt Island in Washington, DC.

- **A future trail connection** is slated to be funded by the I-495 Express Lanes project and will be parallel I-495.



CCT near Georgetown Pike and Difficult Run

3. Study Area Analysis

The feasibility analysis of a footpath in the Georgetown Pike corridor involved the development of mapping, review of traffic data, field investigations, and a detailed environmental review of the study area to support concept design, stakeholder involvement, and future implementation steps.

3.1 Field Investigations and Observations

3.1.1 Mapping

The development of base mapping was a first step in the field investigations. The mapping served to support desktop analyses and conceptual design. Most of the mapping information was acquired from the most recent Fairfax County GIS and Mapping Services Open Geospatial Data as of spring 2018. Roadway, driveway, sidewalk, trail, buildings, and water feature data was acquired from a 2016 data set, based on 2009 aerial imagery. Property lines and easements were acquired from the 2018 data set. Contour elevations were downloaded from the 2016 U.S. Geological Survey 10-foot contour interval data. In addition, 2-foot contours were reviewed for reference through Fairfax County online mapping applications. This mapping information was supplemented by other mapping sources (e.g., Google Maps) and from site visits to enhance the information shown on the maps. **Figure 8** shows an example of this mapping output.

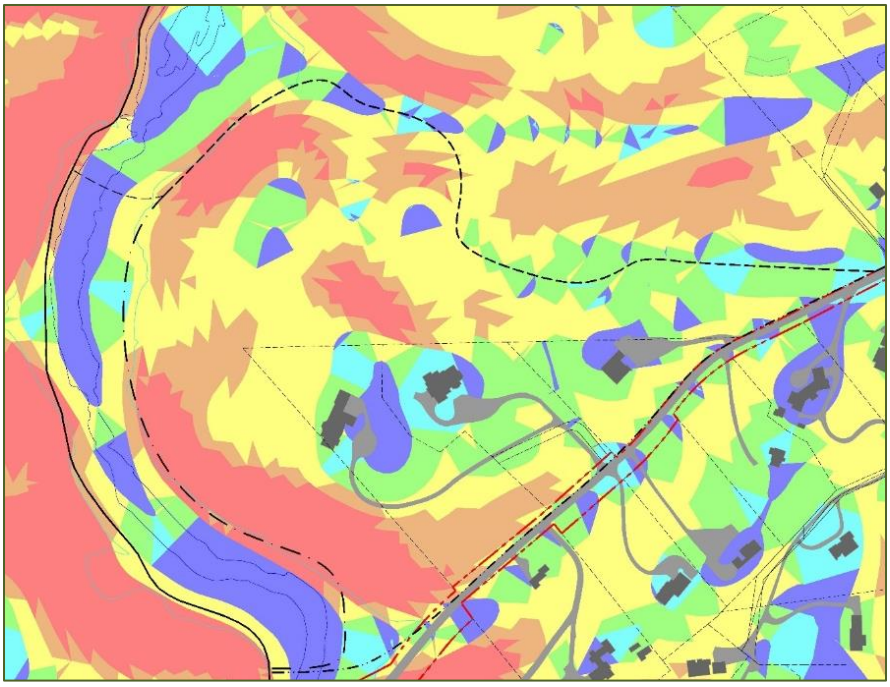


Figure 8:GIS base mapping layer showing slopes and potential footpath alignments (red indicates steepest slopes)

3.1.2 Existing Traffic Conditions

A desktop review of traffic volumes published by VDOT determined that Georgetown Pike experiences an average of 16,000 vehicles per day and 17,000 to 18,000 vehicles per weekday. To the east of the study area, as the corridor crosses Fairfax County's "urban boundary," traffic volumes average 22,000 vehicles per day, with 23,000 vehicles per weekday. Comparatively, Towlston Road, a narrow and very hilly 2-lane local street, carries 650 vehicles per day and 700 vehicles per weekday. See **Table 2**.

These traffic volumes are relatively high for a two-lane road. It was noted at the workshops that with more development occurring to the west in Loudoun County, traffic volumes have increased significantly in the corridor. The posted speed limit on Georgetown Pike is 35 miles per hour; however, study team members observed many vehicles traveling faster than the posted speed limit during field visits.

Table 2: Existing Traffic Volumes in Study Area

Route No.	Route Name	From	To	Annual Average Daily Traffic (AADT)	Average Annual Weekday Daily Traffic (AAWDT)
193	Georgetown Pike	Rt 683 Leigh Mill Rd	Rt 676 Towlston Rd	16,000	18,000
193	Georgetown Pike	Rt 676 Towlston Rd	Urban Boundary	16,000	17,000
193	Georgetown Pike	Urban Boundary	I-495 Capital Beltway	22,000	23,000
676	Towlston Road	Rt 738 Old Dominion Drive	Rt 193 Georgetown Pike	650	700

Source: 2018 VDOT Daily Traffic Volume Estimates

https://www.virginiadot.org/info/resources/Traffic_2018/AADT_029_Fairfax_2018.pdf



Difficult Run Trail

3.1.3 Field Observations

The project team conducted field visits in the spring and fall of 2018 and again in the spring of 2019. These visits (along with discussions with stakeholders at the workshops) form the basis for the following observations within the study area, including observations on the apparent challenges with constructing a footpath within Great Falls Park and along Georgetown Pike.

- **Difficult Run Trail**: This trail begins south of Great Falls Park and proceeds through the park along the north side of Difficult Run to the Potomac River. The trail serves people who want to hike, bike, or ride horses and is generally in good condition. Portions of the trail are well above Difficult Run (with steep banks to the run) while other portions are closer to the water level. Access to Difficult Run is easier in these lower locations, but it is known that the water of Difficult Run can rise significantly and be turbulent during and after storms. Recent repairs to the trail are evident.



Difficult Run Trail with recent repairs of wash out due to flood event

A future pedestrian bridge crossing will need to consider the potential depth and volume of the water during and after storms. Fair-weather crossings where the Difficult Run Trail is closer to the water appear to be possible within the study area.



Difficult Run

- **Difficult Run**: During the site visits, the study team noted that Difficult Run is a relatively fast flowing stream in most locations. (There is wider segment within the project area that serves as a local swimming hole.) Diabase boulders and rock outcroppings indicate that bedrock is at or near the water surface. Some locations have sandy deposits, especially in the location below the last set of falls within the study area, where there is a mid-channel island. It is this location that may have served as a ford for an early trail or wagon road through the area. East of the project area, Difficult Run transitions into a gorge before the run empties into the Potomac River.



Potential crossing location of Difficult Run

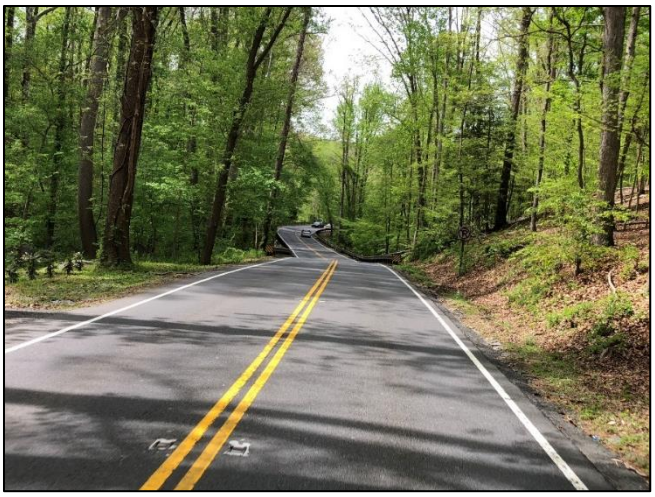
Attempting to cross Difficult Run on foot without a bridge and without getting wet is a challenge. During low flow periods, there are locations where crossing is possible by leaping from boulder to boulder or wading across shallower areas. It may be possible to construct fair-weather crossings within the boulder areas (formalizing them as stepping stones) or at the mid-channel island, perhaps with low-cost wooden bridges (tied off to a tree or other anchor to prevent the bridge from washing downstream during high-water events). Persons with physical disabilities may not be able to cross Difficult Run using a fair-weather crossing. An all-weather bridge crossing would support potential users of all abilities. It appears that all-weather crossings also are feasible. The elevation of the bridge will need to be determined with the help of a hydraulic and hydrologic analysis.

- **Great Falls** Park: Within the study area, south of Difficult Run, Great Falls Park offers heavily wooded ridges and rolling hills, with some steep slopes. Remnants of old trails or roads is evident on side slopes and along a small creek (called Mathis Spring Branch in the literature) that flows into Difficult Run. Observations of the Great Falls Park property south of Difficult Run concluded that a footpath would be possible in this area by following ridges and traversing some side slopes. It should be noted that "social trails" were observed in this area of Great Falls Park near Difficult Run. Social trails are those created informally by frequent visitors to the park. NPS does not authorize or maintain social trails.



Member of study team on informal trail in Great Falls Park south of Difficult Run

- **Georgetown Pike**: This historic roadway travels through the study area from just northwest of Difficult Run in a southeasterly direction. Northwest of the study area is the main vehicle entrance to Great Falls Park and beyond that the village of Great Falls. Southeast of the study area is The Madeira School with its main entrance off of Georgetown Pike, and continuing east, Georgetown Pike provides vehicle access to Scott's Run Nature Preserve. East of Scott's Run is an interchange with the Capital Beltway and the McLean area.



Georgetown Pike (looking west)

The hills and curves along the historic alignment of Georgetown Pike result in limited sight distance along this corridor for vehicles and other modes of travel. In addition, shoulders are narrow and large drainage ditches and steep side slopes exist for much of this portion of Georgetown Pike. Many utility poles are close to the edge of pavement, and overhead and underground utilities exist just off the roadway.



Georgetown Pike: narrow shoulders, overhead utilities, and numerous driveways

Georgetown Pike within the project area also has several side streets and many driveways. From the GIS mapping, the public right-of-way is limited to the roadway itself, except at the crossing of Difficult Run, where the right-of-way is wider.



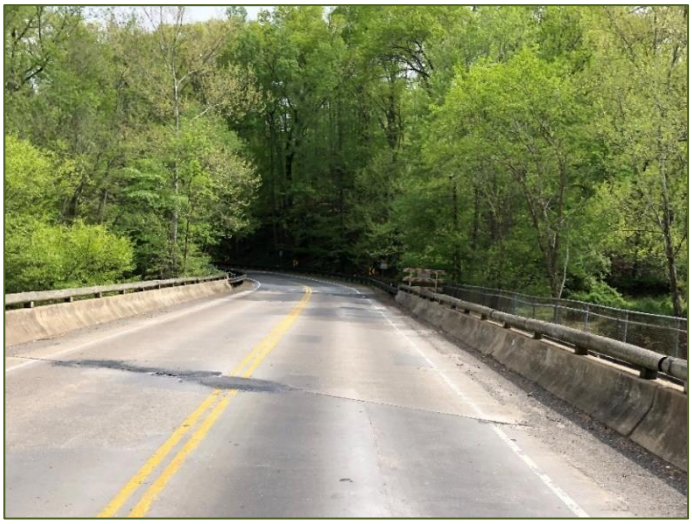
Drover's Rest "pinch point" along Georgetown Pike

Of note is the "pinch point" or narrow area between the edge of the Georgetown Pike pavement and the fence at the Drover's Rest area at the southeast end of the project area. A solution will be needed in this location for the footpath that may involve a narrower trail, additional protection from vehicles, acquisition of right-of-way and/or easements, and replacement of fencing.

Given the physical features of the road and the existing high traffic volumes, pedestrian and bicycle travel along the road is currently challenging. Site distance is limited for pedestrian crossings and there is little space next to the roadway for walking. From the base mapping and from observations along both shoulders of Georgetown Pike, a footpath could be constructed and maintained on either side of the road. However, challenges will include overcoming steep side slopes, minimal available right-of-way, utility conflicts, driveway crossings, and limited sight distance for vehicles, pedestrians, cyclists, and equestrians. The road and the footpath would need to have adequate drainage, and the project would need to provide a barrier (e.g., double-faced guardrail) for protection of pedestrians from vehicles.

Georgetown Pike Bridge over Difficult Run: During the field visits, it was noted that this bridge has an existing cantilevered pedestrian facility on the west side (upstream side) of the bridge. This walkway was permanently closed due to corrosion of structural members. It appears that the wooden deck of the pedestrian facility did not protect the underlying steel members from rain, snow, and salt, which accelerated the deterioration of the steel. It was noted by VDOT representatives at the workshops that this cantilever structure was closed more than 30 years ago due to the structural concerns. It also was noted that the vehicle bridge itself is structurally sound with a “5” rating, meaning that VDOT will not be replacing the bridge in the near term. Stakeholders pointed out that prior to closure of the pedestrian path across the bridge, there was a greater amount of pedestrian activity than there is today, partially due to a parking lot that used to be on the west side of Georgetown Pike, just south of Difficult Run.

The bridge itself supports one travel lane in each direction, each approximately 11 feet wide, and narrow shoulders approximately 6 feet wide between the white edge lines and the face of the parapet walls. While some stakeholders advocated for striping a pedestrian path on the existing bridge by shifting vehicle lane lines and making a wider space for pedestrians, from the field observations, it will be challenging to accommodate pedestrian traffic on the existing bridge given the roadway approaches, existing runs of guardrail on each side of the road at both ends of the bridge, very narrow shoulders in front of and the behind guardrail, high vehicular traffic speeds, and limited site distance for vehicles and pedestrians.



Georgetown Pike bridge over Difficult Run (looking east)



Westbound approach to Georgetown Pike bridge over Difficult Run

3.2 Environmental Review

As part of this Georgetown Pike Footpath feasibility analysis, the Kimley-Horn team assessed environmental elements of the study area including water resources, protected species, hazardous materials, historic resources, Environmental Justice, and Section 4(f) and Section 6(f), and Community Facilities. Kimley-Horn team members conducted a “desktop” review of publicly available GIS and database information to identify sensitive resources within the study area. The team also conducted a limited field review to verify the findings of the database review and to identify unmapped or previously unidentified environmental features.

This environmental review was not conducted to satisfy the requirements of the National Environmental Policy Act (NEPA). Instead, this review was intended to support the feasibility analysis and to support the next steps in the project development process. Any implementation of the recommendations in this study will require compliance with all relevant laws and regulations, including NEPA. Detailed results of this study’s environmental review are included in **Appendix D – Environmental Features Summary**. The review and its results are summarized below.

3.2.1 Water Resources



Difficult Run

The study area contains many water resources that need to be considered during the final design of the footpath. Difficult Run, Rocky Run, and an unnamed perennial tributary to Difficult Run (also called Mathis Spring Branch per documents provided by PHTA) are all within the study area. Hydric soils were identified within the study area through the desktop analyses, indicating the presence of unidentified wetlands. As this footpath project moves forward into final design, it is recommended that a site-specific wetland delineation be conducted for the proposed limited of disturbance (LOD), in accordance with the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual, and be confirmed by USACE through the Jurisdiction Determination process.

A pedestrian bridge crossing that moves forward into final design will require a Joint Permit Application (JPA) to be submitted to the Virginia Marine Resources Commission (VMRC). In addition, if additional wetlands and streams are identified within the project limits of disturbance, additional authorization from the Virginia Department of Environmental Quality (VDEQ) and USACE may be required. It is anticipated that the project would qualify for USACE Nationwide Permit (NWP) 23, with the assumption that a Categorial Exclusion (completed per NEPA) would be approved. Pre-construction notification (PCN) to USACE will be required; however, no VDEQ Water Protection (VWP) permits are expected to be required.

A floodplain study also will be required to complete the design of a pedestrian bridge over Difficult Run. The Fairfax County Department of Land Development Services will require approval of a Floodplain Use Determination Request for work taking place within a floodplain. Although trails and footpaths are exempt from compliance with Resource Protection Area (RPA) regulations, a written request for exemption may be required to be submitted to the Fairfax County Department of Land Development Services for the portion(s) of the footpath within the RPA.

3.2.2 Protected Species

There are protected or endangered species identified near the study, although no confirmed occurrences were identified. No suitable habitat is present within the study area for all species. These species are discussed below:

- **Bald Eagles** may be present within the study area; however, no nests were identified, and a review of the U.S. Fish and Wildlife Service (USFWS) Bald Eagle Concentration Areas revealed no areas within 660 feet of the study area.
- **Yellow Lance Clams** may be present within the study area; however, no confirmed occurrences were identified, and no suitable habitat is present within the study area.
- **Northern Long-Eared Bats** may be present within the study area; however, no winter hibernacula were identified within 0.25 miles of the study area, no maternity roost trees were identified within 150 feet of the study area, and no confirmed occurrences of this species were identified within a 2-mile radius of the study area.
- **Little Brown Bats** are listed as an endangered species within 2 miles of the study area; however, no hibernacula or known maternity roosts were identified within 150 feet of the study area.
- **Tri-Colored Bats** are listed as an endangered species within 2 miles of the study area; however, no hibernacula or known maternity roosts were identified within 150 feet of the study area.
- **Wood Turtles** are listed as a threatened species, and Difficult Run is a confirmed habitat. The bridge crossing of Difficult Run will require additional coordination with the Virginia Department of Game and Inland Fisheries (VDGIF). Construction taking place within 900 feet of Difficult Run may be subject to a restriction from April 1 to September 30 to protect wood turtle nesting areas.

3.2.3 Hazardous Materials

The study team conducted a search of a commercial database of known or potential hazardous material or waste sites within a half mile of each footpath alignment. A total of seven locations were identified, including six Leaking Petroleum Storage Tanks (LTANKS) and one Underground Storage Tank (UST). All LTANKS were associated with leaking residential heating oil tanks, and the UST is associated with a former gasoline station. In all cases the tanks have been closed by VDEQ, and there should be no impact to this footpath project moving forward.

3.2.4 Cultural Resources

The study team reviewed the Virginia Department of Historic Resources' (VDHR) Virginia Cultural Resource Information System (V-CRIS) database to identify known or suspected historic or archaeological sites within the project limits that are listed on the National Register of Historic Places (NRHP) or eligible or potentially eligible for listing on the NRHP. A search of V-CRIS identified seven architectural resources that are listed in, eligible for, or potentially eligible for listing in the NRHP within the study area, including:

- **Georgetown Pike**: The roadway is listed on the NRHP and the Virginia Landmark Register (VLR), and the footpath project would be located within the historic boundary of this roadway.
- **Great Falls Park Historic District**: The northern portion of study area falls within this district, also known as the Potomac Canal Historic District, and is listed on the NRHP and the VLR.
- **Drover's Rest**: The site is an approximately 2-acre property with several structures, including a home believed to have been built between 1757 and 1785, and is eligible for listing on the NRHP. Drover's Rest is located in the southern portion of the study area, and the juxtaposition of the historic structures and the edge of Georgetown Pike present the "pinch point" challenge for a footpath alignments through this area.
- **The Madeira School**: Built in 1931, The Madeira School has not been evaluated but is recommended eligible for listing on the NRHP, according to V-CRIS. The school is located at the southeast end of all four footpath alignments. The existing Public Access (Trail) Easement on the school property along Georgetown Pike is the envisioned adjacent segment of the PHNST network.
- **Difficult Run Trail**: This trail was recommended in 2016 to not be eligible as a historic place, although it has been identified as a contributing resource to the George Washington Memorial Parkway and Great Falls Park Historic Districts. While not eligible, the proposed footpath alignments all connect to this trail.
- **Gauging Station**: A gauging station for Difficult Run water levels is located near a potential footpath bridge crossing; however, in 2007, it was recommended to not be eligible as a historic resource.
- **Unnamed archaeological site**: There is reportedly a site near or within the study area containing prehistoric petroglyphs; the exact location is unknown.

While a formal consultation with VDHR will be required to determine if the project will result in adverse effects to any of these resources, it is important to note that being on the NRHP does not preclude the footpath project from moving forward with final design.

3.2.5 Environmental Justice

After reviewing data at the census block group level, the study team determined that no minority or low-income populations are present within the study area.

3.2.6 Sections 4(f) & 6(f)

The study team reviewed available GIS data to determine whether the proposed alignment options would require a use of properties that qualify for protection under Section 4(f) of the Department of Transportation Act. Section 4(f) resources include publicly-owned parks and recreational lands, wildlife and waterfowl refuges, and publicly or privately-owned historic sites listed on or eligible for listing in the NRHP. A “use” of a Section 4(f) resource may include permanent acquisition or permanent easement, temporary occupancy, or constructive use.

All proposed alignments would result in a direct, permanent use of the Difficult Run Trail, Great Falls Park Historic District, and the Georgetown Pike historic road bed. Permanent and/or temporary uses of Drover’s Rest, and The Madeira School property also may be required depending on final design. Coordination with NPS and VDHR will be required to determine if use of these properties would qualify for a *de minimis* determination. Individual Section 4(f) evaluations may be required if the project is determined to result in an adverse effect to one or more historic properties.

The Land and Water Conservation Fund Act (LWCFA) of 1965 (16 U.S. Code 4601-4 *et seq*.) established a funding source to assist state and federal agencies in the acquisition and development of public outdoor recreational areas and facilities. Section 6(f) of the LWCFA requires that all properties acquired or developed, either partially or wholly, with Land and Water Conservation Fund money must be maintained as such in perpetuity. No Section 6(f) resources were identified within the study area.

3.2.7 Community Facilities

There are currently no existing or planned community facilities within the study area according to a review of Fairfax County GIS data and available comprehensive and master plans. The proposed footpath project would increase connectivity to local and regional parks and trails, which is a primary goal of the Fairfax County Parks and Recreation System Master Plan. The project also would contribute to the ultimate completion of the PHNST, as discussed throughout this report.

3.3 Conclusions on Study Area Analyses

From site analyses and environmental reviews, the study team concluded that there do not appear to be any showstoppers to implementing a footpath in the project area with respect to field conditions and environmental permitting processes. This conclusion was shared with the stakeholders at Workshop #2.

While Georgetown Pike is listed on the National Register and other resources are eligible for listing, a footpath could be constructed in this corridor by following processes required by the agencies such as VDEQ and VDHR and the Army Corps of Engineers. These processes are anticipated to be relatively straightforward as the project moves through final design and into construction.



Georgetown Pike looking west near The Madeira School and Drover's Rest

4. Conceptual Alignments and Design Elements

Considering the base mapping, field investigations, and environmental review, the study team examined various footpath alignments, including footpath alignments considered but dismissed, as well as design elements of footpath cross sections and bridge crossings. The desired outcome of this conceptual design effort was a preferred alignment that will result in a complete, functioning footpath project meeting the goals of FHWA, NPS, and the other project stakeholders.

4.1 Alignment Options

The study team considered design elements that were variable (such as location of the footpath) and those that were fixed (such as the desired 6-foot width of the footpath) and developed various alignments. The discussion of possible alignments began with Workshop #1, during which the participants used the base mapping to sketch ideas (see Figure 4.) Many alignments were considered and analyzed. Some alignments were dismissed, while others moved forward.

By the spring of 2019, three alignments had emerged and were presented at Workshop #2:

- Alignment 1a starting within Great Falls Park well to the east of Georgetown Pike, crossing Difficult Run, proceeding through the park to Georgetown Pike, and proceeding along Georgetown Pike to The Madeira School easement.
- Alignment 1b starting within Great Falls Park adjacent to Georgetown Pike and proceeding along the east side of the Pike to The Madeira School easement.
- Alignment 2 starting within Great Falls Park adjacent to Georgetown Pike and proceeding down the west wide of Georgetown Pike to The Madeira School easement.

One outcome of Workshop #2 was the introduction of a fourth alignment that connected Alignment 1b and Alignment 1a, south of and parallel to Difficult Run on a relatively steep side slope. Following Workshop #2, the alignments were renumbered and the resulting four possible alignments were presented and discussed with the stakeholders at Workshop #3. These four alignments are shown in **Figure 9** and described below.



Steep side slope in Great Falls Park

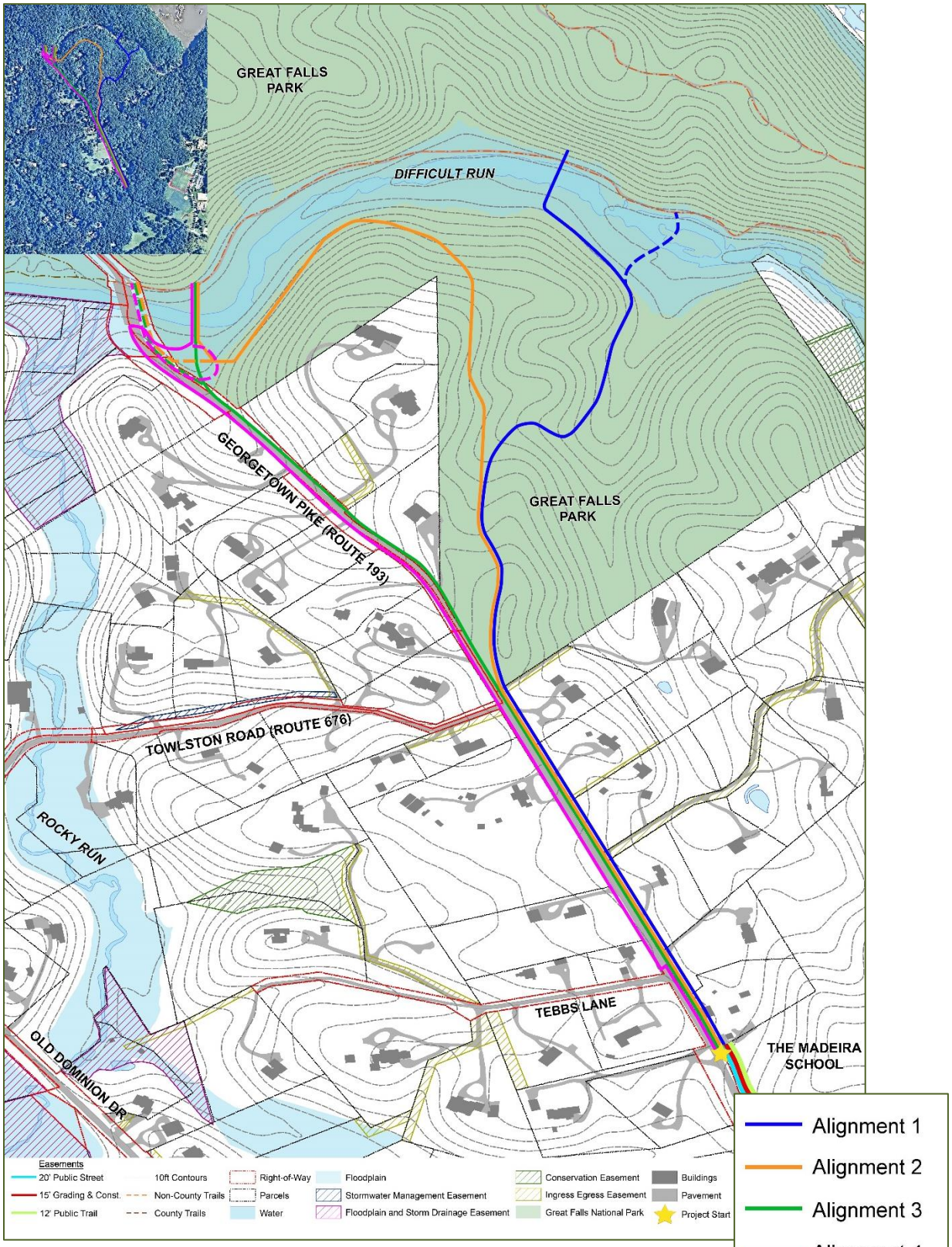


Figure 9:Georgetown Pike Footpath Alignments 1, 2, 3, and 4

4.1.1 Alignment 1

This alignment starts within Great Falls Park along the Difficult Run Trail approximately a quarter mile east of the Georgetown Pike bridge over Difficult Run. The trail crosses Difficult Run at one of two places—upstream of the falls in the area of boulders and bedrock or downstream of the falls making use of the sandy, mid-channel island. The footpath then follows the natural grade through Great Falls Park up the hill to Georgetown Pike opposite the intersection with Towlston Road. The path emerges from the park then proceeds along the east side of Georgetown Pike, through the pinch point at Drover's Rest, and to the west end of the Public Access (Trail) Easement on the Madeira School property.

4.1.2 Alignment 2

This alignment starts at the Difficult Run Trail within Great Falls Park and crosses Difficult Run close to the east side (downstream side) of the existing Georgetown Pike vehicle bridge, perhaps within the existing VDOT right-of-way. The foot bridge could also be adjacent to the east side of the vehicle bridge, either as a separate structure or as part of a future bridge rehabilitation project. The footpath then proceeds along the south side of Difficult Run, cutting into the existing side slope. Like Alignment 1, the footpath then follows the natural grade through Great Falls Park up the hill to Georgetown Pike opposite the intersection with Towlston Road. The path emerges from the park then proceeds along the east side of Georgetown Pike, through the pinch point at Drover's Rest, and to the west end of the easement on the Madeira School property.

4.1.3 Alignment 3

This alignment starts at the Difficult Run Trail within Great Falls Park and, like Alignment 2, crosses Difficult Run close to the east side of the existing Georgetown Pike vehicle bridge. The foot bridge could also be adjacent to the east side of the vehicle bridge, either as a separate structure or as part of a future Georgetown Pike bridge rehabilitation project. The footpath then proceeds along the east side of Georgetown Pike, winding up the hill to the intersection with Towlston Road. From this point, like Alignments 1 and 2, the path proceeds along the east side of Georgetown Pike, through the pinch point at Drover's Rest, and to the west end of the Madeira School easement.

4.1.4 Alignment 4

This alignment starts at the Difficult Run Trail within Great Falls Park and, like Alignments 2 and 3, crosses Difficult Run close to the east side of the existing Georgetown Pike vehicle bridge or adjacent to the vehicle bridge, either as a separate structure or as part of a future bridge rehabilitation project. The footpath then turns right (or left) and proceeds under the vehicular bridge and up the side slope to the west side of Georgetown Pike. From this location (the former parking lot for access to the Difficult Run Trail), the footpath proceeds along the west side of Georgetown Pike, winding up the hill, through the intersection with Towlston Road and to the intersection with Tebbs Lane. The footpath crosses Georgetown Pike at this intersection, making use of a pedestrian crosswalk and warning signs (including flashing lights and other

technology as warranted during design). From this point, like Alignments 1, 2, and 3, the path proceeds along the east side of Georgetown Pike, through the pinch point at Drover's Rest, and to the west end of the Madeira School easement.

4.1.5 Alignments Considered but Dismissed

As shown in **Figure 10**, the study team considered other alignments and discussed these with the stakeholders at the workshops. These alignments are discussed below and were dismissed for the reasons cited.

A. **Footpath crossing south of Georgetown Pike vehicle bridge**. The start of this alignment, while along the Difficult Run Trail, would be outside of Great Falls Park and would require a longer pedestrian bridge to span Difficult Run, given the wide floodplain on the north side of Difficult Run and steep slope on the south side.

B. **Footpath over existing Georgetown Pike vehicle bridge**. This alignment would rely on restriping of the bridge, adding a barrier on the bridge, and constructing a footpath on approaches to the bridge that have very steep side slopes. The study team concluded that the existing bridge is not wide enough to accommodate the two traffic lanes, a narrow footpath, and a barrier separating vehicles from pedestrians. Making use of the existing bridge for a footpath alignment without a barrier was discussed with the stakeholders and considered briefly by the study team, but it was dismissed as unsafe.

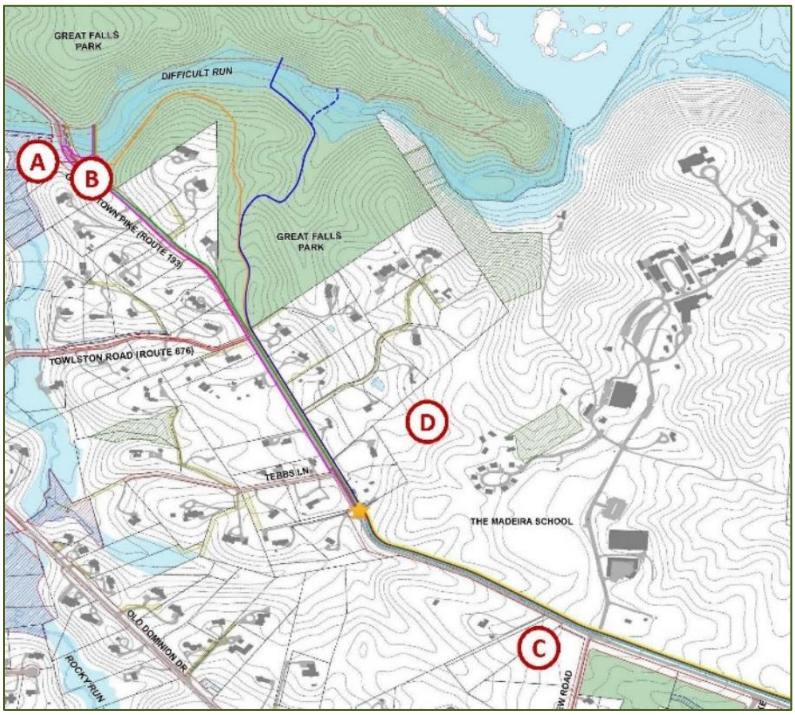


Figure 10: Alignments Considered but Dismissed

C. **Footpath extending on the west side of Georgetown Pike to opposite the vehicle entrance to The Madeira School**. This alignment would require the acquisition of additional right-of-way from private property owners, as well as an unsignalized pedestrian crossing. This alignment also would not take advantage of more than half of the easement that is offered by The Madeira School property. In the future, if a signal were installed at The Madeira School entrance, a pedestrian crossing could also be signalized, making this alignment more attractive, especially in connecting to trails south and east of the project area.

D. **Footpath along west side of The Madeira School property**. This alignment would require an additional easement from The Madeira School as well as access through land not controlled by NPS. The representatives from The Madeira School stated at the workshops that they are opposed to such an alignment, given concerns for the security of their students and the sanctity of their campus. Further, the school has provided the easement along their Georgetown Pike frontage to Fairfax County to be a segment of the PHNST network that would cross their property (vs. behind their property along the Potomac River). (It should be noted that in June 2018, The Madeira School penned a letter to PHTA articulating their reasons for opposing an alignment on their property that is not along Georgetown Pike. A copy of this letter is included as **Appendix E – Letter from The Madeira School**.)

4.1.6 Conclusions on Alignments

The study team concluded that each of the Alignments 1 through 4 could be constructed; however, there are specific conclusions that can be drawn when analyzing construction feasibility of each alignment or comparing pros and cons of each alignment.

1. Construction challenges for all alignments will include:
   a. Grading along the steep slopes within Great Falls Park and along Georgetown Pike
   b. Developing drainage solutions that fit within the context of the park and the corridor and are maintainable
   c. Relocating and/or avoiding overhead and underground utilities
2. According to GIS records, there is not sufficient right-of-way along Georgetown Pike for any of the alignments to be built without acquiring right-of-way or easements from private property owners. A more detailed survey will better quantify amount of land needed as right-of-way or public use easement for the footpath.
3. Within Great Falls Park, a footpath can be constructed with minimal impact to drainage, slopes, and existing vegetation.
4. All of the alignments will need to overcome the pinch point at Drover's Rest along the east side of Georgetown Pike; a solution that may involve a narrower trail through this area.

5. Alignments 1 and 2 have more of the footpath in Great Falls Park and would require the least amount of new right-of-way or new easements from private property owners, as compared with Alignments 3 and 4.
6. Alignment 2 requires cutting a trail into a steep side slope, which is feasible, but will add cost as compared with Alignment 1.
7. Alignments 3 and 4 will cross more driveways and will need to overcome more steep side slopes and ditches along Georgetown Pike than Alignments 1 and 2.
8. With respect to the candidate pedestrian bridge crossings of Difficult Run, a bridge would be feasible in each of the locations. A land survey and a design study, including a hydrologic and hydraulic analysis, will be needed to help determine the appropriate length of the bridge over Difficult Run.
9. Construction of the Alignment 1 bridge a quarter mile from Georgetown Pike may be more challenging than closer to the existing road, given the logistics of staging materials. Project would need access along Difficult Run and the future Alignment 1 path for bridge construction downstream of Georgetown Pike. Lay down areas may need to be along the Difficult Run Trail and/or on the south side of Difficult Run constructed with the trial through Great Falls Park. See discussion in Section 4.3 on bridge types and locations.

4.2 Footpath Cross Sections

The study team researched the appropriate typical cross sections for segments of the footpath within Great Falls Park and along Georgetown Pike. In all locations, the recommended width of the footpath is 6 feet, with shoulders that are each 1 foot wide. Cross sections will vary, however, depending on the location. The following typical sections are recommended:

4.2.1 Typical Section within Great Falls Park

The recommended typical section for the footpath in Great Falls Park is shown in **Figure 11**. The cross section shown was derived from typical details in NPS design guidelines.

Multiple options exist for surface treatment, including crusher run, gravel, heavily compacted soil, and mulch. During final design, the choice for surface treatment will likely depend on the preference of NPS as well as current costs and availability of materials. Care will need to be taken in constructing the footpath with minimal laydown areas for materials.

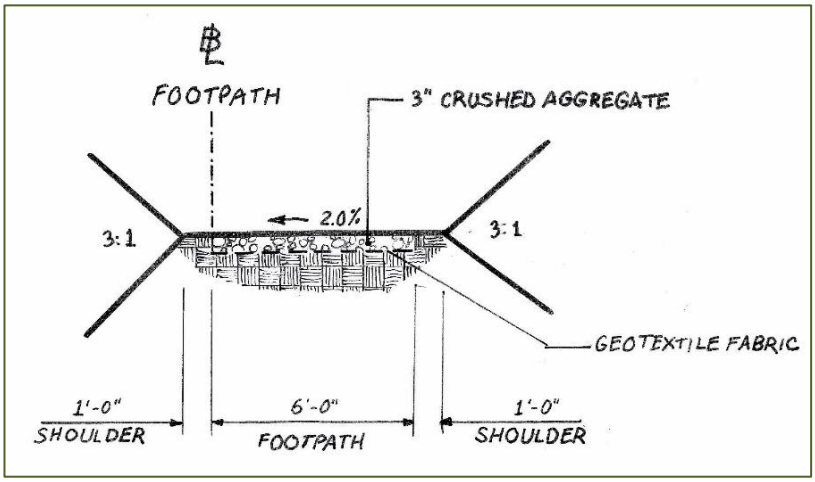


Figure 11:Typical section for footpath in Great Falls Park

4.2.2 Typical Section along VDOT Right-of-Way

Along Georgetown Pike, most of the existing cross section includes open ditches with minimal shoulders. See **Figures 12 and 13**. Some locations have steep cut slopes; other locations have gradual side slopes. Many locations have guardrail protecting traffic from the deep ditches or from steep fill slopes (embankments). Sight distance is limited due to the horizontal and vertical curves that have resulted over time as the road evolved from a wagon road in the 1800s to the heavily-traveled VDOT route that it is today.

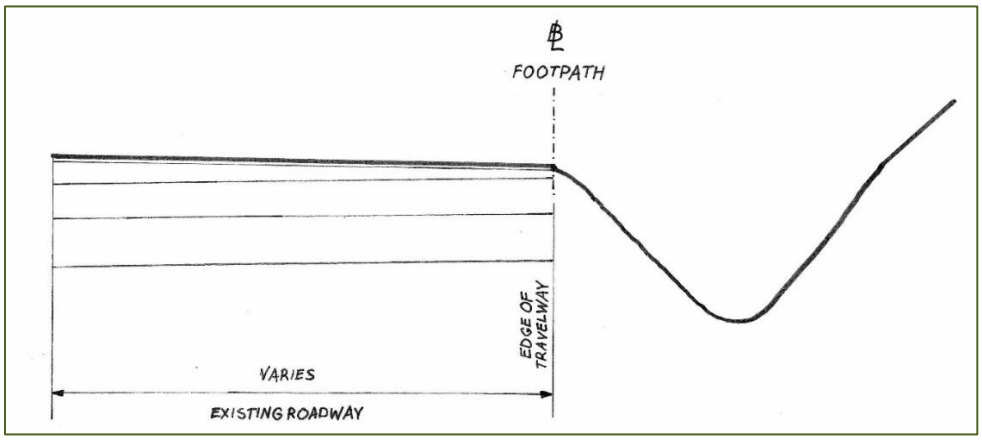


Figure 12: Existing Typical Roadside Ditch Cross Section of Georgetown Pike

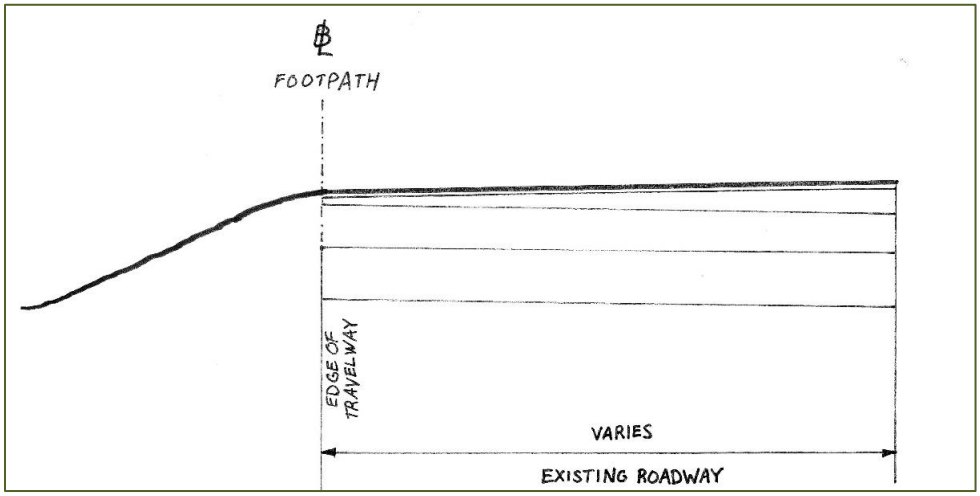


Figure 13: Existing Typical Roadside Slope Cross Section of Georgetown Pike

Within existing right-of-way (or within right-of-way or easements to be acquired as part of project implementation), the typical section for a footpath along Georgetown Pike will need to provide the following:

- Appropriate pedestrian protection from vehicles
- Application of VDOT design criteria for safety and accessibility
- Surface treatment that would minimize erosion and minimize maintenance needs

Thus, the footpath typical section along Georgetown Pike will vary, depending on the existing conditions and on the desire of the agencies owning and maintaining the trail after construction. Stakeholders also will want to provide input during final design. Several options for typical sections are shown in **Figures 14 to 17**.

In all cases, the recommended surface treatment for segments of the footpath along Georgetown Pike is asphalt compacted on prepared subbase (e.g., 21A or 21B stone) and flanked by compacted gravel shoulders. In areas with steep side slopes, small retaining walls may be needed (with handrails added for protection from drop-offs).

Drainage solutions will need to be part of the footpath design, and options include surface runoff behind the footpath, the addition of inlets at the back of the asphalt path, and/or curb and gutter for segments along Georgetown Pike. The precedent has been already set for adding curb and gutter to this historic road in the Great Falls area and along segments to the west of the village of Great Falls.

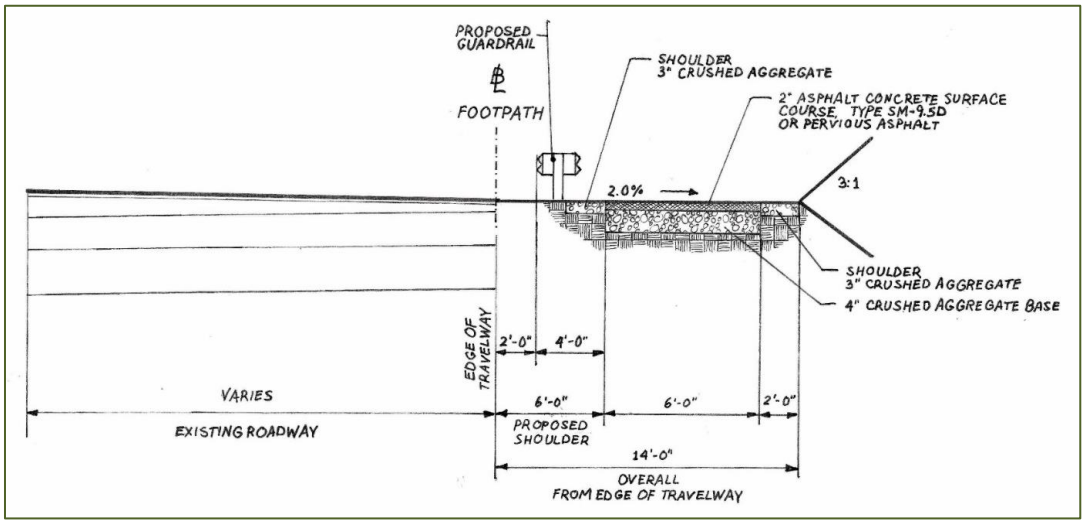


Figure 14: Possible Typical Section for Footpath along Georgetown Pike

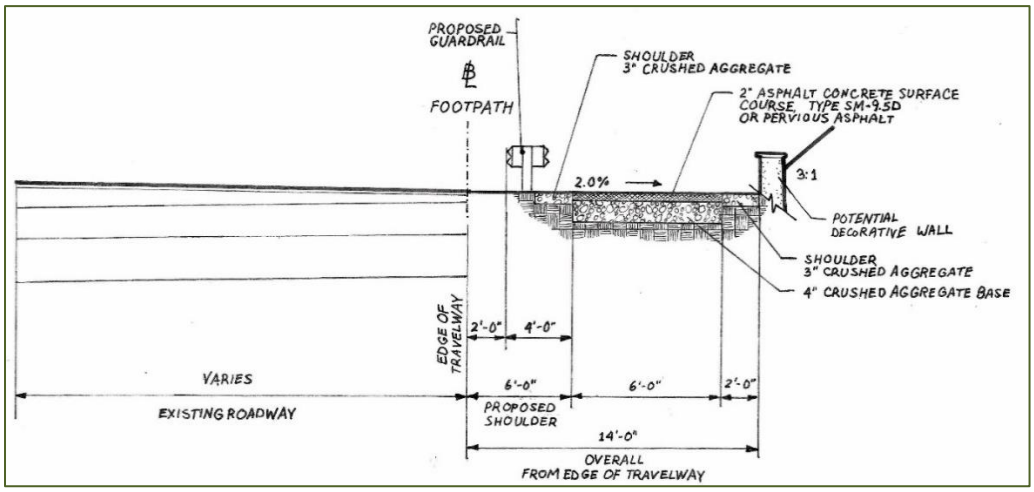


Figure 15: Possible Typical Section for Footpath with Retaining Wall for Cut Slope

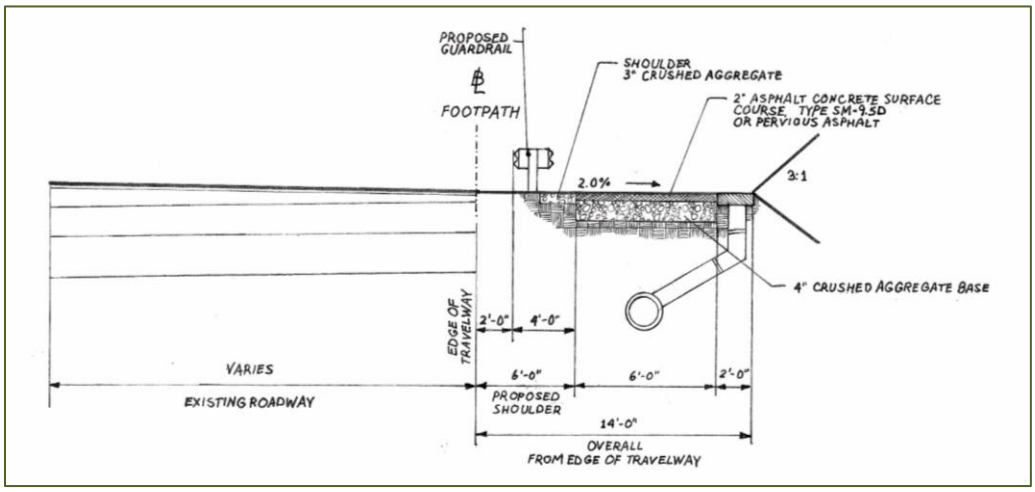


Figure 16:Possible Typical Section for Footpath with Inlet and Drainage System

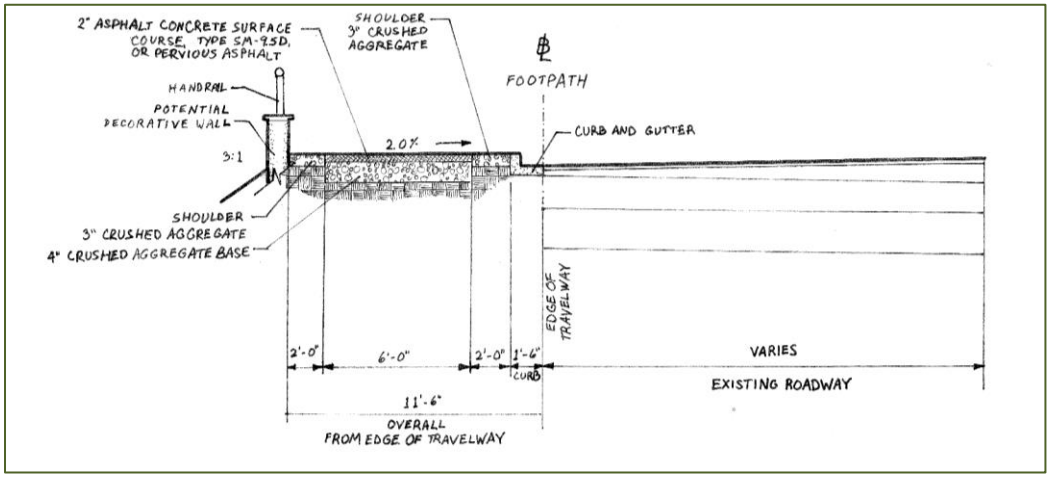


Figure 17: Possible Typical Section for Footpath with Retaining Wall for Fill Slope

4.2.3 Typical Section at Drover's Rest Pinch Point

Applying the design elements of the typical sections discussed above, the study team developed a concept for squeezing in the footpath between the Drover's Rest buildings and fence and the edge of pavement for Georgetown Pike, as shown in **Figure 18**. The width of this area is approximately 11 feet between the fence and the edge of pavement. A design solution in this location will likely need right-of-way (or an easement) from the landowner, as well as the approval of VDOT and Fairfax County for narrow shoulders and/or a narrow footpath.



Figure 18: Possible Footpath Solution at Drover's Rest Pinch Point

4.3 Crossing of Difficult Run

To provide the connection between the Difficult Run Trail and the trails to the south and east within the PHNST network, the Georgetown Pike Footpath will need to cross Difficult Run. It is the desire of NPS and the other project stakeholders that the clear width of the bridge crossing be 6 feet (consistent with the 6-foot-wide trail). The length of the bridge would be dependent upon its location and whether or not the bridge spans the floodplain.

Several crossing locations and many types of bridges were considered in this footpath feasibility study. Fairfax County Park Authority (FCPA) also provided excellent information on their experience with constructing and maintaining trail bridges.

4.3.1 Crossing Locations

When analyzing a location for crossing Difficult Run, the study team considered the following:

- Height of the banks of Difficult Run:
  - Lower banks could assist with low-water crossings, but bridge headers would need to be built for higher crossings, which could have more of an impact on the floodplain.
  - Higher banks could assist with higher crossings, but the bridge lengths may be longer than desired given budget constraints.
- Stability of channel at crossing locations:
  - Bedrock channel bottoms indicate a more stable stream channel and provide better opportunities for anchoring bridges.
  - Minimal bank erosion also indicates a more stable channel.
  - Channels with sediment deposits, such mid-channel “depositional” (sand) bar and bends, indicate less stability. These stream features will likely change over time.
  - Low-water crossings tend to last longer and be more maintainable when located in a stable section of a stream or river, such as upstream of an existing waterfall or on a bedrock outcropping.
  - For a longer-term (higher cost) bridge solution, a location with good channel stability is preferred.
- Floodplain:
  - Spanning the Difficult Run floodplain will require a higher, longer bridge span as compared with constructing a bridge within the floodplain.
  - A bridge within the floodplain will be permittable as long as agency approval processes are followed.
  - A land survey and floodplain analysis will be needed during the detailed design phase.

Thus, the footpath bridge will need to be engineered to span Difficult Run and to avoid or withstand frequent flood events while minimizing cost. Using the GIS mapping, supplemented by field visits, the potential bridge locations would result in bridges longer than 200 feet if

spanning the floodplain. Shorter spans are possible within the floodplain. For conceptual design and cost estimating purposes of this feasibility analysis, it was assumed that 120 feet would be the optimal length for withstanding occasional flooding while minimizing costs. With a land survey, floodplain analysis, and detailed design, the bridge span could be shorter.

As shown in **Figure 19**, Alignment 1 offers two potential locations for crossing Difficult Run, both approximately one quarter mile downstream of the Georgetown Pike vehicle bridge. Both locations offer a setting away from the busy Georgetown Pike and closer to the Potomac River. The locations also offer a connection with the Difficult Run Trail that is closer to trails and other destinations within Great Falls Park.



Figure 19: Alignment 1 Bridge Crossing Locations

The upstream crossing location is in the more stable, bedrock area of the channel. The downstream location is the less stable location; however, it is the likely historic location of the ford that was used by the wagon roads of the 1700s. Each of these locations is feasible depending on the type of bridge and the time frame for implementation. This upstream location would require a span of approximately 100 to 120 feet or two spans of approximately 50 to 60 feet if a pier is anchored in the stream bed. The downstream location could support a clear span bridge of approximately 120 feet or two short span bridges, each 30 to 50 feet long.

As shown in **Figure 20**, Alignments 2, 3, and 4 make use of two potential locations just to the east (downstream) of the vehicle bridge. A free-standing pedestrian bridge is possible between the higher banks of Difficult Run just downstream of Georgetown Pike or next to the existing vehicle bridge. When the vehicle bridge is ready for replacement, a pedestrian bridge could be integrated into the new bridge, allowing another footpath or shared use path to be constructed in the study area.



Figure 20: Alignments 2, 3, and 4 Bridge Crossing Locations

During stakeholder meetings, VDOT noted that the existing bridge structure on Georgetown Pike has a rating of 5 (Fair). A 4 rating would be considered structurally deficient. While it is difficult to predict how long it will be before the structure reaches a 4 rating and would need to be replaced, when it is replaced, VDOT will consider a pedestrian facility with an upgraded bridge design, consistent with current VDOT policy.

4.3.2 Potential Bridge Types

The type of bridge needed to carry the 6-foot-wide Georgetown Pike Footpath over Difficult Run would need to be designed to be high enough and long enough to span the floodplain or if within the floodplain resistant enough to avoid wash out from anticipated flood levels. Given this requirement, as well as the potential locations for a bridge, the study team considered the following types of bridges:

Single log stringer bridge: This type of bridge is seen in more remote locations within National Parks and National Forests. Hand rails can be on one side or both sides of the log. This type of bridge could be a shorter-term solution for the Georgetown Pike Footpath at the mid-channel island in Difficult Run (one of the Alignment 1 crossing options), but it will not support the six-foot-wide trail desired by NPS and other project stakeholders.



Single Log Stringer Bridge, Great Smokey Mountains National Park, Cataloochee, NC

Sawn timber stringer bridge:
This type of bridge is popular in parks and forests as shorter bridges for trails that need to span streams. This type of bridge could be a shorter-term solution for the Georgetown Pike Footpath at the mid-channel island in Difficult Run, and it could carry a 6-foot-wide trail across the stream. Such a bridge also could be tied off with a cable to prevent the wooden bridge from floating downstream during a flood event. NPS staff or volunteers would need to put the bridge back in its place after such an event.



Sawn Timber Stringer Bridge with Cable, Prince William Forest Park, Triangle, VA

Glulam stringer bridge: This type of bridge can be engineered to carry wide trails and even light vehicle loads over relatively long spans. These bridges can be more attractive but also tend to be more expensive with respect to construction and maintenance than a steel truss bridge.



Glulam Bridge example

Prefabricated steel truss: This type of bridge can be engineered to carry a trail over spans as long as 250 feet. This bridge can support the 6-foot-wide trail (as well as 2-foot shoulders, if desired). The truss structure would be outside of this 10-foot width. Other types of truss bridge materials included aluminum and fiberglass; however, steel is less expensive and more readily available.



Prefabricated Steel Truss bridge example

A steel truss bridge is recommended as the longer-term solution for carrying the Georgetown Pike Footpath over Difficult Run. This type of bridge will maximize accessibility for the users of all abilities. The bridge can be constructed and maintained within the floodplain and should survive most storms; however, fallen trees and other debris could cause damage. When discussed with the stakeholders, NPS representatives offered that the trusses provide an open structure that has a better chance of success in a storm event than other designs. Fairfax County Park Authority (FCPA) representatives agreed. A rendering of a steel truss bridge over Difficult Run is shown in a “before and after” comparison in **Figure 21** on the following page.

Moving forward following this feasibility study, the design of a footbridge crossing Difficult Run will require a land survey and analysis related to the floodplain. This design will determine if the bridge will span all of Difficult Run or if a pier in the stream channel will be needed.



Figure 21: Potential Difficult Run crossing location and rendering of possible steel truss bridge

4.3.3 Fairfax County Park Authority Steel Truss Bridges

Following Workshop #3, FCPA provided additional documentation in support of this study, including several examples of steel bridges installed over the past several years. The width of these bridges ranged from 4 to 14 feet. Examples of FCPA bridges are shown the photos on this page. Additional documentation is included in **Appendix F – Fairfax County Park Authority Bridge Information**, including a generic "Not for Construction" example, design information for the 14-foot bridge, and bridge specifications and shop drawings for that structure. It has been FCPA's experience that these types of bridges are able to withstand significant stream loads during flooding events, and they have proven to be good at standing up to large amounts of debris. These bridges are designed for low maintenance during a 75-year lifespan and are suitable for pedestrian, bicycle, and equestrian uses.



Steel Truss Bridge during flood event (photo courtesy of FCPA)

It is FCPA's opinion that the "half-through pony truss" is the best design for these bridges. Other bridge types (including a fiberglass bridge and a concrete arch span) have bowed under stream loads, have had decks pop off during flood events, have been difficult to install, or have had railings torn off by flooding waters. The truss structure FCPA now specifies seems to take the worst of the flow, even with debris piling up against and under the bridge. FCPA says this bridge type is also reasonably affordable.



Prefabricated Steel Truss Bridge (photo courtesy of FCPA)

4.3.4 Fair-Weather Crossings

Near-term "fair-weather" crossings are possible for the Alignment 1 crossing locations, given the desires of the stakeholders moving forward quickly following this feasibility study. Two types of fair-weather crossings may be applicable for a near-term solution for the Georgetown Pike Footpath:

Stepping stones: This crossing involves adding large boulders to the stream bed. A similar solution was recently constructed for the Fairfax County Cross-County Trail. These boulders tend to work best when located in a stable section of a river, such as upstream of an existing waterfall or anchored to bedrock. A rendering of this possible solution is shown in **Figure 22**. It should be noted that this solution doesn't provide accessibility for some potential trail users.



Figure 22: Fair-weather crossing – addition of stepping stones in stream bed

Sawn timber stringer bridges to mid-channel island. Shorter-span wooden bridges could provide access to the mid-channel island and thus carry the footpath across Difficult Run. To mitigate the chance of these bridges floating off during flood events, they could be tied off (anchored) and put back in place after the event.



Fair-weather crossing:
Sawn Timber Stringer Bridge

5. Concept Design and Analysis

Following the development of preliminary concepts for the alignments, typical sections, and bridge locations and types, as well as the presentation and discussion these design elements with the project stakeholders, the study team completed their analyses, drawing conclusions and finalizing 30% concept plans.

5.1 30% Concept Plans

Based on the analyses conducted during this study of footpath alignments, cross sections, and bridge crossings, concept plans for all four alignments were completed by the study team. These plans are included with this report as **Appendix G**. The cover sheet of the plan set is shown in **Figure 23**. The plans were completed in accordance with the FHWA EFLHD, NPS, and VDOT design standards and include plan views, details, high-level construction quantities, and a footpath profile. The plans were used in the evaluation of potential project costs, and they are intended to form the basis for FHWA, NPS, and/or other stakeholders to move forward with the detailed design of the preferred alignment of the footpath.

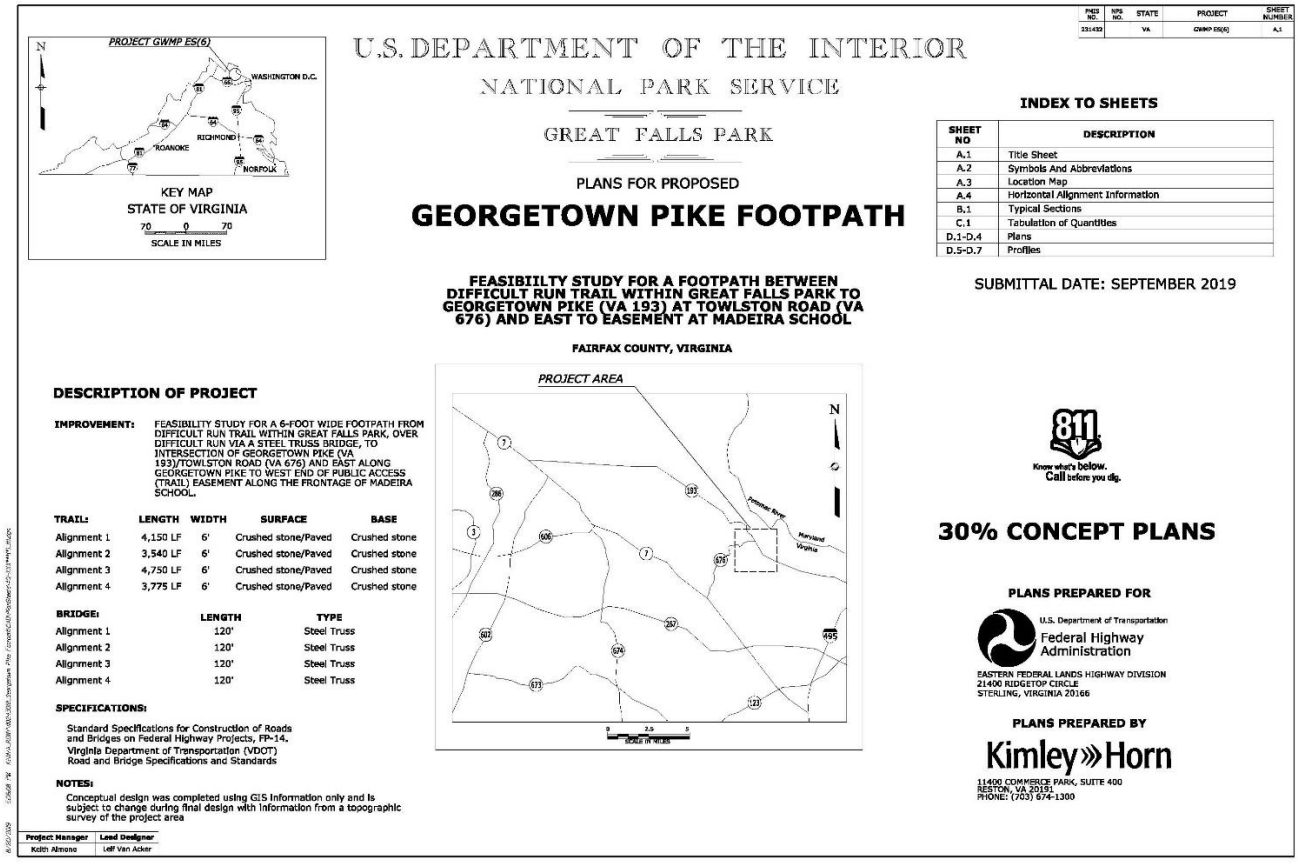


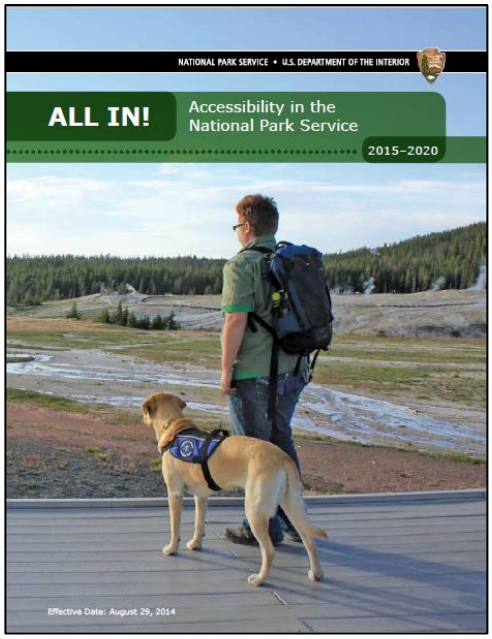
Figure 23: 30% Concept Plans Cover Sheet

5.2 Accessibility

FHWA, NPS, and other stakeholders expressed the desire that the Georgetown Pike Footpath planning and design process results in a facility that maximizes access for people of all abilities. NPS Management Policies (2006) states:

> *"National parks belong to all Americans, and the National Park Service will welcome all Americans to experience their parks."*

This policy and the goals of NPS and all of the stakeholders supported the concept design and the recommendations of this study. To guide the design of the footpath, NPS considers the Architectural Barriers Act Accessibility Standard (ABAAS) for improving access for all users. Americans with Disabilities Act (ADA) requirements are typically applied for facilities in VDOT right-of-way.



NPS Accessibility Guidance

For the segment of the trail within Great Falls Park, the design would need to take into account ABAAS requirements. As stated in NPS design guidelines, the degree of accessibility provided is proportionately related to the degree of human-made modifications in the area—as well as to the importance of the facility to people visiting or working in a park. Great Falls Park is visited frequently, and the longer-term solution for a footpath should be designed to maximize accessibility. A fair-weather crossing of Difficult Run would be a short-term solution as a precursor to the longer-term steel truss bridge that would provide the ABAAS solution. The footpath through the woods would need to be designed to minimize steep grades and to provide a surface that supports as many people with differing abilities as possible.

Along Georgetown Pike, it is presumed that the footpath would be constructed in what will be VDOT right-of-way; thus, ADA design guidelines will need to be followed. At each crossing of an intersecting side street or driveway, concrete curb ramps with detectable surfaces will need to be installed. The asphalt surface of the trail, as well as the barrier separating vehicles and pedestrians, will need to be designed to maximize accessibility for persons of all abilities.

5.3 Permitting

The construction of the Georgetown Pike Footpath will require a number of permits from various agencies. The required permits will be confirmed during the design phase of the preferred alignment. For VDOT projects, permits typically include a grading permit from the local stormwater management agency (Fairfax County in this case), right-of-way permits for construction access, and the environmental permits discussed in Section 3 of this report. Again, there do not appear to be any showstoppers to implementing a footpath in the project area with respect to the permitting processes.

With respect to specific permits for the crossing of Difficult Run, a U.S. Army Corps of Engineers (USACE) permit would be needed, and the project should be covered by a current Nationwide USACE Permit. The permitting process would include developing and submitting a statement of Findings to NPS with (1) rationale for locating improvements in the floodplain, (2) disclosure of risk associated with the site, and (3) a detailed floodplain mitigation plan. The design team would need to model the floodplain with proposed improvements to determine if the flood elevation will rise with the installation of a new crossing and the extent of the rise and its impact to surrounding properties.

5.4 Costs

A preliminary opinion of probable cost (OPC) was prepared for each potential footpath alignment to aid in evaluating the alignments and bridge crossing options. Each alignment was evaluated with a steel-truss bridge either spanning the entire floodplain or only the Difficult Run stream itself. The total estimated project costs included engineering design, right-of-way acquisition, utility relocation, permitting, construction, construction-related services (18.5%), and contingency (30%). These costs are summarized in **Table 3**. More detail is included in **Appendix H**.

Table 3: Estimated Project Cost of Each Alignment

Alignment 1	*Alignment 2*	*Alignment 3*	*Alignment 4*
$ 3,940,000	$ 4,550,000	$ 5,300,000	$ 5,570,000

The lowest cost option for both options was Alignment 1, despite the additional bridge mobilization cost included due to the more difficult access at that bridge location. Alignment 1 had a lower cost compared to Alignment 2 due to the shorter overall length and decreased amount of grading within steep slopes. Alignments 1 and 2 had a lower comparative cost due to avoiding additional roadway construction and right-of-way acquisition. Alignments 3 and 4 had similar costs given they both run adjacent to Georgetown Pike for their entire lengths.

5.5 Evaluation Criteria

Each of the four alignments was evaluated using seven evaluation criteria or factors developed by the study team and confirmed with FHWA, NPS, and the other stakeholders. These criteria are summarized below:

- **General walking quality**: Given that the basis of this project is a footpath (which may be used by walkers or hikers, as well as people with wheelchairs, people with strollers, bicyclists, and horse enthusiasts), this factor qualitatively evaluated the anticipated experience of users with respect to ease of use, avoidance of noise and fumes from traffic, and opportunity to be within a park-like setting.
- **Visual impact**: Visual impact was identified in Workshop #3 as an additional factor to consider. This factor evaluated impact to viewsheds, given the importance of viewsheds to the PNHST network.

- **Protection from traffic**: This factor took a straightforward look at distance from traffic, the presence of barriers, and whether or not the trail crossed Georgetown Pike.
- **Right-of-way impacts**: This factor compared the amount of right-of-way or easements needed for each alignment.
- **Ease of trail construction**: Given the preliminary plans produced for each alignment, this factor examined constructability of the footpath.
- **Ease of bridge construction**: This factor examined constructability of the bridge crossing options.
- **Preliminary project cost**: This factor compared costs of the alignments.

During Workshop #3, NPS representatives offered that it may be helpful to understand any impacts to species or natural resources. The participants concluded that these impacts will likely be similar for all alignments within the general study corridor and should be considered during the detailed design phase.

5.6 Scoring

The study team evaluated the alignments by applying the criteria discussed above. An initial evaluation was conducted by the team and then discussed with the stakeholders at Workshop #2 for three alignments, after which a fourth alignment was added. The criteria were then applied to all four alignments, and results or scores were discussed at Workshop #3. With the additional of visual impacts and using a scoring system of best, good, and fair, the study team applied the factors to all four alignments. Scoring results are shown in **Table 4**.

Table 4: Evaluation of Footpath Alignments

Criteria	*Alignment 1*	*Alignment 2*	*Alignment 3*	*Alignment 4*
General walking quality	●	●	◎	◎
Fewer visual impacts	●	○	○	○
Protection from traffic	●	●	◎	○
Fewer right-of-way impacts	◎	◎	○	○
Ease of trail construction	●	◎	◎	○
Ease of bridge construction	○	◎	◎	◎
Preliminary project cost	●	◎	○	○
Scores	**19**	**17**	**14**	**13**

Key: ● = Best (3 points) ◎ = Good (2 points) ○ = Fair (1 point)

The study team drew several conclusions on the scoring of the alignments:

- Alignment 1 ranked highest compared to the other alignments, which was consistent with the stakeholders' preference discussed at the workshops that as much of the trail as possible should be in Great Falls Park. More of the footpath in the park would result in a better experience for trail users, more protection from traffic, less need for right-of-way, an "easier" trail to construct, and lower cost.
- Alignment 1 edged out Alignment 2 due to its relative ease of constructing the trail and fewer visual impacts. Much of Alignment 2 in Great Falls Park would need to be constructed by cutting a bench into a steep side slope, which would mean a wider swath of clearing through the woods.
- Constructing the bridge for Alignments 2, 3, and 4 should be slightly easier than doing so for the more distant Alignment 1 location, but there will likely not be a great deal of difference in price for each location.
- Construction of the footpath in the park is anticipated to be easier than construction along Georgetown Pike, which would require roadside grading, one-way flagging operations, daytime peak period restrictions, nighttime operations (if allowed by the residents), and barriers, as well as avoidance or relocation utilities. In contrast, a natural surface footpath in a forest would follow natural grades and have the need for minor drainage improvements.

6. Recommendations

Based on the analyses conducted as part of this Georgetown Pike Footpath Feasibility Study, the development and evaluation of footpath alignments, and the extensive coordination with FHWA, NPS, and other project stakeholders, the following recommendations are offered for moving forward with the design, construction, and maintenance of the Georgetown Pike Footpath—another link in the Potomac Heritage National Scenic Trail.

6.1 Move Forward with Alignment 1

The study team recommends advancing Alignment 1, the stakeholders' preferred alignment, in a phased approach.

6.1.1 Near-term phase: Build portion of Alignment 1, with fair weather crossing of Difficult Run

1. Build a fair-weather crossing of Difficult Run with stepping stones or smaller timber bridges at the mid-channel crossing (old ford site) of Difficult Run
2. Construct footpath along Alignment 1 within Great Falls Park; terminate this segment of trail at Georgetown Pike, opposite the intersection with Towlston Road
3. Maintain this new footpath
4. Continue advocacy and planning activities for implementing the longer-term stream crossing and footpath alignment

6.1.2 Longer-term phase: Build all of Alignment 1, with steel truss bridge crossing of Difficult Run

1. Construct the entirety of Alignment 1 to provide access for people of all abilities.
2. Install a one- or two-span steel truss bridge upstream of the mid-channel island in the boulder/bedrock area.
3. Construct a 6-foot-wide trail (wherever possible) along Georgetown Pike from Towlston Road to the western edge of The Madeira School property, including through the "pinch point" at Drover's Rest.
4. Maintain this new footpath
5. Advocate for other parties (e.g., FCDOT or FCPA) build the connecting trail on The Madeira School property within the existing Public Use (Trail) Easement

A phased approach would serve to accomplish the goals of the project more quickly and to build community support and momentum for the longer-term solution. Near-term improvements could be constructed by NPS contractors and/or by other agencies such as FCPA or FCDOT, as well as local volunteer groups with permission from NPS. A near-term project could present educational opportunities about the construction and maintenance of a trail and about the history and characteristics of Great Falls Park and Difficult Run. Longer-term improvements will require additional advocacy, planning, design, and programming—which could be initiated in the near term.

This phased approach is consistent with the "evolution of trails" concept. Many trails develop organically, starting as informal or social trails and becoming more and more recognizable to bicyclists, hikers, runners, cyclists, and other users. These trails can grow into more formal trails (and even paved roads and major transportation corridors). During this study's workshops, the stakeholders agreed that while some social trails exist in the study area, they would like this Georgetown Pike Footpath to be purposefully planned and that phasing could help with advocating for and funding longer-term, more accessible solutions.



Location of near-term footpath terminus along Georgetown Pike across from Towlston Lane

Looking to the future, when Alignment 1 is constructed and providing its many users the experiences the stakeholders intended, and when the time comes for VDOT to replace the Georgetown Pike bridge over Difficult Run, an additional footpath facility could be constructed. For this future phase, VDOT may construct a parallel pedestrian facility on or adjacent to the bridge, per their policies. With this bridge crossing, a segment of Alignment 2 could also be constructed to proceed parallel to the south side of Difficult Run and to connect to Alignment 1 in Great Falls Park.

6.2 Funding Options

Successful funding of the Georgetown Pike Footpath Project, whether implemented in phases or all together, will likely occur when there is a combination of funding sources, along with project champions who can lead the project into the new steps including the development of a funding plan. Such a plan for the project could consider one or more of the following funding opportunities:

- Federal:
  - FHWA's Congestion Mitigation and Air Quality (CMAQ) Program for projects linked to vehicular trip reduction
  - FHWA's Transportation Alternatives Program (TAP) for pedestrian and bike improvements
  - FHWA's Federal Lands Access Program (FLAP) to improve access to recreational amenities
  - Federal Lands Recreation Enhance Act (Recreation Fee)
  - Federal Lands Recreational Trails Program (RTP)
  - Centennial Challenge (50% NPS and 50% partner/donor cost share)

- Virginia:
  - VDOT SMART SCALE funds
  - VDOT maintenance funds for roadside repairs and upgrades
  - Recreational Trails Program, a federal program through the Virginia DCR
- Regional:
  - Northern Virginia Transportation Authority (NVTA) TransAction funds to reduce regional congestion
  - Northern Virginia Transportation Commission (NVTC) Commuter Choice program for funding multimodal projects
  - NOVA Parks (formerly Northern Virginia Regional Park Authority)
- Fairfax County:
  - NVTA's 30% funds for local transportation projects
  - FCDOT Capital Improvement Plan (CIP) funding
- Advocacy and citizen/private groups: Fund raising and financial support, including private contributions for construction and operation and maintenance (O&M)
  - National Park Foundation
  - PHTA, MORE, and others
- In-kind services by NPS, VDOT, and/or FCDOT and FCPA
- Volunteer groups for performing minor construction and O&M

In considering these funding sources, the FHWA programs support reducing vehicle trips, adding pedestrian improvements, or providing access to recreational facilities. VDOT has set aside some SMART SCALE funds that go to pedestrian and bike projects, and VDOT's maintenance program funds roadside repairs and upgrades. In Virginia, there is good partnership between FHWA and VDOT and other agencies, including DCR, to fund trails throughout the Commonwealth.

It's also important to note that securing federal or state funding often requires a commitment for maintenance. Having a VDOT or Fairfax County maintenance agreement in place with NPS, for instance, would demonstrate a partnership with NPS and perhaps help to obtain grant funding.

Regionally, NVTA funds aim to reduce regional congestion, while NVTC programs focus on transit and multimodal projects. NVTC also allocates 30% of its funds for local transportation projects, such as projects implemented by FCDOT and FCPA, which also is moving forward with the many projects in their CIPs focused on pedestrian and bicycle improvements.

Other funding opportunities may be possible from advocacy groups and private citizen groups, in-kind services, or volunteer services. There are recent success stories of NPS and other agencies partnering with advocacy groups such as the National Park Foundation, PHTA, MORE, Potomac Appalachian Trail Club (PATC), and Golden Gate National Recreation Area:

- Advocacy efforts of PHTA and MORE have resulted in miles of constructed trails, including the recent completion of a segment of the PHNST network in Prince William County through a cost-sharing grant.
- PATC manages a number of trails in the region through their volunteer efforts, including the Appalachian Trail.
- Golden Gate National Recreation Area works with a local construction company that is using a new type of concrete, donating this concrete, and teaching youth and adult volunteers who are working on improvements at Alcatraz about construction.

Volunteer organizations for small projects and minor maintenance could include Scout Troops, Boys and Girls Clubs, and private companies such as REI. These organizations may be able to provide in-kind services or volunteer work throughout the project. These services are successful when there are champions with both the agency and private organization to coordinate the efforts and lead their teams.

Involving businesses as stakeholders may be helpful in moving forward with implementation. Potential business and professional associations could come from the McLean and Great Falls areas. Homeowners' associations could also be in the mix, and charitable foundations or non-profit organizations that help support the environment, parks, and trails could provide funding and additional advocacy.

An additional set of supporters for this trail could come from educators, equestrians, and health care advocates. This project presents an opportunity to bring in an educational component on the construction and maintenance of a trail through the woods and on the history and natural features of Great Falls Park and Difficult Run. The footpath also presents an opportunity to support equestrian programs that include trail riding, and there are numerous community health benefits that will come with the construction of this footpath.

6.3 Path Forward

This report and its appendices are intended to provide a foundation upon which the Georgetown Pike Footpath Project can move forward into project development. Considering the analyses, concept plans, and Alignment 1 recommendations discussed in this report, the following implementation steps are recommended:

6.3.1 Near-term

1. Determine the champions for the near-term and longer-term phases, form a leadership team, and continue advocacy efforts and collaboration among stakeholders for all of Alignment 1
2. Involve more groups in the collaboration such as local citizens associations and business associations, charitable foundations, and non-profit organizations

3. Develop an approach for NEPA compliance, permitting, and construction; and maintenance agreements for the near-term phase (including a maintenance plan for fixing or recovering the fair weather crossing after a major storm event)
4. Establish a funding plan, considering the variety of possible funding sources, for constructing and maintaining all of Alignment 1
5. Establish maintenance agreement(s) for all or portions of Alignment 1 between NPS, VDOT, and other stakeholders and applicable advocacy groups and/or volunteer groups
6. Design and construct a near-term version of Alignment 1:
    a. Install the fair weather crossing of Difficult Run
    b. Construct a 2- to 3-foot wide walking path along Alignment 1
7. Initiate planning and design activities for the longer-term version of Alignment 1:
    a. Perform a land survey of the entire Alignment 1 project area
    b. Initiate detailed design of the Alignment 1 segments:
        i. Steel trust foot bridge over Difficult Run
        ii. Full 6-foot-wide gravel trail with shoulders in Great Falls Park
        iii. Shared use asphalt path along Georgetown Pike
    c. Determine which organization will lead the construction of which segments of Alignment 1, e.g., NPS, VDOT, FCDOT, FCPA, volunteer group, etc.)
    d. Initiate NEPA compliance and other permitting requirements

6.3.2 Longer-term

1. Obtain funding from a variety of sources, per the funding plan, for construction and maintenance
2. Complete the design of all segments of Alignment 1
3. Obtain appropriate permits
4. Construct all of Alignment 1 in the appropriate construction phases, given availability of funding and given the agencies leading the construction of the phases
5. Maintain Alignment 1, making use of continuous funding programs

Building upon this feasibility study, the stakeholders can realize the vision of a Georgetown Pike Footpath providing a connection within the Potomac Heritage National Scenic Trail network. With the continued leadership and collaboration, as well as creative approaches to funding and design, the stakeholders can construct and maintain this footpath so that it is usable for persons of all abilities for generations to come.

APPENDICES

A. References

B. Workshop Meeting Minutes and Presentation Materials

C. Public Use (Trail) Easement on The Madeira School Property

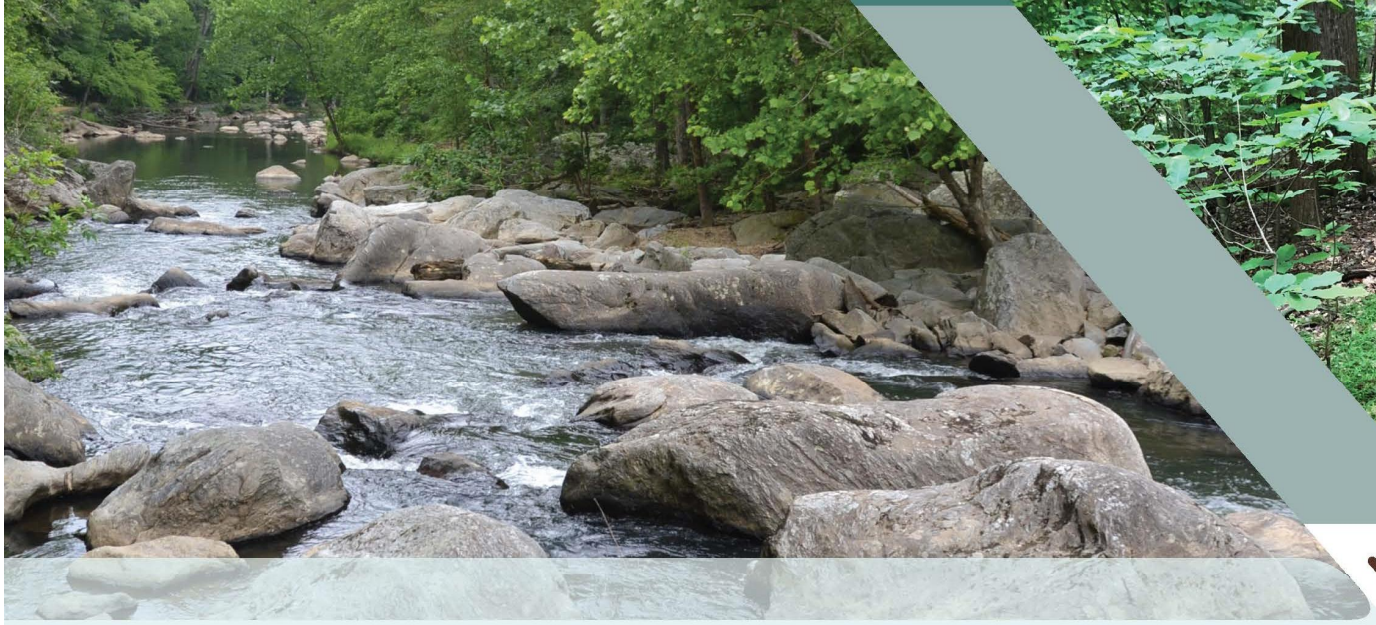
D. Environmental Review Memorandum

E. Letter from The Madeira School

F. Fairfax County Park Authority Pedestrian Bridge Information

G. 30% Concept Plans

H. Opinions of Probable Cost









Appendix A – List of References

1. *All In! Accessibility in the National Park Service*, U.S. Department of the Interior, National Park Service, 2014.
2. *Americans with Disabilities Act (ADA) Standards for Accessible Design*, U.S. Department of Justice, 2010.
3. *Architectural Barriers Act Accessibility Standards (ABAAS)*, United States Access Board, 2004.
4. *Computer-Aided Design and Drafting Standards Manual*, Federal Highway Administration Eastern Federal Lands Highway Division, 2013.
5. *Fairfax County Comprehensive Plan*, including *Countywide Bicycle Master Plan* and *Countywide Trails Plan*, Fairfax County Board of Supervisors, 2017.
6. *Georgetown Pike Footpath Field Trip Report*, Federal Highway Administration Eastern Federal Lands Highway Division, March 2017.
7. *Georgetown Pike Trail Feasibility Summary Findings*, Northern Virginia Regional Commission (NVRC), June 2007.
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9. *Improving Public Health through Public Parks and Trails: Eight Common Measures* (based on research by North Carolina State University's Parks, Recreation and Tourism Management Department), National Park Service and Centers for Disease Control and Prevention (CDC), 2017.
10. *Old Roads and New Insights, Adventures in Discovery* by Winslow R. Hatch (ca. 1980), summaries by Potomac Heritage Trail Association, including documentation of multiple field visits, 2018-2019.
11. *Parks, Trails, and Health Workbook: A Tool for Planners, Parks & Recreation Professionals, and Health Practitioners*, National Park Service and Centers for Disease Control and Prevention, 2015.
12. *Policy for Integrating Bicycle and Pedestrian Accommodations*, Virginia Department of Transportation, 2004.
13. *Potomac Heritage National Scenic Trail Network*, National Park Service Brochure, 2015.
14. *Project Development and Design Manual*, Federal Highway Administration, Office of Federal Lands Highway, 2017.
15. *Road and Bridge Standards*, Virginia Department of Transportation, 2016.
16. *Road Design Manual*, Virginia Department of Transportation, 2019.
17. *Standard Trail Plans and Specifications*, U.S. Department of Agriculture Forest Service, 2014.

Georgetown Pike Footpath Feasibility Study
Initial Planning Workshop

MEETING MINUTES

DATE: April 3, 2018
TIME: 10:00 to 12:00 PM
LOCATION: McLean Governmental Center Community Room
1437 Balls Hill Rd., McLean, VA

SUBJECT: Initial Planning Workshop

MINUTES PREPARED BY: Kimley-Horn
DATE PREPARED: April 11, 2018

ATTENDEES:

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Introduction

- This Initial Planning Workshop for the Georgetown Pike Footpath Feasibility study was held with the study's stakeholders to provide an overview of the scope of the study and to seek input from the participants as the study gets underway.

- The study is being completed by EFLHD, in coordination with NPS, with assistance from Kimley-Horn through a task order under Kimley-Horn's IDIQ contract with EFLHD.
- Following introductions of the participants, the discussion generally followed the agenda and the slides in the attached presentation (Attachment 1).

Project Background and Purpose

- Don Briggs highlighted the local investments made in the Potomac Heritage National Scenic Trail (PHNST) over the past 10 to 20 years and indicated this project is an opportunity to explore a connection between Towlston Road (VA 676) and the Difficult Run Trail within Great Falls Park, as part of a large effort to improve connections between Scott's Run Nature Preserve and Great Falls Park.
- Makayah Royal noted the long-standing partnership between NPS and FHWA EFLHD for transportation projects and that this stakeholder meeting represents an opportunity to engage the community on the proposed Georgetown Pike Footpath.
- Alazar Feleke provided a review of the scope of work and noted that the focus of this effort is to assess the feasibility of options for a trail connection in the Georgetown Pike corridor and for pedestrians or hikers to cross over Difficult Run either next to Georgetown Pike or at a location within the park.
- Using the slide from the attached presentation, John Martin provided an overview of the study area and the project limits. The scope of the feasibility study includes:
  - Feasibility study for a footpath along Georgetown Pike connecting existing and planned facilities
  - Feasibility of options for a pedestrian bridge over Difficult Run to connect to the existing Difficult Run Trail

Previous Studies

- With support from Bill Niedringhaus, the group discussed previous studies related to the study area.
- Georgetown Pike Trail Feasibility Summary Findings
  - Completed by Northern Virginia Regional Commission (NVRC) several years ago
  - Identified issues influencing feasibility of bicycle/pedestrian trail along Georgetown Pike, between the Capital Beltway and Great Falls Park
  - Cindy Engelhart recommended checking with Debbie Spiliotopoulos at Northern Virginia Regional Commission (dspilio@novaregion.org) regarding specific follow-up details on the feasibility study
- Field Trip Report
  - In March 2017, Alazar led group on a field trip to project site area to explore potential opportunities for an alignment to close the gap in the Potomac Heritage Trail. Representatives of both FHWA EFL and NPS participated in the field trip
  - Report documenting the field trip was prepared and is serving as a reference for current study
- Potomac Heritage Trail Association efforts
  - Bill provided documentation of walking between Kimberwicke Road and Great Falls Park
  - Bill mentioned a fascinating book where the author documents traces of old historic roads along the scenic trail area
  - The group discussed the potential of exploring an historic trail or road alignment for use by this study
    - Recognize that we are currently in planning process to explore feasibility, any feasible option will be considered

    - Concern was expressed related to use of historic spaces; NPS noted that there are different historic contexts for different federal lands (forests, battlefields, parks, etc.); though important to note, there are no known restrictions at this time
- Fairfax County efforts
  - The County is administering the implementation of trail connections west of the project study area
    - Georgetown Pike trail connections (between Route 7 and Great Falls) are being delivered in four phases; two phases are complete
    - Federal money currently applied to three of the four projects
  - Pedestrian improvements are also being constructed in the vicinity of the intersection of Georgetown Pike and Route 123 (well to the east of the current study area)
- Fairfax County's Comprehensive Plan includes a Countywide Bicycle Master Plan to help guide this project. Plan was updated 2014. General type and location of bicycle facilities are shown on the plan, but specific types and locations need to be planned and designed to become reality.

Connecting People to Parks
- This current study is consistent with the NPS goal of connecting people to parks.
- Potomac National Heritage Scenic Trail network spans the corridor between the Chesapeake Bay and the Allegheny Highlands in western PA; the current project area is heavily traveled.
- Great Falls Park is one of the most visited parks in the region; similarly, Scott's Run Nature Preserve is also a busy park.

Discussion of Current Study and Possible Alignments
- Discussion turned to the current study—its study area, scope, and existing conditions.
- Steve Bates noted that fee simple ROW is available for the footpath along Georgetown Pike near the current bridge over Difficult Run.
- The existing vehicle bridge on Georgetown Pike (owned by VDOT) has an attached cantilever structure that used to serve as a pedestrian facility.
- Gary Runco indicated that the cantilever structure was closed to pedestrians in the 1980s due to structural concerns.
  - Wooden deck does not protect underlying steel members from rain, snow, and salt, which accelerated the deterioration of the steel.
  - VDOT will not be replacing the bridge in the near term; it currently has a 5 or 6 bridge rating
- Prior to closure of pedestrian path across the bridge, there was a good deal of pedestrian activity, partially due to a parking lot that used to be on the south side of Georgetown Pike, just east of Difficult Run.
- The group agreed that potential footpath or trail could be located next to the Georgetown Pike roadway facility or somewhere away from the roadway on NPS property.
- The possible alignment of the trail appears to favor the north side of Georgetown Pike.
  - More NPS property on the north side, including just to the north of the Georgetown Pike/Towlston Road intersection.
  - An easement for a future trail on the north side of Georgetown Pike has been reserved on the Madeira School property.
  - Other segments of trails along Georgetown Pike are on the north side of the roadway (west of Great Falls and east of I-495).

  - If the pedestrian facility on the south side of the bridge were to be replaced, it may need to be rebuilt on the north side.
- It was noted that with more development occurring to the west in Loudoun County, traffic volumes have increased significantly as traffic avoids Route 7.
  - Average daily traffic volumes are in excess of 15,000 vehicles per day.
  - Heavier traffic on the two-lane road has led to safety concerns regarding pedestrian crossings on Georgetown Pike, making a trail on the south side less attractive.
- Current study is only between Difficult Run and Towlston Rd.
  - The representatives from the agencies present (NPS, VDOT, and Fairfax County) said that a trail is not current planned or programmed to the east of Towlston Road.
  - However, with the easement across the front of Madeira School, the group noted that there could be an opportunity to make a connection between Towlston Road and the west end of the trail on the school property (a distance of about 0.3 miles).
  - The geographic scope of the study should be flexible to include a planned pedestrian trail or other facility on Madeira property at the intersection with Bellview Road

Discussion on Conceptual Design
- This project is planning for a footpath or trail.
  - Trail design and materials to accommodate ADA accessibility will not be evaluated as part of this study.
  - The trail type and material will depend on character NPS wants to maintain, as well as funding, right-of-way, and location.
- More of the focus for this effort is the conceptual alignment, not necessarily details of materials and construction.
- Representatives from PHTA noted that the effort should seek a continuous non-motorized route for the trail, considering potential alignments and potential constraints that could contribute to a pedestrian route between the I-495 sound wall and Great Falls Park.
- In the existing conditions, there are small shoulder areas along Georgetown Pike that will be evaluated during this feasibility study as the potential location of the footpath.
- Following the group discussion, the stakeholders and project team broke off into several discussion groups, which included sketching of potential conceptual alignments on two of the base maps provided for the meeting. These sketches are attached (Attachments 2 and 3).

Schedule and Next Steps
- This study is anticipated to be completed by November 2018.
- Two more workshops are planned within this time frame:
  - One to discuss and refine initial concepts
  - Another to discuss a preferred concept
- Conceptual designs will be documented in a final report
- Planning costs will be developed for concepts; however, funding sources will not be identified as part of the study.
- Following the study, final design and implementation could be implemented by one or more of the agencies present, including through potential partnerships such as NPS/EFLHD and Fairfax County/VDOT.
- As the study moves forward, in addition to meeting attendees, there are additional stakeholders who could be notified that a feasibility study is occurring and who could be invited to the next

workshop, including property owners in the area and Debbie Spiliotopoulos of the Northern Virginia Regional Commission. A working list of contacts used by the Madeira School for communications purposes could be used for subsequent outreach.

Closing

FHWA, NPS, and Kimley-Horn very much appreciate the participation of the attendees at this Initial Planning Workshop.

Kimley-Horn requests that the attendees review the content of these draft minutes and advise the author(s) of any necessary revisions within two weeks of the preparation date, after which time these meeting notes will be considered final.

Attachments:
1. Workshop Presentation Slides
2. Working Sketch 1
3. Working Sketch 2



Federal Highway Administration
Task Order – DTFH7113D000003L/693C7318F000019

Georgetown Pike Footpath Feasibility Study

Initial Planning Workshop and Site Visit

April 3, 2018



AGENDA

1. Welcome / Introductions

2. Project Overview
   - Project Location
   - Project Area
   - Scope of Study

3. Previous Studies

4. Current Study
   - Objectives
   - Schedule

5. Discussion
   - Issues present
   - Base map exercise

6. Next Steps

7. Team Site Visit

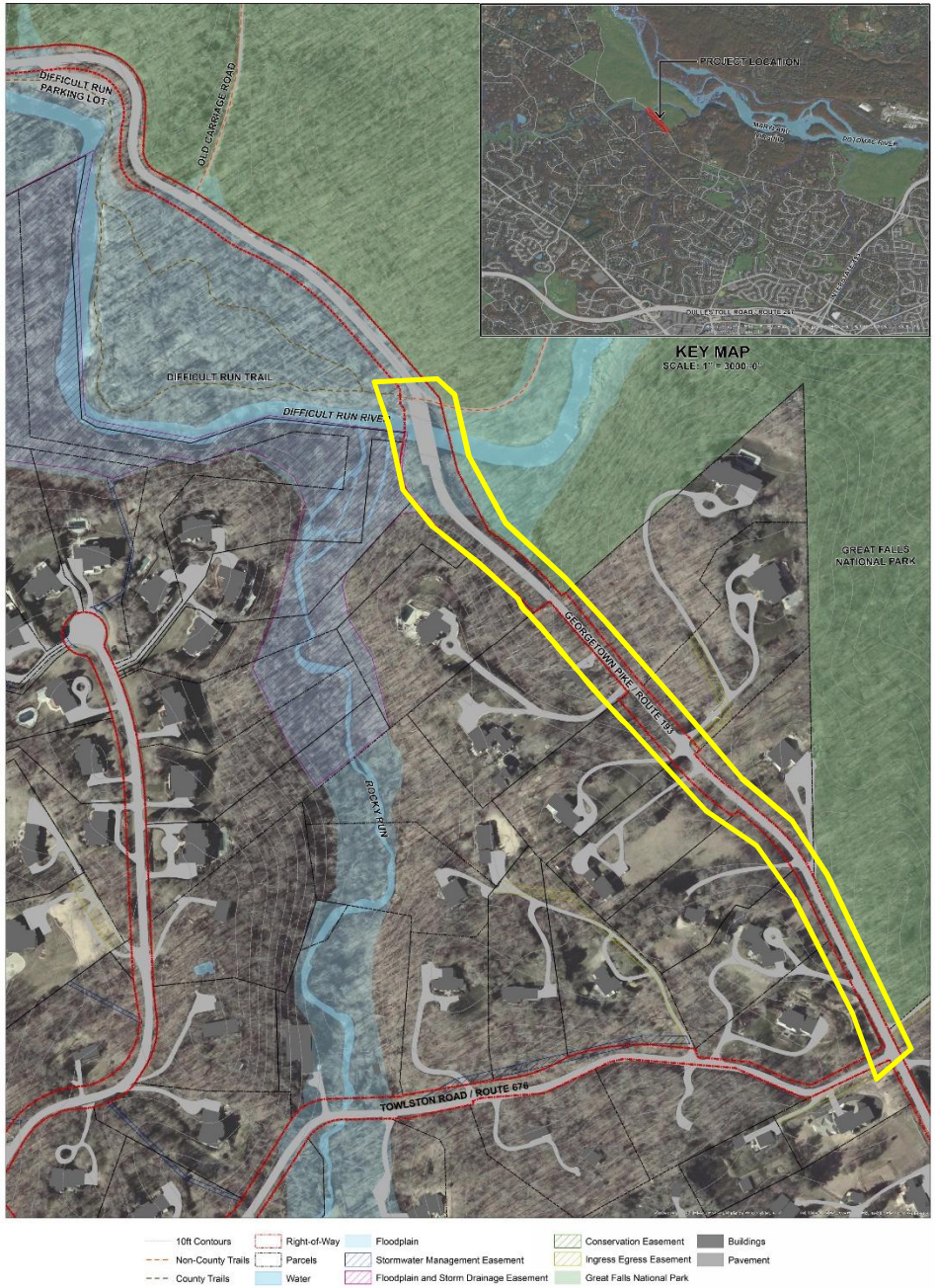
PROJECT LOCATION



PROJECT OVERVIEW

- Project Area:
  Georgetown Pike (VA 193)
  - from Towlston Road (VA 676)
  - to Difficult Run Trail within Great Falls National Park

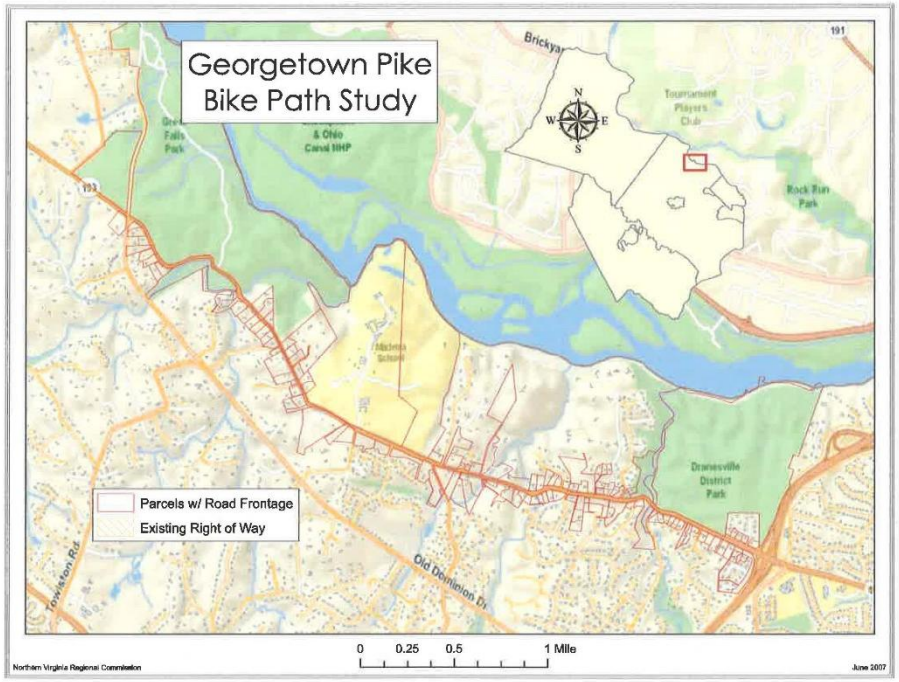
- Scope of Study
  - Feasibility study for a footpath along Georgetown Pike connecting existing facilities
  - Feasibility of options for a pedestrian bridge over Difficult Run to connect to trail



PREVIOUS STUDIES

- Georgetown Pike Trail Feasibility Summary Findings (no date)
  - Completed by Northern Virginia Regional Commission (NVRC)
  - Identified issues influencing feasibility of bicycle/pedestrian trail along Georgetown Pike, between the Capital Beltway and Great Falls National Park
  - Study was Phase 2 of overall Georgetown Pike Trail Project (Phase 1: 5,500' section between Applewood Lane and Ad Hoc Rd.)
  - Reviewed relevant literature and implementation plans for similar trails along historic roads within narrow rights of way

Map of Study Area

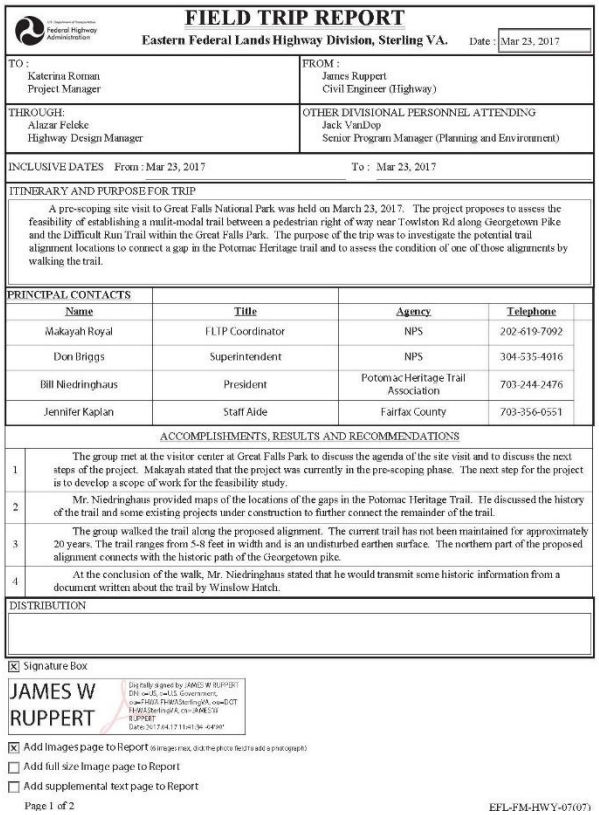


Graphic Source: Georgetown Pike Trail Feasibility Summary Findings, no date

PREVIOUS STUDIES

- Field Trip Report

  Pre-Scoping visit held on March 23, 2017 to investigate the potential trail alignment locations to connect the gap in Potomac Heritage Trail



FIELD TRIP REPORT

Eastern Federal Lands Highway Division, Sterling VA. Date : Mar 23, 2017

TO :	FROM :
Katerina Roman Project Manager	James Ruppert Civil Engineer (Highway)
THROUGH: Alazar Feleke Highway Design Manager	OTHER DIVISIONAL PERSONNEL ATTENDING Jack VanDop Senior Program Manager (Planning and Environment)

INCLUSIVE DATES From : Mar 23, 2017 To : Mar 23, 2017

ITINERARY AND PURPOSE FOR TRIP

A pre-scoping site visit to Great Falls National Park was held on March 23, 2017. The project proposes to assess the feasibility of establishing a multi-modal trail between a pedestrian right of way near Towlston Rd along Georgetown Pike and the Difficult Run Trail within the Great Falls Park. The purpose of the trip was to investigate the potential trail alignment locations to connect a gap in the Potomac Heritage trail and to assess the condition of one of those alignments by walking the trail.

PRINCIPAL CONTACTS

Name	Title	Agency	Telephone
Makayah Royal	FLTP Coordinator	NPS	202-619-7092
Don Briggs	Superintendent	NPS	304-535-4016
Bill Niedringhaus	President	Potomac Heritage Trail Association	703-244-2476
Jennifer Kaplan	Staff Aide	Fairfax County	703-356-0551

ACCOMPLISHMENTS, RESULTS AND RECOMMENDATIONS

1	The group met at the visitor center at Great Falls Park to discuss the agenda of the site visit and to discuss the next steps of the project. Makayah stated that the project was currently in the pre-scoping phase. The next step for the project is to develop a scope of work for the feasibility study.
2	Mr. Niedringhaus provided maps of the locations of the gaps in the Potomac Heritage Trail. He discussed the history of the trail and some existing projects under construction to further connect the remainder of the trail.
3	The group walked the trail along the proposed alignment. The current trail has not been maintained for approximately 20 years. The trail ranges from 5-8 feet in width and is an undisturbed earthen surface. The northern part of the proposed alignment connects with the historic path of the Georgetown pike.
4	At the conclusion of the walk, Mr. Niedringhaus stated that he would transmit some historic information from a document written about the trail by Winslow Hatch.

DISTRIBUTION

☒ Signature Box

JAMES W RUPPERT

☒ Add Images page to Report (to image/s max, click the photo field to add a photograph)

☐ Add full size Image page to Report

☐ Add supplemental text page to Report

Page 1 of 2 EFL-FM-HWY-07(07)

Graphic Source: POHE Field Trip Report



FIELD TRIP REPORT

Eastern Federal Lands Highway Division, Sterling VA. Date : Mar 23, 2017

Trailhead at Parking Lot on Georgetown Pike, West of Bridge Crossing

Trail underneath North side of bridge @ Difficult Run

Trailhead at South side of bridge

Existing pedestrian crossing on brige - closed to public

Beginning of proposed trail alignment on South side of Bridge

Condition of trail along proposed alignment

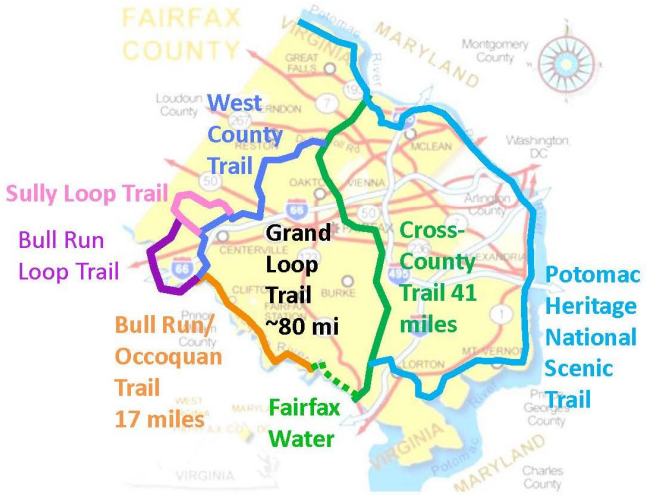
Page 2 of 2 EFL-FM-HWY-07(07)

Graphic Source: POHE Field Trip Report

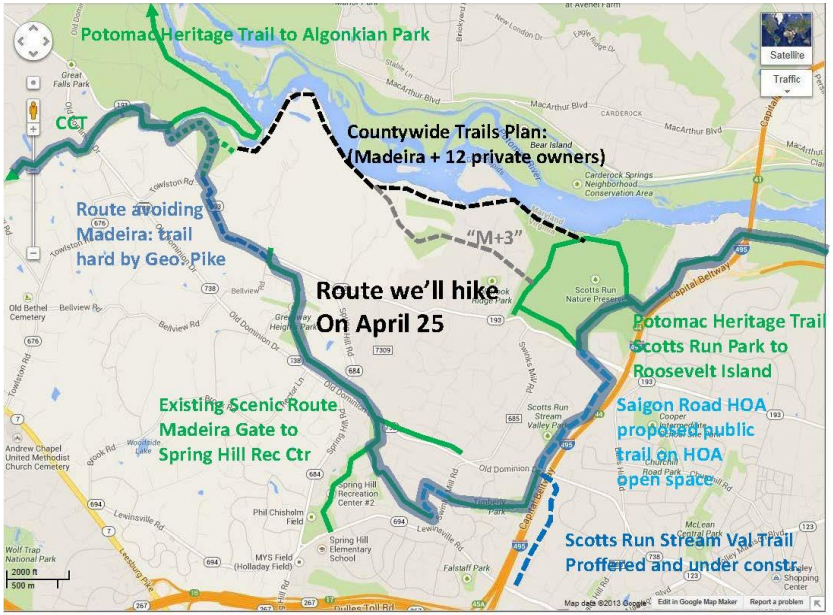
PREVIOUS STUDIES

- Potomac Heritage Trail Association

  Filling the Gap in McLean: Great Falls National Park to Scotts Run Nature Preserve



Graphic Source: Filling the Gap in McLean: Great Falls National Park to Scotts Run National Park

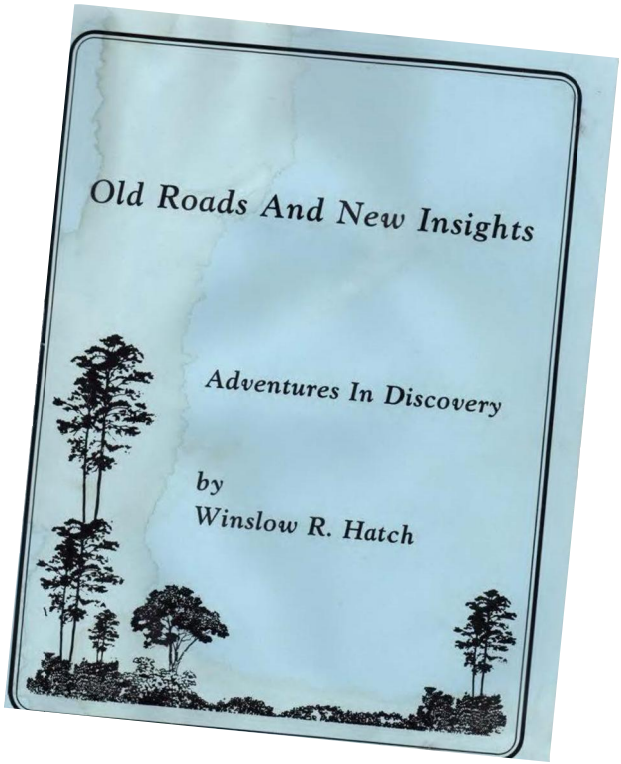


Graphic Source: Filling the Gap in McLean: Great Falls National Park to Scotts Run National Park

PREVIOUS STUDIES

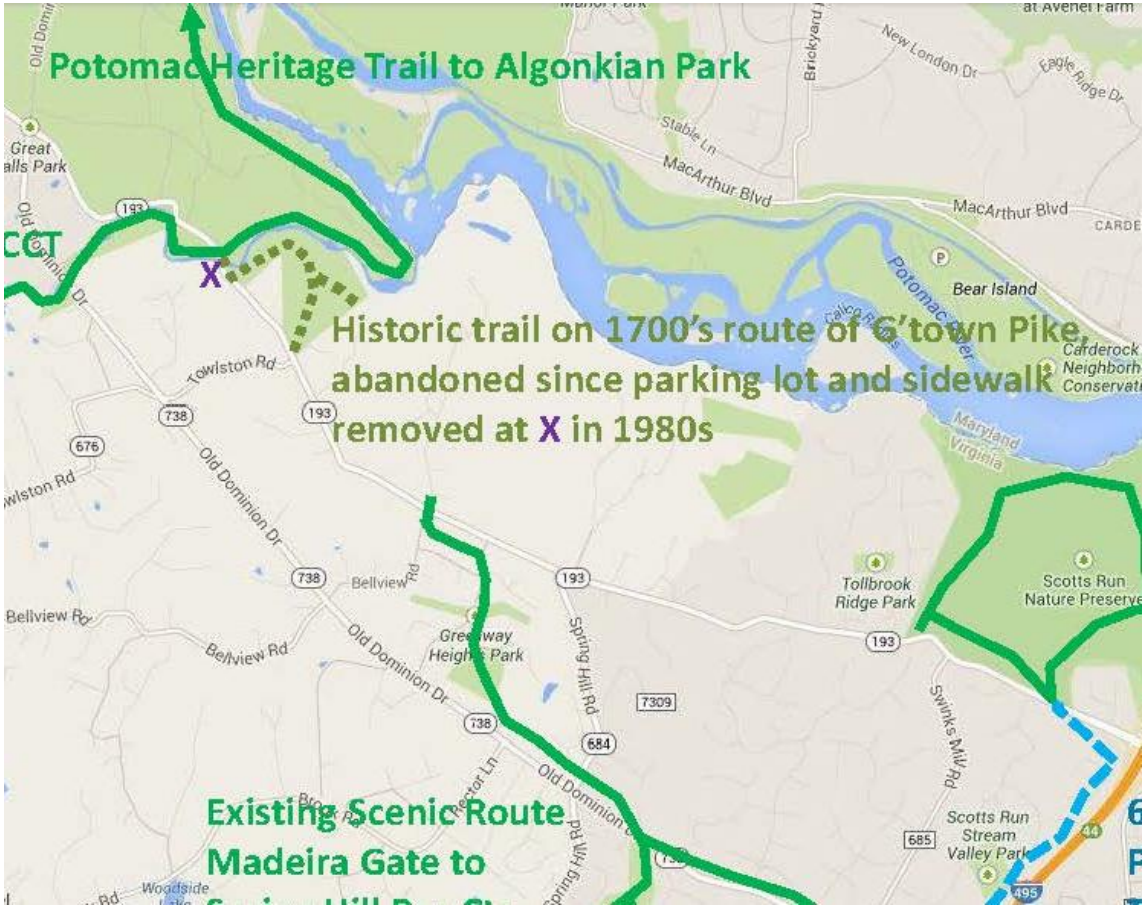
- Mr. Bill Niedringhaus, Potomac Heritage Trail Association (PHTA)
  - Documentation of hike from Georgetown Pike in Great Falls National Park to Kimberwicke Road (toward McLean)
  - Winslow Hatch on original route of Georgetown Pike at Great Falls Park





PREVIOUS STUDIES

- Conclusion from PHTA study: Historic location of Georgetown Pike inside the Great Falls Park has not been maintained as a trail in more than 20 years



Graphic Source: PHTA Presentation, Georgetown Pike Great Falls National Park to Kimberwicke Road

CURRENT STUDY | Objectives

- Investigate concepts
  - Connect pedestrian right-of-way along Georgetown Pike to Difficult Run Trail
  - New pedestrian facility on the existing Georgetown Pike bridge over Difficult Run
  - New pedestrian-only bridge over Difficult Run within Great Falls Park





CURRENT STUDY | Objectives

- Feasibility analysis of concepts:
  - Conduct outreach with potential stakeholders
  - Consider pedestrian, bicycle, and equestrian access for Difficult Run Trail
  - Examine potential environmental compliance measures
  - Evaluate cost and constructability
  - Outline steps for implementation
  - Provide summary of findings and conclusions

CURRENT STUDY | Objectives

- Study will also address the National Park Service Centennial goal of "Connecting People to Parks"
  - Footpath would link to larger network of trails known as the Potomac Heritage National Scenic Trail
  - PHNST:
    - Connects the Potomac River at the Chesapeake Bay to the Alleghany Highlands in Western Pennsylvania
    - Incorporates both existing and planned trails managed by federal, state, local, and nonprofit entities
  - Georgetown Pike Footpath would help to close the gap between Great Falls Park and Scotts Run Nature Preserve

CURRENT STUDY | Schedule

2018

April	Planning Workshop #1 / Field Investigation
May	Initial layout of concepts
Early June	Planning Workshop #2 - Review field investigation findings - Discuss initial concepts
June/July	Design of concepts
August/September	Workshop #3 - Review refined concepts - Discuss draft recommendations
November	Finalize conceptual design/feasibility report

DISCUSSION | Issues Present

- High traffic volumes on Georgetown Pike

Route No.	Route Name	From	To	Annual Average Daily Traffic (AADT)	Average Annual Weekday Daily Traffic (AAWDT)
193	Georgetown Pike	Rt 683 Leigh Mill Rd	Rt 676 Towlston Rd	16,000	17,000
193	Georgetown Pike	Rt 676 Towlston Rd	Urban Boundary	15,000	17,000
676	Towlston Road	Rt 738 Old Dominion Dr	Rt 193 Georgetown Pike	650	700

Source: 2016 VDOT Daily Traffic Volume Estimates
http://www.virginiadot.org/info/2016_traffic_data_by_jurisdiction.asp

DISCUSSION | Issues Present

- Pedestrian access to the planned trail location confined to narrow shoulder of Georgetown Pike bridge over Difficult Run



View: South of Georgetown Pike Bridge, Looking north on shoulder



View: South of Georgetown Pike Bridge, Looking north on centerline

DISCUSSION | Issues Present

- *Let's discuss…*
  - Why the missing gap?
  - What facilities are we connecting?
  - Why is Towlston Road the connection point?
  - How does this project fit into network connectivity?
  - What is the regional context? …local context?
  - What conclusions were drawn from previous structural studies?
  - What groups will use this connection?
  - Who else should we reach out to?
  - Challenges in moving ahead with implementation?

DISCUSSION | Base Map Exercise

- *Let's draw!*
  - What past hikes were completed?
  - What constraints were found during those hikes?
  - What opportunities do we have for connections?
  - In an ideal world where would the trail connection occur?
  - How would the trail function?
  - What would the trail look like?
  - What would the pedestrian bridge look like?

NEXT STEPS

- *Site visit today for those who can join us*
- Field investigation and report—will make use information gathered today
- Desktop environmental investigation
- Initial concept development
- Additional outreach with stakeholder assistance
- Planning Workshop #2 in early June



Federal Highway Administration
Task Order – DTFH7113D000003L/693C7318F000019

Georgetown Pike Footpath Feasibility Study

Initial Planning Workshop and Site Visit

April 3, 2018





KEY MAP

SCALE: 1" = 3000'-0"

10ft Contours
Non-County Trails
County Trails
Right-of-Way
Parcels
Water
Floodplain
Stormwater Management Easement
Floodplain and Storm Drainage Easement
Conservation Easement
Ingress Egress Easement
Great Falls National Park
Buildings
Pavement

GEORGETOWN PIKE FOOTPATH

Fairfax County, VA

U.S. Department of Transportation
Federal Highway Administration

0' 50' 100' 200' 400'

BASEMAP

April 2018

SCALE: 1" = 100' - 0"

Kimley»Horn

RIDGE TRAIL

DIFFICULT RUN TRAIL

DIFFICULT RUN RIVER

Be mindful of how high the water gets at bridge "Rocky Water"

Potential Mill Site

Land Swap

Land Swap

Request easement for Ingress / Egress along Georgetown pike

If drive is actually on NPS - what happens when they want to sell the home?

big impact? occupied?

GEORGETOWN PIKE / ROUTE 193

GREAT FALLS NATIONAL PARK

1

2

3

4

ROCKY RUN

TOWLSTON ROAD / ROUTE 676

10ft Contours
Non-County Trails
County Trails
Right-of-Way
Parcels
Water
Floodplain
Stormwater Management Easement
Floodplain and Storm Drainage Easement
Conservation Easement
Ingress Egress Easement
Great Falls National Park
Buildings
Pavement

GEORGETOWN PIKE FOOTPATH

Fairfax County, VA

0' 50' 100' 200' 400'

BASEMAP

April 2018

SCALE: 1" = 100' - 0"

U.S. Department of Transportation
Federal Highway Administration

Kimley»Horn

Georgetown Pike Footpath Feasibility Study
Planning Workshop #2

MEETING MINUTES

DATE: May 2, 2019
TIME: 10:00 to 12:00 PM
LOCATION: McLean Governmental Center Community Room
1437 Balls Hill Rd., McLean, VA

SUBJECT: Planning Workshop #2 – Meeting Minutes (Final)

MINUTES PREPARED BY: Kimley-Horn

ATTENDEES:

Name	Organization / Role	Phone	Email
Alazar Feleke	FHWA EFLHD – Project Manager	703-404-6319	alazar.feleke@dot.gov
Katerina Roman	FHWA EFLHD	703-404-6291	Katarina.roman@dot.gov
Makaya Royal	NPS NCR – FLTP Coordinator	202-619-7092	makayah_royal@nps.gov
Anne O'Neill	NPS NCR – RTCA	202-619-7154	aoneill@nps.gov
Benjamin Stinnett	NPS/GWMP	202-439-7333	Benjamin.stinnett@nps.gov
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Jenny Kaplan	Supervisor Foust's Office	703-356-0551	Jennifer.kaplan@fairfaxcounty.gov
Tim Hartzell	VDOT NOVA District L&D Engr	703-259-2749	timothy.hartzell@vdot.virginia.gov
Paul Shirey	FCPA Branch Manager	703-324-8738	paul.shirey@fairfaxcounty.gov
Tom McFarland	FCPA	703-324-8688	Tom.McFarland@fairfaxcounty.gov
Chris Wells	FCDOT Bike/Ped Manager	703-877-5772	Chris.wells@fairfaxcounty.gov
Alex Heiberger	Madeira School CFO	703-556-8241	aheiberger@madeira.org
Karen Joostema	Madeira School	703-556-8371	kjoostema@madeira.org
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Karen Jones	PHTA/Fairfax Trails and Streams	703-638-3218	sadiqi0417@gmail.com
Bill Niedringhaus	PHTA/Fairfax Trails and Streams	703-244-2476	wniedrin@gmail.com
Josh Silverman	PHTA	703-582-3456	betula54@msn.com
Ernest Rodriguez	MORE	202-304-8675	president@more-mtb.org
John Martin	Kimley-Horn Project Manager	703-674-1305	john.martin@kimley-horn.com
Keith Aimone	Kimley-Horn Landscape Architect	703-674-1314	keith.aimone@kimley-horn.com
Danielle McCray	Kimley-Horn Planner/Engineer	703-674-1381	Danielle.mccray@kimley-horn.com

Introduction

- This 2nd Planning Workshop for the Georgetown Pike Footpath Feasibility study was held with the study's stakeholders to provide an overview of improvement alternatives and seek input from the participants as the study gets underway.
- The study is being completed by the Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division (EFLHD), in coordination with the National Park Service (NPS), with assistance from Kimley-Horn through a task order under Kimley-Horn's on-call services contract with EFLHD.

- Following introductions of the participants, the discussion generally followed the agenda and the slides in the attached presentation (Attachment 1).

Purpose of Study

- Alazar Feleke provided a review of the scope of work and noted that the focus of this effort is to assess the feasibility of options for a trail connection in the Georgetown Pike corridor and for pedestrians or hikers to cross over Difficult Run either next to Georgetown Pike or at a location within the park.
- Using the slide from the attached presentation, John Martin provided an overview of the study area and the project limits. The scope of the feasibility study includes:
  - Feasibility study for a footpath along Georgetown Pike connecting existing and planned facilities
  - Feasibility of options for a pedestrian bridge over Difficult Run to connect to the existing Difficult Run Trail
- This current study is consistent with the NPS goal of connecting people to parks.
  - Potomac National Heritage Scenic Trail network spans the corridor between the Chesapeake Bay and the Allegheny Highlands in western PA; the current project area is heavily traveled.
  - Great Falls Park is one of the most visited parks in the region; similarly, Scott's Run Nature Preserve is also a busy park.

Project Overview

- The project area includes Georgetown Pike (VA 193) from Difficult Run Trail to Towlston Road and to the west end of Madeira School public access easement.
- The scope of feasibility includes stakeholder outreach, GIS mapping, concept planning, environmental reviews, constructability and cost analyses, and summary report with next steps.
- An overview of the project schedule was provided:
  - Spring/Fall 2018 - Planning Workshop #1 and Field Investigation
  - Winter/Spring 2019 - Environmental review and development of draft concept designs
  - Spring 2019 – Planning Workshop #2
  - Summer 2019 – Concept Design/Draft Final Report
  - Tentative June 2019 – Workshop #3
  - Summer/Fall 2019 – Final Concept Design/Final Report

Previous Studies

- Georgetown Pike Trail Feasibility Summary Findings
  - Completed by Northern Virginia Regional Commission (NVRC) several years ago
  - Identified issues influencing feasibility of bicycle/pedestrian trail along Georgetown Pike, between the Capital Beltway and Great Falls Park
- Field Trip Report
  - In March 2017, Alazar led group on a field trip to project site area to explore potential opportunities for an alignment to close the gap in the Potomac Heritage Trail. Representatives of both FHWA EFL and NPS participated in the field trip
  - Report documenting the field trip was prepared and is serving as a reference for current study
- Potomac Heritage Trail Association efforts
  - Bill Niedringhaus provided documentation of walking between Kimberwicke Road and Great Falls Park

Efforts to Date

- The group review a regional trails connections map that illustrates the greater connectivity from the project study area to trails and projects to the north and to the south. To the north, the Cross County Trail (CCT) and Potomac Heritage Trail to Algonkian Park; to the south, the existing easement to the Madeira School, Existing Scenic Trails, Scotts Run Stream Trail, VDOT funded trail as part of I-495 Express Lanes Northern Extension Project, and the Potomac Heritage Trail and Scotts Run Park to Roosevelt Island.
- At the April 2018 Workshop, stakeholders gathered to confirmed purpose of the project as a trail study and discuss background of the study area and project. Madeira School provided input. Stakeholders drew possible footpath alignments and discussed adding 0.3 mile-segment to scope of study (from Towlston Road to existing easement along Madeira School property).

Feasibility Analysis

- The Kimley-Horn team conducted field observations in late spring 2018 then again in the fall of 2018. The following observations were noted during the field visits:
  - Great Falls Park property: Trail possible along ridges and some side slopes
  - Georgetown Pike: Trail possible, but challenges to overcome include:
    - Narrow shoulders, often with large drainage ditches and steep side slopes
    - Minimal available right of way, lots of utility poles and overhead utilities
    - Driveways and private properties, limited sight distance for pedestrian crossings
  - Existing Georgetown Pike bridge: Challenging to accommodate a trail
- During the discussion, Georgetown Pike was mentioned as not being designated as a historic byway; however, it is eligible for such designation. Following the meeting, Kimley-Horn confirmed that Georgetown Pike is in fact listed in the NHRP and the Virginia Landmark Register (VLR). There has been a long history of opposition to changes in the Georgetown Pike corridor.
- As part of the feasibility analysis, the team assessed environmental elements including water resources, protected species, hazardous materials, environmental justice, and Section 4(f), Section 6(f), and Community Facilities.
- Virginia Cultural Resource Information System identified seven architectural resources that are listed in or are eligible for listing in the National Register of Historic Places:
  - Georgetown Pike – Limits of disturbance (LOD) located within historic boundary
  - Great Falls Park Historic District – Northern portion of study area falls within Potomac Canal Historic District
  - Drover's Rest – Proposed alignments within 2-acre property
  - Madeira School – LOD for all alternatives ends at school property
  - Difficult Run Trail at Great Falls – not NRHP eligible, but all alignments proposed connect to the trail
  - Gauging Station at Difficult Run – adjacent to proposed bridge crossing in alignments 1B and 2
  - Unnamed Archaeological Site – contains prehistoric petroglyphs (exact location unknown)

Discussion of Current Study and Possible Alignments

- Considering the feasibility analysis, field investigation, and variable design elements, the team identified various potential footpath alignments.
- Some alternatives were not considered to advance forward due to steep slopes exceeding 30% grade, no side street for pedestrians opposite easement, and areas outside park boundary.
- Three alignments were advanced forward for further study:

- Alignment 1A elements include:
  - Begins at Madeira School public access easement (no current pedestrian accommodations)
  - Remains on the north side of Georgetown Pike until Towlston Road
  - Enters Great Falls National Park near Towlston Road
  - Follows natural grade through Great Falls Park
  - Bridge crossing would occur downstream from Georgetown Pike
  - Construction challenges: grading, drainage, available right of way, overhead utilities + bridge construction
  - Pinch point at Drover's Rest along north side of Georgetown Pike
  - The team noted that an approximately 180 ft truss bridge would be feasible and that Alignment 1A would coincide with the old historic route of Georgetown Pike.
- Alignment 1B elements include:
  - Begins at Madeira School public access easement (with no current pedestrian accommodations)
  - Remains on the north side of Georgetown Pike to Difficult Run
  - Bridge crossing to Difficult Run Trail would be just north of Georgetown Pike
  - Construction challenges: grading, drainage, available right of way, overhead utilities
  - Pinch point at Drover's Rest along north side of Georgetown Pike
  - The team noted that the bridge structure may need to be lengthened depending on how it extends over the floodplain.
  - A question was asked if a concrete or rock crossing of stepping stones had been considered, like on the Fairfax County Cross County Trail. It was noted that such infrastructure may not accommodate all bicyclists (who would have to carry their bikes), and the stream width and flow may be affected. Further study and discussion of this solution would be needed.
- Alignment 2 elements include:
  - Begins at Madeira School public access easement (with no current pedestrian accommodations)
  - Proceeds on north side of Georgetown Pike to Tebbs Lane
  - Crosses Georgetown Pike at Tebbs Lane intersection
  - Allows for crossing at intersection
  - Would include pedestrian crosswalk with warning signs and flashing light upon activation
  - Proceeds on south side of Georgetown Pike to Difficult Run and under vehicle bridge
  - Uses same bridge at Alignment 1B
  - Construction challenges: grading, drainage, available right of way, overhead utilities
  - Pinch point at Drover's Rest along north side of Georgetown Pike

- Typical Sections will vary depending on location.
  - Within Great Falls Park the following elements were discussed:
    - Footpath can be constructed with minimal impact to drainage, slopes, and existing vegetation
    - Multiple options for surface treatment, including crusher run, gravel, heavily compacted soil, and mulch
    - Project would need access along Difficult Run and the future Alignment 1A path for bridge construction downstream of Georgetown Pike.
  - Along VDOT Right-of-Way Proposed Typical Section the following elements were discussed:
    - Provide for appropriate pedestrian protection from vehicles
    - Utilize VDOT design criteria for safety and accessibility
    - Asphalt pavement would help maintain width and minimize maintenance needs

- Potential bridge types include Prefabricated Steel Truss Bridge or Glulam Stringer Bridge. A truss bridge would provide for an optimal design; could be as long as 250 feet. The longest structure anticipated on this project is 180 feet in length.
- Evaluation criteria: Each alignment was evaluated using six evaluation criteria: General walking quality or the experience for walkers, Protection from traffic, Right-of-way impacts, Ease of trail construction, Ease of bridge construction, and Preliminary project cost. Alignment 1A ranked highest compared to other alignments due to its ease of constructability, fewer right-of-way impacts, and lower preliminary cost.

Discussion

- Cost of bridge structure was initially estimated at a conservative amount of $5,000 per linear foot. The range for total costs of the project could be between $4 million and $8 million, given right-of-way costs and the bridge crossing. The project team will continue to review potential costs with EFLHD and NPS and look for opportunities to reduce costs for elements of the project, including finding examples of recently constructed bridges with a lesser linear foot cost.
- At this time, no construction funding is available. Potential partnership grants including Transportation Alternative Programs and state partnerships may be considered in the future for implementation.
- A plan to re-stripe Georgetown Pike at the bridge was proposed conceptually; however, the plan only includes pavement markings and striping. This plan effectively narrows the travel lanes and shifts then south, allowing a wider "shoulder," but there would not be a physical barrier between vehicle and pedestrians.
- Constructing a trail through the park would not be as expensive; right-of-way along Georgetown Pike and the bridge structure will likely be the most expensive components of the project.
- VDOT representative noted that documentation references different types of users (cyclists, equestrian users, etc.) and asked how Americans with Disabilities Act (ADA) standards apply to the footpath project.
  - From VDOT's perspective, ADA elements would not necessarily be applicable to the footpath alignment in the woods; however, the alignment adjacent to Georgetown Pike would likely need to consider ADA standards.
  - The Fairfax CCT did not consider ADA-compliant standards.
  - NPS representative noted that if any portion of the design or construction uses federal funding, ADA or ABAAS (Architectural Barriers Act Accessibility Standard) would apply for trails in the woods.
- Drover's Rest is private property. Property owners would need to be engaged to discuss how best to construct a trail between Georgetown Pike and the property and/or the possible relocation of the structure.
- NPS noted that a cross section less than 6 feet in width may make the project ineligible for grant opportunities. 10 feet wide is the preferred width to pursue recreational trail grants and attract as many users as possible.
- Cost should not be the driving factor of an alignment; the group agreed that the design should align with the goals of NPS to attract the most users. PHTA noted that less costly alternatives should be included in the study, consistent with the idea of Evolution of Trails (see "Schedule and Next Steps").
- Potential funding opportunities or grant programs will be identified in the report when discussing implementation. Possible funding programs include the Recreation Trails Program through the State DCR. A well-thought out plan will attract partners for building and maintaining the facility.
- NPS noted a recent construction cost of $2,800 per linear foot for a bridge in Abington, Virginia.

- PHTA representatives indicated that Tri-State Trails recently quoted $25 per linear foot cost for a natural trail completed near Potomac Shores with a natural surface 8-ft wide trail constructed along steep slopes, such as needed on Alignment 1c; the price increases to $45 per linear foot if surface is stone dust.
- NPS ADA accessibility and universal design principals will be consulted for design of the Georgetown Footpath.
- The group is interested in the cost of the alignment that was previously eliminated due to the steep grade.
- Any consideration for how the homes/residents would connect to the footpath? It is not clear whether or not the residents are interested in the footpath. The Great Falls Citizens (GFC) will be invited to the next meeting.
- NPS has a partnership with CDC (Center for Disease Control); Anne O'Neill will provide common measures and other resources with the group to improve access to recreation.
- DC Parks Coalitions was noted as a valuable resource for healthier and active communities.
- There are currently no plans for constructing a sidewalk or trail within the easement at the Madeira School along Georgetown Pike.
- At the end of the meeting, the group concluded that an alignment on the northside of Georgetown Pike and more into Great Falls Park would be preferred. Such an alignment would require less right-of-way and preclude having to cross Georgetown Pike.
  - Thus, the group collectively agreed that Alignment 1A was preferred due to fewer interactions with the roadway.
  - However, after some discussion, the group also requested that EFLHD and Kimley-Horn investigate an alignment through Great Falls Park that would proceed from the top of the hill down to and along Difficult Run toward the Georgetown Pike vehicle bridge; this alignment would be referred to as Alignment 1C.
  - This alignment had been considered but dismissed due to construction challenges and redundancy between Alignments 1A and 1B.
- Other activities noted:
  - PHTA and MORE are recipients of NPS grants for to develop and maintain trails in PWC, to close gaps; there are opportunities throughout the region for improvements.
  - REI grant issued $24K to PHTA for feasibility study to evaluate PNHST in Dumfries area.
  - Evolution of Trails – the creation of a relatively primitive trail, establishing a user base, and building on its enthusiasm to create a more-widely accessible trail; repeat as needed

Schedule and Next Steps

- Kimley-Horn will advance the conceptual design of the three concepts (1A, 1B, and 2) and add a concept design for a new alignment (1C).
- EFLHD, NPS, and Kimley-Horn will discuss how to combine these four concepts into specific alignments for evaluation.
- With the refined concept plans, Kimley-Horn will prepare preliminary cost estimates of the alternatives.
- Kimley-Horn will complete an initial draft report (including a section of the "Evolution of Trails" based on the discussion at this meeting).
- Next meeting is scheduled for Thursday, June 13, 2-4PM, at the same location as this Planning Workshop #2.

Closing

FHWA, NPS, and Kimley-Horn very much appreciate the participation of the attendees at this Planning Workshop.

Kimley-Horn requests that the attendees review the content of these draft minutes and advise the author(s) of any necessary revisions within two weeks of receiving the draft minutes, after which time these meeting notes will be considered final.

Attachment: Workshop Presentation Slides



Federal Highway Administration
Eastern Federal Lands Highway Division

Georgetown Pike Footpath Feasibility Study

Planning Workshop #2

May 2, 2019

AGENDA

1. Welcome / Introductions
2. Purpose of study
3. Project Overview
   - Project Location
   - Project Area
   - Scope and Schedule
   - National Park Service Goal
4. Efforts to date
   - Previous studies
   - Regional Trail Connections
   - April 2018 Workshop
5. Feasibility Analysis
   - Field Observations
   - Environmental review
   - Alignments considered
6. Conceptual Design
   - Alternative alignments
   - Typical Sections
   - Bridge Types
7. Discussion/Workshop
8. Next Steps

PURPOSE OF STUDY

- Investigate feasibility
  - Footpath or trail within Georgetown Pike corridor connecting:
    - Difficult Run Trail
    - Towlston Road
    - West end of Madeira School public access easement
  - New pedestrian-only bridge over Difficult Run:
    - Within Great Falls Park
    - Within VDOT right-of-way along Georgetown Pike



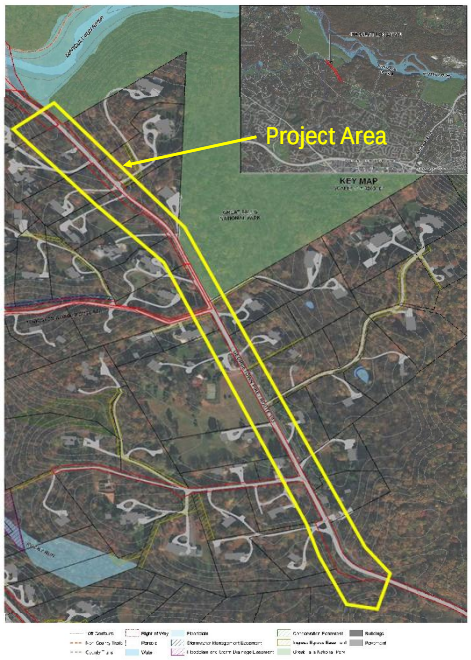


PROJECT OVERVIEW



PROJECT OVERVIEW

- Project Area:
  Georgetown Pike (VA 193)
  - from Difficult Run Trail
  - to Towlston Road
  - to west end of Madeira School public access easement
- Scope of Feasibility Study
  - Stakeholder outreach
  - GIS mapping
  - Concept planning
  - Environmental reviews
  - Constructability and cost analyses
  - Summary report with next steps



PROJECT OVERVIEW | Schedule

2018	
Spring	Planning Workshop #1/Field investigation
Fall	Field investigation of additional area
2019	
Winter/Spring	Environmental review/ Development of draft concept designs
Spring	Planning Workshop #2 - Review field investigation findings - Discuss concepts, feasibility
Spring/Summer	Concept Design/Draft Final Report
June (tentative)	Workshop #3 - Review refined concepts - Discuss draft recommendations
Summer	Final Concept Design/Final Report

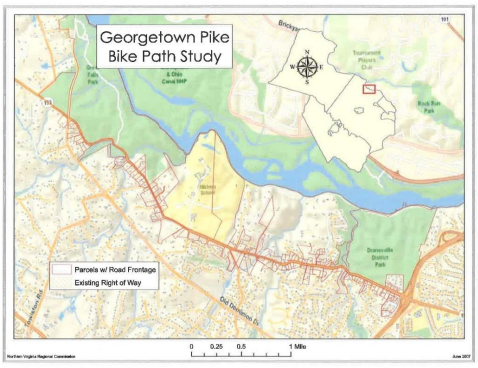
PROJECT OVERVIEW | NPS Goal

- Study addresses the National Park Service Centennial goal of "Connecting People to Parks"
  - Footpath would link to larger network of trails known as the Potomac Heritage National Scenic Trail
  - PHNST:
    - Connects the Potomac River at the Chesapeake Bay to the Alleghany Highlands in Western Pennsylvania
    - Incorporates both existing and planned trails managed by federal, state, local, and nonprofit entities
  - Georgetown Pike Footpath would help to close the gap between Great Falls Park and Scotts Run Nature Preserve

EFFORTS TO DATE | Previous Studies

- Georgetown Pike Trail Feasibility Summary Findings
  - Completed by Northern Virginia Regional Commission (NVRC)
  - Identified issues influencing feasibility of bicycle/pedestrian trail along Georgetown Pike, between the Capital Beltway and Great Falls National Park

Map of Study Area

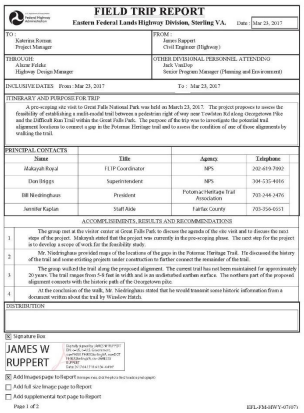


Graphic Source: Georgetown Pike Trail Feasibility Summary Findings, no date

EFFORTS TO DATE | Previous Studies

- FHWA Field Trip Report

  Pre-Scoping visit held on March 23, 2017 to investigate the potential trail alignment locations to connect the gap in Potomac Heritage Trail



FIELD TRIP REPORT
Eastern Federal Lands Highway Division, Sterling VA. Date: Mar 23, 2017

TO: Katrina Roman, Project Manager
FROM: James Ruppert, Civil Engineer (Highway)
THROUGH: Akane Fulcke, Highway Design Manager
OTHER DIVISIONAL PERSONNEL ATTENDING: Jack VanDyo, Senior Program Manager (Planning and Environment)
INCLUSIVE DATES From: Mar 23, 2017 To : Mar 23, 2017

ITINERARY AND PURPOSE FOR TRIP
Pre-scoping site visit to Great Falls National Park was held on March 23, 2017. The project proposes to assess the feasibility of establishing a multi-modal trail between a pedestrian right of way near Townlaton Rd along Georgetown Pike and the Clifford Hunt Trail within the Great Falls Park. The purpose of the trip was to investigate the potential trail alignment locations to connect a gap in the Potomac Heritage trail and to assess the condition of one of those alignments by walking the trail.

PRINCIPAL CONTACTS			
Name	Title	Agency	Telephone
Makayah Royal	TIP Coordinator	NPS	202-619-7092
Dan Briggs	Superintendent	NPS	304-535-6016
Bill Niedringhaus	President	Potomac Heritage Trail Association	703-244-2476
Jennifer Kaplan	Staff Aide	Fairfax County	703-356-0551

ACCOMPLISHMENTS, RESULTS AND RECOMMENDATIONS

1. The group met at the visitor center at Great Falls Park to discuss the agenda of the site visit and to discuss the next steps of the project. Makayah stated that the project was currently in the pre-scoping phase. The next step for the project is to develop a scope of work for the feasibility study.
2. Mr. Niedringhaus provided maps of the locations of the gaps in the Potomac Heritage Trail. He discussed the history of the trail and some existing projects under construction to further connect the remainder of the trail.
3. The group walked the trail along the proposed alignment. The current trail has not been maintained for approximately 20 years. The trail ranges from 5-8 feet in width and is an undisturbed earthen surface. The northern part of the proposed alignment connects with the historic path of the Georgetown pike.
4. At the conclusion of the walk, Mr. Niedringhaus stated that he would transmit some historic information from a document written about the trail by Winslow Hatch.

DISTRIBUTION

☒ Signature Box
JAMES W RUPPERT
☒ Add Images page to Report
☐ Add 1st Site Image page to Report
☐ Add supplemental text page to Report
Page 1 of 2

Graphic Source: POHE Field Trip Report



FIELD TRIP REPORT
Eastern Federal Lands Highway Division, Sterling VA. Date: Mar 23, 2017

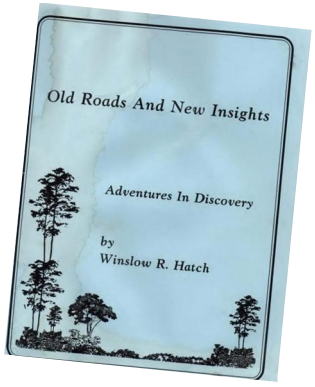
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Graphic Source: POHE Field Trip Report

EFFORTS TO DATE | Previous Studies

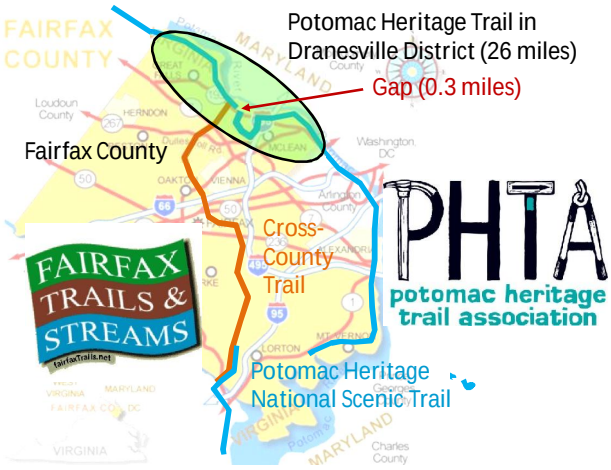
- Mr. Bill Niedringhaus, Potomac Heritage Trail Association (PHTA)
  - Documentation of hike from Georgetown Pike in Great Falls National Park to Kimberwicke Road (toward McLean)
  - Winslow Hatch on original route of Georgetown Pike at Great Falls Park



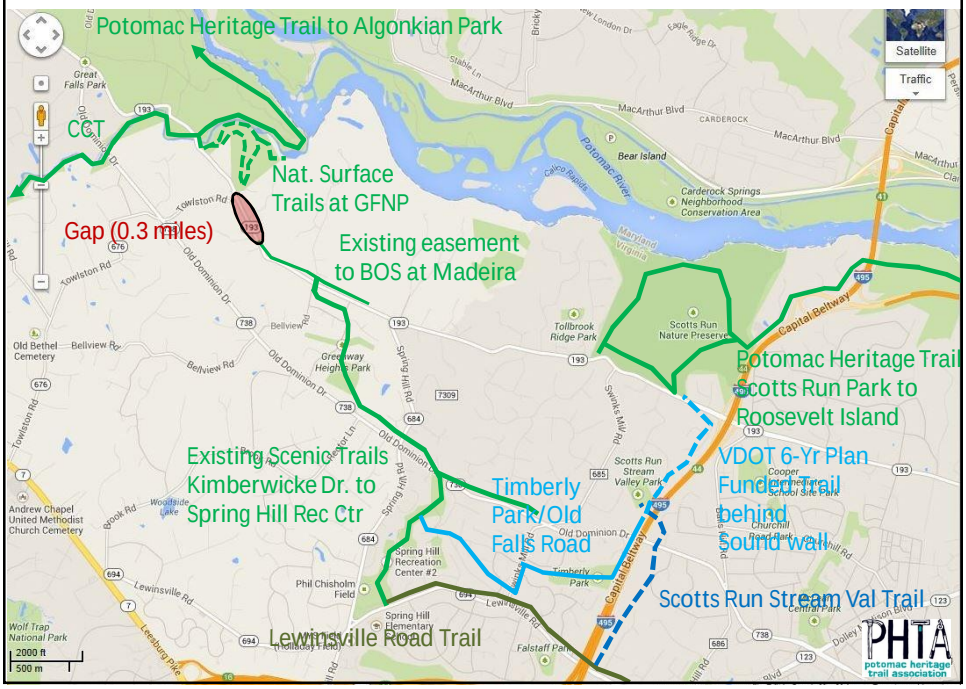


EFFORTS TO DATE | Previous Studies

Potomac Heritage Trail Association: Filling the Gap – Great Falls Park to Scotts Run Nature Preserve



EFFORTS TO DATE | Regional Trail Connections



EFFORTS TO DATE | April 2018 Workshop

- Gathered stakeholders
- Confirmed purpose of project as trail study
- Discussed background
- Received input from Madeira School
- Drew possible footpath alignments
- Discussed adding 0.3 mile segment to scope of study (Towlston Road to existing easement along Madeira property)



FEASIBILITY ANALYSIS | Field Observations

- Great Falls Park property: Trail possible along ridges and some side slopes
- Georgetown Pike: Trail possible, but challenges to overcome include…
  - Narrow shoulders, often with large drainage ditches and steep side slopes
  - Minimal available right of way, lots of utility poles and overhead utilities
  - Driveways and private properties, limited sight distance for pedestrian crossings
- Existing Georgetown Pike bridge: Challenging to accommodate a trail



Georgetown Pike Bridge over Difficult Run



Drovers Cottage "Pinch Point"








3705




SPEED
LIMIT
35

FEASIBILITY ANALYSIS | Field Observations

- High traffic volumes on Georgetown Pike

Route No.	Route Name	From	To	Annual Average Daily Traffic (AADT)	Average Annual Weekday Daily Traffic (AAWDT)
193	Georgetown Pike	Rt 683 Leigh Mill Rd	Rt 676 Towlston Rd	16,000	17,000
193	Georgetown Pike	Rt 676 Towlston Rd	Urban Boundary	15,000	17,000
676	Towlston Road	Rt 738 Old Dominion Dr	Rt 193 Georgetown Pike	650	700

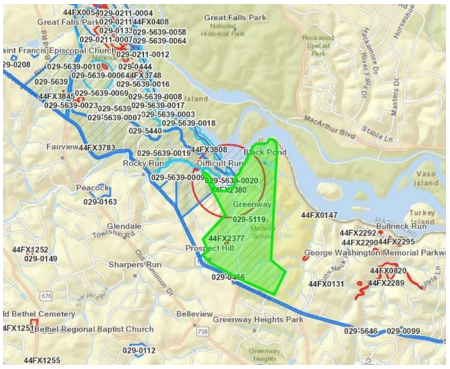
Source: 2016 VDOT Daily Traffic Volume Estimates
http://www.virginiadot.org/info/2016_traffic_data_by_jurisdiction.asp

FEASIBILITY ANALYSIS | Environmental Findings

- Water Resources
  - No mapped wetlands within study area, flood hazard is minimal
  - Resource protection areas (RPAs) associated with Difficult Run, Rocky Run, and an unnamed tributary
  - Alignments run throughout mapped RPAs
- Protected Species
  - Species in the area include: Yellow Long-Eared Bat, Yellow Lance Clam, Bald Eagle, Little Brown Bat, Tri-Colored Bat, Wood Turtle
  - Rivers are a tributary to Potomac River, which is confirmed as an Anadromous Fish Stream
- Hazardous Materials
  - Data Resources identified six leaking Petroleum storage tanks nearby (closed by VDEQ)
  - Full Phase 1 ESA recommended to identify contamination/constructability concerns
- Environmental Justice
  - American Community Service determined presence of minority and low income populations within study area
- Section 4(f) and Section 6(f) and Community Facilities
  - Not anticipated that the construction of a recreational trail would jeopardize existing uses
  - No Section 6(f) resources were identified within the study area

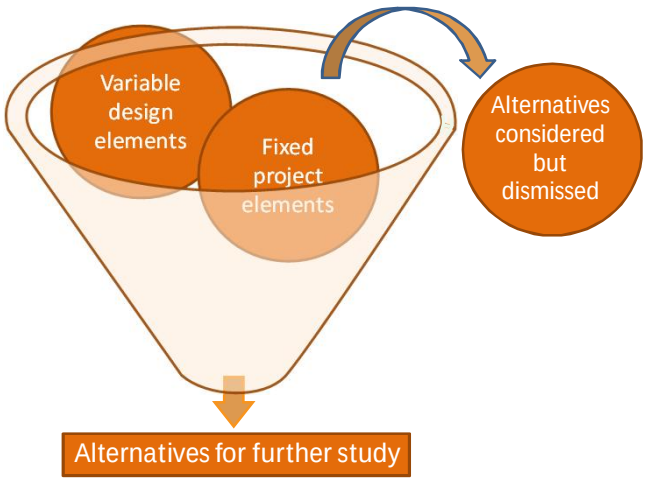
DISCUSSION | Environmental Findings

- Historic Resources: Virginia Cultural Resource Information System identified seven architectural resources that are listed in or are eligible for listing in the National Register of Historic Places:
  - Georgetown Pike – LOD located within historic boundary
  - Great Falls Park Historic District – Northern portion of study area falls within Potomac Canal Historic District
  - Drover's Rest – Proposed alignments within 2-acre property
  - Madeira School – LOD for all alternatives ends at school property



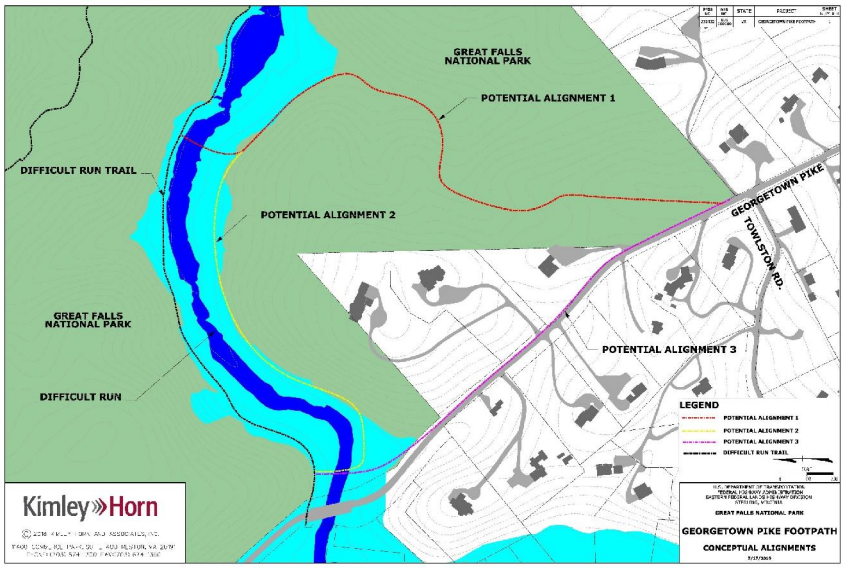
  - Difficult Run Trail at Great Falls – not NRHP eligible, but all alignments proposed connect to the trail
  - Gauging Station at Difficult Run – adjacent to proposed bridge crossing in alignments 1B and 2
  - Unnamed Archaeological Site – contains prehistoric petroglyphs (exact location unknown)

FEASIBILITY ANALYSIS | Alignments Considered

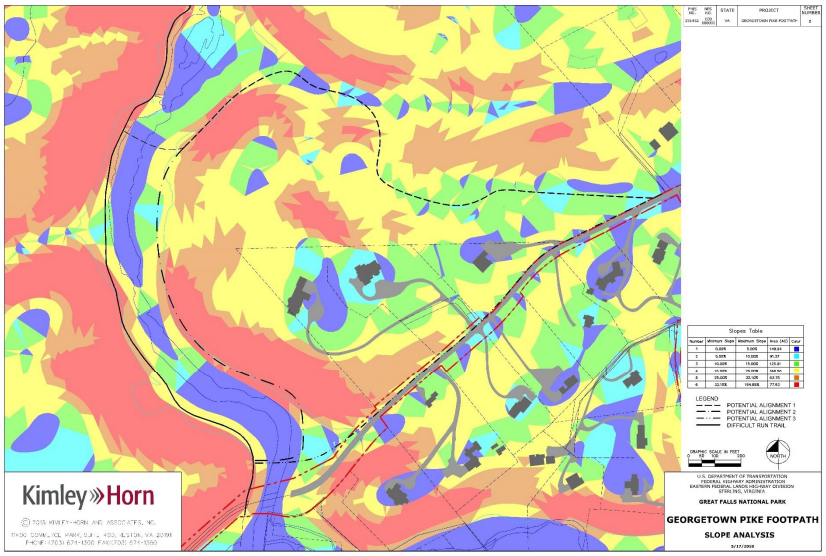


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May 2, 2019
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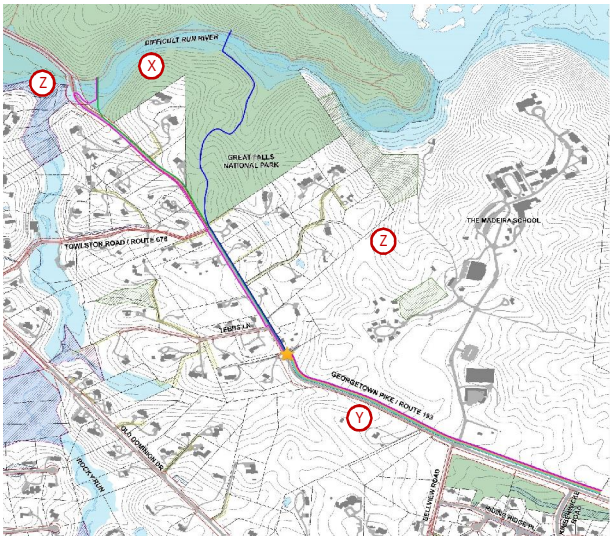
FEASIBILITY ANALYSIS | Alignments Considered



FEASIBILITY ANALYSIS | Alignments Considered



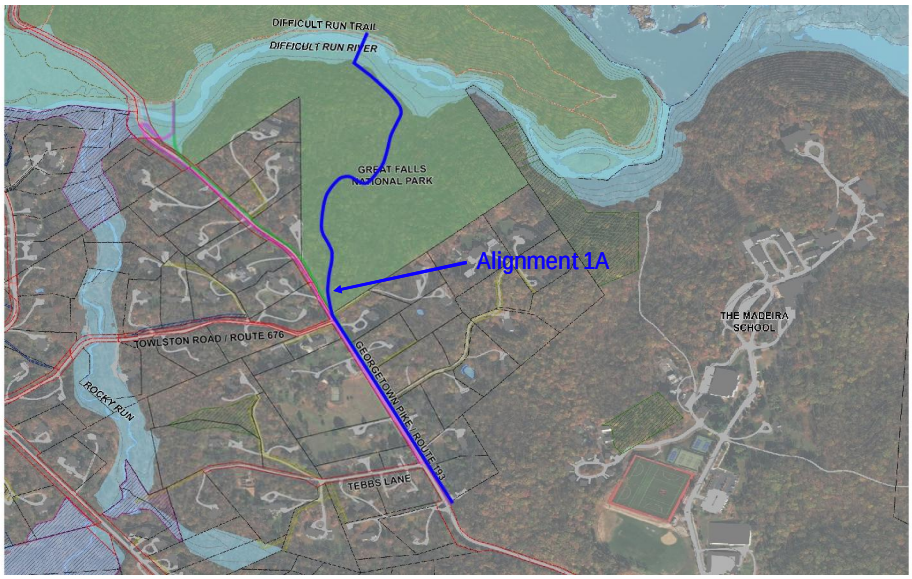
FEASIBILITY ANALYSIS | Alignments Considered



Alignments for further study:
- Alignment 1A
- Alignment 1B
- Alignment 2

Alignments considered but dismissed
- (X) Steep side slope
- (Y) No side street for ped + opposite from easement
- (Z) Outside park boundary

CONCEPTUAL DESIGN | Alignment 1A



CONCEPTUAL DESIGN | Alignment 1A

- Begins at Madeira School public access easement (no current pedestrian accommodations)
- Remains on the north side of Georgetown Pike until Towlston Road
- Enters Great Falls National Park near Towlston Road
- Follows natural grade through Great Falls Park
- Bridge crossing would occur downstream from Georgetown Pike
- Construction challenges: grading, drainage, available right of way, overhead utilities + bridge construction
- Pinch point at Drover's Rest along north side of Georgetown Pike



Potential Alignment 1A



View looking East, along northern side of Georgetown Pike



View Looking east, along northern side of Georgetown Pike near Drover's Rest

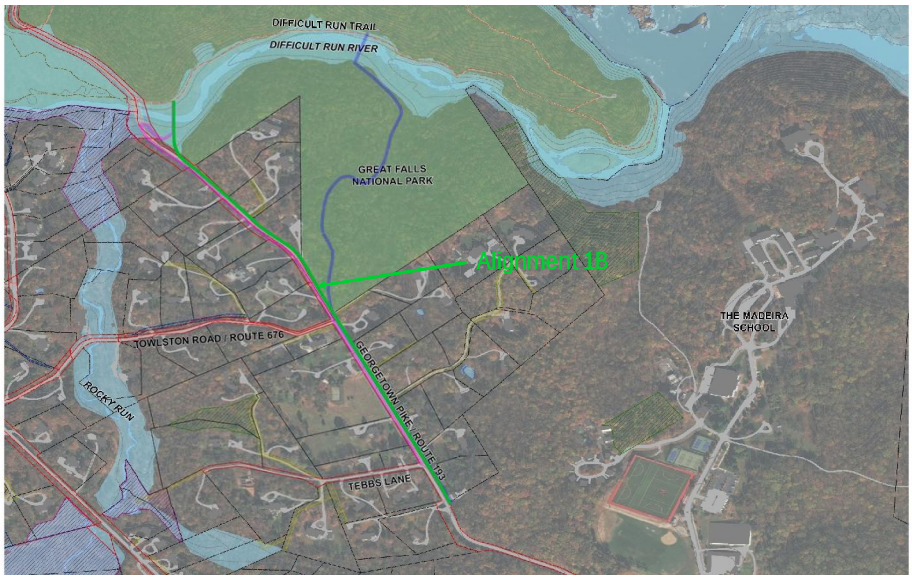


Footpath follows natural trail location



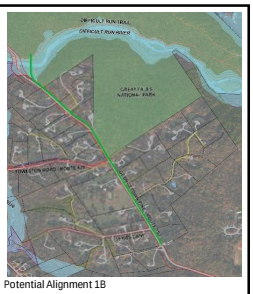
Entry point into Great Falls National Park

CONCEPTUAL DESIGN | Alignment 1B



CONCEPTUAL DESIGN | Alignment 1B

- Begins at Madeira School public access easement (with no current pedestrian accommodations)
- Remains on the north side of Georgetown Pike to Difficult Run
- Bridge crossing to Difficult Run Trail would be just north of Georgetown Pike
- Construction challenges: grading, drainage, available right of way, overhead utilities
- Pinch point at Drover's Rest along north side of Georgetown Pike



Potential Alignment 1B



Approximate location of where the footpath would enter Great Falls National Park



View looking east, along the north side of Georgetown Pike, near Difficult Run



View looking east, along the north side of Georgetown Pike

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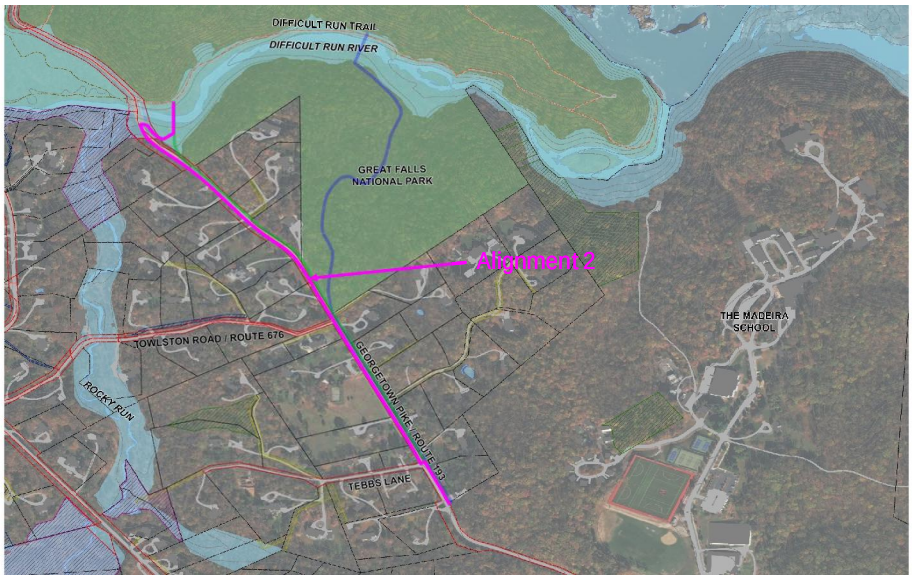
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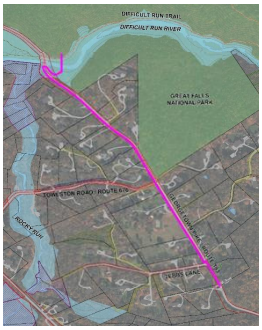




CONCEPTUAL DESIGN | Alignment 2



CONCEPTUAL DESIGN | Alignment 2



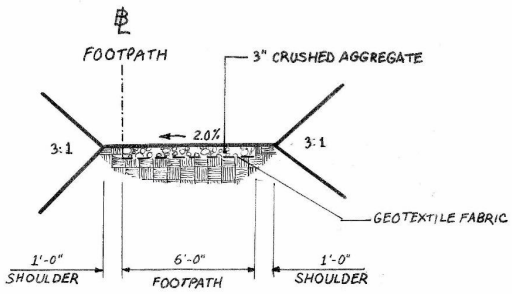
- Begins at Madeira School public access easement (with no current pedestrian accommodations)
- Proceeds on north side of Georgetown Pike to Tebbs Lane
- Crosses Georgetown Pike at Tebbs Lane intersection
  - Allows for crossing at intersection
  - Would include pedestrian crosswalk with warning signs and flashing light upon activation
- Proceeds on south side of Georgetown Pike to Difficult Run and under vehicle bridge
- Uses same bridge at Alignment 1B
- Construction challenges: grading, drainage, available right of way, overhead utilities
- Pinch point at Drover's Rest along north side of Georgetown Pike





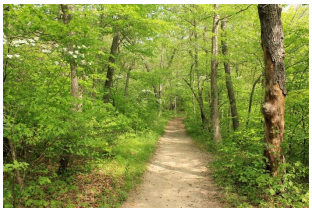
CONCEPTUAL DESIGN | Typical Section in Great Falls Park

- Footpath can be constructed with minimal impact to drainage, slopes, and existing vegetation
- Multiple options for surface treatment, including crusher run, gravel, heavily compacted soil, and mulch
- Would need to provide access for Alternative 1A bridge construction



Typical Footpath Section
Within Great Falls National Park

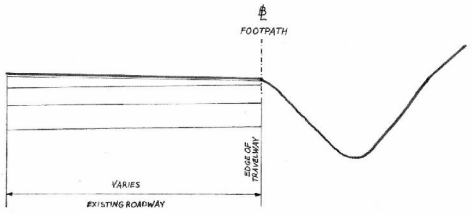




CONCEPTUAL DESIGN | Typical Section Along VDOT ROW

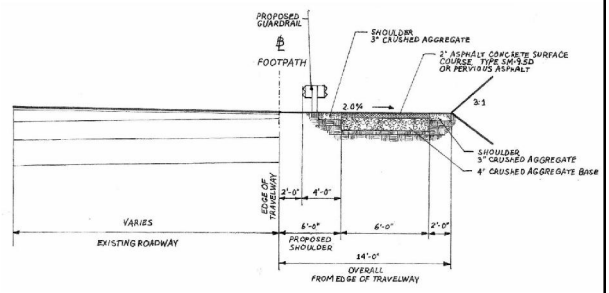
Existing Cross Section (Varies)

- Existing cross section includes open ditches with minimal shoulder
- Steep slopes and guardrail in some locations
- Sight distance limited to due horizontal and vertical curves



Proposed Cross Section (Varies)

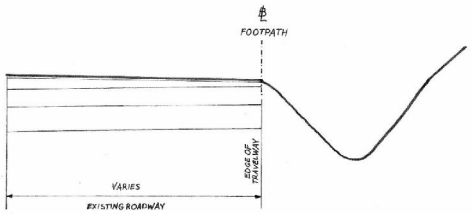
- Provides for appropriate pedestrian protection from vehicles
- Utilizes VDOT design criteria for safety and accessibility
- Asphalt pavement would help maintain width and minimize maintenance needs



CONCEPTUAL DESIGN | Typical Section Along VDOT ROW

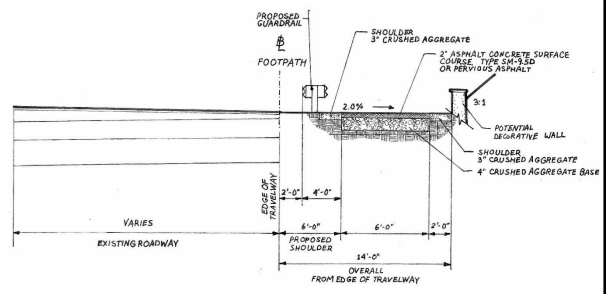
Existing Cross Section (Varies)

- Existing cross section includes open ditches with minimal shoulder
- Steep slopes and guardrail in some locations
- Sight distance limited to due horizontal and vertical curves



Proposed Cross Section (Varies)

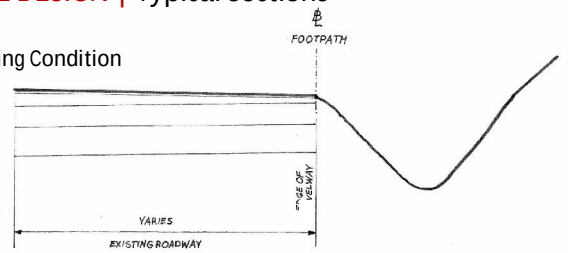
- Provides for appropriate pedestrian protection from vehicles
- Utilizes VDOT design criteria for safety and accessibility
- Asphalt pavement would help maintain width and minimize maintenance needs



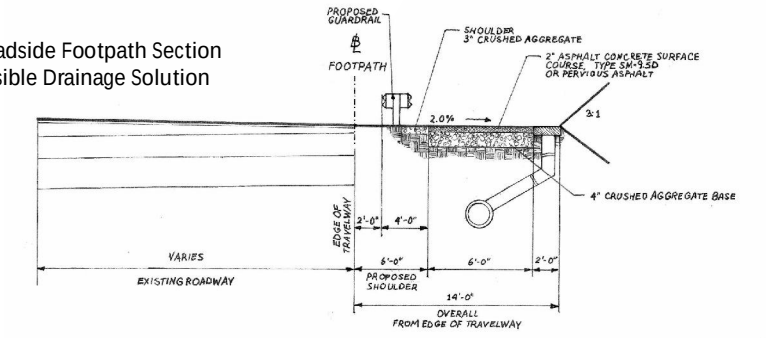
U.S. Department of Transportation Federal Highway Administration
Georgetown Pike Footpath Study – Planning Workshop #2
May 2, 2019
Kimley»Horn

CONCEPTUAL DESIGN | Typical Sections

Existing Condition

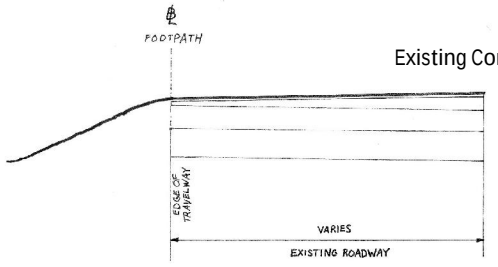


Typical Roadside Footpath Section with Possible Drainage Solution

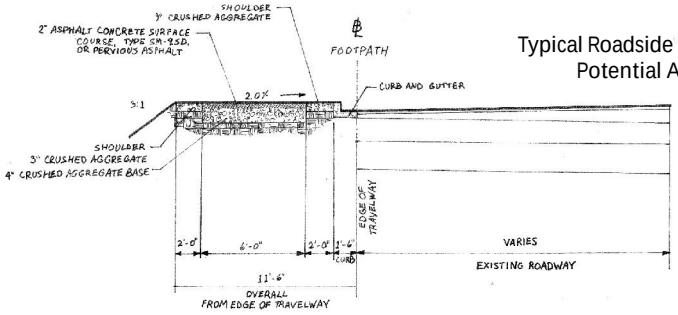


CONCEPTUAL DESIGN | Typical Sections

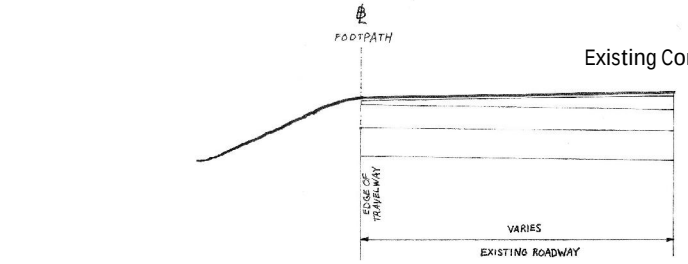
Existing Condition



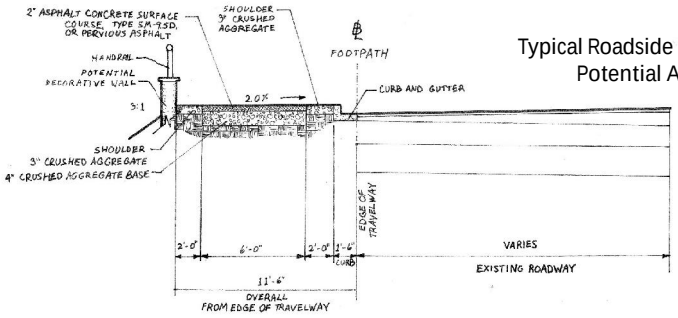
Typical Roadside Footpath Section Potential Alignment 2



CONCEPTUAL DESIGN | Typical Sections



Existing Condition



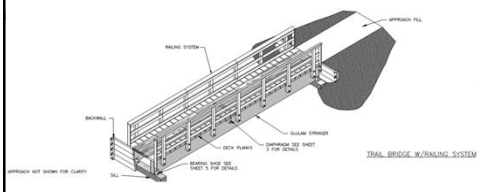
Typical Roadside Footpath Section
Potential Alignment 2

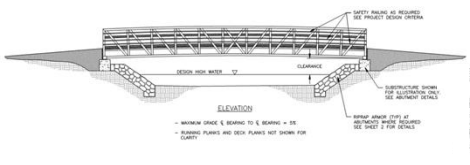
CONCEPTUAL DESIGN | Bridge Type



Prefabricated Steel Truss Bridge







CONCEPTUAL DESIGN | Bridge Type

Glulam Stringer Bridge





DISCUSSION | Evaluation Criteria

- General walking quality
- Protection from traffic
- Right-of-way impacts
- Ease of trail construction
- Ease of bridge construction
- Preliminary project cost

DISCUSSION | Preliminary Comparison of Alternatives

Criteria	Alt 1A	Alt 1B	Alt 2
General walking quality	●	●	●
Protection from traffic	●	◎	○
Fewer right-of-way impacts	◎	○	○
Ease of trail construction	◎	○	○
Ease of bridge construction	○	◎	◎
Preliminary project cost	◎	○	○
Preliminary "Scores"	13	10	9

KEY		
●	◎	○
Best (3)	Good (2)	Fair (1)

DISCUSSION | Workshop

- What are *your* pros and cons of the alternative concepts?
- What challenges do you see?
- Are there potential "outside the box" alignments?
- What bridge type and location do you prefer?
- What are your thoughts on next steps, including implementation?

NEXT STEPS

- Finalize conceptual designs
- Draft final report
- Planning Workshop #3



Federal Highway Administration
Eastern Federal Lands Highway Division

Georgetown Pike Footpath Feasibility Study

Planning Workshop #2

May 2, 2019

Georgetown Pike Footpath Feasibility Study
Planning Workshop #3

MEETING MINUTES

DATE: June 13, 2019
TIME: 10:00 to 12:00 PM
LOCATION: McLean Governmental Center Community Room
1437 Balls Hill Rd., McLean, VA

SUBJECT: Planning Workshop #3 – Meeting Minutes (Final Version)

MINUTES PREPARED BY: Kimley-Horn

ATTENDEES:

Name	Organization / Role	Phone	Email
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Stakeholders Unable to Attend on June 13:

Debbie Spiliotopoulos	Northern Virginia Regional Commission	703-642-4631	DSpilio@novaregion.org
Corey Miles	Northern Virginia Regional Commission	703-642-4625	cmiles@novaregion.org

Introduction

- This 3rd Planning Workshop for the Georgetown Pike Footpath Feasibility study was held with the study's stakeholders to review refined concepts and discuss draft recommendations.

- The study is being completed by the Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division (EFLHD), in coordination with the National Park Service (NPS), with assistance from Kimley-Horn through a task order under Kimley-Horn's on-call services contract with EFLHD.
- Following introductions of the participants, the discussion generally followed the agenda and the slides in the attached presentation (Attachment 1).

Purpose of Study

- Alazar Feleke provided a review of the scope of work and noted that the focus of this effort is to assess the feasibility of options for a trail connection in the Georgetown Pike corridor and for pedestrians or hikers to cross over Difficult Run either next to Georgetown Pike or at a location within the park.
- Using the slides from the attached presentation, John Martin provided an overview of the study area and the project limits.
- A vision or overarching theme of this project is connections, i.e., completing a connection of the Potomac Heritage National Scenic Trail (PHNST) and connecting to other trails and pedestrian facilities in the region.
- The purpose of the study is to examine feasibility:
  - Feasibility of a footpath along Georgetown Pike connecting existing and planned facilities
  - Feasibility of options for a pedestrian bridge over Difficult Run to connect to the existing Difficult Run Trail
- This current study is consistent with the NPS goal of connecting people to parks.
  - The PNHST network spans the corridor between the Chesapeake Bay and the Allegheny Highlands in western PA; the current project area is heavily traveled but needs better connections.
  - Great Falls Park is one of the most visited parks in the region; similarly, Scott's Run Nature Preserve is also a busy park.
- Anne O'Neill offered an additional NPS goal of enhancing outdoor recreation access, as stated in Department of Interior Secretarial Order 3366 (April 18, 2018)
- She also suggested that the study report incorporate similar goals of Fairfax County.

Project Overview

- The project area includes Georgetown Pike (VA 193) from Difficult Run Trail to Towlston Road and to the west end of Madeira School public access easement.
- The scope of the feasibility study includes stakeholder outreach, GIS mapping, concept planning, environmental reviews, constructability and cost analyses, and summary report with next steps.
- An overview of the project schedule was provided:
  - Spring – Fall 2018: Planning Workshop #1 and Field Investigation (study also put on hold pending contract modification)
  - Fall 2018 – Spring 2019: Environmental review and development of draft concept designs
  - Spring 2019: Planning Workshop #2
  - Summer 2019: Concept Design/Draft Final Report
  - June 2019: Workshop #3
  - Summer/Fall 2019: Final Concept Design/Final Report
- It was noted that the study was put on hold for a few months (between dates listed above) while the study scope was modified to include the segment from Towlston Road to the Madeira School property and for several weeks during the recent federal government shutdown.

Stakeholders

- Stakeholders engaged as part of this study are listed below.
  - Fairfax County, Dranesville District (Supervisor Foust)
  - McLean Citizens Association
  - Great Falls Citizens Association
  - Madeira School
  - FHWA Eastern Federal Lands Highway Division (EFLHD)
  - National Park Service (NPS):
    - National Capital Region Offices of Planning, Transportation, & RTCA (Rivers, Trails, and Conservation Assistance program)
    - George Washington Memorial Parkway
  - Virginia Department of Transportation (VDOT)
  - Fairfax County Department of Transportation (FCDOT)
  - Fairfax County Park Authority (FCPA)
  - Potomac Heritage Trail Association (PHTA)
  - Fairfax Trails and Streams
  - Mid-Atlantic Off-Road Enthusiasts (MORE)
  - NOVA Parks
  - Northern Virginia Regional Commission
- The group identified additional organizations to consider, such as the FFX County Health Department and local businesses that may support a footpath project.

Efforts to Date

- The group reviewed a regional trails connections map that illustrates the greater connectivity from the project study area to trails and projects to the northwest and to the south.
  - Connections to the northwest include the Cross County Trail (CCT) and Potomac Heritage Trail to Algonkian Park
  - Connections to the south include the existing easement to the Madeira School, existing scenic trails, Scotts Run Stream Trail, VDOT-funded trail as part of I-495 Express Lanes Northern Extension Project, and the PHNST from Scotts Run Park to Roosevelt Island.
- At the April 2018 Workshop, stakeholders gathered to confirmed purpose of the project as a trail study and discuss background of the study area and project. Madeira School provided input. Stakeholders drew possible footpath alignments and discussed adding 0.3 mile-segment to scope of study (from Towlston Road to existing easement along Madeira School property).
- At the May 2019 Workshop, stakeholders reviewed preliminary findings, alignments, and concepts. The group discussed pros and cons of each alignment and cross section, accessibility, and potential funding programs to consider.

Previous Studies

- Georgetown Pike Trail Feasibility Summary Findings
  - Completed by Northern Virginia Regional Commission (NVRC) several years ago
  - Identified issues influencing feasibility of bicycle/pedestrian trail along Georgetown Pike, between the Capital Beltway and Great Falls Park
- Field Trip Report
  - In March 2017, Alazar led group on a field trip to project site area to explore potential opportunities for an alignment to close the gap in the Potomac Heritage Trail.
  - Representatives of both FHWA EFLHD and NPS participated in the field trip.

  - Report documenting the field trip was prepared and is serving as a reference for current study.
- Potomac Heritage Trail Association efforts
  - Bill Niedringhaus provided documentation of walking between Kimberwicke Road and Great Falls Park
  - PHTA continues to advocate for connections in this study area, as well as segments of PHNST to the south.

Study Area Analysis
- The Kimley-Horn team conducted field observations in late spring 2018, then again in the fall of 2018, and in the spring of 2019. The following observations were noted during these field visits:
  - Great Falls Park property: Trail possible along ridges and some side slopes
  - Georgetown Pike: Trail possible, but challenges to overcome include:
    - Narrow shoulders, often with large drainage ditches and steep side slopes
    - Minimal available right of way, lots of utility poles and overhead utilities
    - Driveways and private properties, limited sight distance for pedestrian crossings
  - Existing Georgetown Pike bridge:
    - Existing cantilevered pedestrian facility is closed due to corrosion of structural members
    - Challenging to accommodate the trail on the existing bridge given the roadway approaches and existing guardrail
- As part of the feasibility analysis, the team assessed environmental elements including water resources, protected species, hazardous materials, environmental justice, and Section 4(f), Section 6(f), and Community Facilities.
- Virginia Cultural Resource Information System identified seven architectural resources that are listed in or are eligible for listing in the National Register of Historic Places:
  - Georgetown Pike – Limits of disturbance (LOD) located within historic boundary
  - Great Falls Park Historic District – Northern portion of study area falls within Potomac Canal Historic District
  - Drover's Rest – Proposed alignments within 2-acre property
  - Madeira School – LOD for all alternatives ends at school property
  - Difficult Run Trail at Great Falls – not NRHP eligible, but all alignments proposed connect to the trail
  - Gauging Station at Difficult Run – adjacent to proposed bridge crossing in alignments 2, 3, and 4
  - Unnamed Archaeological Site – contains prehistoric petroglyphs (exact location unknown)
- It was noted that in completing the site analysis and environmental reviews, with respect to permitting, there do not appear to be any showstoppers to implementing a footpath in the project area. Environmental and permitting processes would need to be followed, but these processes should not be onerous.

Conceptual Alignments
- Considering the feasibility analysis, field investigation, and variable design elements, the team identified various potential footpath alignments.
- Some alternatives were not considered to advance forward due to steep slopes exceeding 30% grade, no side street for pedestrians opposite the Madeira School easement, and areas outside park boundary.
- Initially three alignments were advanced forward for further study. At the 2nd stakeholder workshop, an additional alignment was added for consideration. The naming convention has been revised to clearly define the four alignment alternatives.

- Alignments were described as follows:
  - Alignment 1 elements include:
    - Begins at Madeira School public access easement (with no current pedestrian accommodations)
    - Remains on the north side of Georgetown Pike until Towlston Road
    - Enters Great Falls Park near Towlston Road
    - Follows natural grade through Great Falls Park to a bridge crossing well downstream from Georgetown Pike
    - Construction challenges: grading, drainage, available right of way, overhead utilities, and bridge construction
    - Pinch point at Drover's Rest along north side of Georgetown Pike would need a specific solution
    - The team noted that a pedestrian bridge would be feasible and that Alignment 1 would coincide with the old historic route of Georgetown Pike and a possible historic ford crossing.
    - Two locations were presented, and both a near-term solution of stepping stones and a longer-term construction of a pedestrian bridge were discussed.
    - This bridge could be within the floodplain and thus be shorter than the spans discussed at Workshop 2.
  - Alignment 2 elements include:
    - Begins at Madeira School public access easement
    - Remains on the north side of Georgetown Pike to Difficult Run
    - Enters Great Falls Park near Towlston Road
    - Follows natural grade through Great Falls Park to a bridge crossing either attached to the north side of the existing Georgetown Pike or just downstream of the Georgetown Pike bridge
    - Construction challenges: grading, drainage, available right of way, overhead utilities
    - Pinch point at Drover's Rest along north side of Georgetown Pike would need a solution
    - The team noted that the bridge structure may need to be lengthened depending on how it extends over the floodplain.
  - Alignment 3 elements include:
    - Begins at Madeira School public access easement
    - Proceeds on north side of Georgetown Pike to Tebbs Lane
    - Proceeds on the north side of Georgetown Pike to Difficult Run
    - Uses same bridge crossings as Alignment 2
    - Construction challenges: grading, drainage, available right of way, overhead utilities
    - Pinch point at Drover's Rest along north side of Georgetown Pike would need a solution
  - Alignment 4 elements include:
    - Begins at Madeira School public access easement
    - Proceeds on north side of Georgetown Pike to Tebbs Lane
    - Crosses Georgetown Pike at the Tebbs Lane intersection
    - Would include pedestrian crosswalk with warning signs and possibly flashing lights upon activation
    - Proceeds on south side of Georgetown Pike to Difficult Run and under vehicle bridge
    - Uses same bridge crossings as Alignments 2 and 3
    - Construction challenges: grading, drainage, available right of way, overhead utilities
    - Pinch point at Drover's Rest along north side of Georgetown Pike would need a solution

- Based on the analysis and on feedback received at previous stakeholder meetings, getting the trail into Great Falls Park sooner rather than later was recommended (i.e., Alignment 1 and 2) and appeared to be the preference of this meeting's attendees.
- A connection is needed to the Difficult Run Trail, of course, and several participants stated a preference for the Alignment 1 stream crossing upstream of the falls for a pedestrian bridge structure (vs. at the current island downstream of the falls).
- The island just downstream of the falls (a former ford) could also provide an opportunity for a crossing. Additional study is needed, including an analysis of detailed land and hydraulic survey information.

Cross Sections

- Cross sections will vary depending on location; sketches of potential typical sections were shown.
- Within Great Falls Park the following elements were discussed:
  - Footpath can be constructed with minimal impact to drainage, slopes, and existing vegetation
  - Multiple options for surface treatment, including crusher run, gravel, heavily compacted soil, and mulch
  - Project would need access along Difficult Run and the future Alignment 1 path for bridge construction downstream of Georgetown Pike.
  - Along VDOT Right-of-Way, for the proposed typical section, the following elements were discussed:
    - Provide for appropriate pedestrian protection from vehicles
    - Utilize VDOT design criteria for safety and accessibility
    - Asphalt pavement would help maintain width and minimize maintenance needs
- The project team showed a rendering of a possible solution for the pinch point at Drovers Rest, as well as a trail solution at the western end of the Madeira School easement. Reactions to these renderings were very positive.

Potential Bridge Types

- Various bridge types were discussed with the group including a sawn timber stinger bridge, glulam stinger bridge, and prefabricated steel truss bridge.
- A truss bridge would provide for longer spans (could be as long as 250 feet).
- The longest structure anticipated on this project is 180 feet in length if outside the floodplain, as little as 100 to 120 feet if within the floodplain.
- Bridge design would need to consider potential Difficult Run high water and flood; bridge would need to be engineered with a span high enough to avoid wash out from more frequent flood levels.
- A larger scale bridge would provide accessibility for more users.
- The group discussed the bridge with respect to potential flooding events.
  - A steel bridge within the floodplain should survive a most storms; however, trees and debris could cause damage.
  - Analysis would be required to assess impacts in the floodplain.
  - Relatively open structures have a better chance of success from NPS perspective.
  - Final report will include a recommendation for a land survey and detailed analysis related to the floodplain.
- Two additional ideas were presented:
  - Fiberglass and aluminum type bridges were noted; however, the group agreed steel would be better

  - A clear span bridge would preclude the need for a pier in Difficult Run
- VDOT noted that the existing bridge structure on Georgetown Pike has a rating of 5 (Fair). A 4 rating would be considered structurally deficient. It is difficult to predict how long it will before the structure reach a 4 rating and need replacing. At that time, a pedestrian facility could be considered with the design of an upgraded bridge.

Bridge Crossings
- The group discussed option for crossing Difficult Run from between its banks.
- Adding rocks as stepping stones could be a near-term solution.
  - A rendering was shown for this type of crossing.
  - This solution doesn't provide accessibility for some potential trail users.
- For a bridge crossing, especially one with a pier in the stream, the stability of channel at crossing locations should be considered:
  - Bedrock channel bottom
  - Minimal bank erosion
- Sediment deposits should be avoided such as mid-channel "depositional" bars and bends. These river features will likely change over time
- Low-water crossings are most successful when located in a stable section of a river, such as upstream of an existing waterfall or on a bedrock outcropping.
- A location with good channel stability and a safe (bridge) crossing is preferred for long term improvements.
- Renderings were shown for a bridge crossing with a pier in the channel.
  - The group appreciated the renderings.
  - FCPA representatives suggested also showing a bridge spanning the entire stream, with no pier in the middle.
- In discussing accessibility of the stream crossing, NPS considers the Architectural Barriers Act Accessibility Standard (ABAAS) for improving access for all users.
  - Degree of accessibility provided is proportionately related to the degree of human-made modifications in the area.
  - Consideration is given to the importance of the facility to people visiting or working in the park.
- Americans with Disabilities Act (ADA) requirements are typically applied for facilities in VDOT right-of-way.
- With respect to permitting a bridge crossing, a U.S. Army Corps of Engineers (USACE) permit would be needed; the project should be covered by a current Nationwide USACE Permit.
- Permitting process would include:
  - Statement of Findings submitted to NPS with (1) Rationale for locating improvements in floodplain, (2) Disclose amount of risk associated with site, and (3) Detail floodplain mitigation plans.
  - Modelling of the floodplain with proposed improvements used to determine if flood elevation will rise with installation of new crossing and the extent of rise and impact to surrounding properties.

Evaluation Criteria and Scoring of Alignments
- Each alignment was evaluated using six evaluation criteria: General walking quality or the experience for walkers, Protection from traffic, Right-of-way impacts, Ease of trail construction, Ease of bridge construction, and Preliminary project cost.

- Alignment 1 ranked highest compared to other alignments due to its ease of constructability, fewer right-of-way impacts, and a good rating for preliminary cost.
- Discussion related to criteria and scoring is summarized below.
  - Construction along Georgetown Pike would require smaller equipment, one-way flagging operations, nighttime operations (if allowed by the residents), and barriers.
  - The daytime off-peak time period for this corridor is limited to about 9 am to 3 pm, given commuter traffic and school traffic.
  - The ease of bridge construction is slightly easier for Alternatives 2, 3, and 4.
  - The project team took an action to discuss bridge construction in more detail with Tom McFarland from FCPA.
  - As an addition to the evaluation criteria, it may be helpful to understand any impacts to species or natural resources. The impacts may be similar for all alternatives, as the general study corridor is the same; however, these impacts should be considered during more detailed design.
  - Visual impact was identified as an additional factor to consider. The viewshed impact should be considered, given the importance of viewsheds to the Potomac National Heritage Scenic Trail network.

Funding Opportunities

- Several funding opportunities were shared with the group.
- Successful funding of this type of project occurs when there is a combination of sources of funding with an overall project champion and a lot of stakeholder support.
- In addition to the sources listed on the slide, funding could include:
  - Recreational Trails Program (Federal Program through the Department of Conservation and Recreation – DCR)
  - Federal Lands Recreational Trails Program
- Related to In-Kind Services:
  - Stakeholders noted that if VDOT replaces bridge on Georgetown Pike, providing a pedestrian facility would be in-kind service.
  - Volunteers, such as REI or Scout Troops, may be considered for near term improvements such as construction of smaller trail segments in Great Falls Park and maintenance of the trail in the park.
  - Stakeholders asked if NPS would agree to volunteers putting in a trail as pre-courser to long term improvements. NPS noted that any work would require permitting.
  - Potomac Appalachian Trail Club manage a lot of trails in the area through their volunteer efforts.
  - Golden Gate National Recreation Area works with a local construction company using a new type of concrete, teaching youth and the volunteers are doing improvements in Alcatraz with donated concrete from the construction company.
  - MORE and PHTA are completing volunteer work for PHNST in Prince William County through a cost-sharing grant.
  - Any in-kind service will require a champion or group.
- Each funding source is different and vary in how hours of service may be considered as in-kind contributions
- The final report will discuss possible funding sources for moving forward with this project.
- Ultimately, a funding plan will require a variety of funding sources.

Recommended Path Forward

- Project team's recommended path forward is to advance Alignment 1 in a phased approach.
  - Near-term phase (to build community support) would include:
    - Interim use of "ford" with smaller timber bridges to cross Difficult Run
    - Interim trail improvements in Great Falls Park
  - Longer-term phase would include:
    - Plan, program, design, and construct entire Alignment 1
    - Obtain funding from a variety of sources
    - Cross Difficult Run with 2-span timber or steel truss bridge or 1-span steel truss bridge
    - 6-ft wide trail wherever possible in Great Falls Park and along Georgetown Pike
    - Provide access for people of all abilities
  - Longer term improvements should be considered along Georgetown Pike and its vehicle bridge over Difficult Run.
- Group discussion related to the recommended path forward is summarized below.
  - Understanding that there's a need to connect to difficult run trail, having a trail from the Madeira School easement diverse off Georgetown Pike and into the Park sooner is highly desired.
  - Crossing Difficult Run with a trail further away from Georgetown Pike is also desired.
  - A more detailed study (with land survey) and permitting processes will be needed for realizing a footpath in the study area.
  - For any project in Great Falls Park or in VDOT right-of-way, "planning, programming, budgeting, designing, and constructing" will be required for any phase, near-term or longer term.
    - In the near term, the group agreed that building community support is important.
    - In the interim, a potential crossing at the old ford (island downstream of the falls) could be constructed by volunteer groups, and this activity and resulting crossing could help build momentum for support of a longer-term solution.
    - Long term improvements will require a detailed survey, and subsequently, an assessment of a single span bridge vs. a 2-span bridge.

Discussion

- Alignment 1 generally acceptable—getting into Park quickly and crossing Difficult Run downstream of Georgetown Pike.
- VDOT is planning to restripe Georgetown Pike; Internal VDOT meeting held on 6/12 to discuss restriping.
  - VDOT will confirm the conditions of bridge after eradicating pavement markings with power washers.
  - VDOT will provide EFLHD and NPS and update regarding its striping plan.
- It's unclear how many people are currently walking across the bridge.
- Stakeholders noted that people do walk on the bridge today.
  - However, to do so, people would need to climb over the guardrail at the end of each of the bridge parapet walls and walk on the bridge deck in the existing 4-foot buffer between the parapet wall and the travel lanes.
  - PHTA representatives are asking for VDOT to restripe the bridge and create a 6-foot buffer area by shifting lane lines.

  - Everyone agreed, however, that there is very little room to walk in front of the guardrail on the roadway approaching the bridge, and that walking behind the guardrail and climbing over it to get to walk on the bridge deck is generally unsafe.
- According to GIS records, there is not sufficient right-of-way along Georgetown Pike for any of the possible alignments to be built without acquiring right-of-way or easements from private property owners; a more detailed survey will better quantify amount of land needed as right-of-way or public use easement for the footpath.
- Involving businesses as stakeholders may be helpful to include in the conversation.
  - Business Improvement Districts (BIDs) in DC are collaborating with NPS to help improve trial connections.
  - Potential business and professional associations could come from McLean, which is closer to the project area (Madeira School has a McLean address).
  - While the project would not complete a connection into Great Falls (which would create a more vested interest), it would still be good to engage them in the conversation.
- Nearest recreation center is Spring Hill Recreation Center (Bull Neck Run).
- Northern Virginia Regional Parks Authority (now NOVA Parks) should be engaged in the conversation.
- To secure state or federal funding requires a commitment for maintenance.
- It's a heavy lift to ask NPS to take on new assets.
- Maintenance agreements currently exist between NPS National Capital Region with Rock Creek (DDOT) and Anacostia (DDOT).
- Having a VDOT or Fairfax County maintenance agreement in place would demonstrate a partnership with NPS and perhaps help to obtain grant funding.
- Other potential funding sources and approaches were discussed, including:
  - Any family foundations or non-profits in McLean or Great Falls could help.
  - Perhaps there is the potential for a charitable foundation to support environmental parks and trails.
  - Homeowners' associations could also be in the mix.
  - The representatives from McLean said that a lot of community members are interested and that it would be good to have a conversation with people in the area of Great Falls in the Dranesville District.
  - There is a lot of interest from people in McLean to get to Great Falls Park. This project will provide for future connection opportunity.
  - National Park Foundation is a possibility; however, their scholar programs tend to be more focused on science, visitor service, and historic resources.
  - Funding for on-going maintenance is often the most difficult to secure.
- This project presents an opportunity to bring in an educational component: the construction and maintenance of a trail through the woods.
  - Madeira School would be interested in education component and conversation; however, school will not support educational programs (e.g., field trips) for the segment of the trail along Georgetown Pike
  - The equestrian program is thriving at Madeira, and interest is increasing. However, the current competitive riders are doing dressage, i.e., not doing a lot of trail riding.
  - However, an equestrian friendly trail would create an opportunity for students to do trail riding.
- Trial should provide access for as many abilities as possible. The amount of work to complete a 4-foot wide vs. 6-foot wide trail is very similar.

- An interim volunteer-based effort to build a short timber bridge is feasible with approval from NPS; however, the bridge might not last more than one year with Difficult Run rising during heavy rains.
- Another crossing opportunity to the east of the island was mentioned; however, banks are much higher and the area is not as accessible from an Alignment 1 trail.
  - Placing a bridge crossing further east of identified locations would be very difficult.
  - Even further east, Difficult Run becomes a gorge as it empties into the Potomac River.
- Evolution of trails was discussed, i.e., how footpaths develop into trails.
  - Trails organically grow and become recognizable to bicyclists, hikers, and runners.
  - Some trails have grown to become paved roads and major transportation corridors.
  - NPS wants to look at planned projects that align with a purposefully planned corridor and trail network.
  - Fairfax County and NPS have "social trails" that are difficult to maintain and are not reliably accessible. (Social trails are unplanned.)
- Safety of trail crossings near driveway entrances along Georgetown Pike will need to be further evaluated with an engineering analysis

Schedule and Next Steps

- With the refined concept plans, Kimley-Horn will prepare preliminary cost estimates of the alternatives.
- Kimley-Horn will complete an initial draft report for review by the stakeholders (report will include estimated costs).
- The draft report will be completed in the July/August time frame.

Closing

FHWA, NPS, and Kimley-Horn very much appreciate the participation of the attendees at this Planning Workshop #3.

Kimley-Horn requests that the attendees review the content of these draft minutes and advise the author(s) of any necessary revisions within two weeks of receiving the draft minutes, after which time these meeting notes will be considered final.

Attachment: Workshop #3 Presentation Slides



Federal Highway Administration
Eastern Federal Lands Highway Division

Georgetown Pike Footpath Feasibility Study

Planning Workshop #3

May 2, 2019



Federal Highway Administration
Eastern Federal Lands Highway Division

Georgetown Pike Footpath Feasibility Study

Planning Workshop #3

May 2, 2019

AGENDA

0. Welcome & Introductions

1. Introduction
   - Vision/purpose of study
   - NPS Goal: Connecting people to parks
   - Project area
   - Study scope and schedule
   - Stakeholders & Workshops

2. Context
   - History of corridor
   - Previous studies
   - Connections

3. Study Area Analysis
   - Existing conditions
   - Field Observations: Great Falls Park, Difficult Run, Georgetown Pike
   - Environmental review/cultural resources

4. Conceptual Alignments, Design Elements
   - Alignments
   - Cross sections
   - Crossing of Difficult Run

5. Analysis and Recommendations
   - Accessibility
   - Permitting
   - Evaluation Criteria and Scoring
   - Funding Opportunities
   - Recommended Path Forward

STUDY PRESENTATION

1. Introduction
   - Vision/purpose of study
   - NPS Goal: Connecting people to parks
   - Project area
   - Study scope and schedule
   - Stakeholders & Workshops



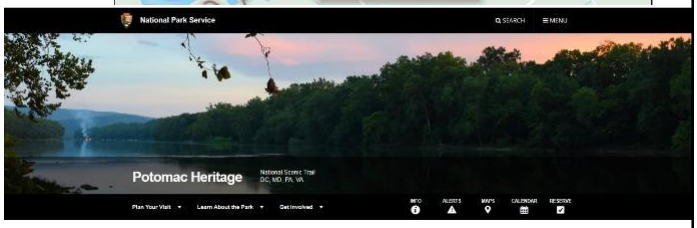
VISION

Connections!

- Potomac Heritage National Scenic Trail
- Other trails







PURPOSE OF STUDY

Investigate feasibility

- Footpath or trail within Georgetown Pike corridor connecting:
  - Difficult Run Trail
  - Towlston Road
  - West end of Madeira School public access easement
- New pedestrian-only bridge over Difficult Run:
  - Within Great Falls Park
  - Within VDOT right-of-way along Georgetown Pike



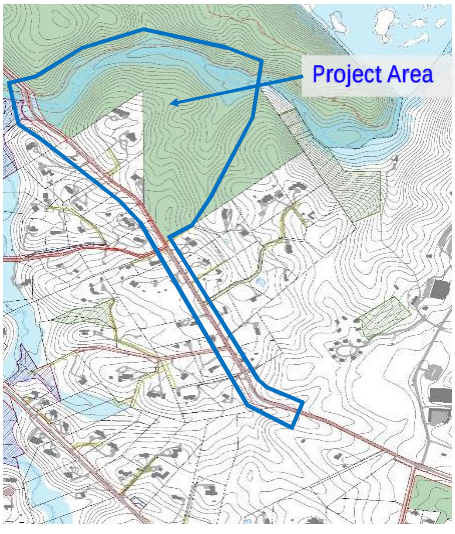


NPS GOAL

- Study addresses the National Park Service Centennial goal of "Connecting People to Parks"
  - Footpath would link to larger network of trails known as the Potomac Heritage National Scenic Trail
  - PHNST:
    - Connects the Potomac River at the Chesapeake Bay to the Alleghany Highlands in Western Pennsylvania
    - Incorporates both existing and planned trails managed by federal, state, local, and nonprofit entities
  - Georgetown Pike Footpath would help to close the gap between Great Falls Park and Scotts Run Nature Preserve

PROJECT AREA & SCOPE

- Great Falls Park and Georgetown Pike (VA 193)
  - from Difficult Run Trail
  - to Towlston Road
  - to west end of Madeira School public access easement
- Scope of Feasibility Study
  - Stakeholder outreach
  - GIS mapping
  - Concept planning
  - Environmental reviews
  - Constructability and cost analyses
  - Summary report with next steps



PROJECT SCHEDULE

2018	
Spring	Planning Workshop #1/Field investigation
Fall	Field investigation of additional area
2019	
Winter/Spring	Environmental review/ Development of draft concept designs
May 2	Planning Workshop #2 - Review field investigation findings - Discuss concepts, feasibility
June 13	Workshop #3 - Review refined concepts - Discuss draft recommendations
Summer	Draft & Final Report/Concept Design

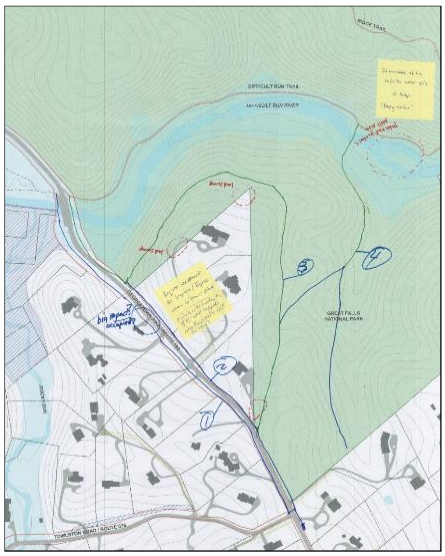
STAKEHOLDERS

- ✓ Fairfax County, Dranesville District (Supervisor Foust)
- ✓ McLean Citizens Association
- ✓ Great Falls Citizens Association
- ✓ Madeira School
- ✓ FHWA Eastern Federal Lands Highway Division (EFLHD)
- ✓ National Park Service (NPS)
- ✓ Virginia Department of Transportation (VDOT)
- ✓ Fairfax County Department of Transportation (FCDOT)
- ✓ Fairfax County Park Authority (FCPA)
- ✓ Potomac Heritage Trail Association (PHTA)
- ✓ Fairfax Trails and Streams
- ✓ Mid-Atlantic Outdoor Recreation Enthusiasts (MORE)

Others?

WORKSHOP #1 | April 3, 2018

- Gathered stakeholders
- Confirmed purpose of project as trail study
- Discussed background
- Received input from Madeira School
- Drew possible footpath alignments
- Discussed adding 0.3 mile segment to scope of study, Towlston Road to existing easement along Madeira property, "missing link"



WORKSHOP #2 | May 2, 2019

- Presentation of findings and concepts
  - Alignments
  - Cross sections
  - Bridges
  - Evaluation of alternatives
- Discussed…
  - Pros and cons of alignments, cross sections
  - Bridges and alternative stream crossings
  - Accessibility
  - Possible funding programs
- Added a 4th alignment





WORKSHOP #3 | June 13, 2019

- Presentation of study analyses, concepts, and recommendations
- *Let's discuss!*





STUDY PRESENTATION

2. Context

- History of corridor
- Previous studies
- Connections



HISTORY OF CORRIDOR

- Old wagon trails in Great Falls Park
- Possible ford at Difficult Run circa 1764
- Remnants of an old road bed on southeast side of Difficult Run





PREVIOUS STUDIES

- Georgetown Pike Trail Feasibility Summary Findings
  - Completed by Northern Virginia Regional Commission (NVRC)
  - Identified issues influencing feasibility of bicycle/pedestrian trail along Georgetown Pike, between the Capital Beltway and Great Falls National Park

Map of Study Area

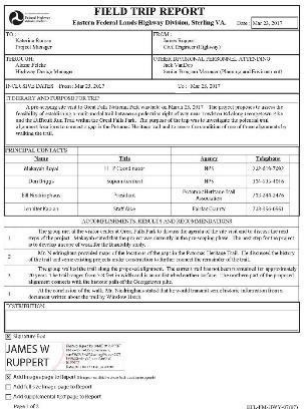


Graphic Source: Georgetown Pike Trail Feasibility Summary Findings, no date

PREVIOUS STUDIES

- FHWA Field Trip Report

  Pre-Scoping visit held on March 23, 2017 to investigate the potential trail alignment locations to connect the gap in Potomac Heritage Trail


FIELD TRIP REPORT
Eastern Federal Lands Highway Division, Sterling VA. Date: Mar 23, 2017

Graphic Source: POHE Field Trip Report

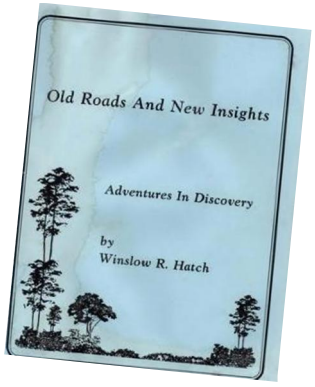

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PREVIOUS STUDIES

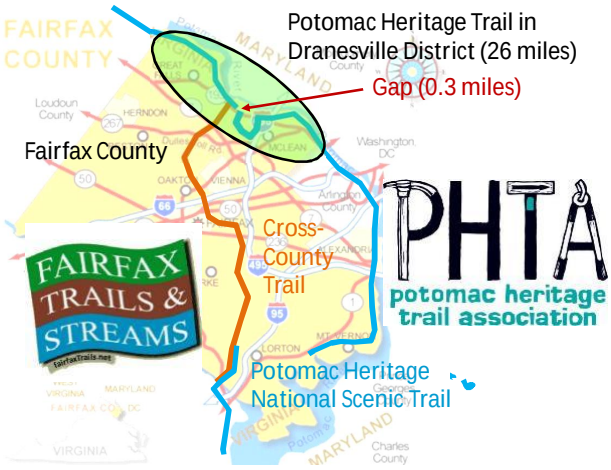
- Potomac Heritage Trail Association (PHTA)
  - Documentation of hike from Georgetown Pike in Great Falls National Park to Kimberwicke Road (toward McLean)
  - Winslow Hatch on original route of Georgetown Pike at Great Falls Park



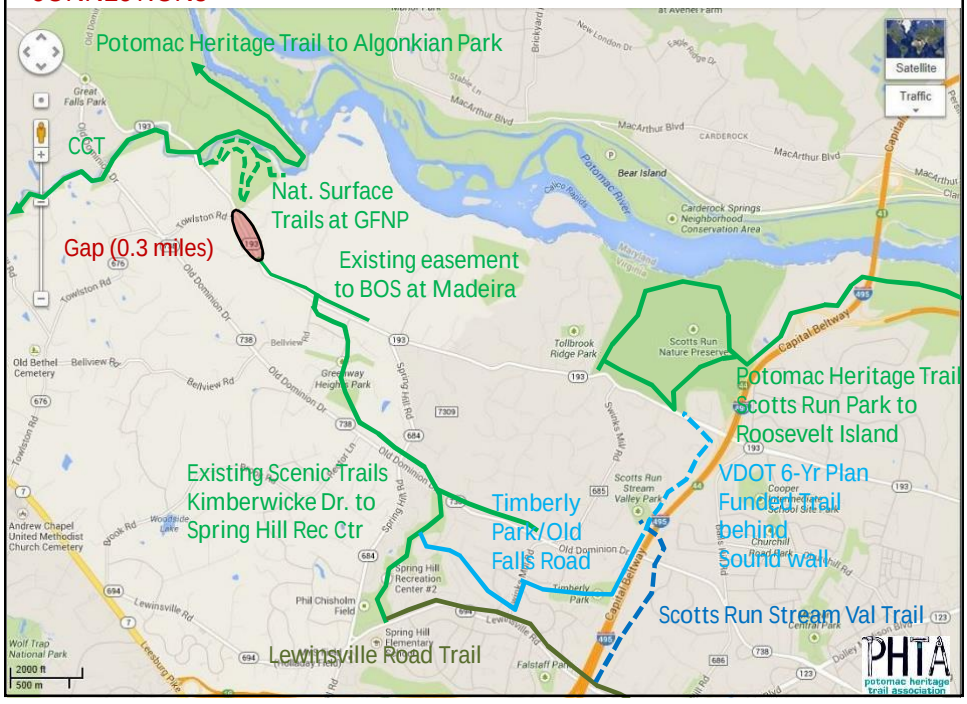


PREVIOUS STUDIES

Potomac Heritage Trail Association: Filling the Gap – Great Falls Park to Scotts Run Nature Preserve



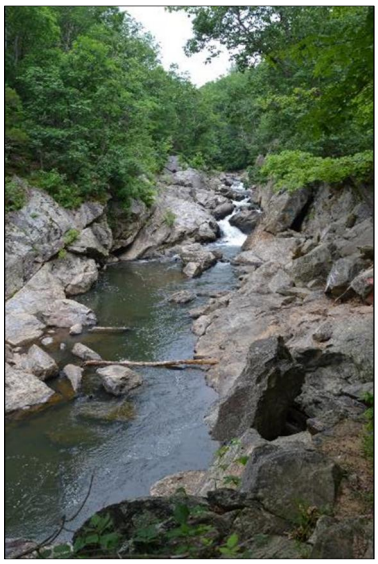
CONNECTIONS



STUDY PRESENTATION

3. Study Area Analysis

- Existing conditions
- Field Observations:
  - Great Falls Park
  - Difficult Run
  - Georgetown Pike
- Environmental review/ cultural resources



EXISTING CONDITIONS

- Georgetown Pike:
  - High traffic volumes
  - Limited ROW
  - Limited horizontal and vertical sight distance
  - Narrow shoulders, deep ditches, cut and fill slopes

Route No.	Route Name	From	To	Annual Average Daily Traffic (AADT)	Average Annual Weekday Daily Traffic (AAWDT)
193	Georgetown Pike	Rt 683 Leigh Mill Rd	Rt 676 Towlston Rd	16,000	17,000
193	Georgetown Pike	Rt 676 Towlston Rd	Urban Boundary	15,000	17,000
676	Towlston Road	Rt 738 Old Dominion Dr	Rt 193 Georgetown Pike	650	700

Source: 2016 VDOT Daily Traffic Volume Estimates
http://www.virginiadot.org/info/2016_traffic_data_by_jurisdiction.asp

FIELD OBSERVATIONS

- Difficult Run Trail: Recent repairs evident
- Difficult Run Crossing: Several candidate locations



Georgetown Pike Bridge over Difficult Run



Drovers Rest "Pinch Point"





FIELD OBSERVATIONS

- Great Falls Park: Trail possible along ridges and some side slopes
- Existing Georgetown Pike bridge: Challenging to accommodate a trail
- Georgetown Pike: Trail possible, but challenges to overcome include…
  - Narrow shoulders, often with large drainage ditches and steep side slopes
  - Minimal available right of way, lots of utility poles and overhead utilities
  - Driveways and private properties, limited sight distance for pedestrian crossings



Georgetown Pike Bridge over Difficult Run

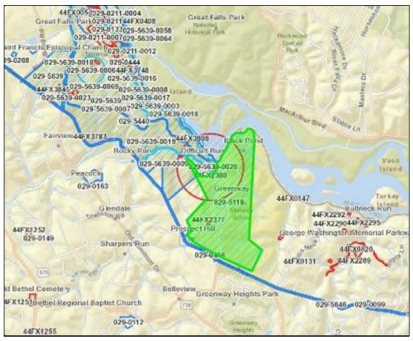


Drovers Rest "Pinch Point"



ENVIRONMENTAL REVIEW

- Water Resources
- Protected Species
- Hazardous Materials
- Environmental Justice
- Section 4(f) and Section 6(f) and Community Facilities
- Cultural Resources
  - Georgetown Pike (VDHR ID 029-0466) listed on the National Register of Historic Places
  - Great Falls Park Historic District (VDHR ID 029-5639) also listed

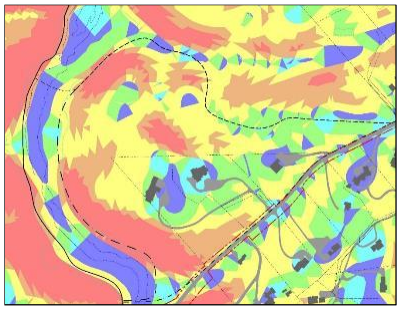




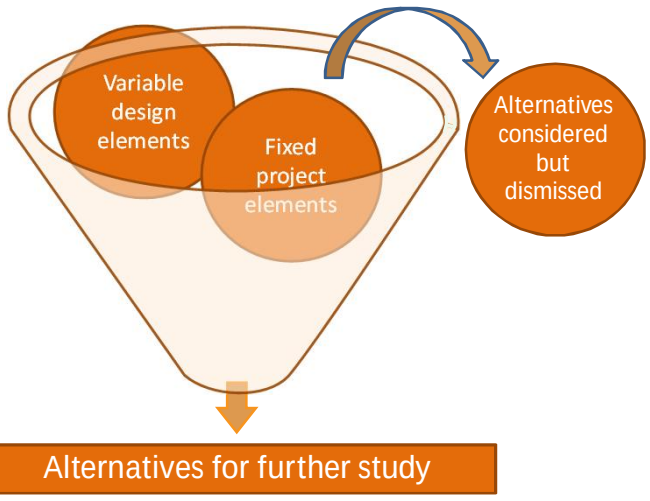
STUDY PRESENTATION

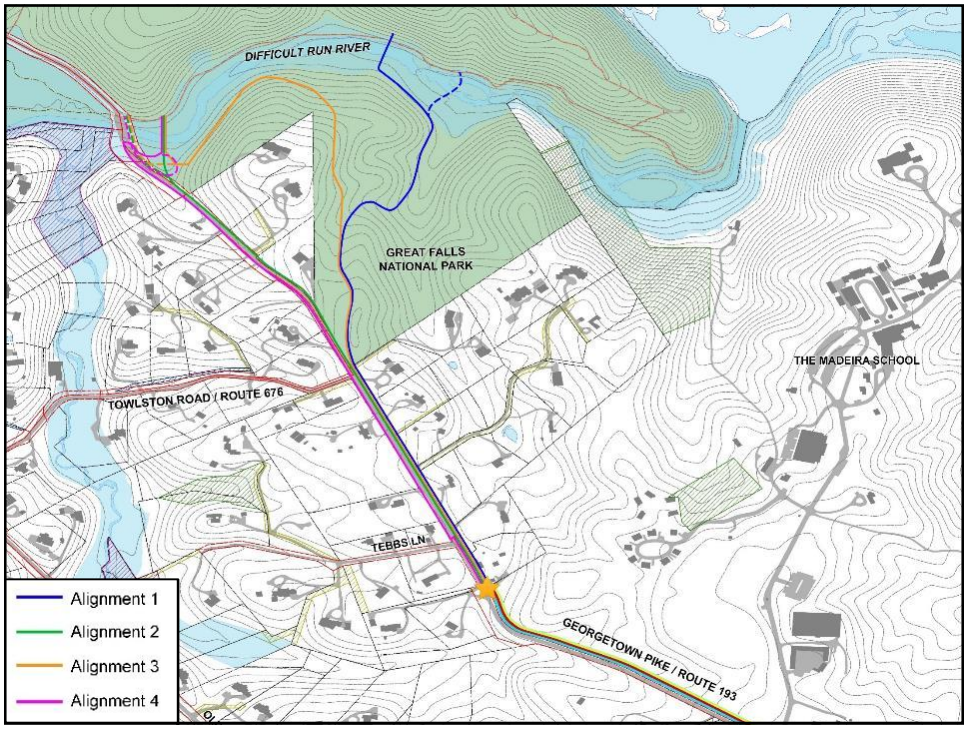
4. Conceptual Alignments, Design Elements
   - Alternatives Considered
   - Alignments
   - Footpath cross sections
   - Crossing of Difficult Run



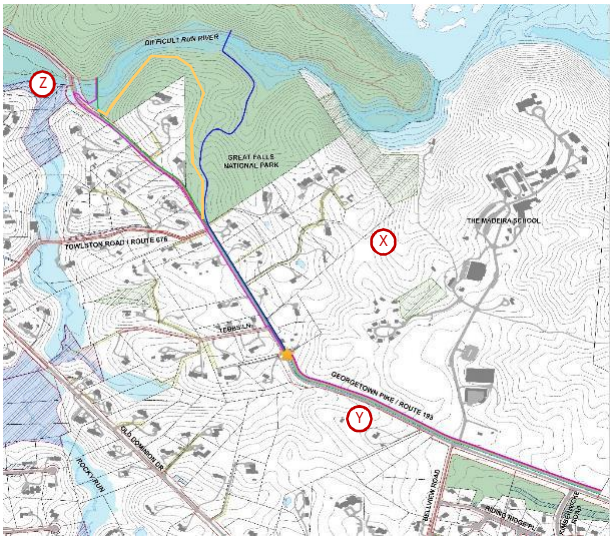


ALTERNATIVES CONSIDERED





ALTERNATIVES CONSIDERED



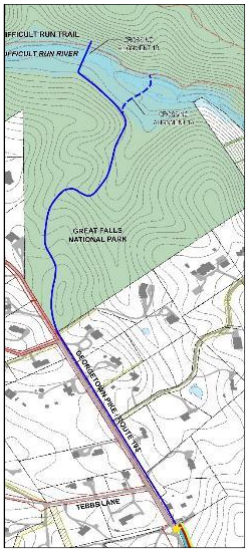
Alignments for further study:
- Alignment 1
- Alignment 2
- Alignment 3
- Alignment 4

Alignments considered but dismissed

- (X) Outside park boundary/ on Madeira School property (non-easement)
- (Y) No side street for ped + opposite from easement
- (Z) Outside park boundary/ longer crossing with steep banks

ALIGNMENTS | Alignment 1

- Begins at Madeira School public access easement (no current pedestrian accommodations)
- Remains on the north side of Georgetown Pike until Towlston Road
- Enters Great Falls National Park near Towlston Road
- Follows natural grade through Great Falls Park
- Bridge crossing would occur downstream from Georgetown Pike
- Construction challenges: grading, drainage, available right of way, overhead utilities + bridge construction
- Pinch point at Drover's Rest along north side of Georgetown Pike



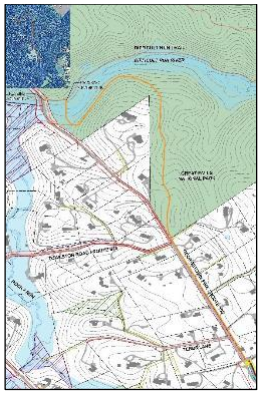






ALIGNMENTS | Alignment 2

- Begins at Madeira School public access easement (no current pedestrian accommodations)
- Remains on the north side of Georgetown Pike until Towlston Road
- Enters Great Falls National Park near Towlston Road
- Follows natural grade through Great Falls Park, curving to the west and paralleling Difficult Run
- Bridge crossing would occur just downstream from Georgetown Pike (or alternatively with a reconstructed VDOT bridge)
- Construction challenges: grading, drainage, available right of way, overhead utilities + bridge construction
- Pinch point at Drover's Rest along north side of Georgetown Pike



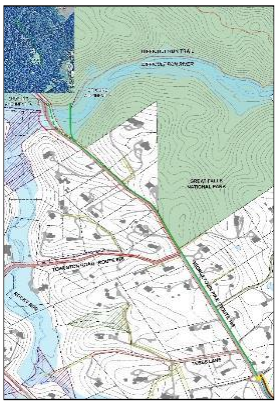






ALIGNMENTS | Alignment 3

- Begins at Madeira School public access easement (with no current pedestrian accommodations)
- Remains on the north side of Georgetown Pike to Difficult Run
- Bridge crossing to Difficult Run Trail would be just north of Georgetown Pike
- Construction challenges: grading, drainage, available right of way, overhead utilities
- Pinch point at Drover's Rest along north side of Georgetown Pike



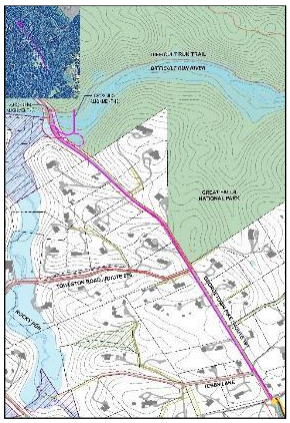






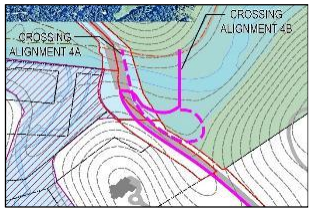
ALIGNMENTS | Alignment 4

- Begins at Madeira School public access easement (with no current pedestrian accommodations)
- Proceeds on north side of Georgetown Pike to Tebbs Lane
- Crosses Georgetown Pike at Tebbs Lane intersection
  - Allows for crossing at intersection
  - Would include pedestrian crosswalk with warning signs and flashing light upon activation
- Proceeds on south side of Georgetown Pike to Difficult Run and under vehicle bridge
- Uses same bridge at Alignment 1B
- Construction challenges: grading, drainage, available right of way, overhead utilities
- Pinch point at Drover's Rest along north side of Georgetown Pike



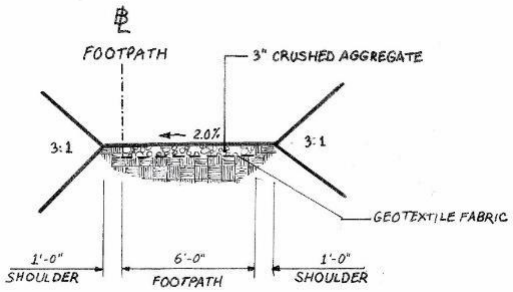






CROSS SECTIONS | Typical Section in Great Falls Park

- Footpath can be constructed with minimal impact to drainage, slopes, and existing vegetation
- Multiple options for surface treatment, including crusher run, gravel, heavily compacted soil, and mulch
- Would need to provide access for Alternative 1 bridge construction



Typical Footpath Section
Within Great Falls National Park

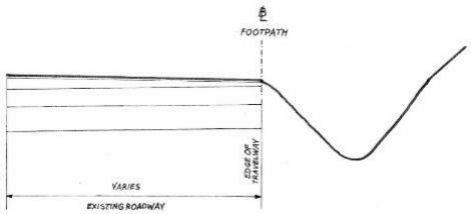




CROSS SECTIONS | Typical Section along VDOT ROW

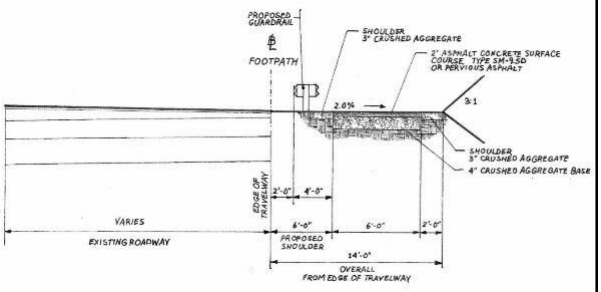
Existing Cross Section (Varies)

- Existing cross section includes open ditches with minimal shoulder
- Steep slopes and guardrail in some locations
- Sight distance limited to due horizontal and vertical curves



Proposed Cross Section (Varies)

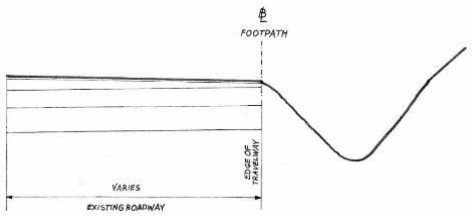
- Provides for appropriate pedestrian protection from vehicles
- Utilizes VDOT design criteria for safety and accessibility
- Asphalt pavement would help maintain width and minimize maintenance needs



CROSS SECTIONS | Typical Section Along VDOT ROW

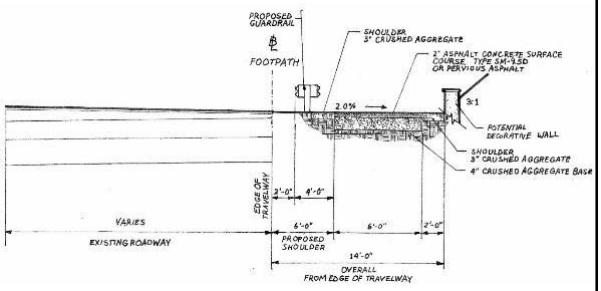
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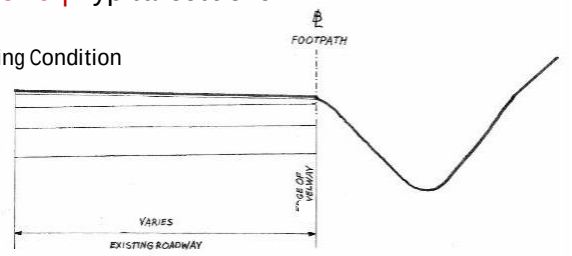
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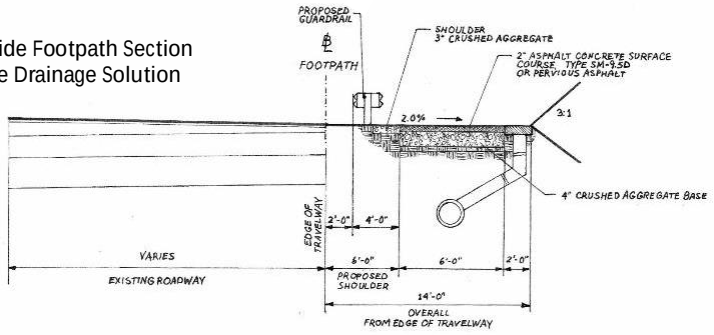


CROSS SECTIONS | Typical Sections

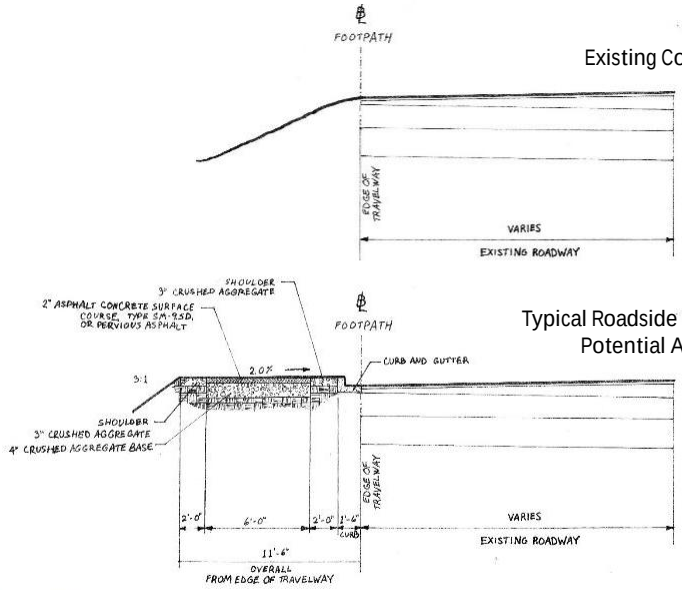
Existing Condition



Typical Roadside Footpath Section with Possible Drainage Solution



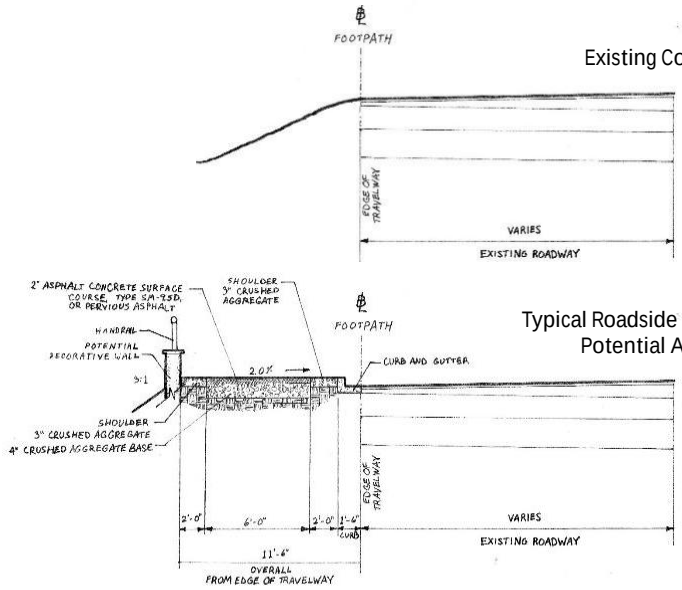
CROSS SECTIONS | Typical Sections



Existing Condition

Typical Roadside Footpath Section
Potential Alignment 2

CROSS SECTIONS | Typical Sections



Existing Condition

Typical Roadside Footpath Section
Potential Alignment 2

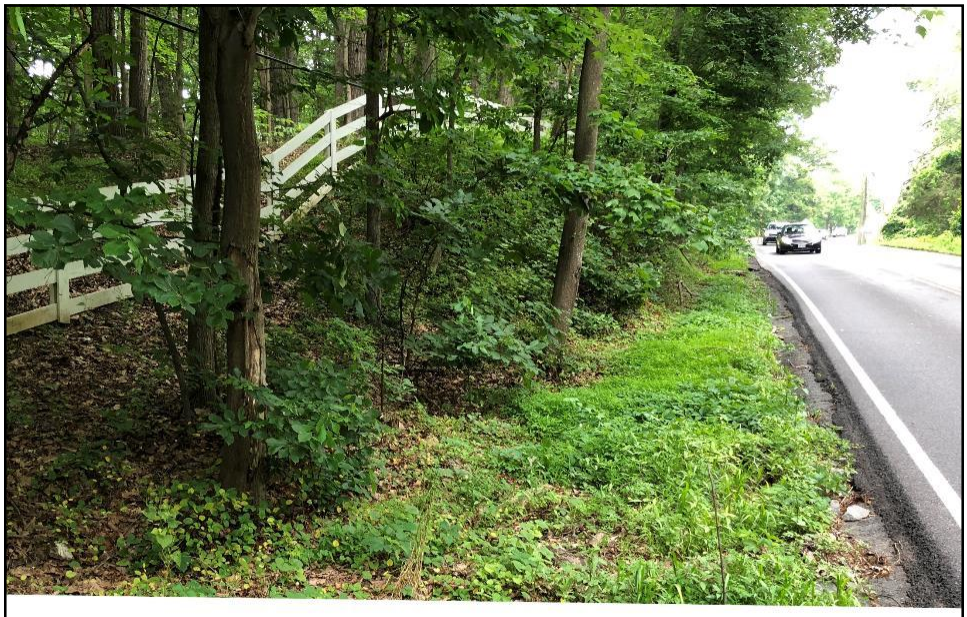
U.S. Department of Transportation Federal Highway Administration

Georgetown Pike Footpath Study – Planning Workshop #3
June 13, 2019

Kimley»Horn





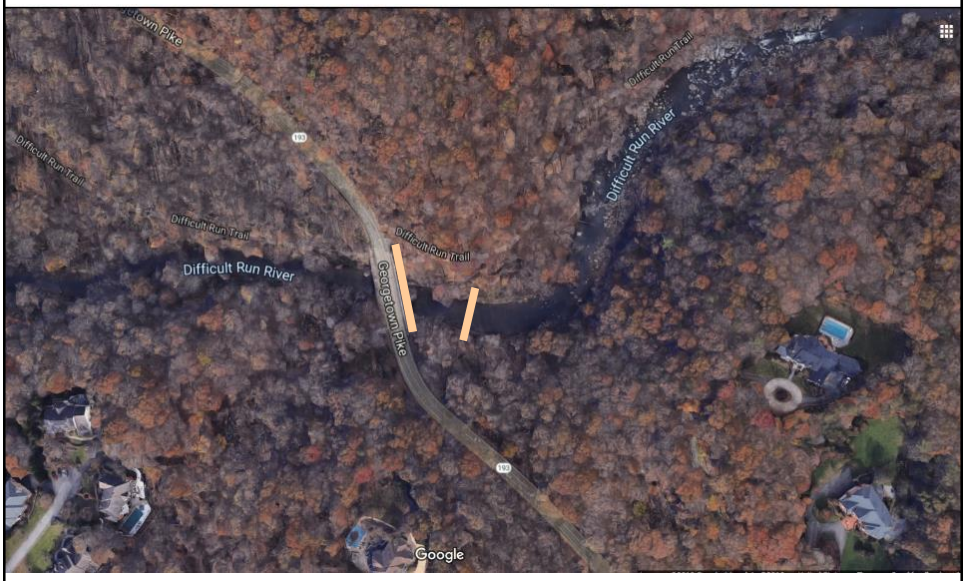




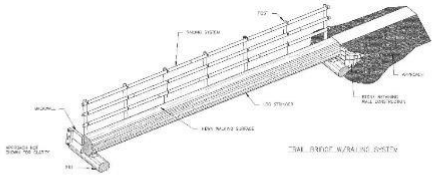
CROSSING OF DIFFICULT RUN | Locations – Alignment 1



CROSSING OF DIFFICULT RUN | Locations – Alignments 2, 3, and 4



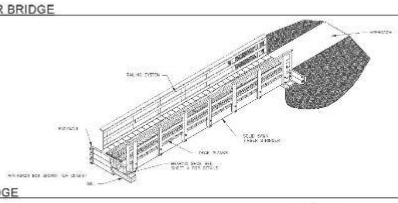
CROSSING OF DIFFICULT RUN | Options



SAWN TIMBER STRINGER BRIDGE



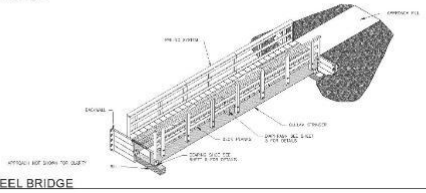
SINGLE LOG STRINGER BRIDGE



GLULAM STRINGER BRIDGE



SAWN TIMBER STRINGER BRIDGE



PREFABRICATED STEEL BRIDGE



GLULAM STRINGER BRIDGE

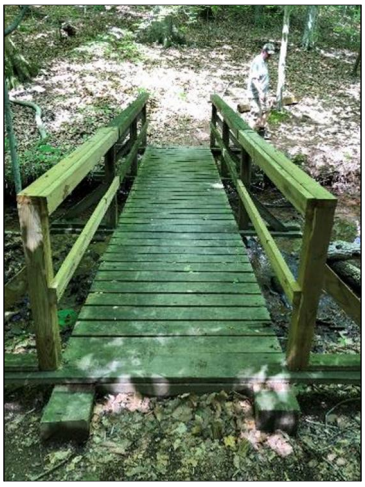
CROSSING OF DIFFICULT RUN | Options



Cataloochee Creek
Great Smoky Mountains National Park



CROSSING OF DIFFICULT RUN | Options



Prince William Forest Park, Virginia



CROSSING OF DIFFICULT RUN | Bridge Types

Glulam Stringer Bridge



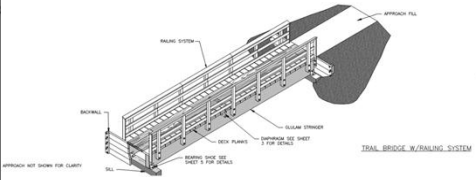


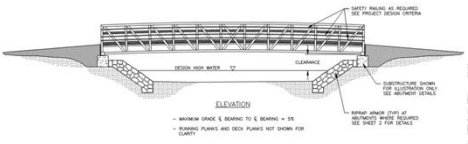
CROSSING OF DIFFICULT RUN | Bridge Type





Prefabricated Steel Truss Bridge





CROSSING OF DIFFICULT RUN | Options



CROSSING OF DIFFICULT RUN | Options



CROSSING OF DIFFICULT RUN | Options



CROSSING OF DIFFICULT RUN | Options



CROSSING OF DIFFICULT RUN | Options



Federal Highway Administration
Georgetown Pike Footpath Study – Planning Workshop #3
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CROSSING OF DIFFICULT RUN | Options



CROSSING OF DIFFICULT RUN | Site Considerations

- Accessibility to crossing from banks
- Stability of channel at crossing locations
  - Bedrock channel bottom
  - Minimal bank erosion
  - Avoid sediment deposits, mid-channel "depositional" bars, and bends—they will likely change over time
- Low-water crossings are most successful when located in a stable section of the river, such as upstream of an existing waterfall or on a bedrock outcropping



STUDY PRESENTATION

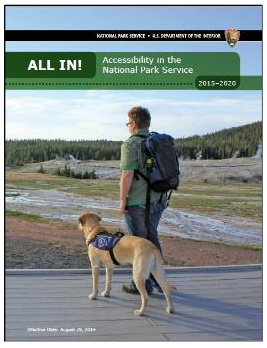
5. Analysis and Recommendations

- Accessibility
- Permitting
- Evaluation Criteria and Scoring
- Funding Opportunities
- Recommended Path Forward



ACCESSIBILITY | NPS and VDOT Policies

- NPS Property
  - Architectural Barriers Act Accessibility Standard (ABAAS)
  - Accessibility provided consistent with preserving park resources
  - Degree of accessibility provided:
    - Proportionately related to the degree of human-made modifications in the area
    - Importance of the facility to people visiting or working in the park



"National parks belong to all Americans, and the National Park Service will welcome all Americans to experience their parks."
NPS *Management Policies 2006*

- VDOT Right-of-Way
  - Americans with Disabilities Act (ADA) Requirements in the Public Right-of-Way

PERMITTING | Crossing of Difficult Run

- Statement of Findings submitted to NPS
  - Rationale for locating improvements in floodplain
  - Disclose amount of risk associated with site
  - Detail floodplain mitigation plans
- Model floodplain with proposed improvements
  - Determine if flood elevation will rise with installation of new crossing
  - Determine extent of rise and impact to surrounding properties
- USACE Permit: Covered by a Nationwide Permit



EVALUATION CRITERIA AND SCORING | Evaluation Criteria

- ✓ General walking quality
- ✓ Protection from vehicle traffic
- ✓ Right-of-way impacts
- ✓ Ease of trail construction
- ✓ Ease of bridge construction
- ✓ Preliminary project cost

EVALUATION CRITERIA AND SCORING | Comparison of Alternatives

Criteria	Alt 1	Alt 2	Alt 3	Alt 4
General walking quality	●	◎	●	◎
Protection from traffic	●	●	◎	○
Fewer right-of-way impacts	◎	◎	○	○
Ease of trail construction	◎	○	○	○
Ease of bridge construction	○	◎	◎	◎
Preliminary project cost	◎	◎	○	○
Preliminary Scores	13	12	10	9

KEY		
●	◎	○
Best (3)	Good (2)	Fair (1)

FUNDING OPPORTUNITIES

- Federal:
  - FHWA's Congestion Mitigation and Air Quality (CMAQ) Program for projects linked to vehicular trip reduction
  - FHWA's Transportation Alternatives Program (TAP) for pedestrian and bike improvements
  - FHWA's Federal Lands Access Program (FLAP) to improve access to recreational amenities
  - Federal Lands Recreation Enhance Act (Recreation Fee)
  - Centennial Challenge (50% NPS/50% partner/donor cost share)
- State:
  - VDOT SMART SCALE funds for pedestrian and bike projects or rail and transit projects
  - VDOT Maintenance: Roadside repairs and upgrades
- Regional:
  - NVTA's TransAction funds to reduce regional congestion
  - NVTC's Commuter Choice program to fund multimodal projects
- Fairfax County:
  - NVTA's 30% funds for local transportation projects
  - FCDOT (County CIP) funding
- Advocacy and citizen/private groups: Fund raising and financial support, including private contributions for construction and O&M
  - National Park Foundation
  - PHTA, MORE, and others
- In-Kind Services by NPS, VDOT, and/or Fairfax County
- Volunteer groups for performing minor construction and O&M

RECOMMENDED PATH FORWARD

- Move forward with Alignment 1 in phased approach
  - Near-term phase (build support):
    - Interim use of "ford" with smaller timber bridges to cross Difficult Run
    - Interim trail improvements in Great Falls Park
  - Longer-term phase:
    - Plan, program, design, and construct entire Alignment 1
    - Obtain funding from a variety of sources
    - 2-span timber truss bridge across Difficult Run
    - 6-ft wide trail wherever possible in Park and along Pike
    - Provide access for people of all abilities
- Consider longer term improvements along Georgetown Pike

DISCUSSION | Workshop

- What are your thoughts on the alignments, cross sections, and bridges?
- What are *your* preferred solutions?
- Thoughts on funding opportunities and approaches?
- Feedback on recommended path forward?
- What are your thoughts on next steps, including implementation?

NEXT STEPS

- Finalize conceptual design
- Draft report
- Final report

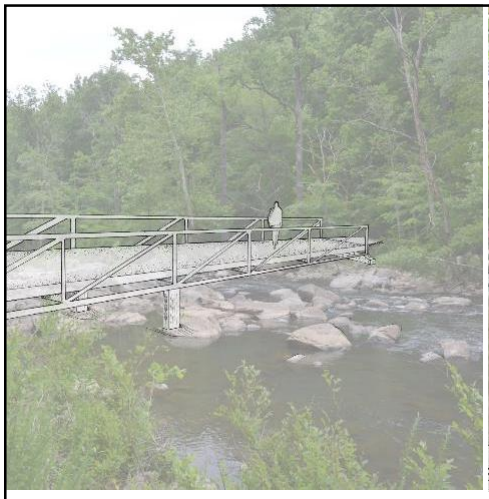




THANK YOU !

Federal Highway Administration
Eastern Federal Lands Highway Division

Georgetown Pike Footpath Feasibility Study
Planning Workshop #3
May 2, 2019





Federal Highway Administration
Eastern Federal Lands Highway Division

Georgetown Pike Footpath Feasibility Study

Planning Workshop #3

May 2, 2019

91 129812 OCT -7 3:33

DEED OF RESERVATION AND EASEMENT AGREEMENT

THIS DEED OF RESERVATION AND EASEMENT AGREEMENT is made as of this 2nd day of October, 1991, by and between (i) THE MADEIRA SCHOOL, INC., ("Madeira"), as Grantor, and (ii) THE BOARD OF SUPERVISORS OF FAIRFAX COUNTY, VIRGINIA, a body corporate and politic (the "County"), as Grantee.

BK7918 1632

RECITALS:

R-1. Madeira is the sole owner of a certain parcel of land located in the county of Fairfax, Virginia (the "Property"), more particularly described and shown on the attached plat entitled "Plat Showing 20' Reservation for Public Street Purposes, 12' Public Access (Trail) Easement and 15' Temporary Grading and Construction Easement thru the Property of Madeira School, Inc." dated October 1990, revised through August 6, 1991, and prepared by Dewberry & Davis (the "Plat"), having acquired the Property by Deeds recorded in Deed Book LI-10 at Page 455, Deed Book 1255 at Page 433, and Deed Book H-12 at Page 1, among the land records of Fairfax County, Virginia.

DEWBERRY & DAVIS
ATTN: STEVEN A. MONTGOMERY
8401 ARLINGTON BLVD
FAIRFAX VA 22031

R-2. Madeira desires (i) to reserve a portion of the Property for public street purposes, and (ii) to grant certain easements to the County.

DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION
DEPARTMENT OF TRANSPORTATION
DEVELOPMENT REVIEW

NOW THEREFORE, this Deed of Reservation witnesseth:

THAT for and in consideration of the premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Madeira does hereby reserve 79,303 square feet of land for public street purposes, in that area described on the Plat as "Hereby Reserved for Public Street

Purposes" to be used for no other purpose unless the County agrees in writing. Madeira agrees to dedicate the right-of-way to the County on demand without compensation. Madeira represents, warrants and agrees that this agreement and covenant for the dedication and conveyance of right-of-way is not a covenant personal to Madeira but is a covenant running with the land which is and shall be binding on their heirs, personal representatives, purchasers, successors and assigns.

THIS EASEMENT AGREEMENT FURTHER WITNESSETH:

THAT for and in consideration of Ten Dollars ($10.00), cash in hand paid, the receipt and sufficiency of which are hereby acknowledged, Madeira does hereby grant and convey to the County, it successors and assigns, a Temporary Construction and Grading Easement for the purpose of performing construction and grading work and activities on, through and across the property, said property and easement being more particularly bounded and described on the Plat attached hereto and incorporated herein. The easement is subject to the following terms and conditions:

1. The County and its agents shall have full and free use of the said easement and right-of-way for the purposes named, and shall have all rights and privileges reasonably necessary to the enjoyment and exercise of the easement and right-of-way including the right of reasonable access to and from the right-of-way and the right to use adjoining land of Madeira where necessary; provided, however, that this right to use adjoining land shall be exercised only during periods of actual surveying,

construction, reconstruction or maintenance, and further, this right shall not be construed to allow the County to erect any building, structure or facility of a permanent nature on such adjoining land.

2. The County shall have the right to trim, cut and remove trees, shrubbery, fences, structures or other obstructions or facilities in or reasonably near the easement being conveyed deemed by it to interfere with the proper and efficient construction, grading, or maintenance of the Property; provided, however, that the County at its own expense shall restore, as nearly as possible, the premises to their original condition, such restoration to include the backfilling of trenches, the replacement of shrubbery and the seeding or sodding of lawns or pasture areas, but not the replacement of structures, trees or other obstructions.

3. Madeira reserves the right to make any use of the easement herein granted which may not be inconsistent with the rights herein conveyed, or interfere with the use of the easement by the County for the purposes named, provided, however, that Madeira shall not erect any building or other structure, including a fence, on the easement, without obtaining the prior written approval of the County.

4. The easement shall terminate at such time as construction is completed.

THIS EASEMENT AGREEMENT FURTHER WITNESSETH:

THAT for and in consideration of Ten Dollars ($10.00), cash in hand paid, the receipt and sufficiency of which are hereby acknowledged, Madeira does hereby grant and convey to the County, its successors and assigns, a Trail Easement for the purpose of constructing, operating and maintaining public trails through and across the Property of Madeira, said Property and Easement being more particularly bounded and described on the Plat attached hereto and incorporated herein. The easement is subject to the following terms and conditions:

1. All facilities installed in the easement and right-of-way shall be and remain the property of the County, its successors and assigns.

2. The County and its agents shall have full and free use of the said easement and right-of-way for the purposes named, and shall have all rights and privileges reasonably necessary to the enjoyment and exercise of the easement and right-of-way including the right of reasonable access to and from the right-of-way and the right to use adjoining land of Madeira where necessary; provided, however, that this right to use adjoining land shall be exercised only during periods of actual surveying, construction, reconstruction or maintenance, and further, this right shall not be construed to allow the County to erect any building, structure or facility of a permanent nature on such adjoining land.

3. The County shall have the right to trim, cut and remove trees, shrubbery, fences, structures or other obstructions or facilities in or reasonably near the easement being conveyed deemed by it to interfere with the proper and efficient construction, operation, maintenance or enjoyment of the trail; provided, however, that the County at its own expense shall restore, as nearly as possible, the premises to their original condition, such restoration to include the backfilling of trenches, the replacement of shrubbery and the seeding or sodding of lawns or pasture areas, but not the replacement of structures, trees or other obstructions.

4. Madeira reserves the right to make any use of the easement herein granted which may not be inconsistent with the rights herein conveyed, or interfere with the use of the easement by the County for the purposes named, provided, however, that Madeira shall not erect any building or other structure excepting a fence running parallel to the easement, on the easement, without obtaining the prior written approval of the County.

WITNESS the following signatures and seals:

THE MADEIRA SCHOOL, INC., a
Virginia corporation

By: Franklin B. Smith (SEAL)
Name: FRANKLIN B. SMITH
Title: TREASURER

State of Virginia
County of Fairfax, to-wit:

The foregoing instrument was acknowledged before me this 2nd day of October, 1991 by Franklin Smith as Treasurer of The Madeira School, Inc., on behalf of the corporation.

Karen L. Allen
Notary Public

My Commission expires: Jan. 22, 1993

Accepted on behalf of the Board of Supervisors of Fairfax County, Virginia, by authority granted by said Board.

Approved as to form:

Ellen K. Pugh
Assistant County Attorney

Director,
Department of Environmental
Management

State of Virginia
County of Fairfax, to-wit:

The foregoing instrument was acknowledged before me by Irving Birmingham, Director, Department of Environmental Management, on this the 7th day of October, 1991.

Rosamond K Sard
Notary Public

My Commission expires: 11-21-92

u:\5342\5341\madeira.ded

with plat attached

OCT -7 91

RECORDED FAIRFAX CO VA
TESTE:
CLERK

BK7918 1638

MADEIRA SCHOOL
RESIDUE · 369.725AC

MATCH LINE THIS SHEET

7,303± HEREBY RESERVED FOR PUBLIC STREET PURPOSES

12' PUBLIC ACCESS (TRAIL) ESMT. (SEE NOTE #5)

S56°44'00"E - 1285.85'

N56°44'00"W - 1286.80'

N56°44'00"W

APPROXIMATE LOCATION OF ℄ PER EXISTING RECORDS

GEORGETOWN PIKE
(Variable Width R/W)

Notes:

1. The property delineated on this plat is located on Assessment Map 20-1 ⓪ 14 & 20-2 ⓪ 1 AND IS ZONED R-E
2. The property shown hereon was acquired by Madeira School Inc. in DB. U-10 at Pg. 455, DB. 1255 at Pg. 433, & DB. H-12 at Pg. 1.
3. Temporary Grading & Construction Esmt. to become null and void at such time as construction is complete.
4. Information shown hereon taken from existing records.
5. TRAIL EASEMENT TO BE MAINTAINED BY FAIRFAX COUNTY BOARD OF SUPERVISORS

A
CO
DIVISIO
SIT
By
Da

GRA
SW

COMMONWEALTH
JOHN T
No.
LAND

REVISED:
REVISED

BK 7918 1639

MAGNETIC NORTH (1924)

TRACT E
SARAH T. BRO

S13°00'00"E - 269.23'

N13°00'00"W - 269.85'

N61°13'00"E - 280.78'

S47°49'00"E
40.78'

S62°56'00"E - 208.42'

N62°56'00"W - 209.50'

N47°49'00"W - 49.70'

℄

APPROXIMATE LOCATION OF ℄ PER EXISTING RECORDS

MADEIRA SCHOOL IN

12' PUBLIC ACCESS (TRAIL) ESMT
(SEE NOTE #5)

S53°55'00"E - 563.69'

N53°55'00"W - 561.66'

GEORGETOWN PIKE
(Variable Width R/W)

MADEIRA SCHOOL

RESIDUE - 369.725AC

MATCH

7.5303 AC HEREBY RESERVED FOR PUBLIC STREET PURPOSES

12' PUBLIC ACCESS (TRAIL) ESMT
(SEE NOTE #5)

S53°55'00"E - 1285.85'

BK7918 1640

MADEIRA SCHOOL INC.

12' PUBLIC ACCESS (TRAIL) ESMT. (SEE NOTE #5)

15' TEMPORARY GRADING & CONSTRUCTION ESMT (SEE NOTE #3)

S 51° 20' 00" E - 781.51'

N51°20'00"W - 782.00'

45' 25' 15' 12'

MATCH LINE THIS SHEET

S 00° E - 563.63'

00"W - 561.66'

GEORGETOWN PIKE

Route #113

(Variable Width R/W)

MADEIRA SCHOOL INC.

RESIDUE : 360.725AC

PUBLIC ACCESS (TRAIL) ESMT.
E NOTE #5)

15' TEMPORARY GRADING & CONSTRUCTION ESMT (SEE NOTE #3)

S56°48'00"E - 811.94'

N56°48'00"W - 809.39'

S40°29'35"W

15' 12'

45'

MADEIRA SCHOOL INC.

RESIDUE - 369.725AC

PUBLIC ACCESS(TRAIL) ESMT
E NOTE #5)

15' TEMPORARY GRADING
& CONSTRUCTION ESMT
(SEE NOTE #3)

S56°48'00"E - 811.94'

N56°48'00"W - 805.39'

N56°48'00"W

S40°29'35"W
20.16'

GEORGETOWN PIKE
(Variable Width R/W)

Route #193

APPROVED
COUNTY OF FAIRFAX
DIVISION OF DESIGN REVIEW
SITE REVIEW BRANCH
By _____
Date 9-23-91

GRADE E01
SW/TR E02

COMMONWEALTH OF VIRGINIA
JOHN T. MONAGHAN
No. 000815B
LAND SURVEYOR

REVISED: FEBRUARY 27, 1991
REVISED AUGUST 6, 1991

PLAT SHOWING
20' RESERVATION FOR PUBLIC STREET PURPOSES,
12' PUBLIC ACCESS(TRAIL) EASEMENT
AND
15' Temporary Grading & Construction Easement
THRU THE PROPERTY OF
MADEIRA SCHOOL INC.
Dranesville District
Fairfax County, Virginia

Scale: 1" = 100'

October, 1990

DEWBERRY & DAVIS
ARCHITECTS · ENGINEERS · PLANNERS · SURVEYORS
8401 ARLINGTON BOULEVARD, FAIRFAX, VA

ENGINEER'S COPY

1641

5158-SP-01

RPA-4007

Georgetown Pike Footpath Feasibility Study

ENVIRONMENTAL REVIEW SUMMARY

1. Introduction

The Eastern Federal Lands Highway Division (EFLHD) of the Federal Highway Administration (FHWA), in close coordination with the National Park Service (NPS), is conducting a feasibility study for a six-foot-wide footpath in the Georgetown Pike (Virginia Route 193) corridor in Fairfax County, Virginia. The footpath would extend from the Difficult Run Trail in Great Falls Park to proposed pedestrian right-of-way (ROW) near the intersection of Towlston Road (VA Route 676), and east along Georgetown Pike to an existing Public Access (Trail) Easement located on property owned by The Madeira School. This feasibility study also includes the evaluation of a pedestrian bridge crossing over Difficult Run within Great Falls Park.

EFLHD contracted with Kimley-Horn to conduct this Georgetown Pike Footpath Feasibility Study, which has also included a preliminary environmental review to meet the following objectives:

- Identify environmental resources associated with the study's alternative alignments;
- Evaluate potential impacts to environmental resources; and
- Provide recommendations for further study and/or coordination processes that may be required

It is Kimley-Horn's understanding that as a federal undertaking, this project would be subject to the National Environmental Policy Act (NEPA) and NEPA implementing regulations of FHWA and NPS.

The study area for this environmental review consists of a 50-foot buffer surrounding the proposed limits of disturbance (LOD) of each of the alternative alignments, derived from the Draft 30% Plans dated January 30, 2019. The study area and proposed limits of disturbance (LOD) for each alignment are shown in **Attachment A**. Preliminary impact analyses were performed based on the proposed LODs for each alignment, as shown in the Draft 30% Plans.

Alignments

As of the date of this report, the alignments of the footpath being considered in the Georgetown Pike Footpath feasibility analysis include:

- **Alignment 1a**: This alignment would connect to Difficult Run Trail approximately 1,500 feet east of the existing Georgetown Pike road bridge and would cross Difficult Run via a pedestrian bridge. The footpath would continue south through a wooded area within Great Falls Park to the intersection of Towlston Road, then continue along the east side of Georgetown Pike within the public ROW or easements (to be acquired) to the west end of the Madeira School easement. Between the Difficult Run Trail and Towlston Road, the proposed footpath would consist of a 6-foot-wide crushed stone path with a 1-foot shoulder to either side, for a total width of 8 feet. Between Towlston Road and the southern terminus, the footpath would consist of a 6-foot paved path, a 2-foot crushed stone shoulder along the east side, and a 6-foot crushed stone shoulder and guardrail between the footpath and Georgetown Pike, for a total of 14 feet in width along Georgetown Pike.

- **Alignment 1b**: This alignment would connect to the Difficult Run Trail via a pedestrian bridge approximately 100 feet east of the existing Georgetown Pike Bridge over Difficult Run and would continue along the east side of Georgetown Pike within public ROW or easements to the Madeira School easement. The entire length of the footpath would consist of a 6-foot paved path, a 6-foot crushed stone shoulder and guardrail between the footpath and Georgetown Pike, and a 2-foot crushed stone shoulder along the far side.

- **Alignment 2**: This alignment includes the same bridge crossing of Difficult Run as Alignment 1B. The footpath would cross under the Georgetown Pike bridge south of Difficult Run and proceed up to the level of the roadway continue south along the west side of Georgetown Pike to Tebbs Lane. At this location, Alignment 2 crosses Georgetown Pike via a marked and signed pedestrian crossing and continues along the eastern edge of the roadway to the Madeira School easement. The entire length of the footpath would consist of a 6-foot paved path, a 6-foot crushed stone shoulder and guardrail between the footpath and Georgetown Pike, and a 2-foot crushed stone shoulder along the far side.

Environmental Review

Kimley-Horn conducted a review of publicly available geographic information systems (GIS) and database information to identify sensitive resources within the study area. A limited field review was conducted to verify the findings of the database review and to identify unmapped or previously unidentified environmental features. Field observations were documented and photographed and can be found in **Attachment B**.

WATER RESOURCES

Streams and Wetlands

Kimley-Horn conducted a desktop review of topographic mapping, aerial photography, U.S. Fish and Wildlife (USFWS) National Wetland Inventory (NWI) GIS data, U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) GIS data, National Resources Conservation Services (NRCS) Web Soil Survey data, and available Fairfax County GIS data to identify potential wetlands and water resources within the study area. This desktop review was supplemented with field observations. The following paragraphs summarize the water and wetland resources, identified through this review, located within or adjacent to the limits of the project, included as Figures 1 through 5 in Attachment A:

- Difficult Run, a perennial tributary to the Potomac River, is located within the northern portions of the study area. Difficult Run is also within a 100-year floodplain and a Resource Protection Area (RPA) per Fairfax County GIS mapping. Difficult Run has a drainage area of approximately 58 square miles.

- Rocky Run is a perennial tributary to Difficult Run located adjacent to the study area to the west. The study area intersects with the 100-year floodplain and RPA associated with Rocky Run. The drainage area of Rocky Run is approximately 7.5 square miles.

- An unnamed perennial tributary to Difficult Run is located within the eastern portion of the study area. Fairfax County GIS data shows that the stream is within a RPA. (Historical documents provided to FHWA by the Potomac Heritage Trail Association show this stream at Mathis Stream Branch.)

The NRCS Web Soil Survey identified two hydric soil map units within the study area, including Codorus and Hatboro soils, located within the Alignment 1a study area along the unnamed perennial tributary to Difficult Run, and Codorus silt loam, located along Difficult Run at the location of the proposed Alignments

1b and 2 bridge crossing. Hydric soils in these areas suggest that previously unidentified wetlands may be present and further evaluation is needed. A soil map is included in Attachment A, Figure 5. **Table 1 Error! Reference source not found.**provides a summary of the soils identified by NRCS within the project limits.

Table 1. Summary of Soils within the Project Limits

Soil Map Unit	Symbol	Hydric Status
Codorus and Hatboro soils, 0 to 2 percent slopes, occasionally flooded	30A	Yes
Codorus silt loam, 0 to 2 percent slopes, occasionally flooded	29A	Yes
Glenelg silt loam, 15 to 25 percent slopes	39D	No
Glenelg silt loam, 7 to 15 percent slopes	39C	No
Meadowville loam, 2 to 7 percent slopes	78B	No
Rhodhiss-Rock outcrop complex, 25 to 45 percent slopes	88E	No
Wheaton-Glenelg complex, 15 to 25 percent slopes	105D	No
Wheaton-Glenelg complex, 7 to 15 percent slopes	105C	No

A review of NWI data identified no mapped wetlands within the study area. However, unmapped wetlands and tributary streams may exist within the study area. A site-specific wetland delineation, conducted in accordance with U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual and confirmed by USACE, is recommended for the entire LOD of the project to determine the precise locations of wetlands and waters not shown on existing mapping resources.

A clear-span bridge over Difficult Run is proposed under all alternative alignments. Because Difficult Run has a drainage area greater than five square miles, all alignments would require a permit from the Virginia Marine Resources Commission (VMRC). A Joint Permit Application (JPA) would need to be submitted to VMRC.

If additional wetlands and streams are identified within the project limits of disturbance during a subsequent field wetland delineation, additional authorization may be required from VDEQ and USACE Norfolk District. It is Kimley-Horn's understanding that the proposed project would be classified as a Categorical Exclusion per FHWA regulations. It is therefore expected that the project would qualify for USACE Nationwide Permit (NWP) 23: Approved Categorical Exclusions. Per USACE Regulatory Guidance Letter 05-07, pre-construction notification (PCN) to USACE would be required. VDEQ has issued Section 401 Water Quality Certification for NWP 23, so no VDEQ Virginia Water Protection (VWP) permits are expected to be required. All permanent impacts to wetlands and streams that occur as a result of publicly funded linear transportation projects require compensatory mitigation.

Floodplains

The 100-year floodplain is defined by FEMA as an area subject to a one percent or greater chance of flooding in a given year. Consistent with FEMA's floodplain mapping, Map Number 51059C0155E, revised September 17, 2010, the study area is predominantly located in Zone X, an area of minimal flood hazard. The northern portion of the study area intersects with Zones A and AE of the 100-year floodplain associated with Difficult Run.

In addition to FEMA floodplains, Fairfax County recognizes two additional types of floodplains: minor floodplains, which have a drainage area greater than 70 acres but less than 360 acres; and major floodplains, which have a drainage area 360 acres or greater. Fairfax County GIS data indicates that the major and minor floodplains as mapped by the County are generally consistent with FEMA floodplain mapping.

A pedestrian bridge over Difficult Run is proposed under all alternative alignments. A floodplain study prepared in accordance with Fairfax County and federal standards is required for new bridges within floodplains to ensure that the project would not increase flood levels, the probability of flooding, or the potential for property loss and hazard to life. The Fairfax County Department of Land Development Services also requires review and approval of a Floodplain Use Determination Request for all work that takes place in a floodplain.

Resource Protection Areas

Resource Protection Areas (RPAs) are defined in the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO) as tidal wetlands, tidal shores, water bodies with perennial flow, and non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or perennial water bodies, as well as a 100-foot vegetated buffer area located adjacent to and landward of these features, and land within major floodplains associated with these features.

Upon review of Fairfax County GIS data, RPAs associated with Difficult Run, Rocky Run, and the unnamed tributary to Difficult Run were identified within the study area. All proposed alternative alignments would result in disturbance within RPAs due to the proposed crossing of Difficult Run. Alignment 1a would result in the greatest amount of RPA impact due to its location along the unnamed tributary to Difficult Run. Approximately 1,230 linear feet of Alignment 1a, 400 linear feet of Alignment 1b, and 550 linear feet of Alignment 2 are located within mapped RPAs associated with Difficult Run.

The Fairfax County CBPO states that passive recreation facilities such as boardwalks, trails, and pathways are exempt from compliance with RPA regulations, provided that the project adheres to state and local erosion and sediment control regulations and that disturbance within the RPA is minimized to the extent possible. A written request for an exemption may be required to be submitted to the Fairfax County Department of Land Development Services. A formal Water Quality Impact Assessment (WQIA) is not anticipated to be required.

PROTECTED SPECIES

Kimley-Horn conducted a desktop review and database searches of the USFWS Information for Planning and Conservation (IPaC) web application, the Center for Conservation Biology's (CCB) VaEagles Nest Locator, Virginia Department of Game and Inland Fisheries' (VDGIF) Virginia Fish and Wildlife Information Service (VaFWIS) database, VDGIF's Wildlife Environmental Review Map Service (WERMS), VDGIF's Northern Long-Eared Bat (NLEB) Winter Habitat and Roost Trees Application, VDGIF's Little Brown Bat (MYLU) and Tri-Colored Bat (PESU) Winter Habitat and Roosts Application, and the Virginia Department of Conservation and Recreation's (DCR) Natural Heritage Data Explorer (NHDE) to determine whether known or suspected federal- and state-listed T&E species, state-listed plants or insects, or natural heritage resources have been identified within the study area or within a two-mile radius of the study area. A summary of the databases maintained by the USFWS, CCB, VDGIF, and DCR reviewed for the proposed project is provided below. A copy of the database results are included in **Attachment C**.

USFWS

The USFWS Official Species List, dated October 31, 2018 and included within Attachment C, identified the following species that may occur within the study area:

- Northern Long-Eared Bat (*Myotis septentrionalis*) (NLEB) – Federally-listed as threatened. According to VDGIF's NLEB Winter Habitat and Roost Trees Application, no known NLEB winter hibernacula were identified within 0.25 mile of the study area, and no maternity roost trees were identified within 150 feet of the study area. In addition, no confirmed occurrences of this species were identified within a 2-mile radius of the study area in the VaFWIS Search Report. While Alignment 1a would require approximately 0.55-acre of tree clearing within Great Falls Park, incidental takes of individual NLEB due to tree clearing are not prohibited when tree clearing occurs outside of hibernaculum and roost tree areas, as documented in the Programmatic Biological Opinion on Final 4(d) Rule for NLEB (USFWS, 2016). Because the proposed project would take place outside of the referenced tree clearing ranges for NLEB hibernacula and roost trees, no impacts to NLEB are anticipated under each alternative alignment.

- Yellow Lance Clam (*Elliptio lanceoata*) – Federally-listed as threatened. No critical habitat has been designated for this species. No confirmed occurrences or protected habitat for this species were identified in the VaFWIS Search Report. Because no suitable habitat is present within the study area, no effects to this species are anticipated.

- Bald eagle (*Haliaeetus leucocephalus*) – Federally-protected under the Bald and Golden Eagle Protection Act. Kimley-Horn reviewed the CCB VaEagles Nest Locator on October 31, 2018 (Attachment C) to identify known active bald eagle (*Haliaeetus leucocephalus*) nests within 660 feet of the study area, the distance suggested by USFWS to avoid nest disturbance. No bald eagle nests were identified. Additionally, a review of the USFWS VA Bald Eagle Concentration Areas online mapping application revealed no bald eagle concentration areas within 660 feet of the study area. Therefore, the proposed project is unlikely to disturb bald eagles under each alternative alignment.

To ensure project compliance with Section 7 of the Endangered Species Act (ESA), coordination with the USFWS Virginia Field Office would consist of an online project review. If the project review determines that the project is unlikely to affect threatened and endangered species, designated critical habitat, and other Federal trust resources, a self-certification package would be submitted to USFWS. If the project review determines that the project may affect these resources, further coordination with USFWS would be required. Because no effects to species listed above are anticipated, submission of a self-certification package is anticipated and no individual coordination with USFWS is expected to be necessary.

VDGIF

The VDGIF VaFWIS Search Report, accessed October 31, 2018 (Attachment C), and the VDGIF WERMS database identified three documented occurrences of federal- and state-listed protected species within a 2-mile radius of the study area, including:

- Little Brown Bat (*Myotis lucifugus*) – state-listed as an endangered species. VDGIF's Little Brown Bat (MYLU) and Tri-Colored Bat (PESU) Winter Habitat and Roosts Application, accessed October 31, 2018, did not identify MYLU hibernacula within 0.25 mile of the project limits, or known maternity roost trees within 150 feet of the study area (Attachment C). No impacts to this species are anticipated under each alternative alignment, and no further coordination on this species with VDGIF would be required.

- Tri-Colored Bat (*Perimyotis subflavus*) – state-listed as an endangered species. VDGIF's MYLU and PESU Winter Habitat and Roosts Application, accessed October 31, 2018, did not identify PESU hibernacula within 0.25 mile of the project limits, or known maternity roost trees within 150 feet of the study area (Attachment C). No impacts to this species are anticipated under each alignment, and no further coordination on this species with VDGIF would be required.

- Wood Turtle (*Glyptemis insculpta*) – state-listed as a threatened species. In addition, Difficult Run is listed as a Threatened and Endangered Species Water, indicating that the stream is confirmed habitat for the wood turtle. The crossing of Difficult Run would require additional coordination with VDGIF. Construction activities within 900 feet of Difficult Run may be subject to a time-of-year restriction from April 1 to September 30 to protect wood turtle nesting areas.

The VaFWIS report and WERMS database also identified the following:

- Difficult Run is a tributary to the Potomac River, which is listed as a confirmed Anadromous Fish Use Stream. Because no alternative alignments would require in-stream work within Difficult Run, no impacts to anadromous fish within the Potomac River are anticipated, and no time-of-year restrictions for anadromous fish are expected to apply.

Additional coordination with VDGIF would be required to determine impacts and conservation measures related to the wood turtle.

DCR

A review of DCR's Natural Heritage Data Explorer (NHDE) identified the Potomac Gorge conservation site within the study area. The natural heritage resource of concern at this conservation site is the wood turtle, which would require coordination with VDGIF as discussed above. No further coordination with DCR is anticipated to be required.

Rocky Run and Difficult Run are also listed as part of the Potomac River Yellow Falls Stream Conservation Unit (SCU), which contains riparian habitat that supports rare aquatic plants, animals, or communities. A clear-span trail crossing of Difficult Run is proposed under all study alignments; however, no in-stream work or direct impacts to Difficult Run are proposed. Coordination with VDCR would consist of an online project review request and adherence with the recommendations received in response. No additional coordination with DCR is anticipated to be required.

HAZARDOUS MATERIALS

Environmental Data Resources, Inc. (EDR), a commercial database search and environmental risk information provider, was engaged by Kimley-Horn team members to search state and federal databases to identify and locate sites with known or potential presence of hazardous materials or wastes within a 0.5-mile radius from the centerline of each Alternative. EDR's findings are summarized below and included as **Attachment D** of this report.

As indicated in Table 2, EDR identified six Leaking Petroleum Storage Tanks (LTANKS) and one Underground Storage Tank (UST) within a 0.5-mile search radius of the study area. The EDR report indicates that all six LTANKS results are associated with leaking residential heating oil tanks that have been closed by VDEQ. The tank located at 8550 Georgetown Pike is located immediately adjacent to northbound Georgetown Pike at a higher elevation than the study area. Two releases have occurred at this property, both of which have been closed. A portion of this property is located within the proposed LOD of Alternatives 1a and 1b. The UST result is associated with a former gasoline station located approximately 800 feet west of the study area. The UST consists of a 500-gallon diesel tank that is identified as closed in the ground and at a lower elevation than the study area. The remaining identified tanks are located over 1,500 feet from the study area.

Table 2. EDR Report Results

Location	Database	Distance from the Study Area	Relative Elevation	Case Status
8550 Georgetown Pike McLean, Virginia 22102	VA LTANKS	Adjacent	Higher	PC 20053207: Closed PC 19931975: Closed
8612 Tebbs Lane McLean, Virginia 22102	VA UST	~800 feet	Lower	Closed in Ground
8740 Old Dominion Drive McLean, Virginia 22102	VA LTANKS	0.34 miles	Lower	Closed
921 Bellview Road McLean, Virginia 22102	VA LTANKS	0.39 miles	Higher	Closed
912 Saddleback Court McLean, Virginia 22102	VA LTANKS	0.43 miles	Higher	Closed
911 Saddleback Court McLean, Virginia 22102	VA LTANKS	0.45 miles	Higher	Closed
914 Saddleback Court McLean, Virginia 22102	VA LTANKS	0.46 miles	Higher	Closed

The EDR report identified one VA Spills orphan site, unmappable due to poor or inadequate address information, located in the vicinity of the intersection of Georgetown Pike and Kimberwicke Road, approximately 0.5-mile southeast of the study area. The specific site address is unknown; however, due to the distance from the study area, the VA Spills site is not likely to pose a risk to the project.

The findings discussed above are preliminary in nature. Prior to or during any acquisition of right-of-way or easements for this project, a full Phase I Environmental Site Assessment performed in accordance with the American Society for Testing and Materials (ASTM) method E1527-13 is recommended to identify any contamination/constructability concerns and any potential mitigations needed.

HISTORIC RESOURCES

Kimley-Horn reviewed the Virginia Department of Historic Resources' (VDHR) Virginia Cultural Resource Information System (V-CRIS) database to identify known or suspected historic or archaeological sites within the project limits that are listed on the National Register of Historic Places (NRHP) or eligible or potentially eligible for listing on the NRHP. A search of V-CRIS identified seven architectural resources that are listed in, eligible for, or potentially eligible for listing in the NRHP within the study area, including:

- VDHR ID 029-0466, Georgetown Pike – According to V-CRIS, Georgetown Pike is listed in the NHRP and the Virginia Landmark Register (VLR). The site includes an approximately 14-mile section of Georgetown Pike that begins at the boundary between the District of Columbia and Virginia on the south bank of the Potomac River, and terminates at the Leesburg Pike and Seneca Road junction southeast of the Loudoun County border. The boundary of the historic road bed consists of the entire VDOT-maintained ROW. The proposed LOD for all alternatives is partially located within the historic boundary of Georgetown Pike. Being on the NRHP does not preclude the footpath project from moving forward; coordination with VDHR and other agencies is needed for final design to move forward.

- VDHR ID 029-5639, Great Falls Park Historic District – According to V-CRIS, the Great Falls Park Historic District, also known as the Potomac Canal Historic District, is listed in the NRHP and the VLR. Much of the northern portion of the study area falls within the Potomac Canal Historic District.

- VDHR ID 029-0012, Drover's Rest – According to V-CRIS, Drover's Rest is eligible for listing on the NRHP. The site is an approximately 2-acre property with several structures, including a home believed to have been built between 1757 and 1785. Drover's Rest is located adjacently west of Georgetown Pike within the southern-most portion of the study area where Alternatives 1a, 1b, and 2 share the same alignment.

- VDHR ID 029-5119, The Madeira School – According to V-CRIS, The Madeira School is not evaluated, recommended eligible for listing on the NRHP. Built in 1931, the Madeira School is located on the Potomac River at 8328 Georgetown Pike and occupies a 413-acre lot bounded by the river, Georgetown Pike, and Difficult Run on the west, and Potomac Knolls on the east. The Madeira School property is located adjacently southeast of the study area. The proposed LOD for all three alternatives ends at the Madeira School property boundary.

- VDHR ID 029-5639-0009, Difficult Run Trail at Great Falls – The Difficult Run Trail has not been evaluated for NRHP eligibility, although it was recommended not eligible in 2016. V-CRIS identifies this footpath as a potentially contributing resource to the George Washington Memorial Parkway and Great Falls Park Historic Districts as a remnant of the former Miller's Landing Road. All proposed alternatives include a connection to the Difficult Run Trail.

- VDHR ID 029-5639-0021, Gauging Station at Difficult Run – The Gauging Station is listed as a potentially contributing resource to the George Washington Memorial Parkway and Great Falls Park Historic Districts. This resource has not been evaluated for NRHP eligibility but was recommended not eligible in 2007. The Gauging Station is adjacent to the location of the bridge crossing proposed under Alternatives 1b and 2.

- VDHR ID 44FX2380, Unnamed Archaeological Site – This site is believed to contain prehistoric petroglyphs. The exact location is unknown.

Formal consultation under Section 106 of the National Historic Preservation Act with VDHR, the State Historic Preservation Officer (SHPO), and other parties as identified through consultation would be required to determine if the project would result in adverse effects to these resources. Additional cultural resource studies may be required to identify unrecorded sites that may be eligible for listing in the NRHP. Additional information regarding historic resources within or adjacent to the study area can be found in **Attachment E, Historic Resources Review**.

ENVIRONMENTAL JUSTICE

Kimley-Horn reviewed data at the census block group level from the U.S. Census Bureau's 2010 Decennial Census and the 2017 American Community Survey to determine the presence of minority and low-income populations within the study area, respectively (Attachment F). To serve as a measure for comparison, census data for Fairfax County and Virginia were also reviewed. The study area lies within Census Tract 4801, Block Groups 3 and 4, and Census Tract 4803, Block Group 2, as identified in Figure 6 of Attachment A.

Minority Populations

As guided by the Council on Environmental Quality's Guidance Under the National Environmental Policy Act, and in accordance with the terms of Executive Order (EO) 12898, a minority population is found to exist where either (a) the minority population of the affected area exceeds 50 percent of the total population, or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage of the surrounding jurisdiction.

Table 3. Minority Population by Census Block Group, 2010

Location		Demographic Total	Total Minority	Percent Minority
Census Tract 4801	Block Group 3	841	93	11.1%
	Block Group 4	712	183	25.7%
Census Tract 4803	Block Group 2	757	108	14.2%
Fairfax County		1,081,726	677,990	37.3%
Virginia		8,001,024	2,514,172	31.4%

Source: U.S. Census Bureau 2010 SF1 100% Data, QT-P6: Race Alone or in Combination and Hispanic or Latino

As indicated in Table 3, above, none of the census block groups within the study area contain a minority population exceeding 50 percent, nor the threshold set by Fairfax County, at 37.3%. Therefore, in accordance with EO 12898, no minority populations are present within the study area.

Low-Income Populations

In accordance with the terms of FHWA Order 6640.23A and USDOT Order 5610.2(a), low-income persons include persons whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines for the United States.

Table 4. Median Household Income by Census Block Group

Location		Median Household Income
Census Tract 4801	Block Group 3	$174,125
	Block Group 4	$244,286
Census Tract 4803	Block Group 2	$250,000+
Fairfax County		$117,515
Virginia		$68,766
HHS 2017 Poverty Guidelines		$24,600

Source: 2013-2017 American Community Survey 5-Year Estimate, Median Household Income in the Past 12 Months (in 2017 Inflation-Adjusted Dollars)

As indicated in Table 4 above, none of the census block groups within the study area has a median household income at or below the 2017 HHS poverty threshold, at $24,600 for a family of four. As such, no low-income populations are present within the study area.

SECTION 4(f) AND SECTION 6(f)

Kimley-Horn reviewed available GIS data to determine whether the proposed alignment options would require a use of properties that qualify for protection under Section 4(f) of the Department of Transportation Act. Section 4(f) resources include publicly owned parks and recreational lands, wildlife and waterfowl refuges, and publicly or privately owned historic sites listed on or eligible for listing in the NRHP. A “use” of a Section 4(f) resource may include permanent acquisition or permanent easement, temporary occupancy, or constructive use.

The following potential Section 4(f) resources were identified within or adjacent to the study area:

Table 5. Section 4(f) Resources

Resource Name	Resource Type	Authority with Jurisdiction	Impacted Under Study Alignments:
Great Falls National Park and Historic District	National Park; NRHP-Listed Historic District	NPS	1a, 1b, 2
Cross County Trail (Difficult Run Section)	Existing Shared-Use Path; Potentially Eligible Historic Site contributing to Great Falls Park Historic District	NPS	1a, 1b, 2
Georgetown Pike	NRHP-Listed Historic Site	VDHR	1a, 1b, 2
Drover's Rest	NRHP-Eligible Historic Site	VDHR	1a, 1b, 2
Madeira School	Potentially Eligible Historic Site	VDHR	1a, 1b, 2
Gauging Station at Difficult Run	Potentially Eligible Historic Site contributing to Great Falls Park Historic District	VDHR	1b, 2

All proposed alignments would result in a direct, permanent use of the Difficult Run Trail, Great Falls Park and Historic District, and the Georgetown Pike historic road bed. Permanent and/or temporary uses of Drover's Rest and the Madeira School property may also be required depending on final design and/or construction methods. Because the proposed project consists of the construction of a recreational trail to improve access to existing parks and trails, it is not anticipated that the project would jeopardize the existing use of Great Falls Park and the Difficult Run Trail as recreational facilities. Coordination with NPS and VDHR pursuant to Section 4(f) would be required to determine if the necessary uses of these properties would qualify for a *de minimis* determination. If, as a result of the Section 106 process described above, VDHR or NPS determines that the project would result in an adverse effect to one or more historic properties, individual Section 4(f) evaluations may be required.

Section 6(f)

The Land and Water Conservation Fund Act (LWCFA) of 1965 (16 USC 4601-4 et seq.) established a funding source to assist state and federal agencies in the acquisition and development of public outdoor recreational areas and facilities. Section 6(f) of the LWCFA requires that all properties acquired or developed, either partially or wholly, with Land and Water Conservation Fund money must be maintained as such in perpetuity. No Section 6(f) resources were identified within the study area.

COMMUNITY FACILITIES

Kimley-Horn reviewed available comprehensive and master plans and local GIS data to identify existing or planned recreational, bicycle, and pedestrian facilities and community services within the project limits.

There are currently no sidewalks provided on either side of Georgetown Pike within the study area. Bicycles are permitted to use Georgetown Pike with caution. The Difficult Run section of the Cross County Trail is located at the northern terminus of the study area. The Cross County Trail is a 40-mile multi-use trail through the entirety of Fairfax County that allows pedestrian, bicycle, and equestrian uses. The Cross County Trail connects to numerous other local and regional trails such as the Washington & Old Dominion Trail, the Fairfax County Parkway Trail, several stream valley trail systems, and the Great Falls Park trail system. The proposed project would connect with the Cross County Trail and provide a new southern extension.

The proposed project is located within the McLean Planning District for both the Fairfax County Comprehensive Plan and the Parks and Recreation System Master Plan. No specific improvements to

trail connections along Georgetown Pike are mentioned in the Fairfax County Parks and Recreation System Master Plan, although enhancing connectivity among local and regional parks and trails is a primary goal. Additionally, MWCOG's 2015 Bicycle and Pedestrian Plan identifies a need for a multi-use path along Georgetown Pike from I-495 to Route 7.

Aside from the Section 4(f) resources discussed in the previous section, and the Cross County Trail described above, a review of Fairfax County GIS data determined that no community facilities, including educational facilities, places of worship, emergency services, healthcare facilities, governmental facilities, post offices, libraries, museums, performing arts centers, sports centers, or commuter lots are located within the study area.

Conclusions

This environmental review of the area of the potential Georgetown Pike Footpath project showed there are no fatal flaws with moving the project forward from the current feasibility study into final design and construction. Additional detailed studies will be needed (e.g., hydraulics study for a pedestrian bridge over Difficult Run) and approvals and permits will need to be obtained; however, these studies, approvals, and permits appear to be possible with relatively straightforward processes by the agency or agencies that will lead this project into design and construction and into subsequent operations and maintenance.

Attachments

Attachment A – Figures
- Figure 1 – Topographic Vicinity
- Figure 2 – Study Area
- Figure 3 – NWI, NHD, and Fairfax County GIS
- Figure 4 – Floodplains
- Figure 5 – NRCS Web Soil Survey
- Figure 6 – Census Block Groups

Attachment B – Photo Log

Attachment C – Threatened and Endangered Species

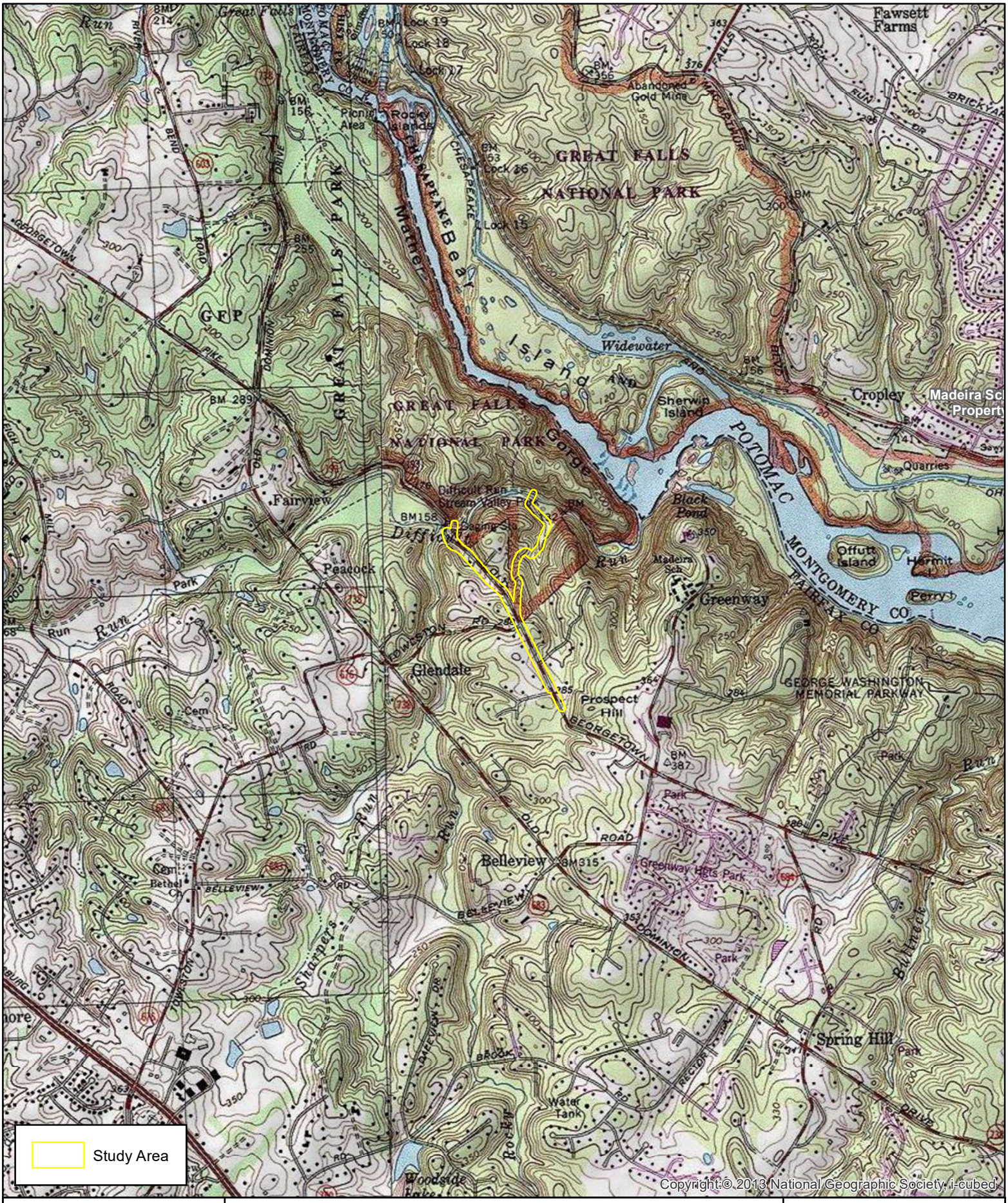
Attachment D – Hazardous Materials Review

Attachment E – Historic Resources Review

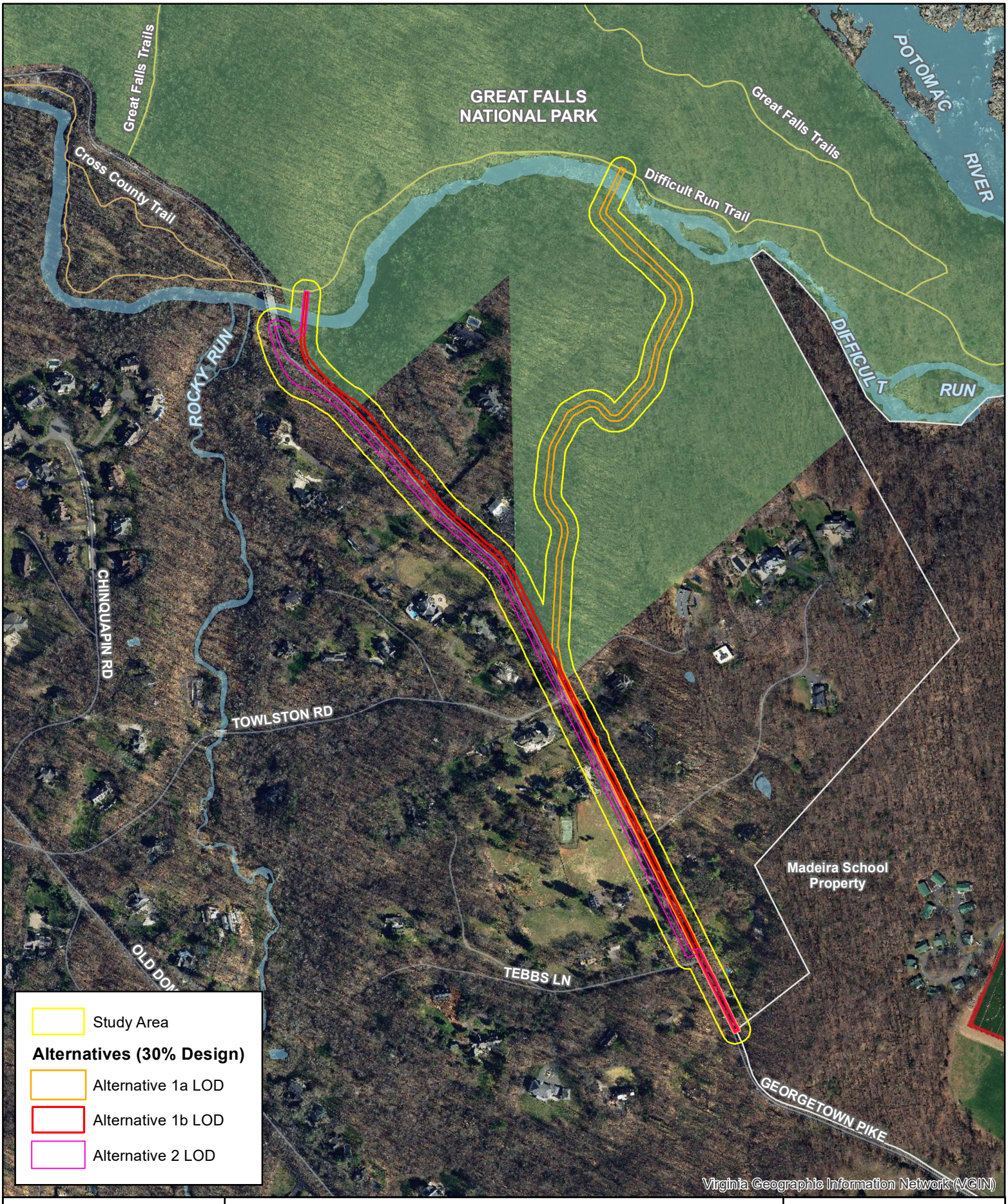
Attachment F – Environmental Justice Review

ATTACHMENT A

FIGURES

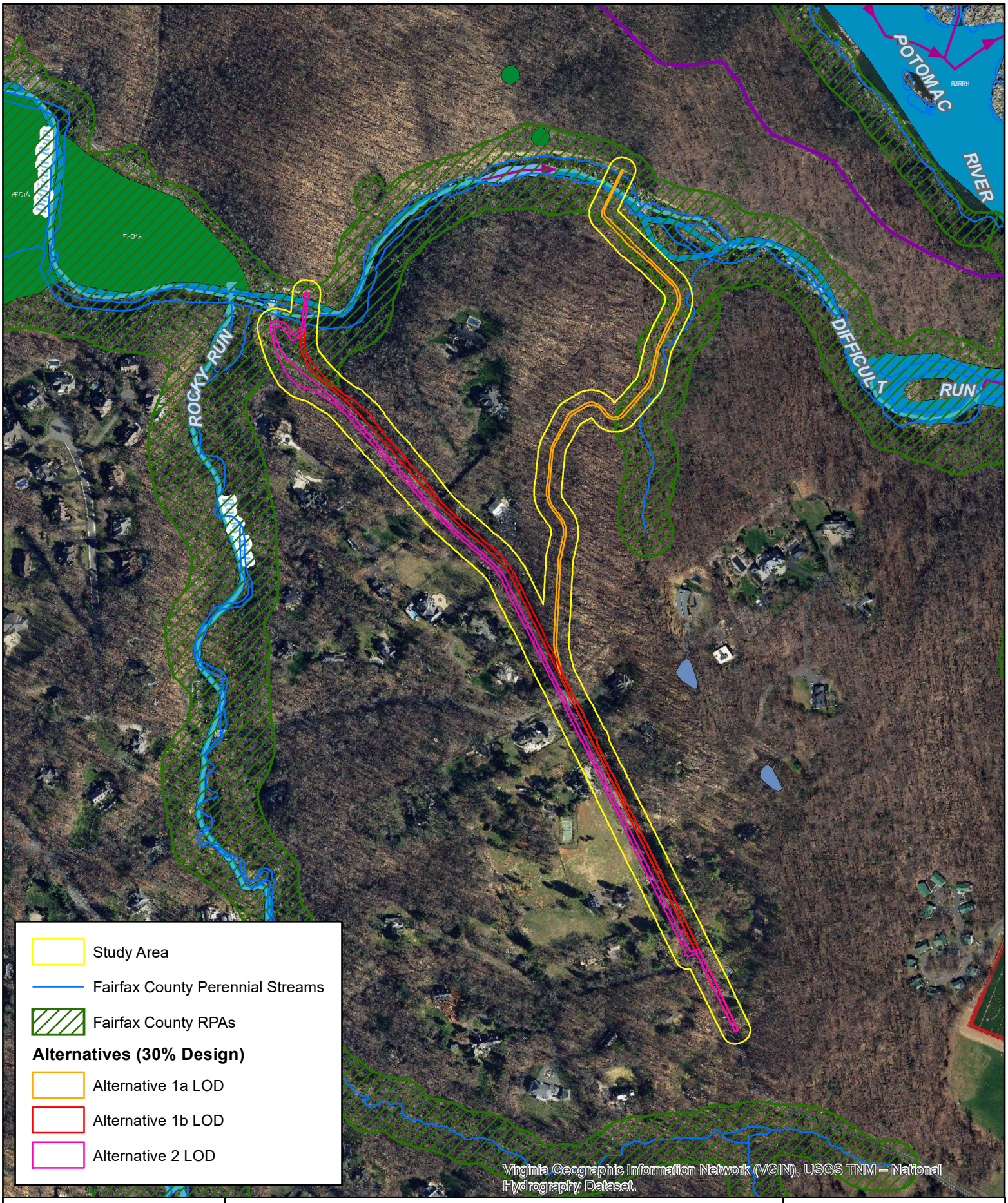


Kimley»Horn	PROJECT: GEORGETOWN PIKE PRELIMINARY ENVIRONMENTAL REVIEW FAIRFAX COUNTY, VA	**FIGURE 1: Topographic Vicinity Map**
	CREATED BY: L. DeLIO — 1 IN = 2,000 FT	
	DATE: 3/16/2019 — KHA PROJECT NUMBER: 110243018	



Kimley»Horn	PROJECT: GEORGETOWN PIKE PRELIMINARY ENVIRONMENTAL REVIEW FAIRFAX COUNTY, VA	
	CREATED BY: L. DeLIO	1 IN = 500 FT
	DATE: 4/2/2019	KHA PROJECT NUMBER: 110243018

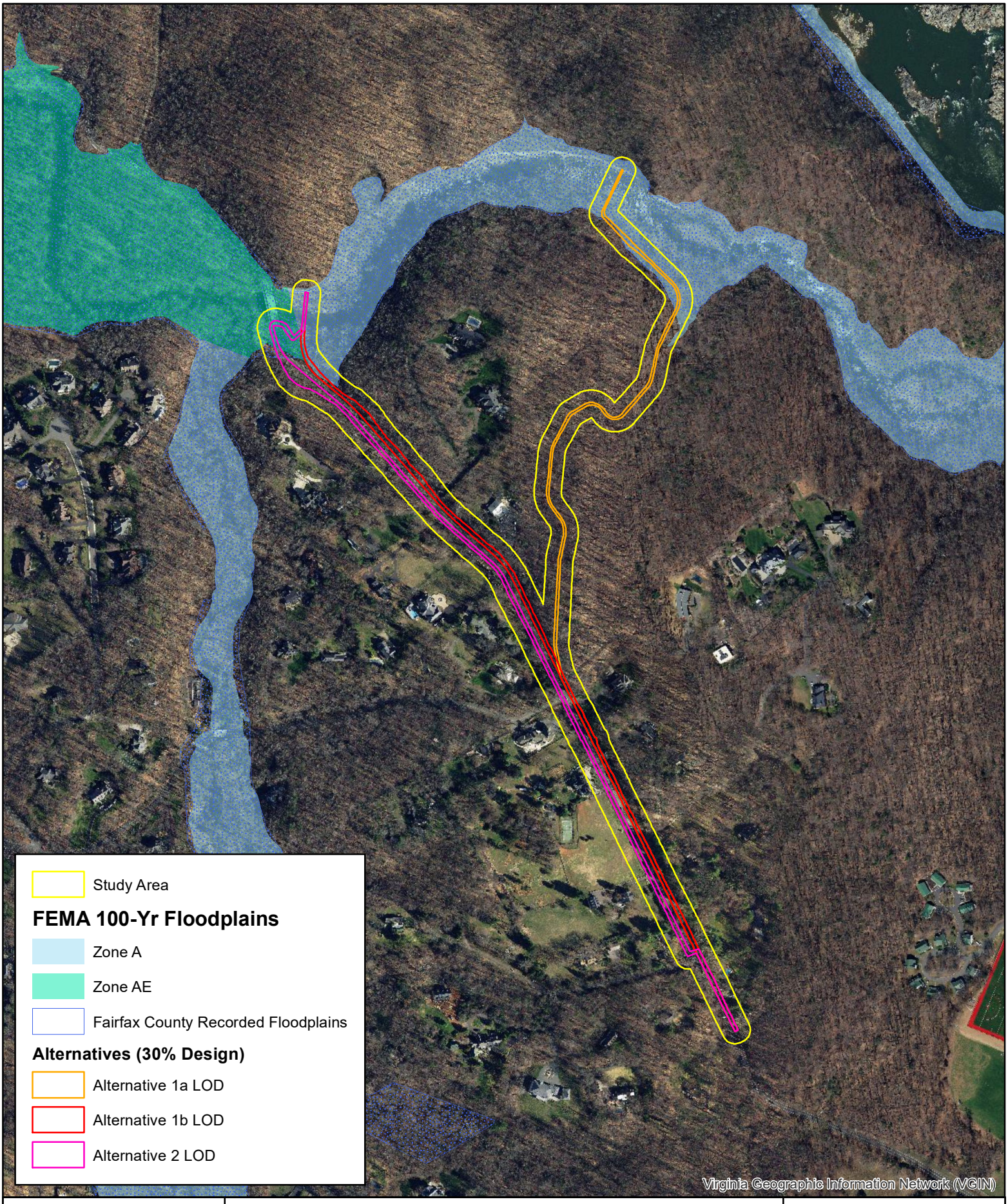
FIGURE 2:
Study Area



Kimley»Horn

PROJECT: GEORGETOWN PIKE PRELIMINARY ENVIRONMENTAL REVIEW FAIRFAX COUNTY, VA	
CREATED BY: L. DeLIO	1 IN = 500 FT
DATE: 3/16/2019	KHA PROJECT NUMBER: 110243018

FIGURE 3:
NWI, NHD, and Fairfax County GIS



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PROJECT: GEORGETOWN PIKE PRELIMINARY ENVIRONMENTAL REVIEW
FAIRFAX COUNTY, VA

CREATED BY: L. DeLIO	1 IN = 500 FT
DATE: 3/16/2019	KHA PROJECT NUMBER: 110243018

FIGURE 4: Floodplains



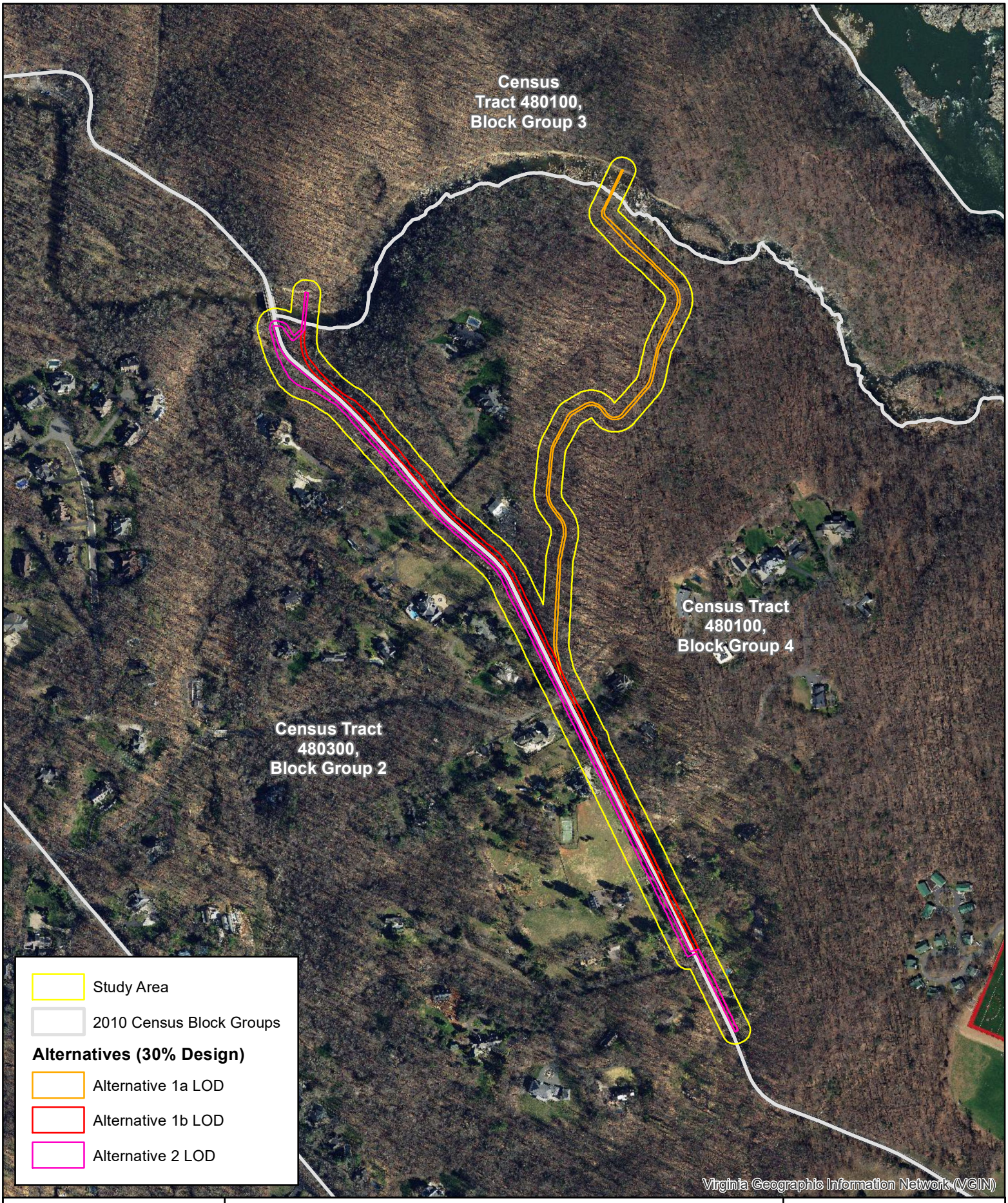
Kimley»Horn

PROJECT: GEORGETOWN PIKE PRELIMINARY ENVIRONMENTAL REVIEW
FAIRFAX COUNTY, VA

CREATED BY: L. DeLIO | 1 IN = 500 FT

DATE: 3/16/2019 | KHA PROJECT NUMBER: 110243018

FIGURE 5:
NRCS Web Soil Survey



Kimley»Horn	PROJECT: GEORGETOWN PIKE PRELIMINARY ENVIRONMENTAL REVIEW FAIRFAX COUNTY, VA	**FIGURE 6: Census Block Groups**
	CREATED BY: L. DeLIO	1 IN = 500 FT
	DATE: 3/16/2019	KHA PROJECT NUMBER: 110243018

ATTACHMENT B

PHOTO LOG



Photo 1. Difficult Run Stream beneath Georgetown Pike Road Bridge, May 2, 2018



Photo 2. Beneath Georgetown Pike Road Bridge, May 2, 2018



Photo 3. Difficult Run Stream, May 2, 2018



Photo 4. May 2, 2018



Photo 5. Difficult Run Stream, May 2, 2018



Photo 6. USGS Water Quality Monitoring Station for Difficult Run, May 2, 2018



Photo 7. Culvert, May 2, 2018



Photo 8. Difficult Run Trail, May 2, 2018



Photo 9. May 2, 2018



Photo 10. Difficult Run Stream and Difficult Run Trail, May 2, 2018



Photo 11. Difficult Run Stream, May 2, 2018



Photo 12. May 2, 2018



Photo 13. Georgetown Pike Road Bridge, May 2, 2018



Photo 14. Soils, May 2, 2018



Photo 15. Stream Gage, May 2, 2018



Photo 16. May 2, 2018



Photo 17. Georgetown Pike facing south, May 2, 2018.



Photo 18. May 2, 2018



Photo 19. May 2, 2018



Photo 20. May 2, 2018



Photo 21. May 2, 2018



Photo 22. View of Drover's Rest Property from Georgetown Pike. May 2, 2018



Photo 23. View of Drover's Rest Property from Georgetown Pike. May 2, 2018



Photo 24. Groundwater. May 2, 2018

ATTACHMENT C

THREATENED AND ENDANGERED SPECIES REVIEW

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:
Consultation Code: 05E2VA00-2019-SLI-0566
Event Code: 05E2VA00-2019-E-01266
Project Name: Georgetown Pike

October 31, 2018

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.

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: 05E2VA00-2019-SLI-0566

Event Code: 05E2VA00-2019-E-01266

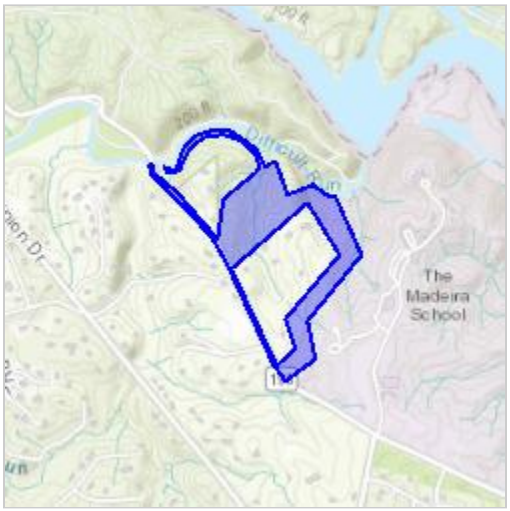
Project Name: Georgetown Pike

Project Type: DEVELOPMENT

Project Description: Threatened and Endangered species review

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.972154930101794N77.2417738882841W



Counties: Fairfax, 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

Clams

NAME	STATUS
Yellow Lance *Elliptio lanceolata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4511	Threatened

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.

REFUGE INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Site Location

38,58,30.3 -77,14,32.9
is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Search Point is at map center

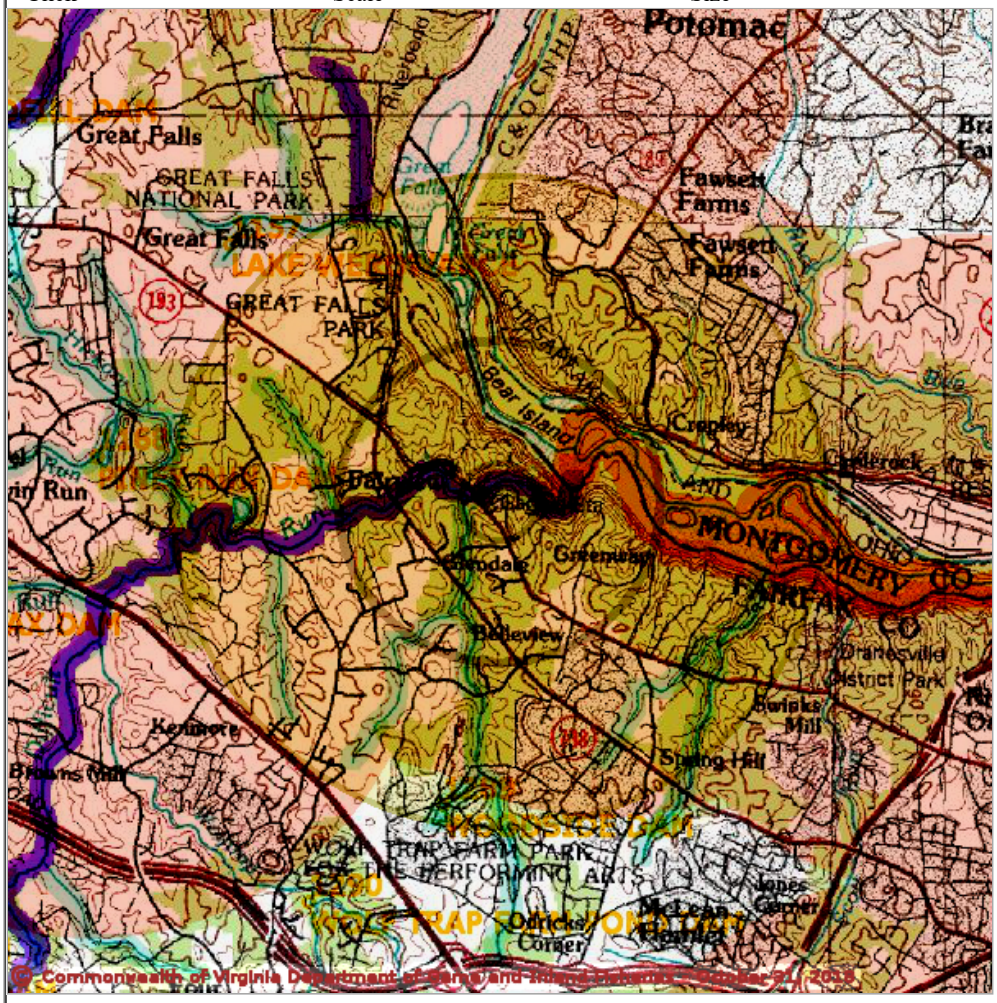
Base Map Choices
Topography

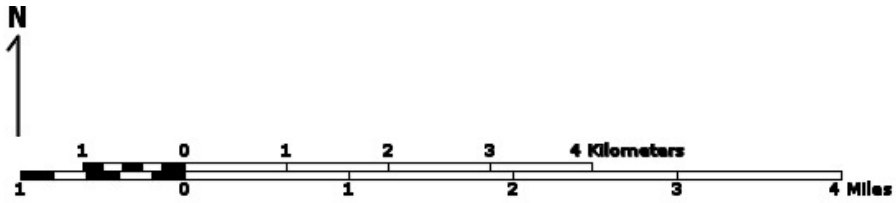
Map Overlay Choices
Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous

Map Overlay Legend

Refresh Browser Page

Map Click Pan Id M Map Scale In Zoom Out Screen Size Small Size Big Help





Point of Search 38,58,30.3 -77,14,32.9
Map Location 38,58,30.3 -77,14,32.9

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 300944 and top 4321203. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The

T & E Waters

Federal

State

Predicted Habitat WAP Tier I & II

Aquatic

Terrestrial

Trout Waters

Class I - IV

Class V - VI

Anadromous Fish Reach

Confirmed

Potential

123 Impediment

Position Rings 1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts

map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2018-10-31 14:35:46 (qa/qc March 21, 2016 12:20 - tn=942148.0 dist=3218.688 I)
$poi=38.9750833 -77.2424722

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VaFWIS Search Report Compiled on 10/31/2018, 2:34:55 PM

Help

Known or likely to occur within a **2 mile radius around point 38,58,30.3 -77,14,32.9** in **059 Fairfax County, VA**

View Map of Site Location

699 Known or Likely Species ordered by Status Concern for Conservation (displaying first 32) (32 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060029	FT	IIa	Lance, yellow	Elliptio lanceolata		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus	Yes	BOVA,SppObs,HU6
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus	Yes	BOVA,SppObs,HU6
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes	BOVA,TEWaters,Habitat,SppObs,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	Sparrow, Henslow's	Ammodramus henslowii		BOVA
100155	ST	Ia	Skipper, Appalachian grizzled	Pyrgus wyandot		BOVA,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata	Yes	BOVA,SppObs,HU6
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA,HU6
040306		Ia	Warbler, golden-	Vermivora chrysoptera		BOVA

			winged			
100248		Ia	Fritillary, regal	Speyeria idalia idalia		BOVA,HU6
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		BOVA,HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040033		IIa	Egret, snowy	Egretta thula		BOVA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040181		IIa	Tern, common	Sterna hirundo		BOVA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea	Potential	BOVA,BBA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
060071		IIa	Lampmussel, yellow	Lampsilis cariosa		BOVA
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus	Potential	BOVA,BBA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii	Yes	BOVA,BBA,SppObs,HU6
070020		IIc	Amphipod, Pizzini's	Stygobromus pizzinii		HU6
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius		BOVA,HU6
100166		IIc	Skipper, Dotted	Hesperia attalus slossonae		HU6

To view **All 699 species** View 699

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

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams (1 records)

View Map of All Anadromous Fish Use Streams

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE*	Highest Tier**	
C64	Potomac river	Confirmed	6		IV	Yes

Impediments to Fish Passage (1 records)

View Map of All Fish Impediments

ID	Name	River	View Map
1289	WOODSIDE DAM	TR-ROCKY RUN	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters (10 Reaches)

View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Difficult Run (021586)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (022262)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (024652)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (025997)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (026319)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (028927)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (029101)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (029302)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (037890	ST	030062	ST	Ia	Turtle,	Glyptemys	Yes

)					wood	insculpta	

To view **All 10 Threatened and Endangered Waters records** View 10

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations

(99 records - displaying first 20 , 6 Observations with Threatened or Endangered species)

View Map of All Query Results
Species Observations

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
302158	SppObs	Aug 25 2003	J. Gates	4	SE	I	Yes
65424	SppObs	May 2 2002	Joseph C. Mitchell (collector)	1	ST	I	Yes
8794	SppObs	May 25 1994	SUSAN A. BLOOMFIELD, , NATURAL RESOURCE MANAGEMENT SPECIALIST, , GREAT FALLS PARK	1	ST	I	Yes
3107	SppObs	Jun 24 1928	DCR/Div. Natural Heritage	1	ST	I	Yes
364530	SppObs	Jan 1 1900		2	ST	I	Yes
63458	SppObs	Jul 27 1984	S. W. Gotte	1	SS	III	Yes
512	SppObs	Jan 1 1900		1		II	Yes
622633	SppObs	Jun 27 2014	Michael; Meador| Wayne; Starnes	20		III	Yes
615995	SppObs	Oct 11 2012	Jason; Cessna	16		III	Yes
615544	SppObs	Aug 20 2012	Shannon; Curtis| Emma; Gutzler| Joseph; Sanchirico	8		III	Yes
608318	SppObs	Sep 9	Shannon; Curtis| Heather; Ambrose|	21		III	Yes

		2010	Christopher; Mueller| Chad; Grupe| Eric; Forbes| LeAnne; Astin				
316910	SppObs	Jun 24 2006	Jason Gibson	20		III	Yes
308200	SppObs	Jul 16 2004	Matt Handy	19		III	Yes
308380	SppObs	Jun 8 2004	Alex Barron	2		III	Yes
301198	SppObs	Oct 16 2003	Mike Mangold (Principle Permittee), U. S. F. W. S	2		III	Yes
300922	SppObs	Aug 25 2002	Lucy Spelman, permittee/Cheryl Tanner Collector	3		III	Yes
303609	SppObs	Jul 17 2002	Matt Handy	16		III	Yes
67869	SppObs	Jun 8 2001	Rick Browder (Principle Permittee)	4		III	Yes
59677	SppObs	Aug 12 1999	MS. AMY MAHER, COUNTY OF FAIRFAX, DEPT. OF PUBLIC WORKS	17		III	Yes
425244	SppObs	Aug 12 1999	VCU - INSTAR	17		III	Yes

Displayed 20 Species Observations

Selected 99 Observations View all 99 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species (6 Reaches)

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

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Bullneck Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Captain Hickory Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Rocky Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700082)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
040038			Bittern, American	Botaurus lentiginosus	Yes

Virginia Breeding Bird Atlas Blocks (6 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
53203	Falls Church, CW	56		III	Yes
53201	Falls Church, NW	88		II	Yes
53215	Rockville, SW	56		II	Yes
52216	Seneca, SE	79		II	Yes
52204	Vienna, CE	50		III	Yes
52202	Vienna, NE	65		III	Yes

Public Holdings: (2 names)

Name	Agency	Level
Chesapeake and Ohio Canal National Historical Park	National Park Service	Federal
George Washington Memorial National Parkway	National Park Service	Federal

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

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
059	Fairfax	559	FESE	I

USGS 7.5' Quadrangles:
Vienna
Seneca
Falls Church
Rockville

USGS NRCS Watersheds in Virginia:

N/A

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

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
PL22	Difficult Run	67	ST	I
PL23	Potomac River-Nichols Run-Scott Run	69	SE	I

Compiled on 10/31/2018, 2:34:55 PM I942148.0 report=all searchType= R dist= 3218.688 poi= 38,58,30.3 -77,14,32.9

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1 Species Observations where Bat, tri-colored (050027) observed

38,58,30.3 -77,14,32.9 is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, SppObs

Map Overlay Legend

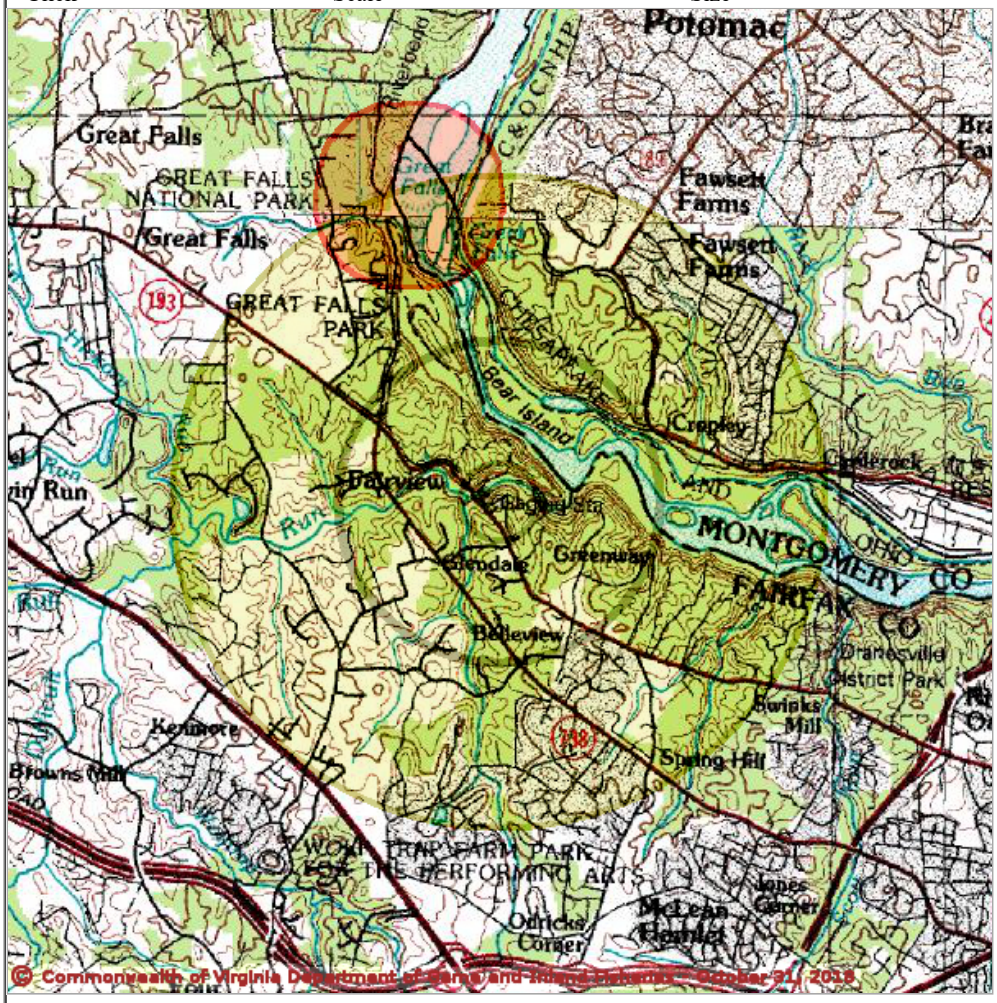
Position Rings 1 mile and 1/4 mile at the Search Point

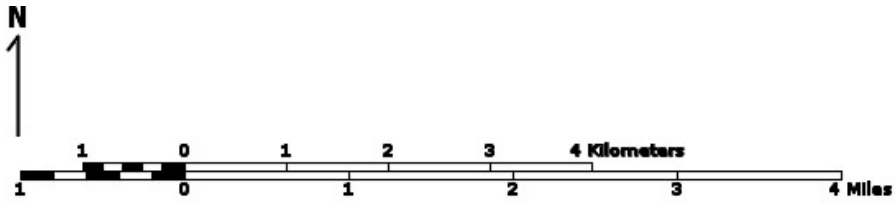
2 mile radius Search Area

Data Observation Site

Refresh Browser Page

Map Click Pan Id M Map Scale In Zoom Out Screen Size Small Size Big Help





Point of Search 38,58,30.3 -77,14,32.9
Map Location 38,58,30.3 -77,14,32.9

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 300944 and top 4321203. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The

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are from the United States Department of the Interior, United States Geological Survey.
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http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2018-10-31 14:40:47 (qa/qc March 21, 2016 12:20 - tn=942148.1 dist=3218.688 I)
$poi=38.9750833 -77.2424722

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Virginia Department of Game and Inland Fisheries

10/31/2018 2:40:04 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 10/31/2018, 2:40:04 PM

Help

Known or likely to occur within a **2 mile radius around point 38.9750833 -77.2424722**
in **059 Fairfax County, VA**
where (050027) **Bat, tri-colored** observed.

View Map of
Site Location

Species Observations where Bat, tri-colored (050027) observed

(1 records , 1 Observation with Threatened or Endangered species)

View Map of All Query Results
Species Observations where Bat, tri-colored (050027) observed

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
302158	SppObs	Aug 25 2003	J. Gates	4	SE	I	Yes

Displayed 1 Species Observations where Bat, tri-colored (050027) observed

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**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
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USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
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audit no. 942148 10/31/2018 2:40:04 PM Virginia Fish and Wildlife Information Service

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Virginia Department of Game and Inland Fisheries

10/31/2018 2:45:53 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 10/31/2018, 2:45:53 PM

Help

Known or likely to occur within a **2 mile radius around point 38.9750833 -77.2424722**
in **059 Fairfax County, VA**
where (030062) **Turtle, wood** observed.

View Map of
Site Location

Threatened and Endangered Waters where Turtle, wood (030062) observed

(10 Reaches)

View Map of All
Threatened and Endangered Waters

Stream Name	T&E Waters Species							View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name						
Difficult Run (021586)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (022262)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (024652)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (025997)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (026319)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (028927)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (029101)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (029302)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes
Difficult Run (037890)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta		Yes

To view **All 10 Threatened and Endangered Waters records** View 10

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

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Species Observations where Turtle, wood (030062) observed

(4 records , 4 Observations with Threatened or Endangered species)

View Map of All Query Results
Species Observations where Turtle, wood (030062) observed

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
65424	SppObs	May 2 2002	Joseph C. Mitchell (collector)	1	ST	I	Yes
8794	SppObs	May 25 1994	SUSAN A. BLOOMFIELD, , NATURAL RESOURCE MANAGEMENT SPECIALIST, , GREAT FALLS PARK	1	ST	I	Yes
3107	SppObs	Jun 24 1928	DCR/Div. Natural Heritage	1	ST	I	Yes
364530	SppObs	Jan 1 1900		2	ST	I	Yes

Displayed 4 Species Observations where Turtle, wood (030062) observed

Habitat Predicted for Aquatic WAP Tier I & II Species where Turtle, wood (030062) observed

(6 Reaches)

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

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Bullneck Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Captain Hickory Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Difficult Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Rocky Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700081)	ST	030062	ST	Ia	Turtle,	Glyptemys	Yes

					wood	insculpta	
tributary (20700082)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species where Turtle, wood (030062) observed

N/A

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

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
PL22	Difficult Run	67	ST	I
PL23	Potomac River-Nichols Run-Scott Run	69	SE	I

Compiled on 10/31/2018, 2:45:53 PM I942148.1 report=BOVA searchType= R dist= 3218.688 poi= 38.9750833 -77.2424722

audit no. 942148 10/31/2018 2:45:53 PM Virginia Fish and Wildlife Information Service

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Threatened and Endangered Waters where Turtle, wood (030062) observed

38,58,30.3 -77,14,32.9 is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, TEWaters

Map Overlay Legend

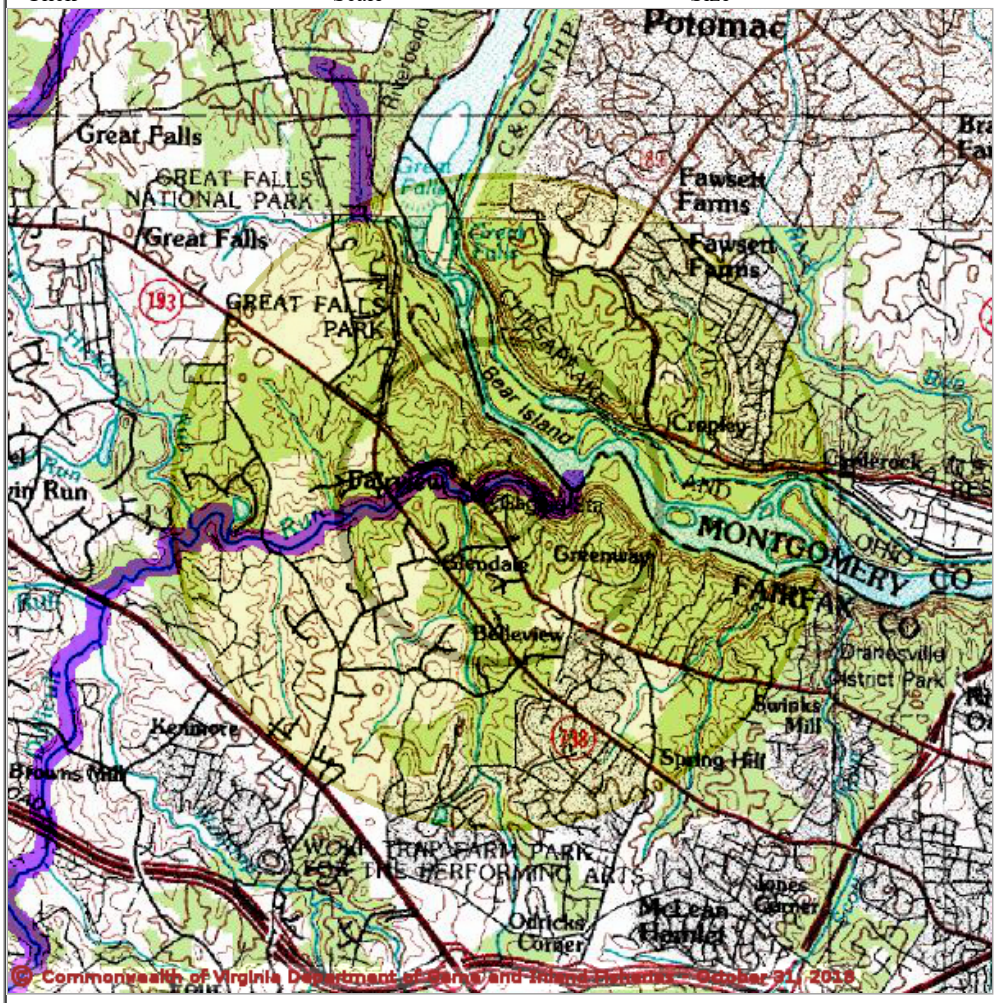
T & E Waters
Federal
State

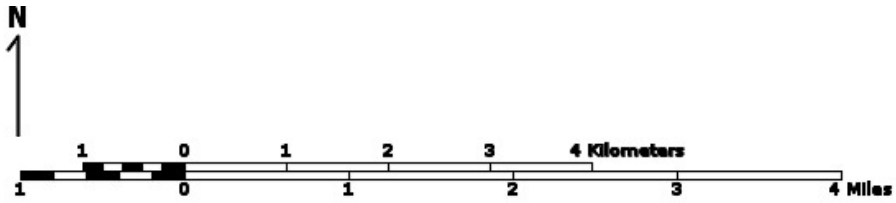
Position Rings
1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

Refresh Browser Page

Map Click Pan Id M Map Scale In Zoom Out Screen Size Small Size Big Help





Point of Search 38,58,30.3 -77,14,32.9
Map Location 38,58,30.3 -77,14,32.9

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 300944 and top 4321203. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The

map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2018-10-31 14:46:42 (qa/qc March 21, 2016 12:20 - tn=942148.1 dist=3218.688 I)
$poi=38.9750833 -77.2424722

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1 Species Observations where Bat, little brown (050020) observed

38,58,30.3 -77,14,32.9 is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, SppObs

Map Overlay Legend

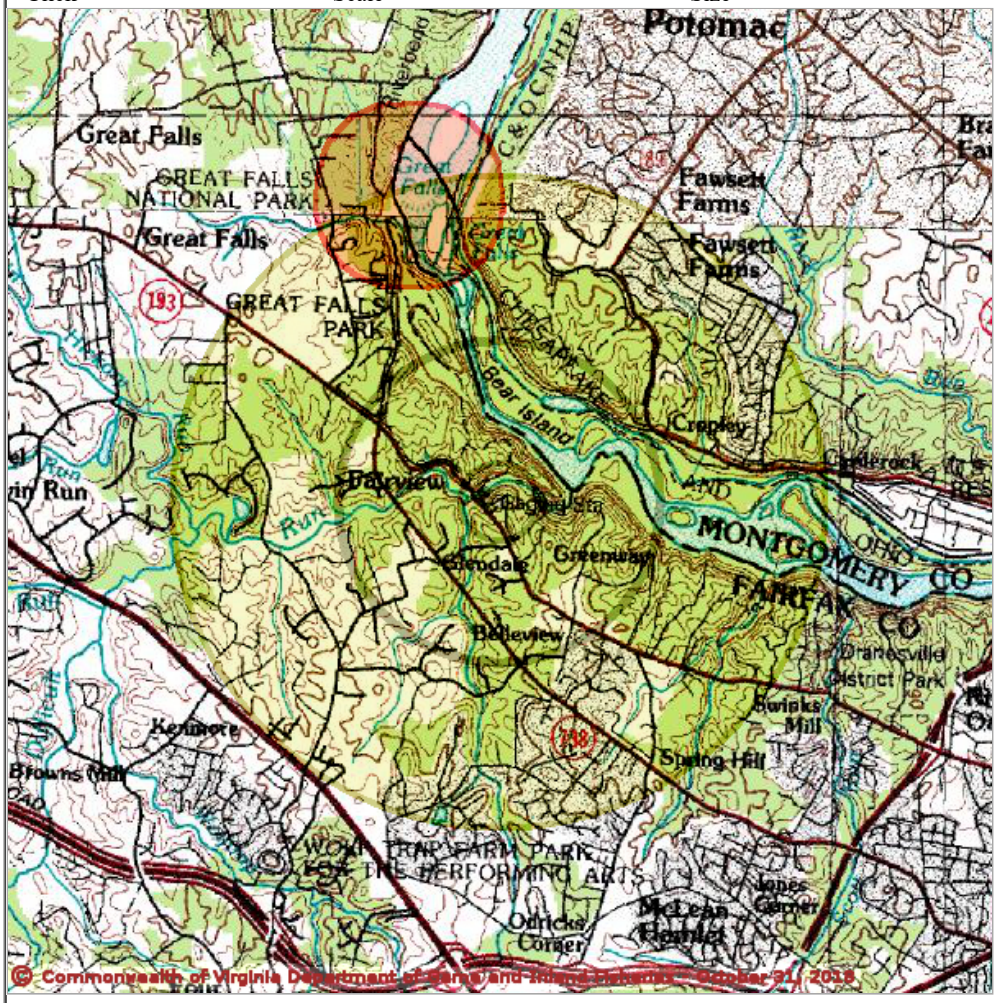
Position Rings 1 mile and 1/4 mile at the Search Point

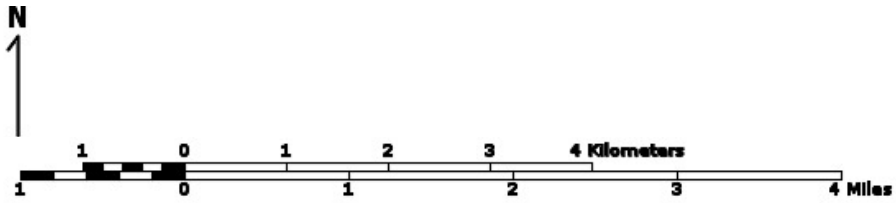
2 mile radius Search Area

Data Observation Site

Refresh Browser Page

Map Click Pan Id M Map Scale In Zoom Out Screen Size Small Size Big Help





Point of Search 38,58,30.3 -77,14,32.9
Map Location 38,58,30.3 -77,14,32.9

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 300944 and top 4321203. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The

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map assembled 2018-10-31 14:38:23 (qa/qc March 21, 2016 12:20 - tn=942148.1 dist=3218.688 I)
$poi=38.9750833 -77.2424722

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Virginia Department of Game and Inland Fisheries

10/31/2018 2:37:12 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 10/31/2018, 2:37:12 PM

Help

Known or likely to occur within a **2 mile radius around point 38.9750833 -77.2424722**
in **059 Fairfax County, VA**
where (050020) **Bat, little brown** observed.

View Map of
Site Location

Species Observations where Bat, little brown (050020) observed

(1 records , 1 Observation with Threatened or Endangered species)

View Map of All Query Results
Species Observations where Bat, little brown (050020) observed

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
302158	SppObs	Aug 25 2003	J. Gates	4	SE	I	Yes

Displayed 1 Species Observations where Bat, little brown (050020) observed

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

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
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Virginia Widlife Action Plan Conservation Opportunity Ranking:
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c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

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

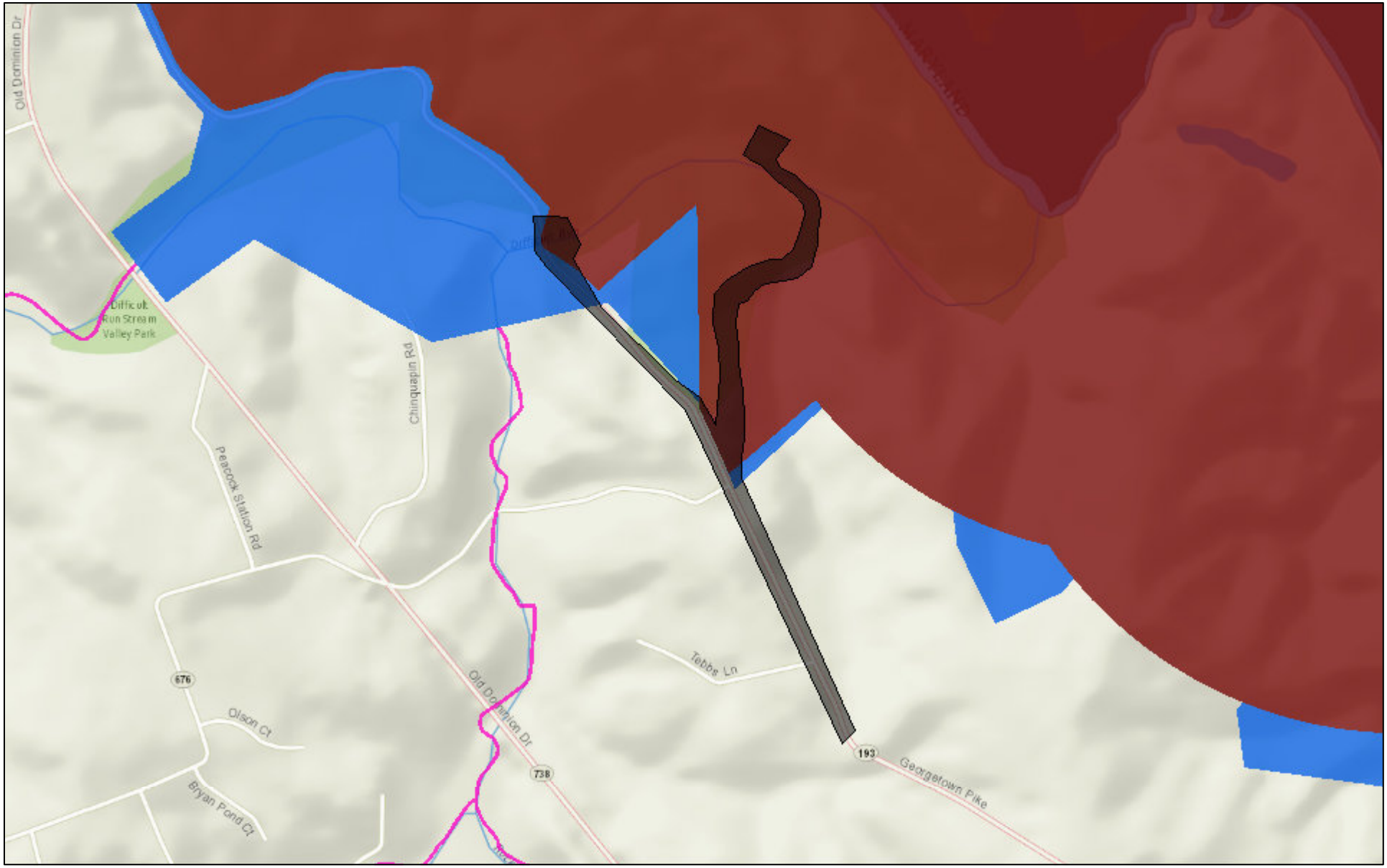
HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
PL23	Potomac River-Nichols Run-Scott Run	69	SE	I

Compiled on 10/31/2018, 2:37:12 PM I942148.1 report=BOVA searchType= R dist= 3218.688 poi= 38.9750833 -77.2424722

audit no. 942148 10/31/2018 2:37:12 PM Virginia Fish and Wildlife Information Service

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Georgetown Pike



January 3, 2019

1:13,166

0 0.1 0.2 0.4 mi

0 0.175 0.35 0.7 km

NH Screening Layer
- Conservation Site
- GLNHR
- SCU

Atlantic Pigtoe
- Predicted Suitable Habitat
- Diabase Soils Present

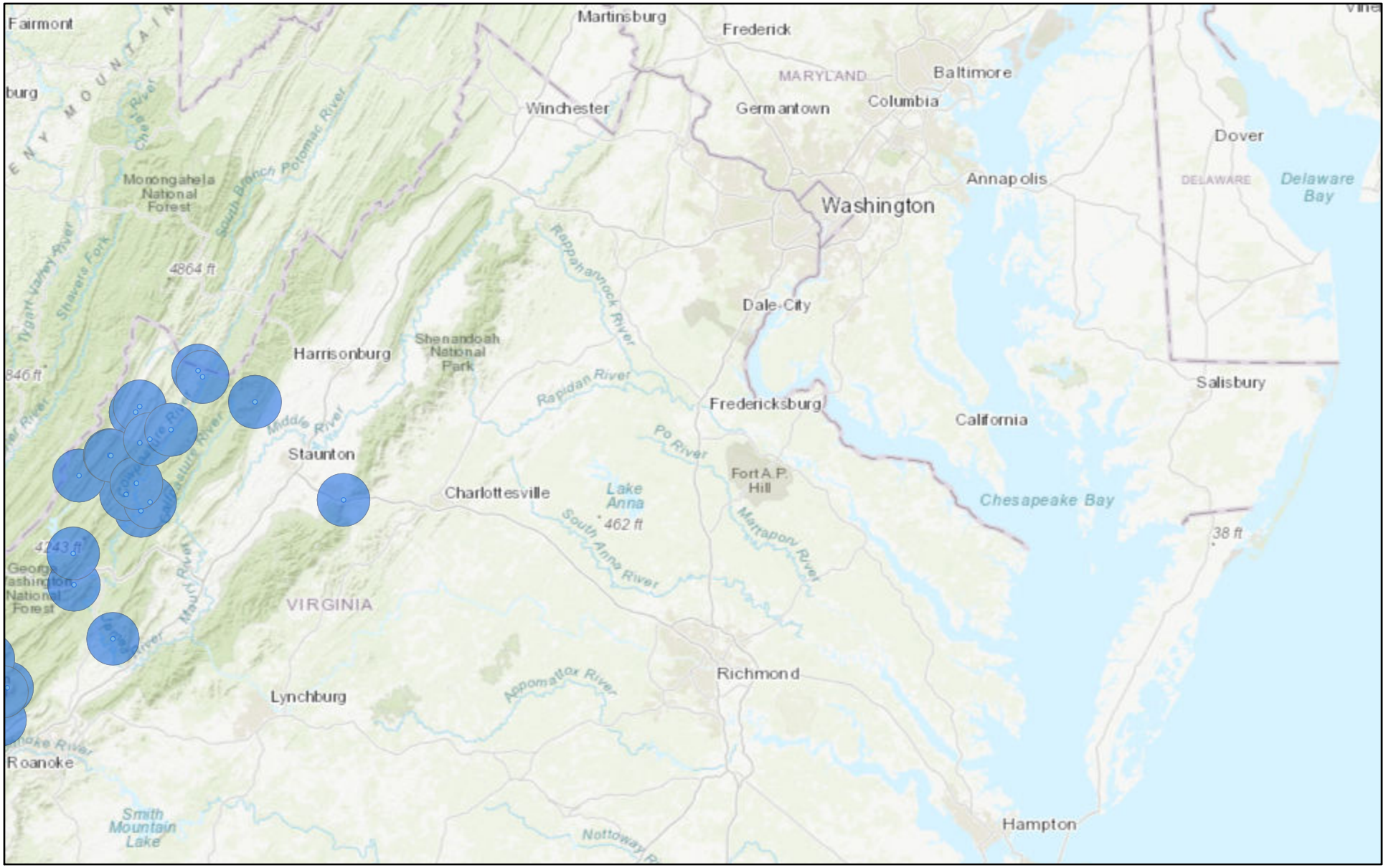
Dwarf Wedgemussel
- Predicted Suitable Habitat

Eastern Prairie Fringed Orchid
- Predicted Suitable Habitat

James Spinymussel
- Predicted Suitable Habitat
- Karst Topography Present
- Predicted Suitable Habitat

Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA,

MYLU PESU Bat Habitat Map



10/31/2018, 2:20:17 PM

Tri-colored and Little Brown Hibernaculum Half Mile Buffer

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

1:2,311,162

0 15 30 60 mi

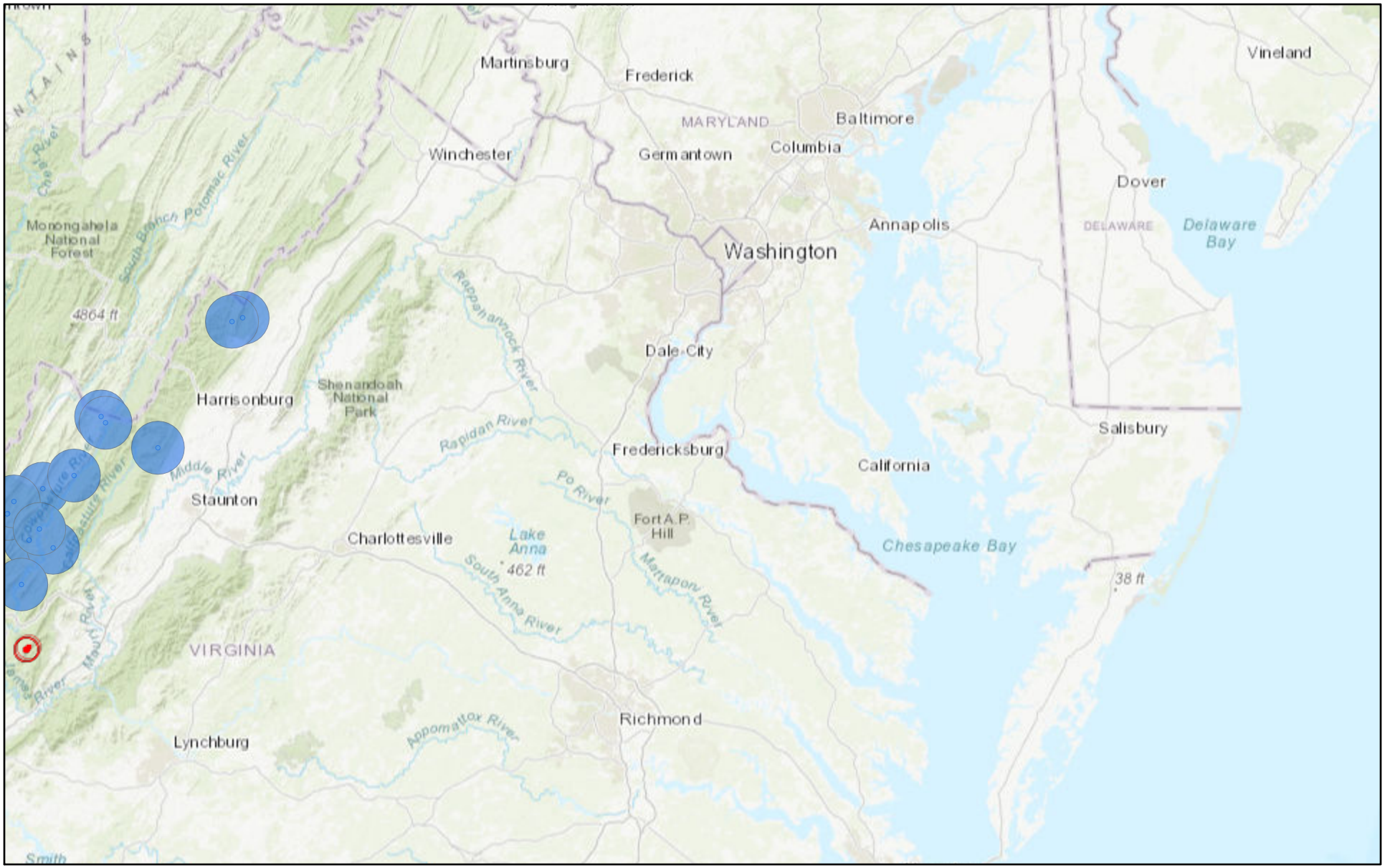
0 20 40 80 km

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

Dept. Game and Inland Fisheries

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

NLEB Locations and Roost Trees



10/31/2018, 2:23:11 PM

NLEB Known Occupied Maternity Roost (Summer Habitat)

NLEB Hibernaculum 5.5 Mile Buffer

NLEB Hibernaculum Half Mile Buffer

1:2,311,162

0 15 30 60 mi

0 25 50 100 km

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

VA Dept. Game & Inland Fisheries

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

ATTACHMENT D

HAZARDOUS MATERIALS REVIEW

Georgetown Pike
Georgetown Pike
Mc Lean, VA 22102

Inquiry Number: 5528725.2s
January 08, 2019

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	13
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting Source Map	A-7
Physical Setting Source Map Findings	A-8
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

GEORGETOWN PIKE
MC LEAN, VA 22102

COORDINATES

Latitude (North):	38.9714050 - 38° 58' 17.05''
Longitude (West):	77.2419110 - 77° 14' 30.87''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	305775.4
UTM Y (Meters):	4315786.0
Elevation:	281 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey

Target Property:	SW
Source:	U.S. Geological Survey

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20150722
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
GEORGETOWN PIKE
MC LEAN, VA 22102

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	CHANG HELEN RESIDENC	8550 GEORGETOWN PIKE	VA LTANKS	Higher	134, 0.025, ESE
2	LAWRENCE MARK	8612 TEBBS LN	VA UST	Lower	759, 0.144, SW
3	GAVULA STEPHEN P AND	8740 OLD DOMINION DR	VA LTANKS	Lower	1768, 0.335, WSW
A4	VASILIADIS CHARLES C	921 BELLVIEW RD	VA LTANKS	Higher	2046, 0.387, SSE
A5	WILSON DESMOND RESID	912 SADDLEBACK CT	VA LTANKS	Higher	2279, 0.432, SSE
B6	GLEMBOCKI RAYMOND RE	911 SADDLEBACK CT	VA LTANKS	Higher	2384, 0.452, SE
B7	LABOUDIQUE JEAN CLAU	914 SADDLEBACK CT	VA LTANKS	Higher	2414, 0.457, SSE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

State and tribal leaking storage tank lists

VA LTANKS: A review of the VA LTANKS list, as provided by EDR, and dated 07/05/2018 has revealed that there are 6 VA LTANKS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CHANG HELEN RESIDENC Facility Status: Closed CEDS Facility Id: 200000185800 Pollution Complaint #: 20053207 Pollution Complaint #: 19931975	8550 GEORGETOWN PIKE	ESE 0 - 1/8 (0.025 mi.)	1	8
VASILIADIS CHARLES C Facility Status: Closed CEDS Facility Id: 200000224059 Pollution Complaint #: 20063253	921 BELLVIEW RD	SSE 1/4 - 1/2 (0.387 mi.)	A4	8
WILSON DESMOND RESID Facility Status: Closed CEDS Facility Id: 200000224201 Pollution Complaint #: 20063271	912 SADDLEBACK CT	SSE 1/4 - 1/2 (0.432 mi.)	A5	9
GLEMBOCKI RAYMOND RE Facility Status: Closed CEDS Facility Id: 200000204991 Pollution Complaint #: 20023099	911 SADDLEBACK CT	SE 1/4 - 1/2 (0.452 mi.)	B6	9
LABOUDIQUE JEAN CLAU Facility Status: Closed CEDS Facility Id: 200000221673 Pollution Complaint #: 20063013	914 SADDLEBACK CT	SSE 1/4 - 1/2 (0.457 mi.)	B7	9

Lower Elevation	Address	Direction / Distance	Map ID	Page
GAVULA STEPHEN P AND Facility Status: Closed	8740 OLD DOMINION DR	WSW 1/4 - 1/2 (0.335 mi.)	3	8

CEDS Facility Id: 200000874391
Pollution Complaint #: 20143149

State and tribal registered storage tank lists

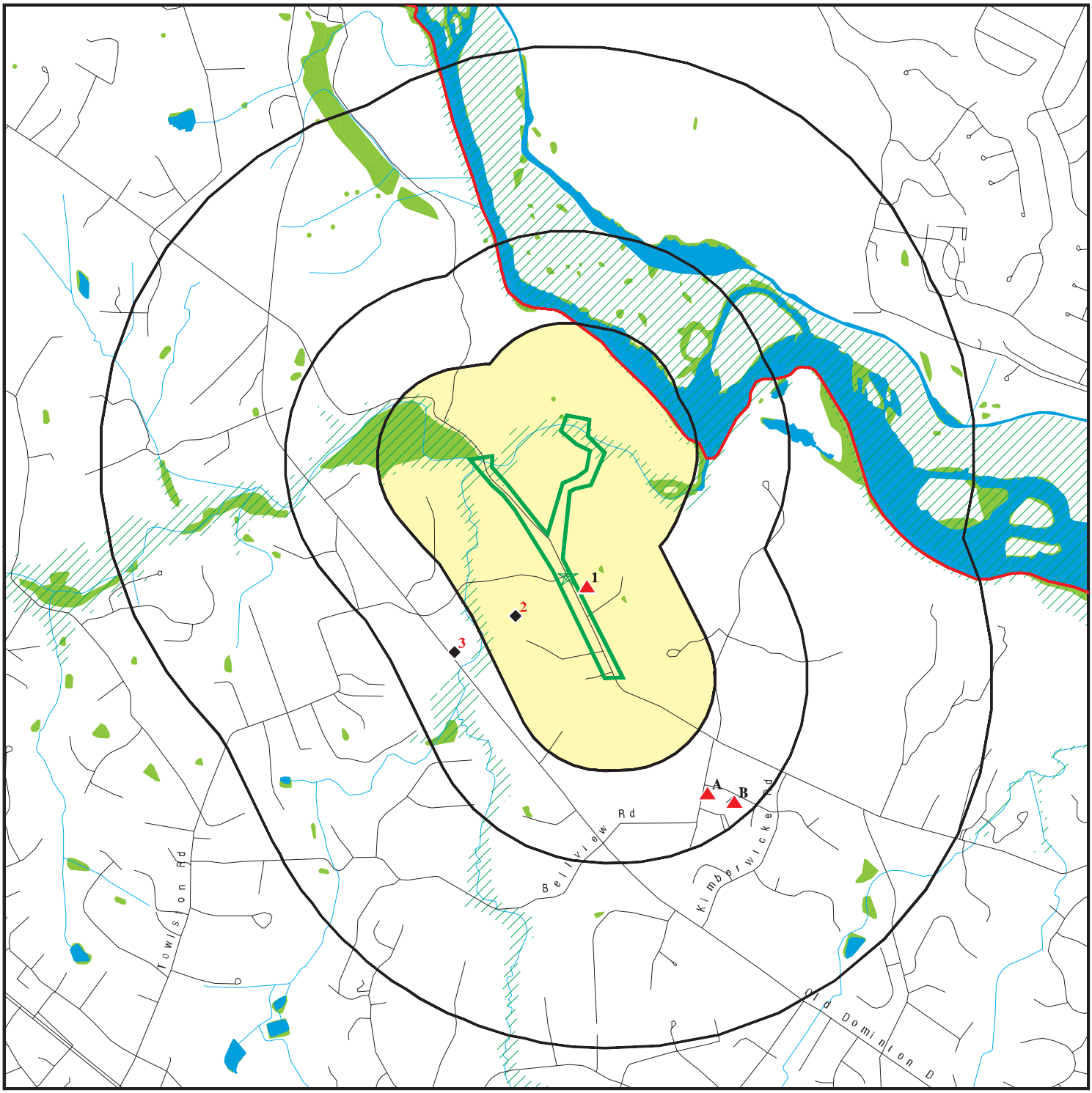
VA UST: A review of the VA UST list, as provided by EDR, and dated 08/03/2018 has revealed that there is 1 VA UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
LAWRENCE MARK Tank Status: CLS IN GRD Facility Id: 3013636 CEDS Facility ID: 200000077011	8612 TEBBS LN	SW 1/8 - 1/4 (0.144 mi.)	2	8

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
FAIRFAX COUNTY	S108929620	GEORGETOWN PIKE	GEORGETOWN PIKE AT KIMBERWICKE		VA SPILLS

OVERVIEW MAP - 5528725.2S



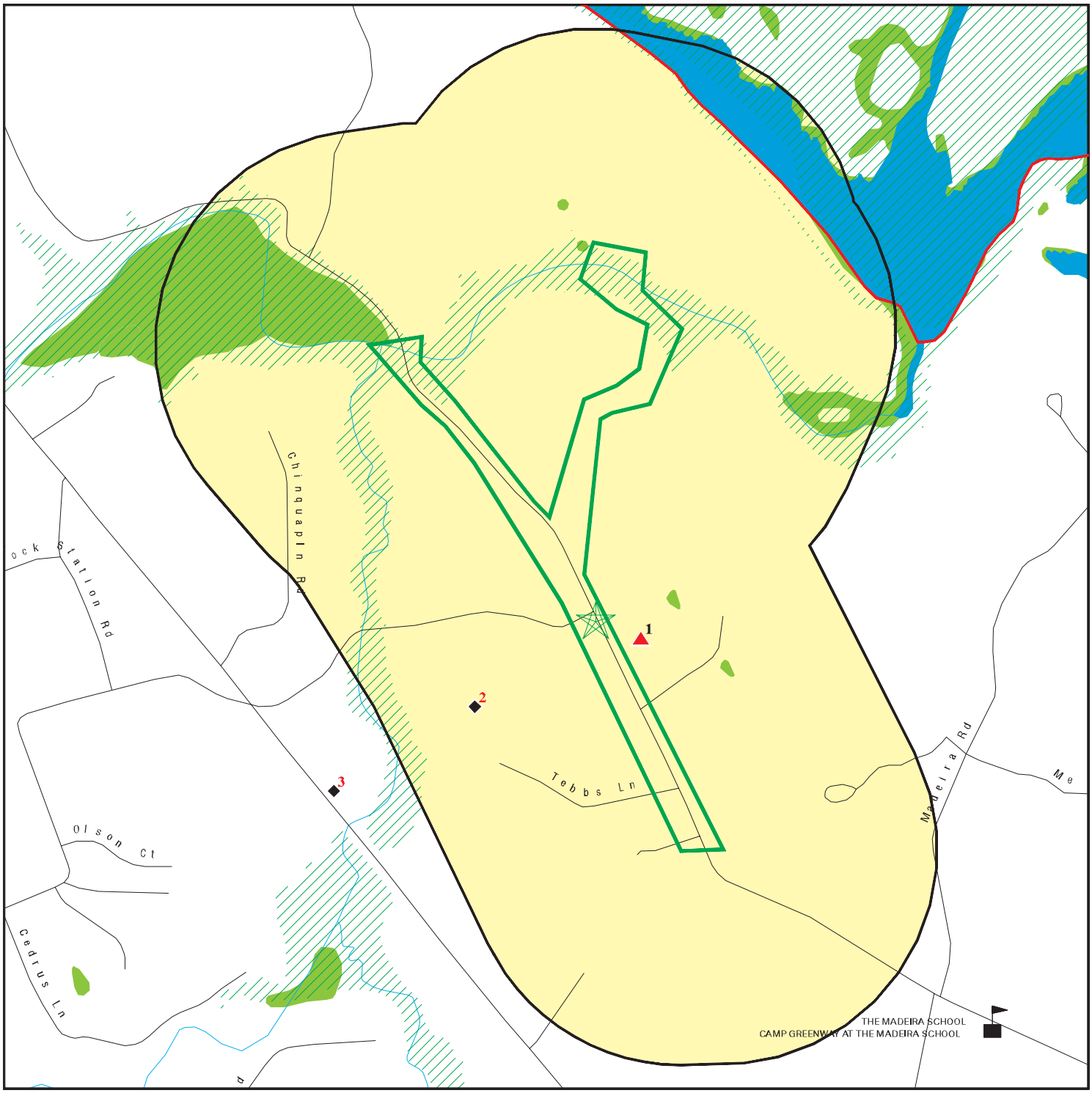
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Georgetown Pike ADDRESS: Georgetown Pike Mc Lean VA 22102 LAT/LONG: 38.971405 / 77.241911	CLIENT: Kimley Horn & Associates CONTACT: Nicholas Romano INQUIRY #: 5528725.2s DATE: January 08, 2019 12:32 pm

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DETAIL MAP - 5528725.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

0 1/8 1/4 1/2 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Georgetown Pike	CLIENT: Kimley Horn & Associates
ADDRESS: Georgetown Pike Mc Lean VA 22102	CONTACT: Nicholas Romano
LAT/LONG: 38.971405 / 77.241911	INQUIRY #: 5528725.2s DATE: January 08, 2019 12:36 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
VA SHWS	N/A		N/A	N/A	N/A	N/A	N/A	N/A
MD SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
VA SWF/LF	0.500		0	0	0	NR	NR	0
MD SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
VA LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
VA LTANKS	0.500		1	0	5	NR	NR	6
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
VA UST	0.250		0	1	NR	NR	NR	1
MD UST	0.250		0	0	NR	NR	NR	0
VA AST	0.250		0	0	NR	NR	NR	0
MD AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
VA ENG CONTROLS	0.500		0	0	0	NR	NR	0
MD ENG CONTROLS	0.500		0	0	0	NR	NR	0
VA INST CONTROL	0.500		0	0	0	NR	NR	0
MD INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VA VCP	0.500		0	0	0	NR	NR	0
MD VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
VA BROWNFIELDS	0.500		0	0	0	NR	NR	0
MD BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	0.001		0	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
VA SPILLS	0.001		0	NR	NR	NR	NR	0
VA SPILLS 90	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MD SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
VA AIRS	0.001		0	NR	NR	NR	NR	0
MD AIRS	0.001		0	NR	NR	NR	NR	0
VA NPDES	0.001		0	NR	NR	NR	NR	0
VA COAL ASH	0.500		0	0	0	NR	NR	0
MD COAL ASH	0.500		0	0	0	NR	NR	0
VA DRYCLEANERS	0.250		0	0	NR	NR	NR	0
MD DRYCLEANERS	0.250		0	0	NR	NR	NR	0
VA ENF	0.001		0	NR	NR	NR	NR	0
VA Financial Assurance	0.001		0	NR	NR	NR	NR	0
MD Financial Assurance	0.001		0	NR	NR	NR	NR	0
MD MANIFEST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MD NPDES	0.001		0	NR	NR	NR	NR	0
VA TIER 2	0.001		0	NR	NR	NR	NR	0
VA UIC	0.001		0	NR	NR	NR	NR	0
MD UIC	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
VA RGA LF	0.001		0	NR	NR	NR	NR	0
MD RGA LF	0.001		0	NR	NR	NR	NR	0
VA RGA LUST	0.001		0	NR	NR	NR	NR	0
MD RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	1	1	5	0	0	7

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
1 **ESE** **< 1/8** **0.025 mi.** **134 ft.** **Relative:** **Higher**	**CHANG HELEN RESIDENCE** **8550 GEORGETOWN PIKE** **MCLEAN, VA 22102** Click here for full text details **VA LTANKS** Facility Status: Closed CEDS Facility Id: 200000185800 Pollution Complaint #: 20053207 Pollution Complaint #: 19931975	**VA LTANKS**	**S105095719** **N/A**
2 **SW** **1/8-1/4** **0.144 mi.** **759 ft.** **Relative:** **Lower**	**LAWRENCE MARK** **8612 TEBBS LN** **MCLEAN, VA 22102** Click here for full text details **VA UST** Tank Status: CLS IN GRD Facility Id: 3013636 CEDS Facility ID: 200000077011	**VA UST**	**U003680441** **N/A**
3 **WSW** **1/4-1/2** **0.335 mi.** **1768 ft.** **Relative:** **Lower**	**GAVULA STEPHEN P AND JOANNE C RESIDENCE** **8740 OLD DOMINION DR** **MCLEAN, VA 22102** Click here for full text details **VA LTANKS** Facility Status: Closed CEDS Facility Id: 200000874391 Pollution Complaint #: 20143149	**VA LTANKS**	**S116624958** **N/A**
A4 **SSE** **1/4-1/2** **0.387 mi.** **2046 ft.** **Relative:** **Higher**	**VASILIADIS CHARLES C RESIDENCE** **921 BELLVIEW RD** **MCLEAN, VA 22102** Click here for full text details **VA LTANKS** Facility Status: Closed CEDS Facility Id: 200000224059 Pollution Complaint #: 20063253	**VA LTANKS**	**S107869916** **N/A**

A5
SSE
1/4-1/2
0.432 mi.
2279 ft.

Relative:
Higher

WILSON DESMOND RESIDENCE
912 SADDLEBACK CT
MCLEAN, VA 22102

VA LTANKS **S108106035**
N/A

Click here for full text details

VA LTANKS
Facility Status: Closed
CEDS Facility Id: 200000224201
Pollution Complaint #: 20063271

B6
SE
1/4-1/2
0.452 mi.
2384 ft.

Relative:
Higher

GLEMBOCKI RAYMOND RESIDENCE
911 SADDLEBACK CT
MCLEAN, VA 22102

VA LTANKS **S105174542**
N/A

Click here for full text details

VA LTANKS
Facility Status: Closed
CEDS Facility Id: 200000204991
Pollution Complaint #: 20023099

B7
SSE
1/4-1/2
0.457 mi.
2414 ft.

Relative:
Higher

LABOUDIQUE JEAN CLAUDE RESIDENCE FORMER
914 SADDLEBACK CT
MCLEAN, VA 22102

VA LTANKS **S107152926**
N/A

Click here for full text details

VA LTANKS
Facility Status: Closed
CEDS Facility Id: 200000221673
Pollution Complaint #: 20063013

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
VA	AIRS	Permitted Airs Facility List	Department of Environmental Quality	09/21/2018	11/01/2018	12/26/2018
VA	AST	Registered Petroleum Storage Tanks	Department of Environmental Quality	08/03/2018	08/30/2018	10/09/2018
VA	BROWNFIELDS	Brownfields Site Specific Assessments	Department of Environmental Quality	10/18/2018	10/24/2018	11/08/2018
VA	CEDS	Comprehensive Environmental Data System	Department of Environmental Quality	09/18/2018	09/19/2018	10/09/2018
VA	COAL ASH	Coal Ash Disposal Sites	Department of Environmental Protection	07/29/2009	07/31/2009	08/21/2009
VA	DRYCLEANERS	Drycleaner List	Department of Environmental Quality	12/31/2017	11/01/2018	12/26/2018
VA	ENFORCEMENT	Enforcement Actions Data	Department of Environmental Quality	06/01/2018	06/06/2018	07/05/2018
VA	ENG CONTROLS	Engineering Controls Sites Listing	Department of Environmental Quality	10/31/2018	11/06/2018	12/28/2018
VA	Financial Assurance 1	Financial Assurance Information Listing	Department of Environmental Quality	11/03/2018	11/06/2018	12/26/2018
VA	Financial Assurance 2	Financial Assurance Information listing	Department of Environmental Quality	11/01/2018	11/06/2018	12/27/2018
VA	INST CONTROL	Voluntary Remediation Program Database	Department of Environmental Quality	10/31/2018	11/06/2018	12/28/2018
VA	LTANKS	Leaking Petroleum Storage Tanks	Department of Environmental Quality	07/05/2018	08/30/2018	10/09/2018
VA	LUST REG NO	Leaking Underground Storage Tank Tracking Database	Department of Environmental Quality Northern	05/18/2004	05/22/2004	07/09/2004
VA	LUST REG PD	Leaking Underground Storage Tank Sites	Department of Environmental Quality Piedmont	12/02/2014	12/04/2014	01/16/2015
VA	LUST REG SC	Leaking Underground Storage Tanks	Department of Environmental Quality, South Ce	09/06/2013	09/06/2013	09/17/2013
VA	LUST REG SW	Leaking Underground Storage Tank Database	Department of Environmental Quality Southwest	07/15/2013	07/18/2013	09/16/2013
VA	LUST REG TD	Leaking Underground Storage Tank Sites	Department of Environmental Quality Tidewater	06/30/2013	07/05/2013	09/16/2013
VA	LUST REG VA	Leaking Underground Storage Tank List	Department of Environmental Quality Valley Re	12/06/2011	12/08/2011	01/16/2012
VA	LUST REG WC	Leaking Underground Storage Tank List	Department of Environmental Quality West Cent	06/04/2015	06/05/2015	07/07/2015
VA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Environmental Quality		07/01/2013	01/20/2014
VA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	Department of Environmental Quality		07/01/2013	01/15/2014
VA	SHWS	This state does not maintain a SHWS list. See the Federal CE	Department of Environmental Quality			
VA	SPILLS	Prep/Spills Database Listing	Department of Environmental Quality	08/03/2018	08/30/2018	10/09/2018
VA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	09/01/2012	01/03/2013	02/15/2013
VA	SPILLS BRL	Prep/Spills Database Listing	DEQ, Blue Ridge Regional Office	09/18/2009	09/18/2009	10/06/2009
VA	SPILLS NO	PREP Database	Department of Environmental Quality, Northern	09/23/2009	09/29/2009	10/30/2009
VA	SPILLS PC	Pollution Complaint Database	Department of Environmental Quality	06/01/1996	10/22/1996	11/21/1996
VA	SPILLS PD	PREP Database	Department of Environmental Quality, Piedmont	10/20/2009	10/29/2009	12/03/2009
VA	SPILLS SW	Reportable Spills	Department of Environmental Quality, Southwes	01/21/2010	01/22/2010	02/16/2010
VA	SPILLS TD	PREP Database	Department of Environmental Quality, Tidewate	09/17/2009	09/23/2009	10/06/2009
VA	SPILLS VA	PREP Database	Department of Environmental Quality, Valley R	08/08/2012	08/09/2012	10/05/2012
VA	SPILLS WC	Prep Database	Department of Environmental Quality, West Cen	09/21/2009	09/29/2009	10/30/2009
VA	SWF/LF	Solid Waste Management Facilities	Department of Environmental Quality	08/31/2018	09/04/2018	10/09/2018
VA	TIER 2	Tier 2 Information Listing	Department of Environmental Quality	12/31/2014	01/20/2017	02/14/2017
VA	UIC	Underground Injection Control Wells	Department of Mines, Minerals and Energy	10/30/2018	10/31/2018	12/27/2018
VA	UST	Registered Petroleum Storage Tanks	Department of Environmental Quality	08/03/2018	08/30/2018	10/09/2018
VA	VRP	Voluntary Remediation Program	Department of Environmental Quality	10/31/2018	11/06/2018	12/28/2018
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2018	09/11/2018	09/14/2018
MD	AIRS	Permit and Facility Information Listing	Department of the Environment	12/31/2017	10/23/2018	12/07/2018
MD	AST	Permitted Aboveground Storage Tanks	Department of The Environment	09/30/2018	10/05/2018	11/06/2018
MD	BROWNFIELDS	Eligible Brownfields Properties	Department of Environment	07/02/2018	09/11/2018	10/04/2018
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017
MD	COAL ASH	Coal Ash Disposal Site Listing	Department of the Environment	08/13/2010	01/05/2011	01/31/2011
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	07/01/2014	09/10/2014	10/20/2014
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	09/30/2018	10/12/2018	12/07/2018

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	CORRACTS	Corrective Action Report	EPA	03/01/2018	03/28/2018	06/22/2018
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	07/31/2012	08/07/2012	09/18/2012
MD	DRYCLEANERS	Registered Drycleaning Facilities	Department of the Environmental	10/12/2018	10/16/2018	11/08/2018
US	Delisted NPL	National Priority List Deletions	EPA	11/14/2018	11/27/2018	12/07/2018
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	09/02/2018	09/05/2018	09/14/2018
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
MD	ENG CONTROLS	Engineering Controls Site listing	Department of the Environment	11/10/2008	11/21/2008	12/17/2008
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	09/24/2018	09/25/2018	11/09/2018
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	11/07/2016	01/05/2017	04/07/2017
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	12/31/2005	02/06/2006	01/11/2007
US	FEMA UST	Underground Storage Tank Listing	FEMA	05/15/2017	05/30/2017	10/13/2017
US	FINDS	Facility Index System/Facility Registry System	EPA	08/07/2018	09/05/2018	10/05/2018
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	01/31/2015	07/08/2015	10/13/2015
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	08/22/2018	08/22/2018	10/05/2018
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
MD	Financial Assurance 1	Financial Assurance Information Listing	Department of the Environment	06/15/2018	08/08/2018	08/27/2018
MD	Financial Assurance 2	Financial Assurance Information Listing	Department of the Environment	09/30/2018	11/08/2018	12/07/2018
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	03/26/2018	03/27/2018	06/08/2018
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/12/2018	05/18/2018	07/20/2018
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/10/2018	05/18/2018	07/20/2018
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/12/2018	05/18/2018	07/20/2018
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/10/2018	05/18/2018	07/20/2018
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
MD	INST CONTROL	Voluntary Cleanup Program Applicants/Participants	Department of the Environment	09/13/2018	09/19/2018	10/04/2018
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	08/13/2018	10/04/2018	11/16/2018
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	08/13/2018	10/04/2018	11/16/2018
US	LUCIS	Land Use Control Information System	Department of the Navy	10/17/2018	10/25/2018	12/07/2018
MD	MANIFEST	Hazardous Waste Manifest Information Listing	Department of the Environment	12/31/2017	03/15/2018	06/22/2018
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	08/30/2016	09/08/2016	10/21/2016
MD	NPDES	Wastewater Permit Listing	Department of the Environment	11/19/2018	11/19/2018	12/07/2018
US	NPL	National Priority List	EPA	11/14/2018	11/27/2018	12/07/2018
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	09/14/2018	10/11/2018	12/07/2018
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	PRP	Potentially Responsible Parties	EPA	08/13/2018	10/04/2018	11/09/2018
US	Proposed NPL	Proposed National Priority List Sites	EPA	11/14/2018	11/27/2018	12/07/2018
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	10/02/2018	10/03/2018	11/09/2018
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
MD	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of the Environment		07/01/2013	01/16/2014
MD	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	Department of the Environment		07/01/2013	01/03/2014
US	RMP	Risk Management Plans	Environmental Protection Agency	08/01/2018	08/22/2018	10/05/2018
US	ROD	Records Of Decision	EPA	08/13/2018	10/04/2018	11/16/2018
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	11/14/2018	11/27/2018	12/07/2018
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	11/14/2018	11/28/2018	12/07/2018
MD	SHWS	Notice of Potential Hazardous Waste Sites	Department of the Environment			
MD	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	07/15/2012	01/03/2013	03/06/2013
US	SSTS	Section 7 Tracking Systems	EPA	12/31/2009	12/10/2010	02/25/2011
MD	SWF/LF	Permitted Solid Waste Disposal Facilities	Department of the Environment	11/01/2018	11/02/2018	12/07/2018
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2016	01/10/2018	01/12/2018
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
MD	UIC	Underground Injection Wells Database	Department of the Environment	02/07/2018	02/16/2018	03/15/2018
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	06/23/2017	10/11/2017	11/03/2017
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	09/18/2018	09/18/2018	11/09/2018
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	09/21/2018	09/21/2018	11/09/2018
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	07/31/2018	08/28/2018	09/14/2018
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	08/31/2018	09/25/2018	11/09/2018
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	09/21/2018	09/21/2018	11/09/2018

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	07/31/2018	08/28/2018	09/14/2018
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	08/01/2018	08/29/2018	10/05/2018
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
MD	UST	Registered Underground Storage Tank List	Department of the Environment	09/30/2018	11/08/2018	12/07/2018
US	UXO	Unexploded Ordnance Sites	Department of Defense	09/30/2017	06/19/2018	09/14/2018
MD	VCP	Voluntary Cleanup Program Applicants/Participants	Dept. of the Environment	12/13/2018	12/19/2018	12/21/2018
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	11/12/2018	11/14/2018	12/04/2018
NJ	NJ MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2017	07/13/2018	08/01/2018
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	10/01/2018	10/31/2018	12/20/2018
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2017	10/23/2018	11/27/2018
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2017	02/23/2018	04/09/2018
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	12/31/2017	06/15/2018	07/09/2018
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
VA	Daycare Centers	Sensitive Receptor: Licensed Facilities	Department of Social Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		PennWell Corporation			
US	Electric Power Transmission Line Data		PennWell Corporation			

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

GEORGETOWN PIKE
GEORGETOWN PIKE
MC LEAN, VA 22102

TARGET PROPERTY COORDINATES

Latitude (North):	38.971405 - 38° 58' 17.06''
Longitude (West):	77.241911 - 77° 14' 30.88''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	305775.4
UTM Y (Meters):	4315786.0
Elevation:	281 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5950507 FALLS CHURCH, VA
Version Date:	2013
Southwest Map:	5950559 VIENNA, VA
Version Date:	2013

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

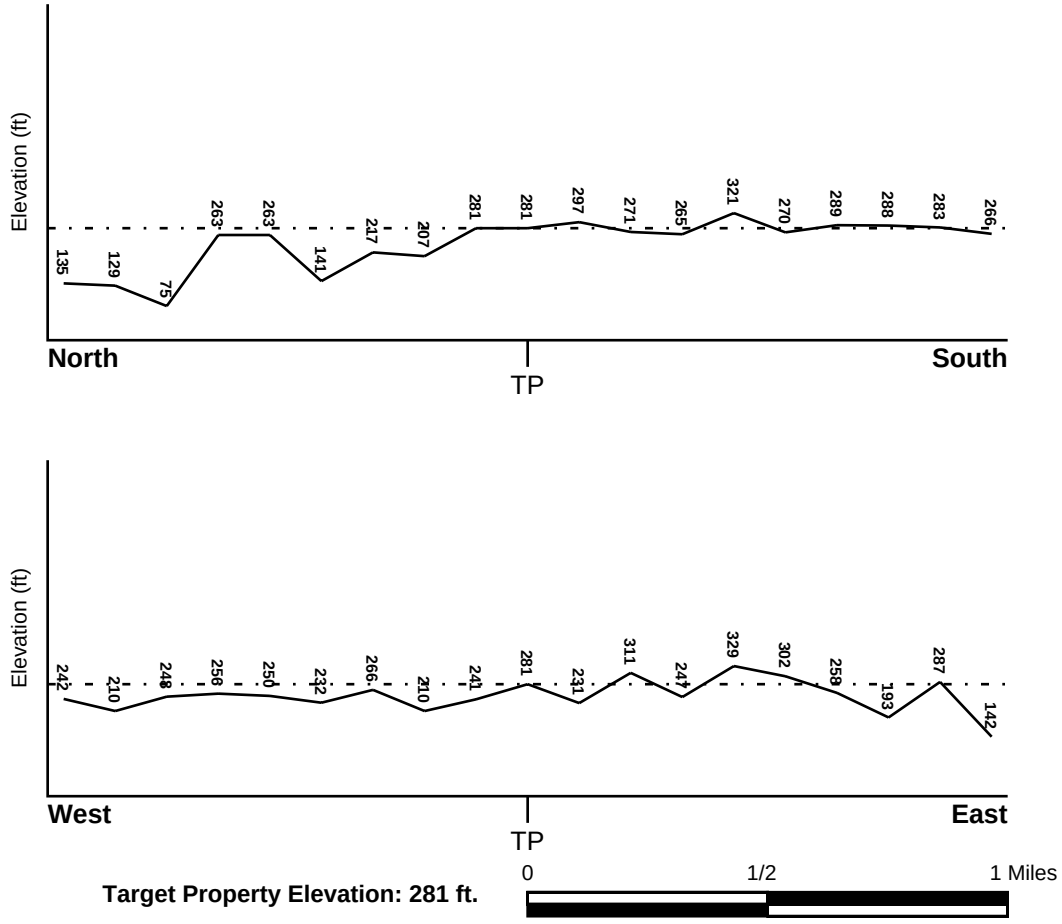
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WNW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 281 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
51059C0155E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
51059C0135E	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
FALLS CHURCH	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Paleozoic
System:	Cambrian
Series:	Cambrian
Code:	Ce *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Eugeosynclinal Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	MANOR
Soil Surface Texture:	loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: LOW

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	10 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 6.00 Min: 3.60
2	10 inches	20 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 2.00 Min: 0.60	Max: 6.00 Min: 3.60
3	20 inches	72 inches	loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 0.60	Max: 6.00 Min: 3.60

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: silt loam
very stony - loam
channery - loam

Surficial Soil Types: silt loam
very stony - loam
channery - loam

Shallow Soil Types: No Other Soil Types

Deeper Soil Types: stratified
channery - fine sandy loam
silt loam
weathered bedrock

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

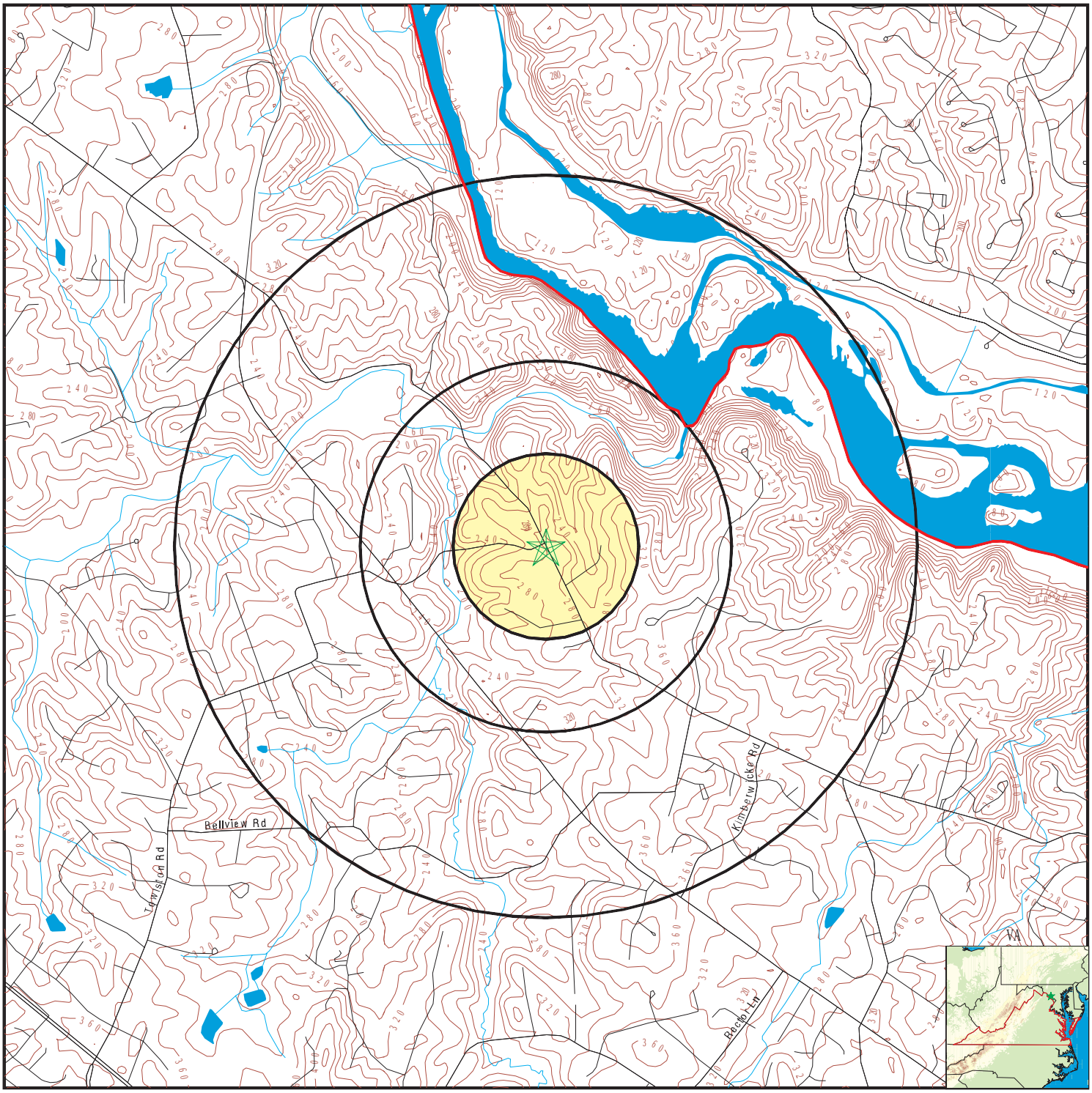
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 5528725.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

N

SITE NAME:	Georgetown Pike	CLIENT:	Kimley Horn & Associates
ADDRESS:	Georgetown Pike Mc Lean VA 22102	CONTACT:	Nicholas Romano
		INQUIRY #:	5528725.2s
LAT/LONG:	38.971405 / 77.241911	DATE:	January 08, 2019 12:37 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

EPA Region 3 Statistical Summary Readings for Zip Code: 22102

Number of sites tested: 680.

Maximum Radon Level: 42.4 pCi/L.
Minimum Radon Level: 0.2 pCi/L.

pCi/L <4	pCi/L 4-10	pCi/L 10-20	pCi/L 20-50	pCi/L 50-100	pCi/L >100
435 (63.97%)	206 (30.29%)	33 (4.85%)	6 (0.88%)	0 (0.00%)	0 (0.00%)

Federal EPA Radon Zone for FAIRFAX County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Virginia Public Water Supplies
Source: Department of Health, Office of Water Programs
Telephone: 804-786-1756

OTHER STATE DATABASE INFORMATION

Virginia Oil and Gas Wells
Source: Department of Mines, Minerals and Energy
Telephone: 804-692-3200
A listing of oil and gas well locations.

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

EPA Region 3 Statistical Summary Readings
Source: Region 3 EPA
Telephone: 215-814-2082
Radon readings for Delaware, D.C., Maryland, Pennsylvania, Virginia and West Virginia.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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Georgetown Pike

Georgetown Pike

Mc Lean, VA 22102

Inquiry Number: 5528725.3

January 08, 2019

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

01/08/19

Site Name:

Georgetown Pike
Georgetown Pike
Mc Lean, VA 22102
EDR Inquiry # 5528725.3

Client Name:

Kimley Horn & Associates
4500 Main Street
Virginia Beach, VA 23462-0000
Contact: Nicholas Romano

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Kimley Horn & Associates were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # FA53-4A26-AF0D

PO # NA

Project Georgetown Pike

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: FA53-4A26-AF0D

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Georgetown Pike

Georgetown Pike

Mc Lean, VA 22102

Inquiry Number: 5528725.4

January 08, 2019

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

01/08/19

Site Name:	Client Name:
Georgetown Pike	Kimley Horn & Associates
Georgetown Pike	4500 Main Street
Mc Lean, VA 22102	Virginia Beach, VA 23462-0000
EDR Inquiry # 5528725.4	Contact: Nicholas Romano

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Kimley Horn & Associates were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: Georgetown Pike

Coordinates:

Latitude:	38.971405 38° 58' 17" North
Longitude:	-77.241911 -77° 14' 31" West
UTM Zone:	Zone 18 North
UTM X Meters:	305780.42
UTM Y Meters:	4315993.86
Elevation:	280.78' above sea level

Maps Provided:

2013	1956	1894
1994	1951	1891
1982, 1984	1947	1890
1979, 1980	1945	1885
1977	1944	
1971	1915	
1965, 1966	1900	
1957	1897	

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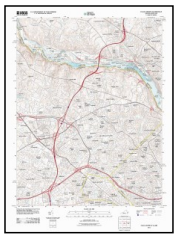
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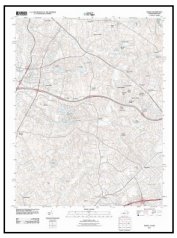
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets



Falls Church
2013
7.5-minute, 24000

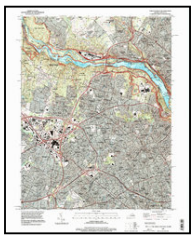


Vienna
2013
7.5-minute, 24000

1994 Source Sheets

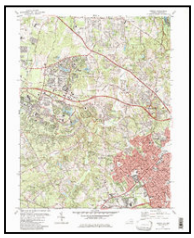


Vienna
1994
7.5-minute, 24000
Aerial Photo Revised 1994

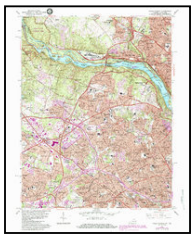


Falls Church
1994
7.5-minute, 24000
Aerial Photo Revised 1994

1982, 1984 Source Sheets



Vienna
1982
7.5-minute, 24000
Aerial Photo Revised 1980



Falls Church
1984
7.5-minute, 24000
Aerial Photo Revised 1981

1979, 1980 Source Sheets



Falls Church
1979
7.5-minute, 24000
Aerial Photo Revised 1977

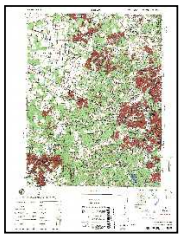


Vienna
1980
7.5-minute, 24000
Aerial Photo Revised 1978

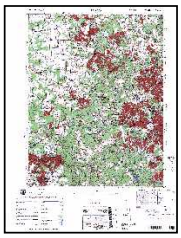
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1977 Source Sheets



FAIR FAX
1977
15-minute, 50000



FAIRFAX
1977
15-minute, 50000

1971 Source Sheets



Falls Church
1971
7.5-minute, 24000
Aerial Photo Revised 1971

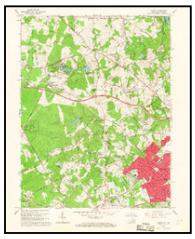


Vienna
1971
7.5-minute, 24000
Aerial Photo Revised 1971

1965, 1966 Source Sheets



Falls Church
1965
7.5-minute, 24000
Aerial Photo Revised 1955



Vienna
1966
7.5-minute, 24000
Aerial Photo Revised 1964

1957 Source Sheets



Vienna
1957
7.5-minute, 24000
Aerial Photo Revised 1949

Topo Sheet Key

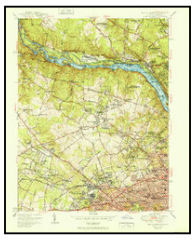
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1956 Source Sheets



Falls Church
1956
7.5-minute, 24000
Aerial Photo Revised 1955

1951 Source Sheets



Falls Church
1951
7.5-minute, 24000
Aerial Photo Revised 1949



Vienna
1951
7.5-minute, 24000
Aerial Photo Revised 1949

1947 Source Sheets



FAIRFAX
1947
15-minute, 50000



FAIR FAX
1947
15-minute, 50000

1945 Source Sheets



Falls Church
1945
7.5-minute, 31680

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1944 Source Sheets



Fairfax
1944
15-minute, 62500
Aerial Photo Revised 1943

1915 Source Sheets



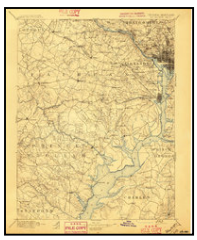
Fairfax
1915
15-minute, 62500

1900 Source Sheets



Washington
1900
15-minute, 62500

1897 Source Sheets

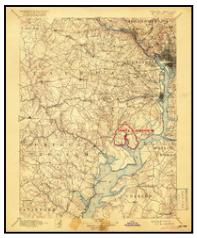


Mt. Vernon
1897
30-minute, 125000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1894 Source Sheets



Mt. Vernon
1894
30-minute, 125000

1891 Source Sheets



Mt. Vernon
1891
30-minute, 125000

1890 Source Sheets

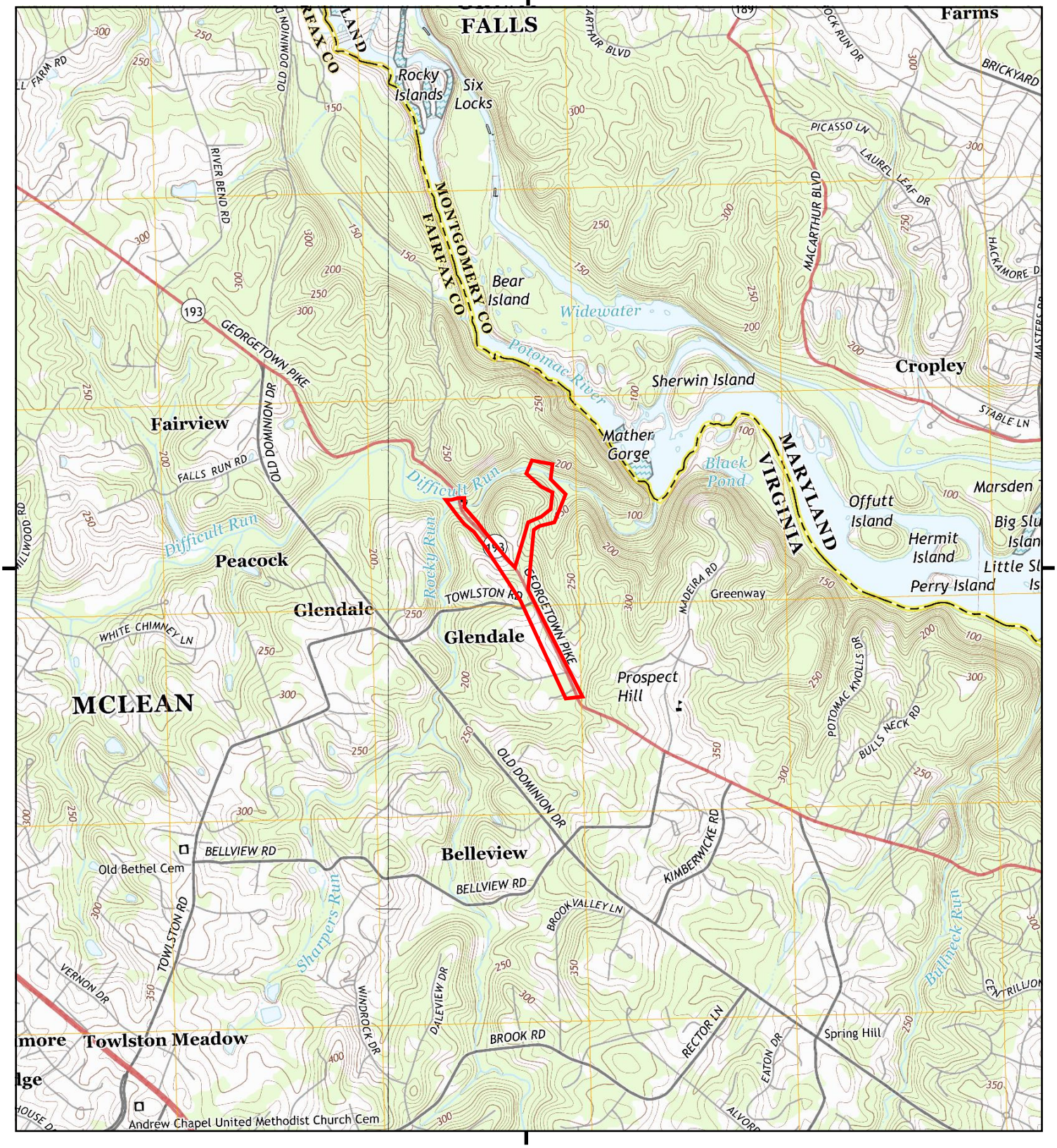


Mt. Vernon
1890
30-minute, 125000

1885 Source Sheets



WEST WASHINGTON
1885
15-minute, 62500



This report includes information from the following map sheet(s).

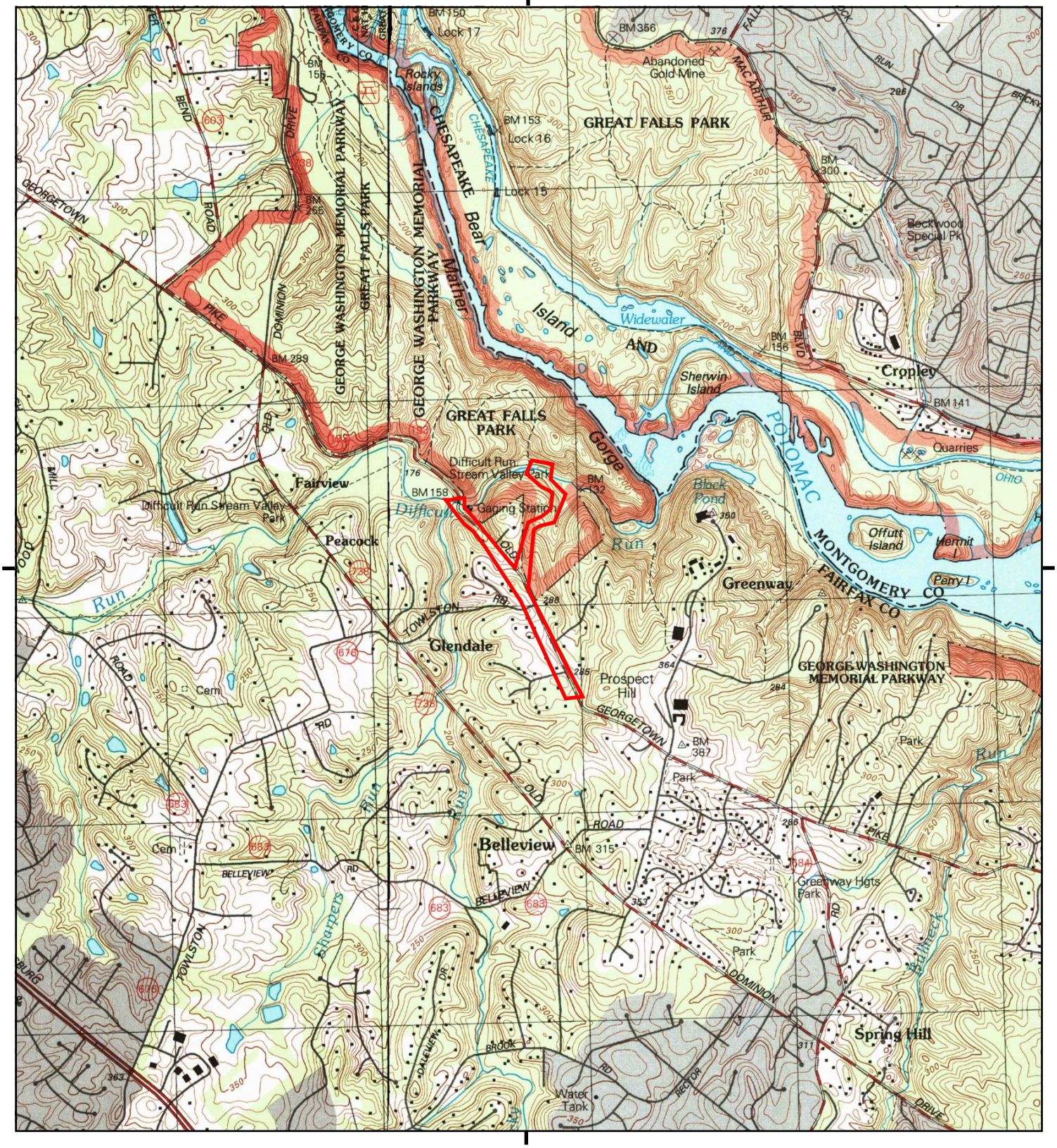
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Falls Church, 2013, 7.5-minute
SW, Vienna, 2013, 7.5-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

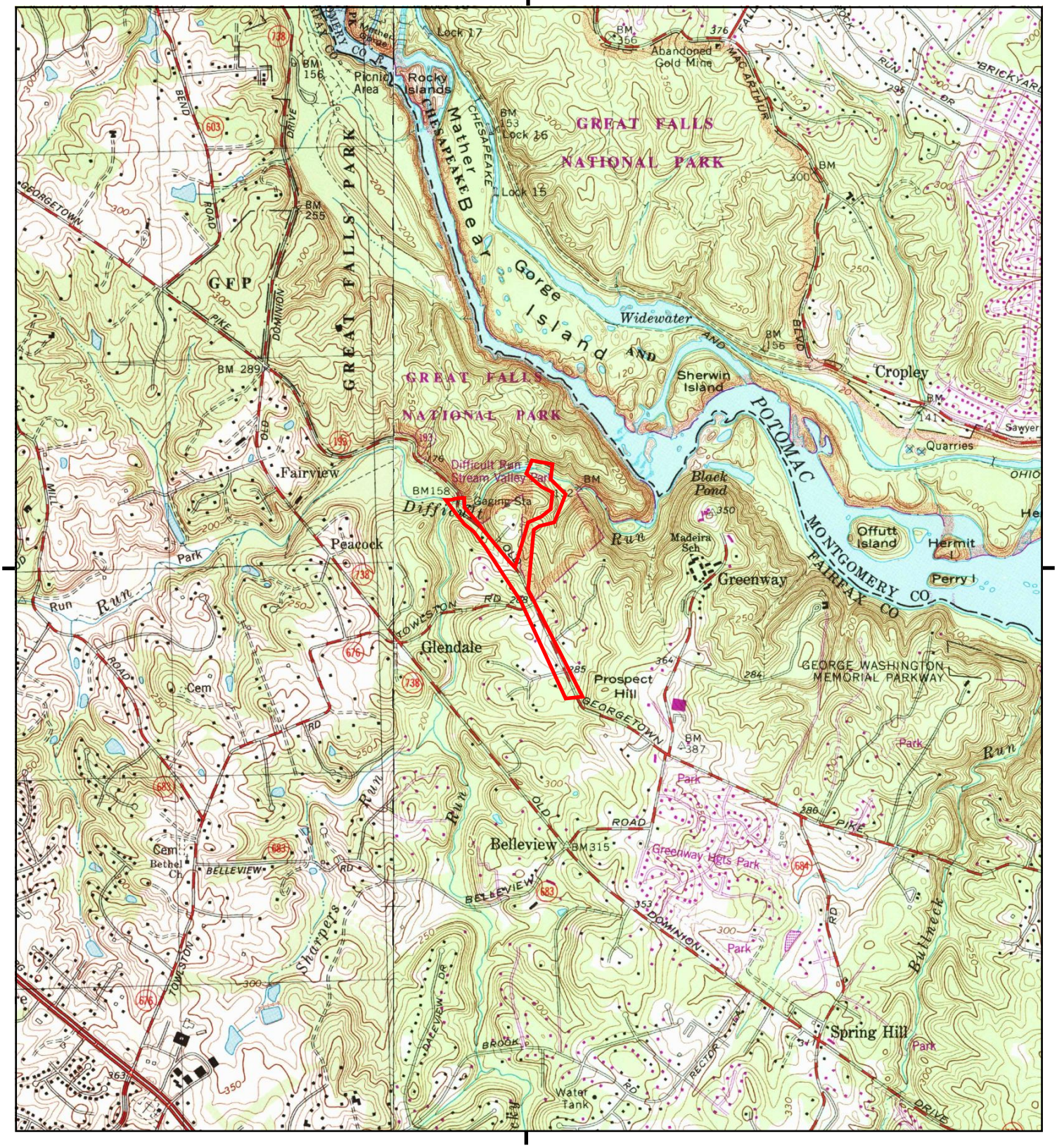
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Falls Church, 1994, 7.5-minute
SW, Vienna, 1994, 7.5-minute

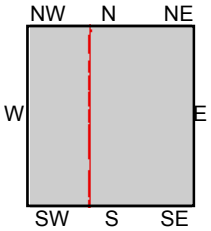
SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



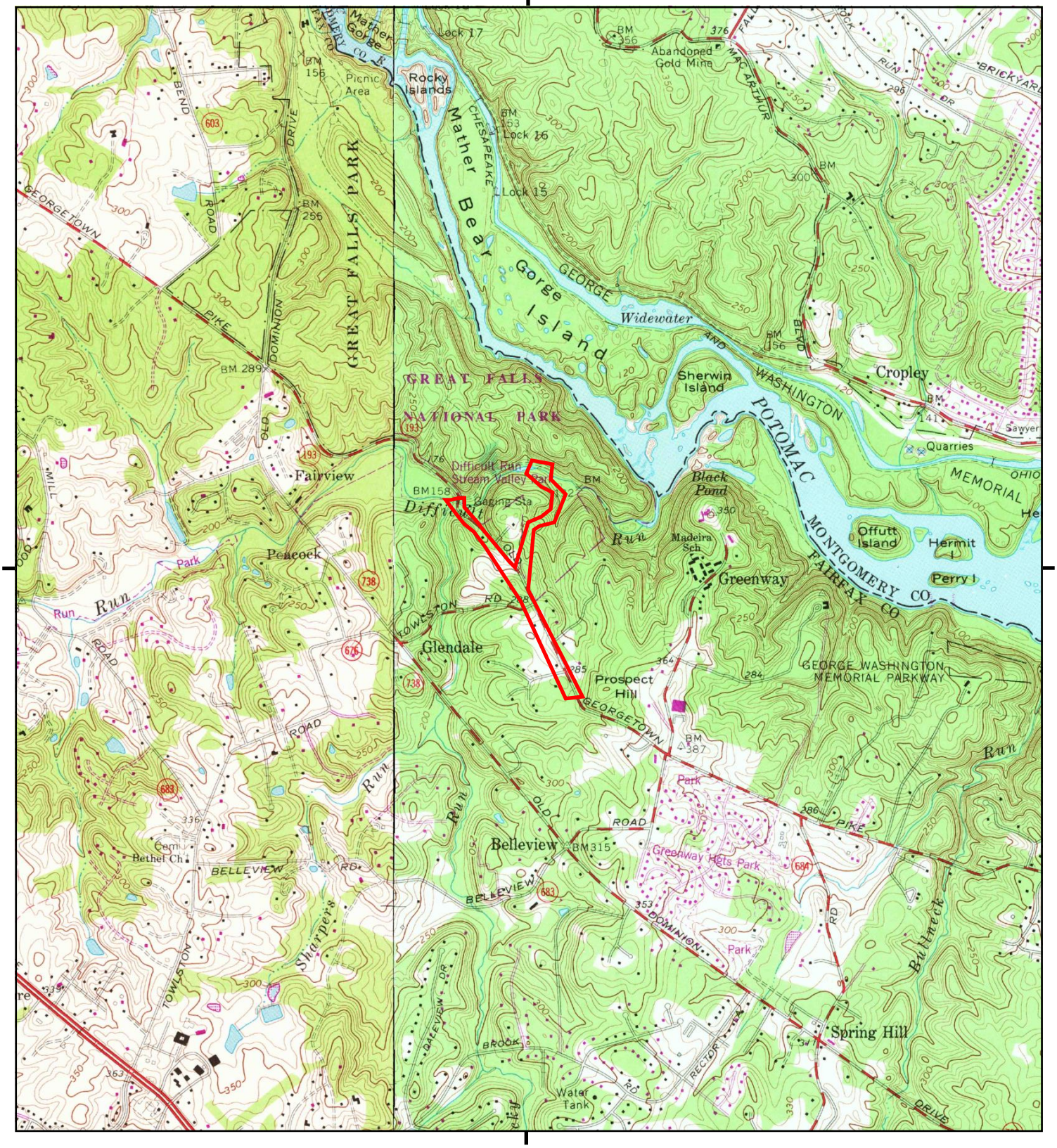
TP, Falls Church, 1984, 7.5-minute
SW, Vienna, 1982, 7.5-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N

Historical Topo Map

1979, 1980



This report includes information from the following map sheet(s).

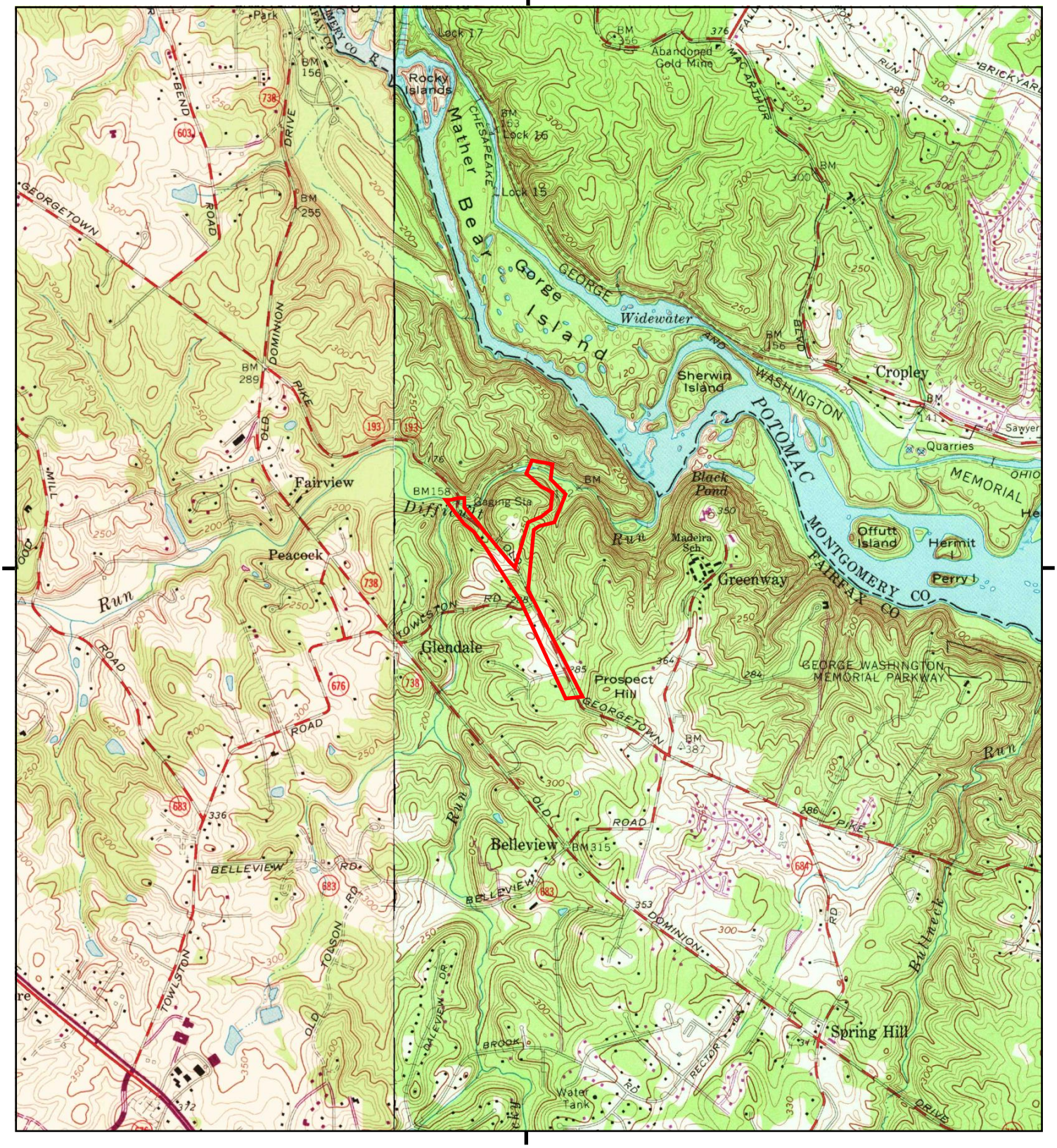
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Falls Church, 1979, 7.5-minute
SW, Vienna, 1980, 7.5-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

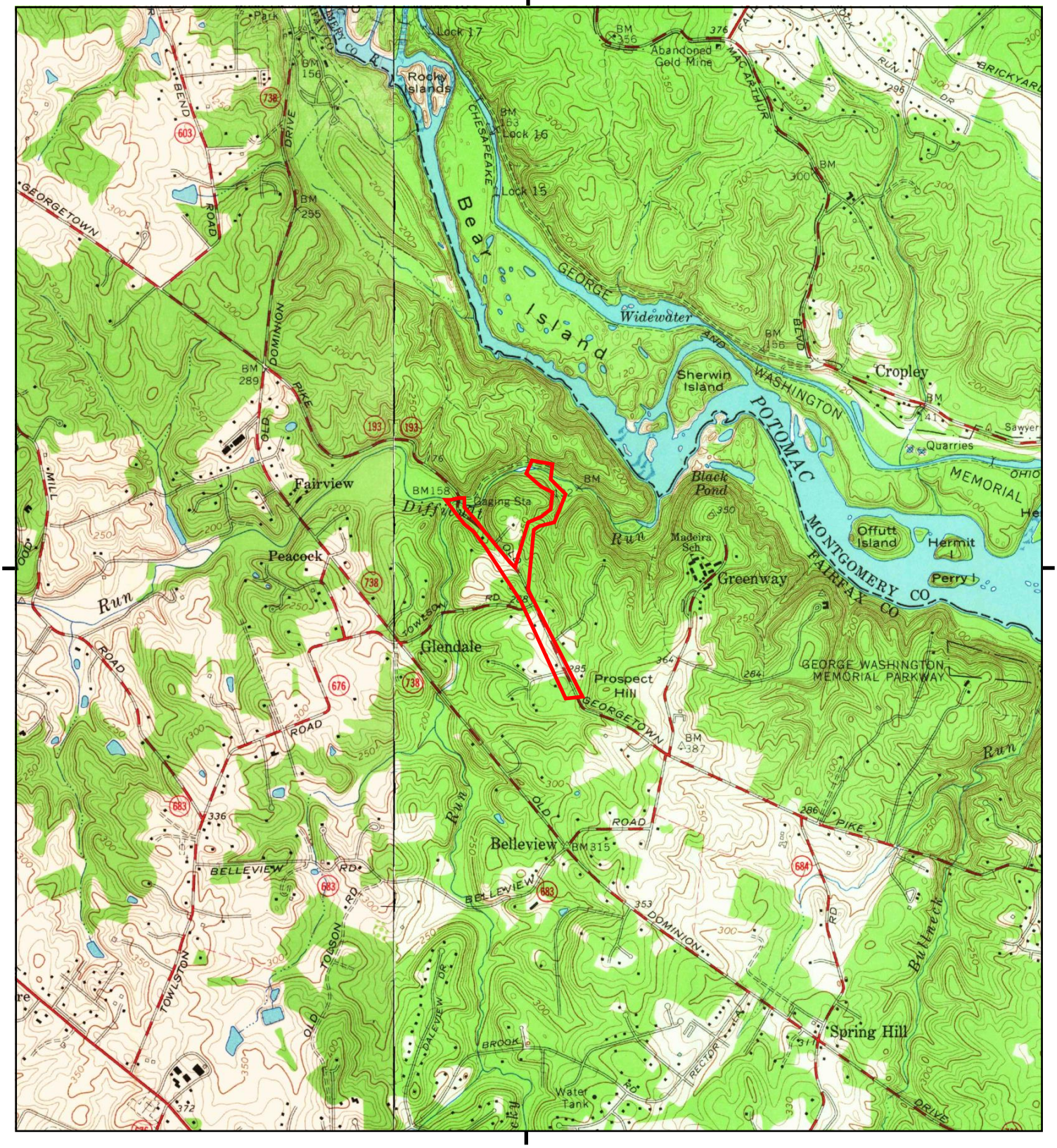
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Falls Church, 1971, 7.5-minute
SW, Vienna, 1971, 7.5-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

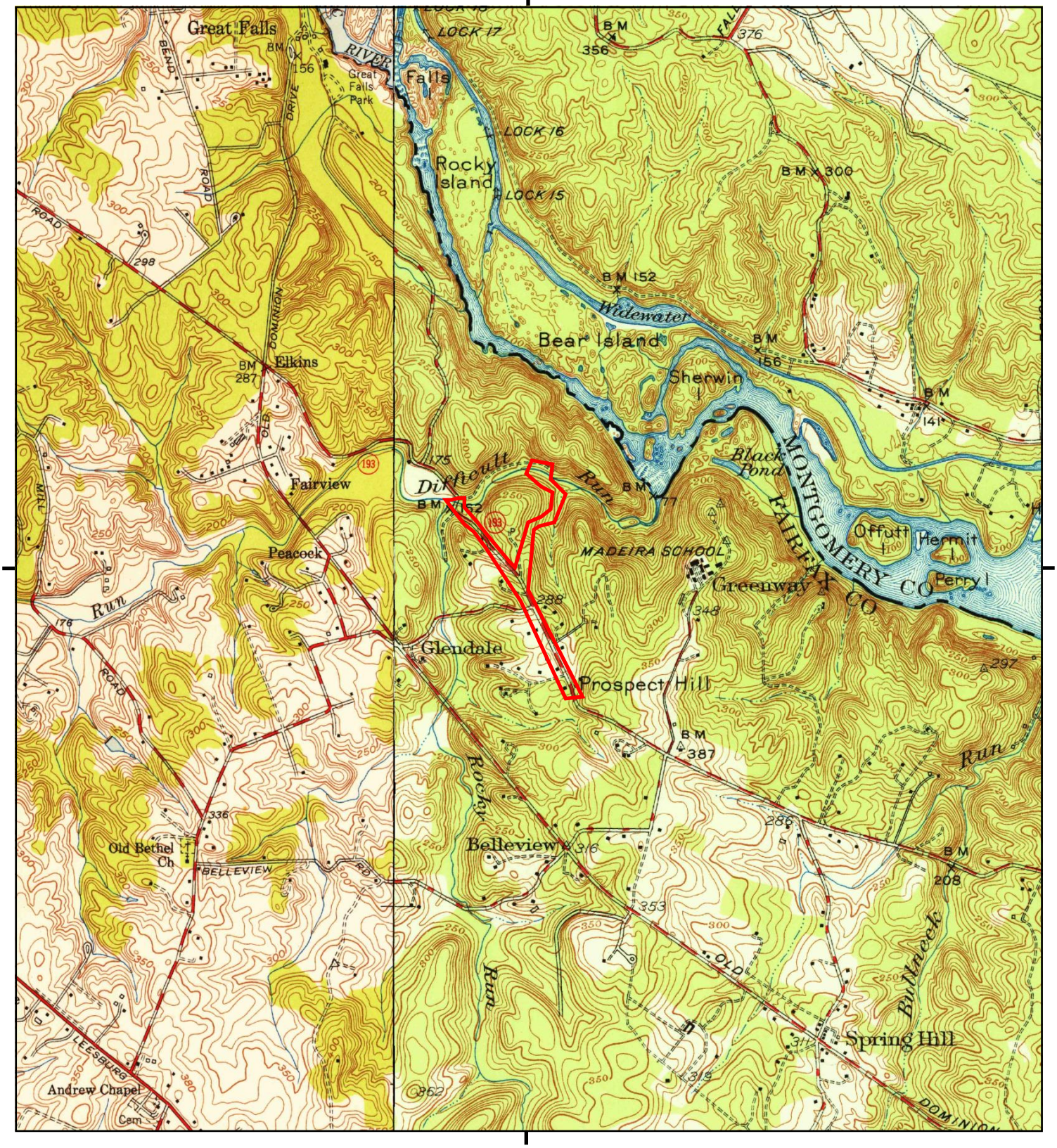
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Falls Church, 1965, 7.5-minute
SW, Vienna, 1966, 7.5-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

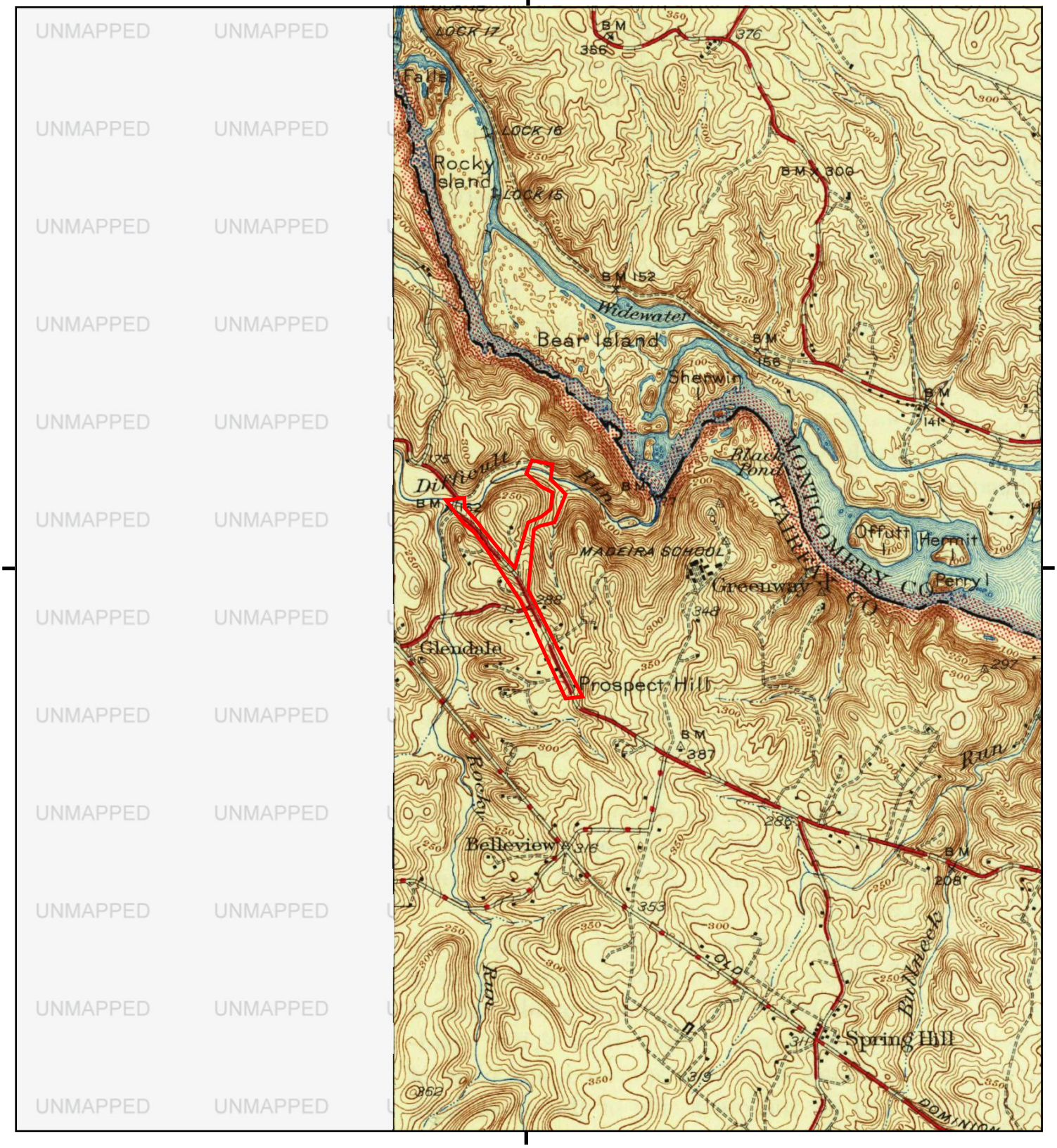
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Falls Church, 1951, 7.5-minute
SW, Vienna, 1951, 7.5-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

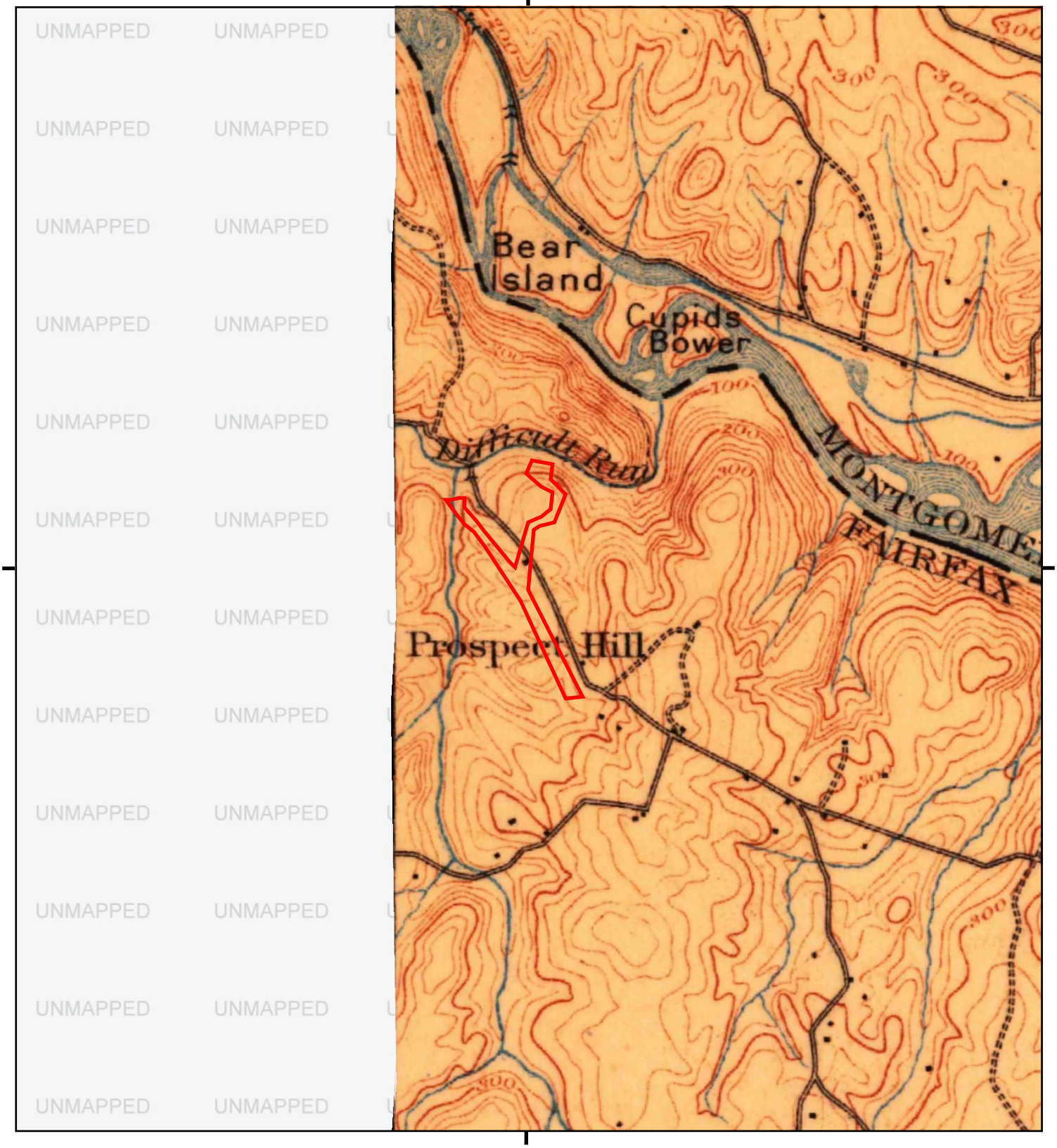
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Falls Church, 1945, 7.5-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

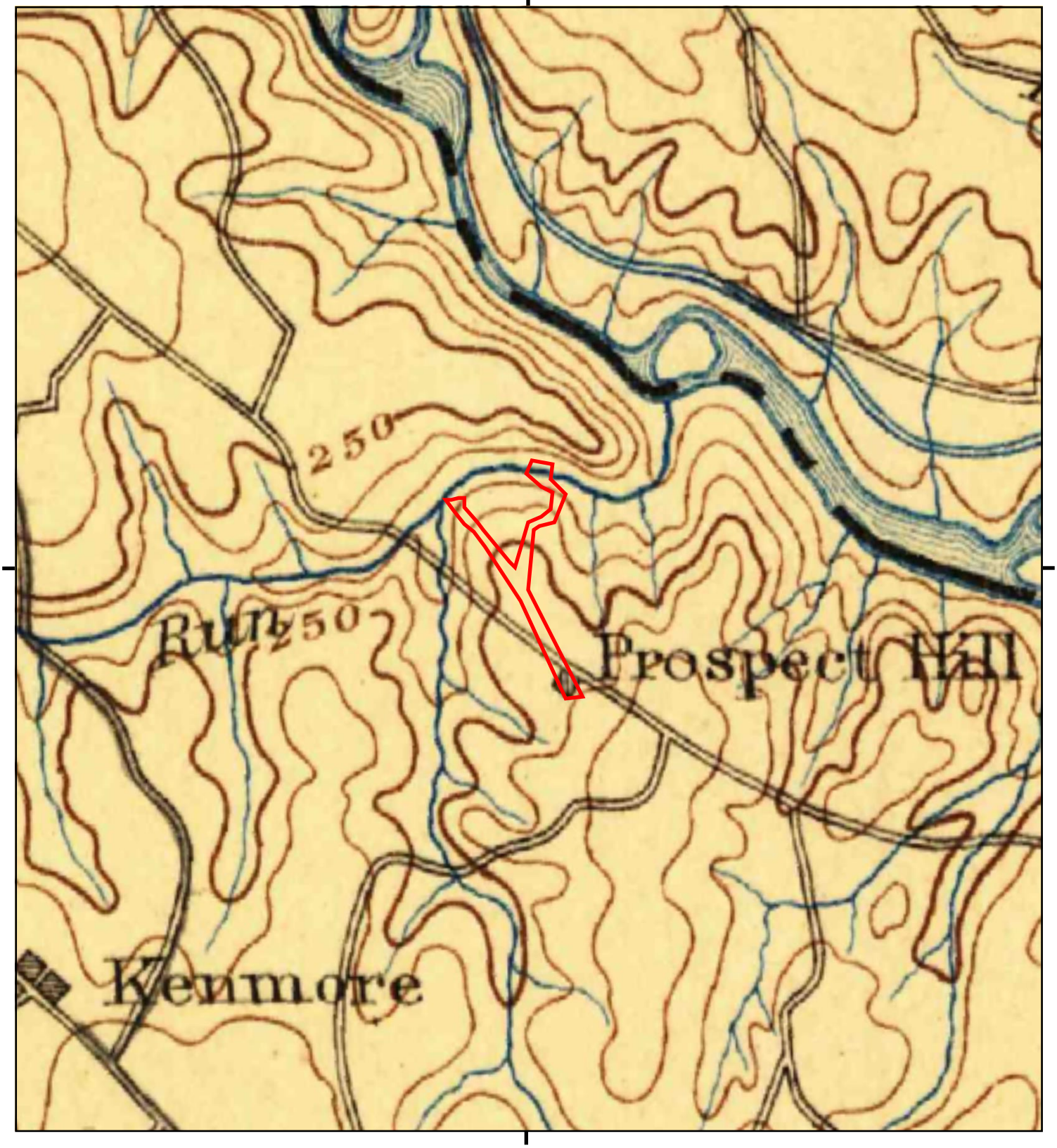
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Washington, 1900, 15-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

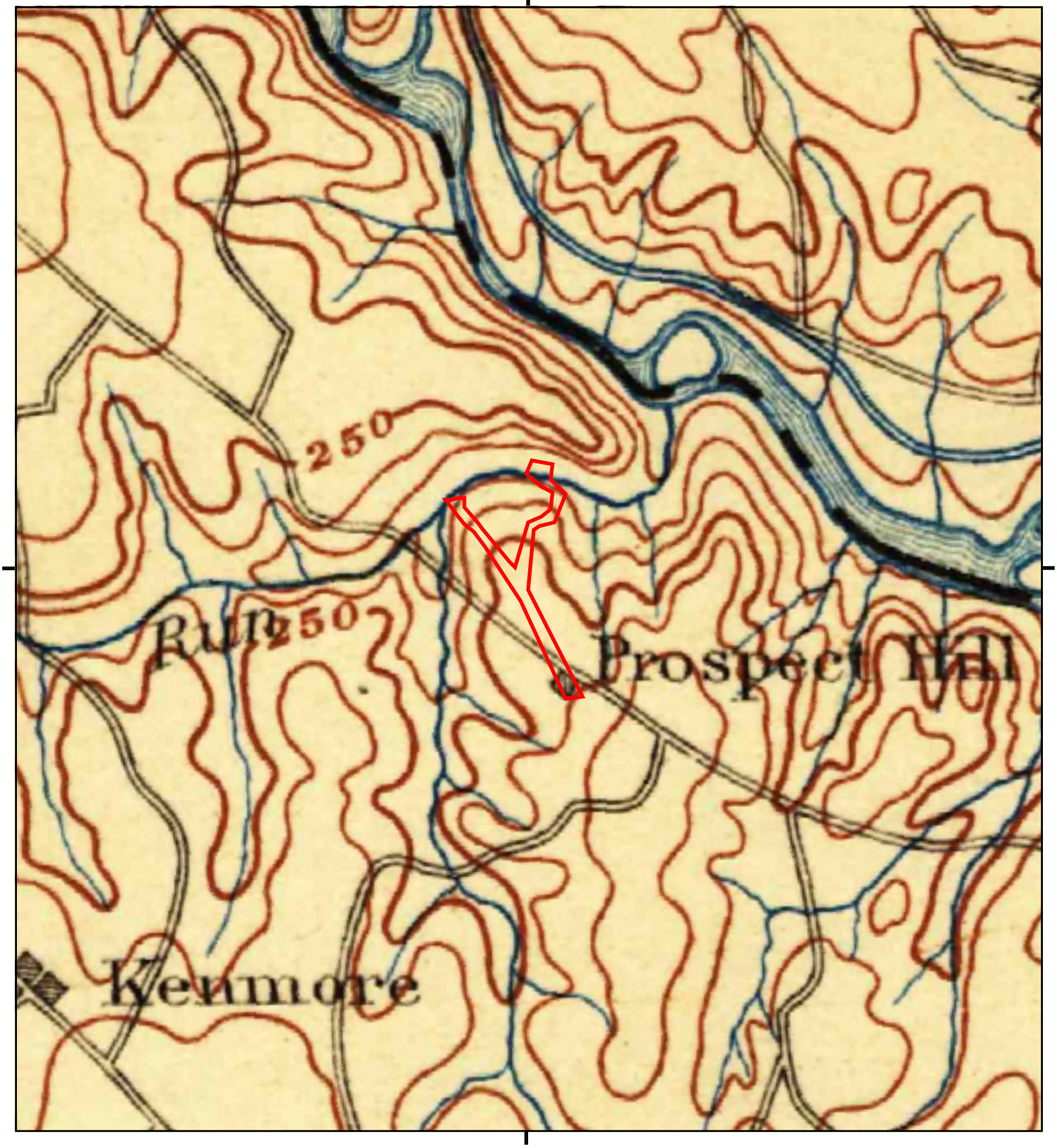
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mt. Vernon, 1897, 30-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

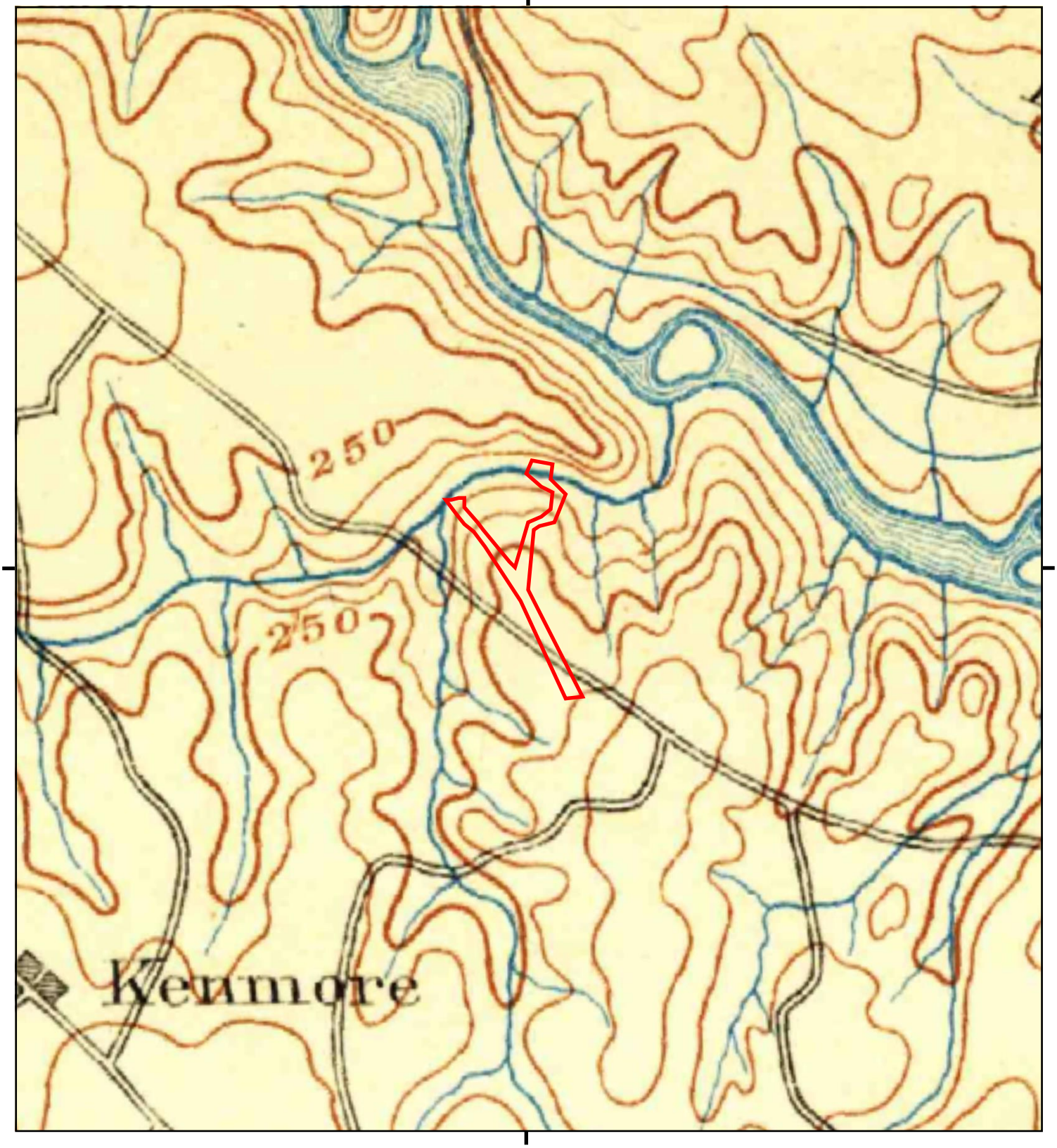
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mt. Vernon, 1894, 30-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



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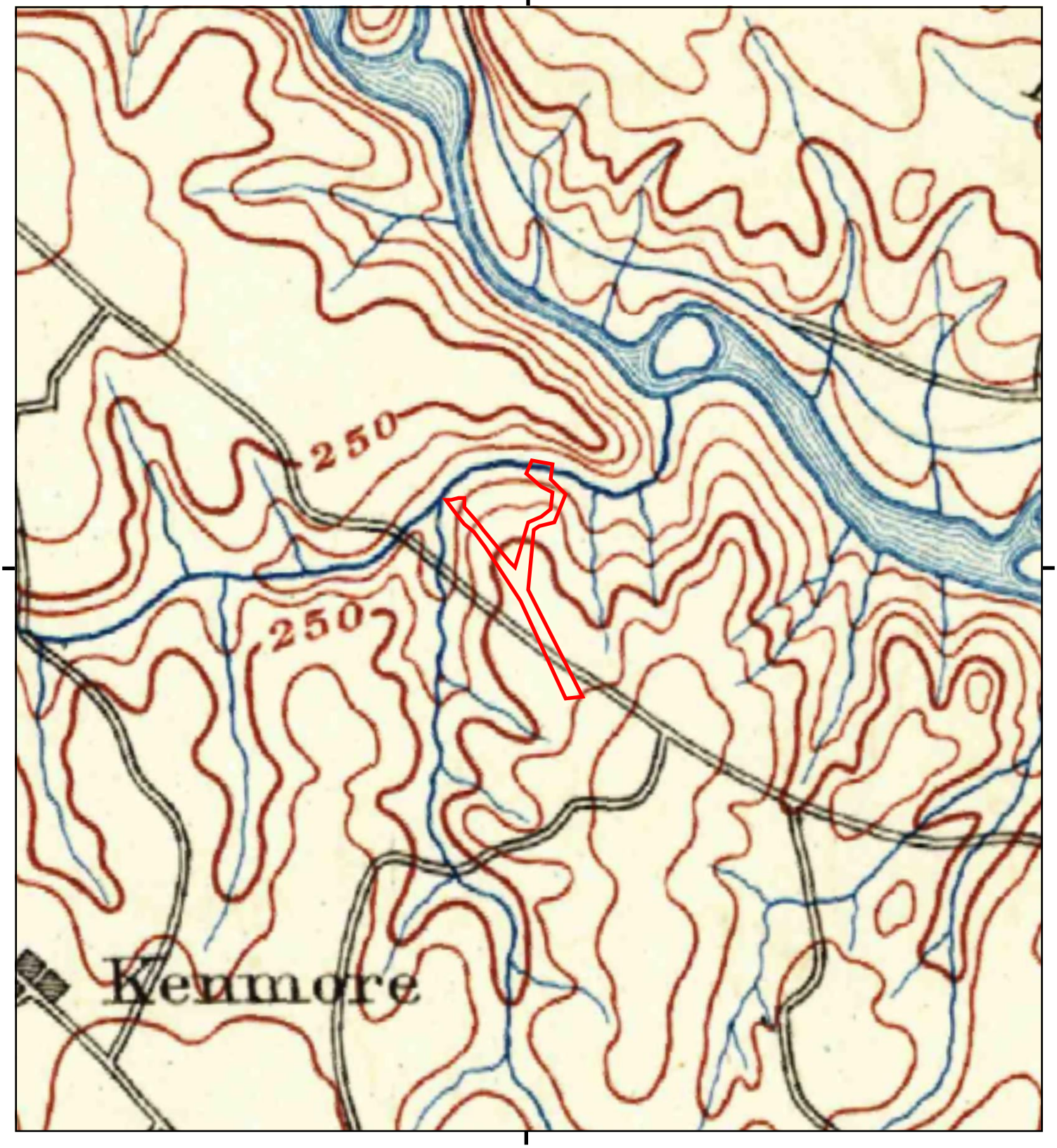
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mt. Vernon, 1891, 30-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

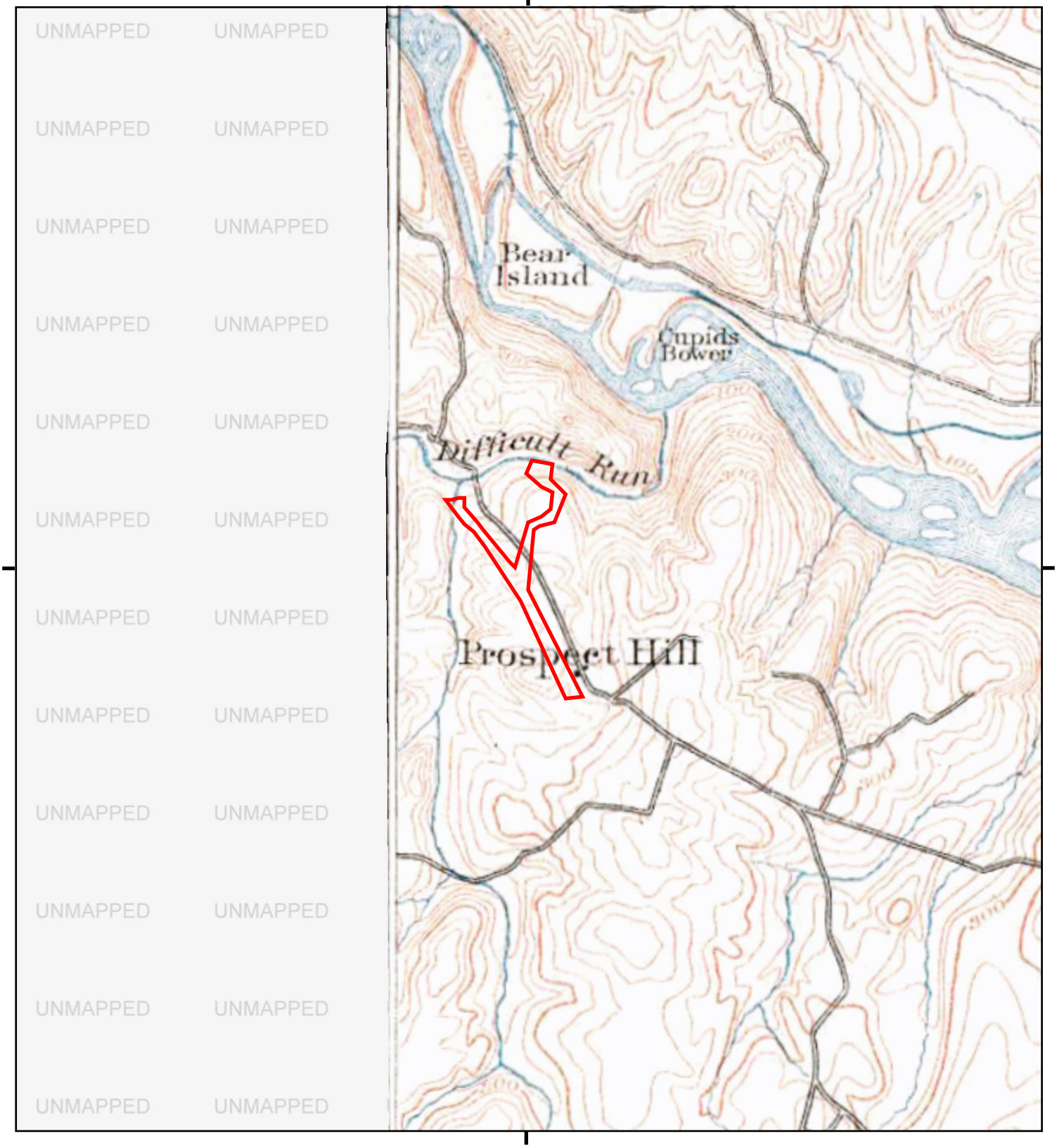
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mt. Vernon, 1890, 30-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, WEST WASHINGTON, 1885, 15-minute

SITE NAME: Georgetown Pike
ADDRESS: Georgetown Pike
Mc Lean, VA 22102
CLIENT: Kimley Horn & Associates

N

Georgetown Pike

Georgetown Pike

Mc Lean, VA 22102

Inquiry Number: 5528725.8

January 08, 2019

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

01/08/19

Site Name:

Georgetown Pike
Georgetown Pike
Mc Lean, VA 22102
EDR Inquiry # 5528725.8

Client Name:

Kimley Horn & Associates
4500 Main Street
Virginia Beach, VA 23462-0000
Contact: Nicholas Romano

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Search Results:

Year	Scale	Details	Source
2017	1"=500'	Flight Year: 2017	USDA/NAIP
2014	1"=500'	Flight Year: 2014	USDA/NAIP
2011	1"=500'	Flight Year: 2011	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
2000	1"=750'	Flight Date: March 31, 2000	USGS
1998	1"=750'	Flight Date: April 03, 1998	USGS
1994	1"=500'	Flight Date: March 17, 1994	USGS
1988	1"=500'	Acquisition Date: April 20, 1988	USGS/DOQQ
1980	1"=500'	Flight Date: August 24, 1980	USDA
1979	1"=500'	Flight Date: July 08, 1979	USDA
1970	1"=500'	Flight Date: July 17, 1970	USDA
1969	1"=500'	Flight Date: June 30, 1969	USDA
1963	1"=500'	Flight Date: March 18, 1963	USGS
1954	1"=500'	Flight Date: February 10, 1954	USDA
1951	1"=500'	Flight Date: September 28, 1951	USDA
1949	1"=500'	Flight Date: March 04, 1949	USGS
1943	1"=500'	Flight Date: September 27, 1943	USDA
1937	1"=500'	Flight Date: April 19, 1937	USDA

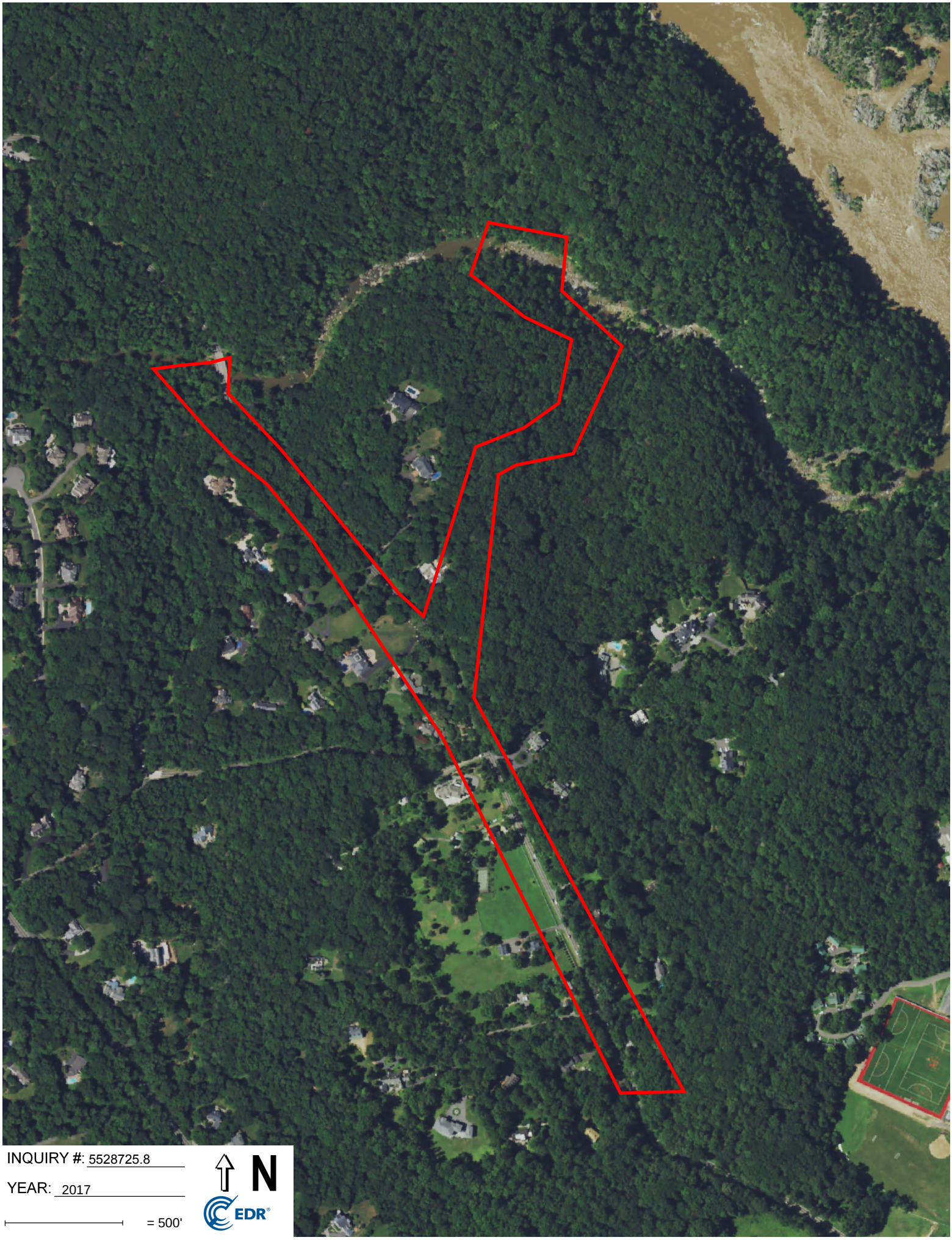
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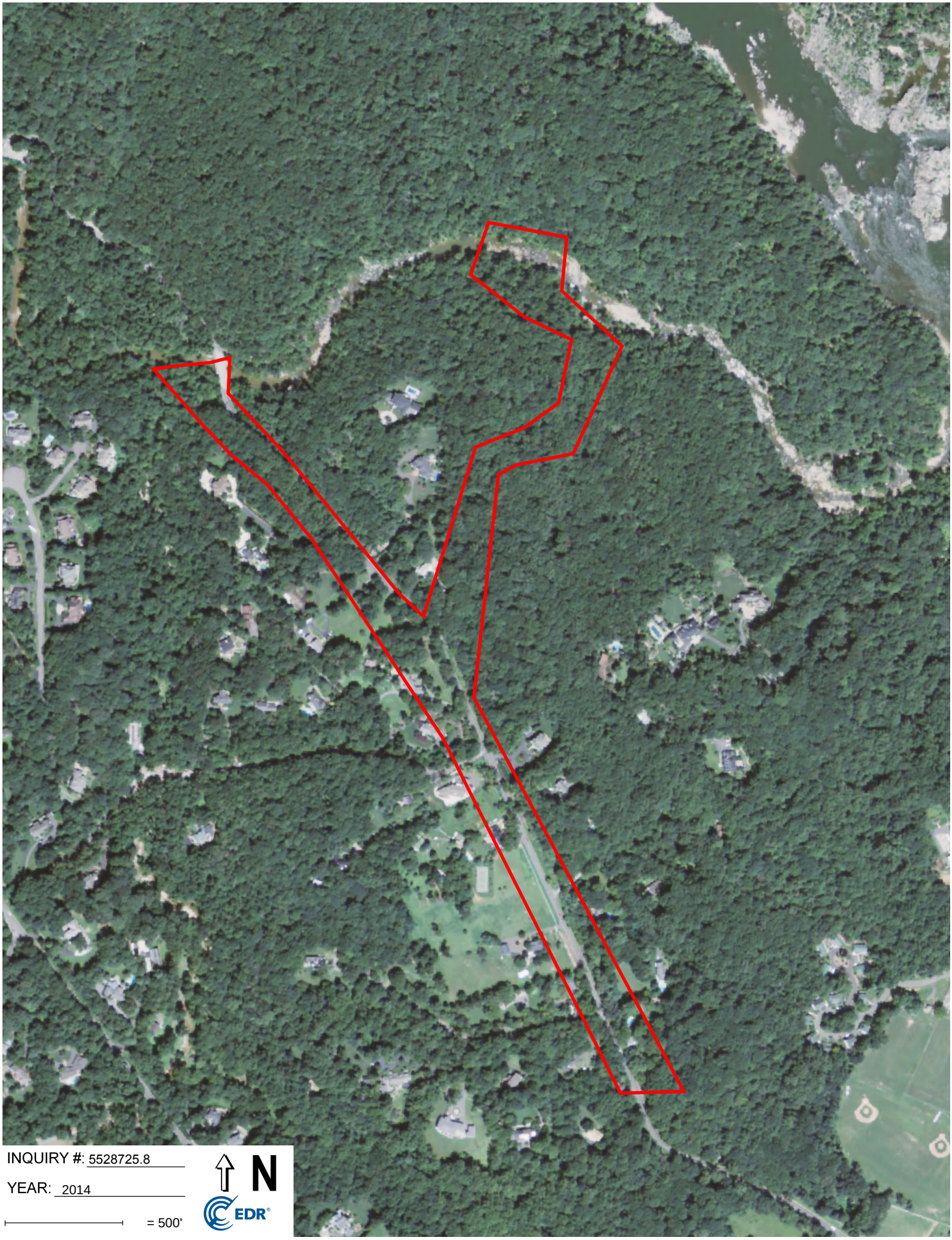
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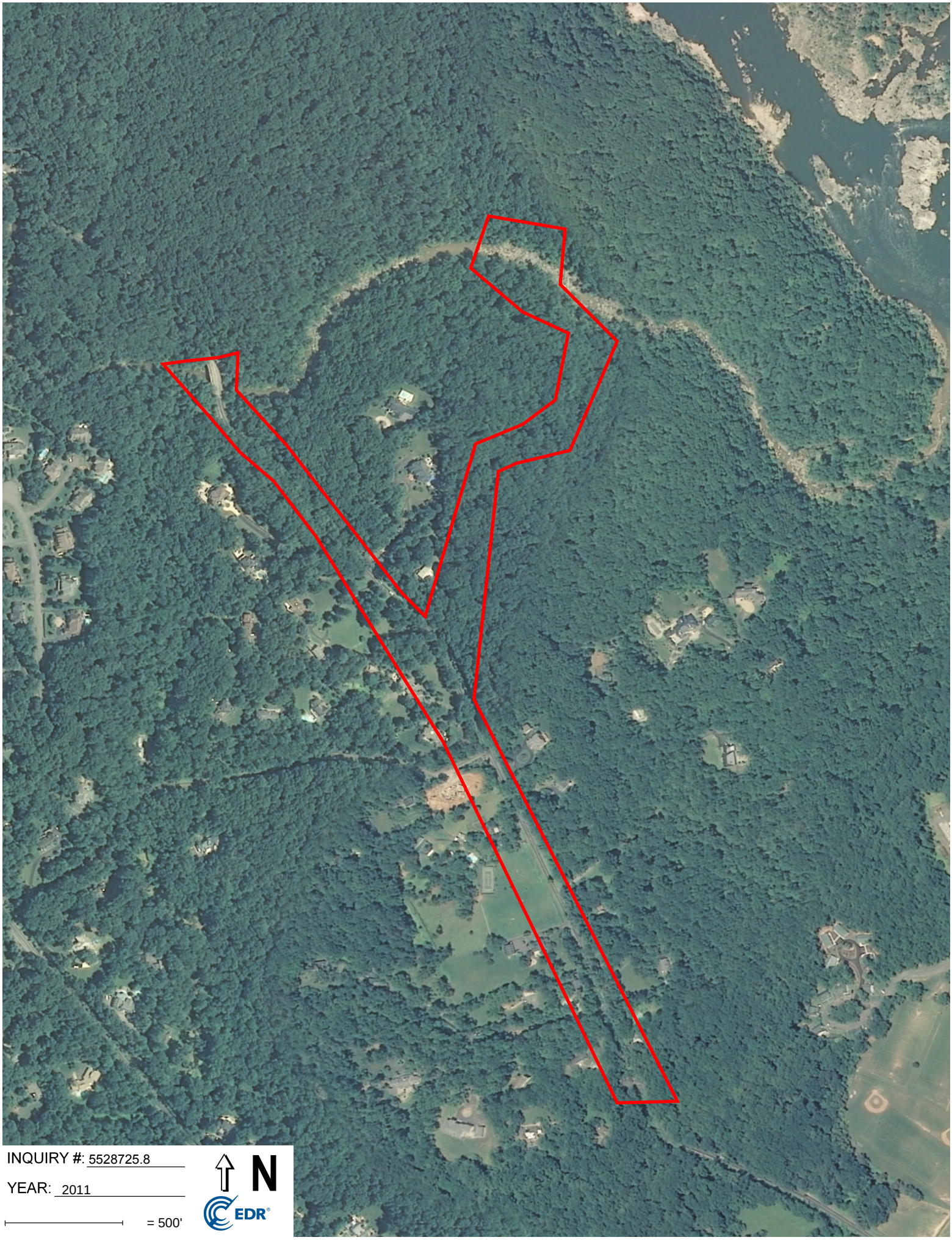
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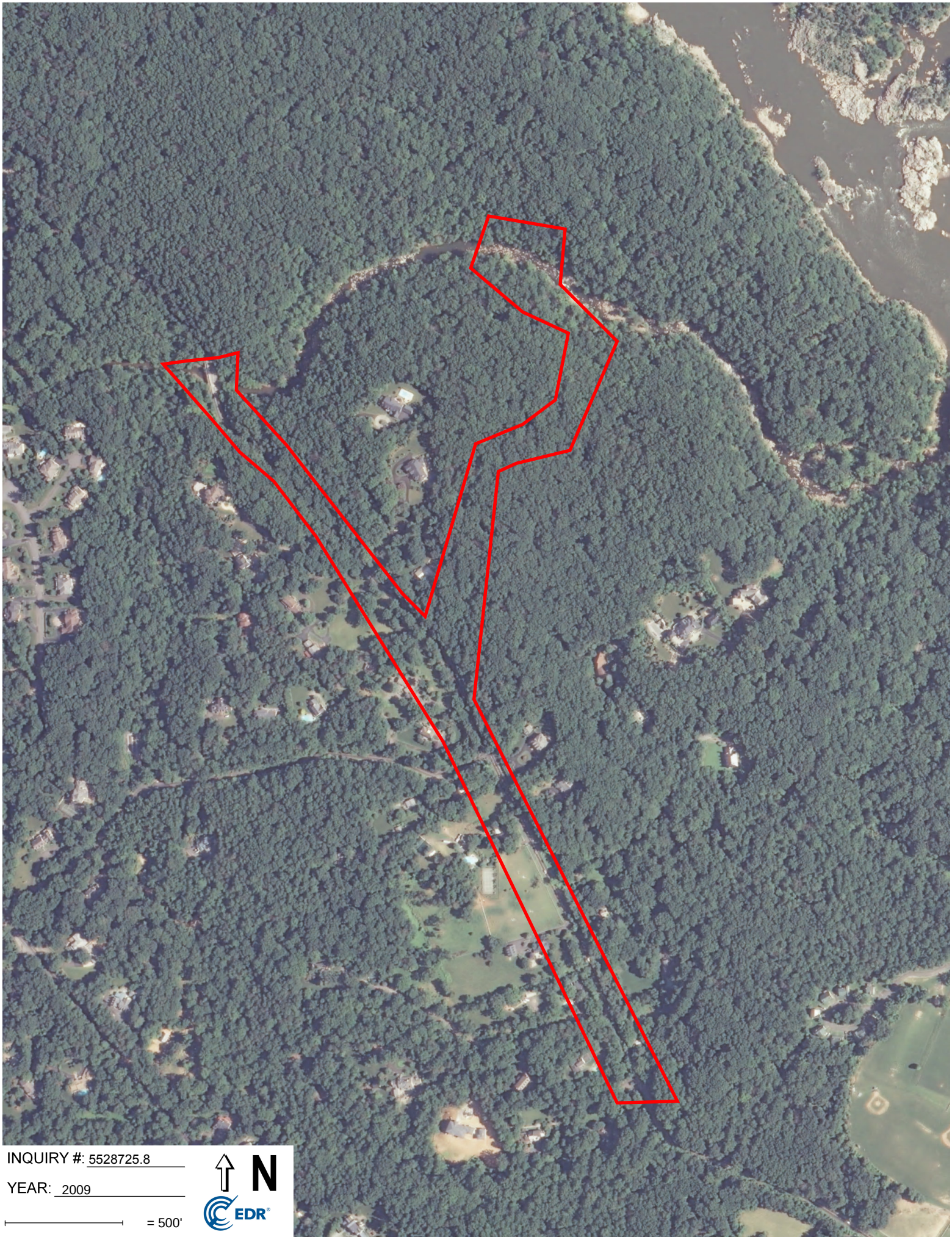
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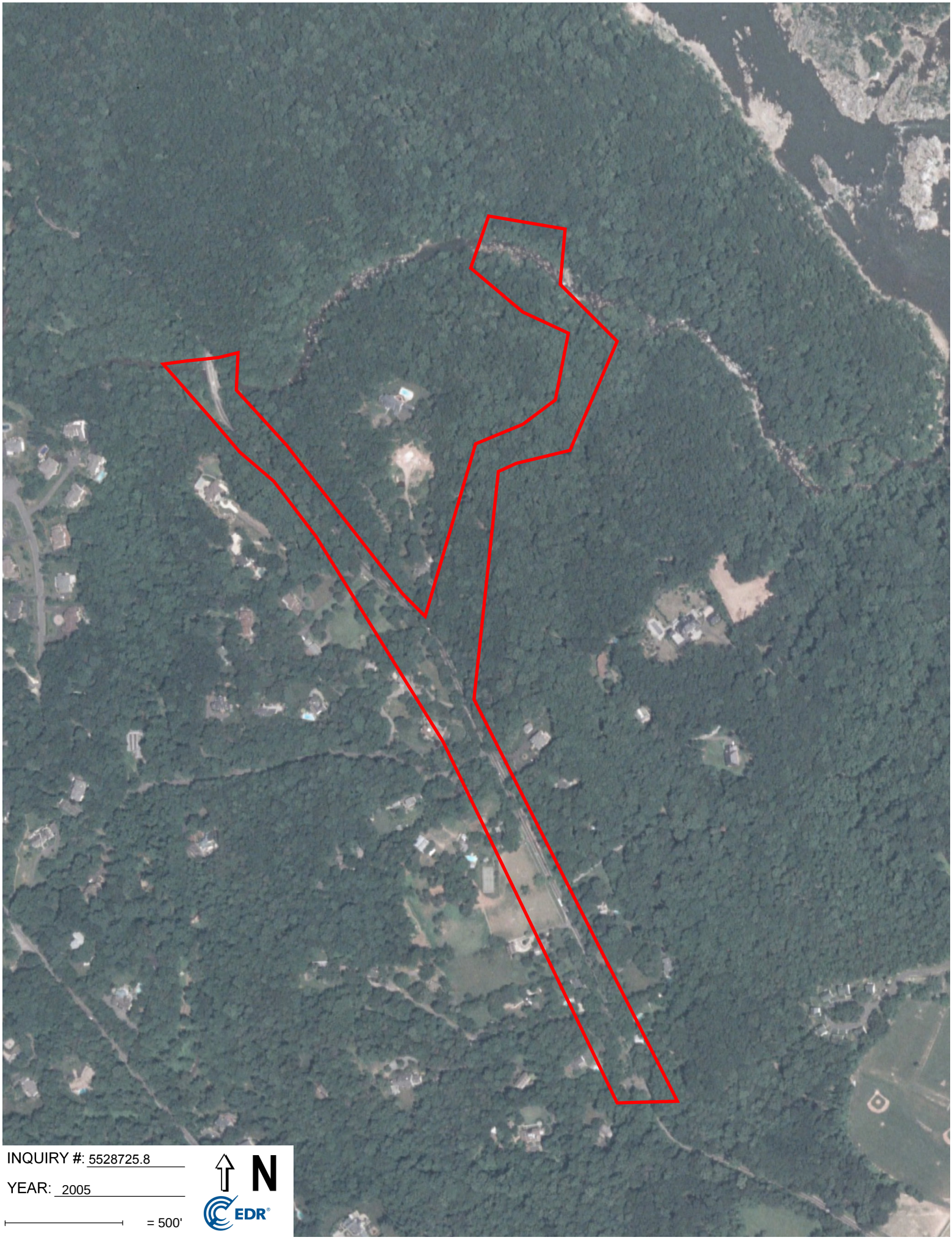
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YEAR: 2014
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YEAR: 2011
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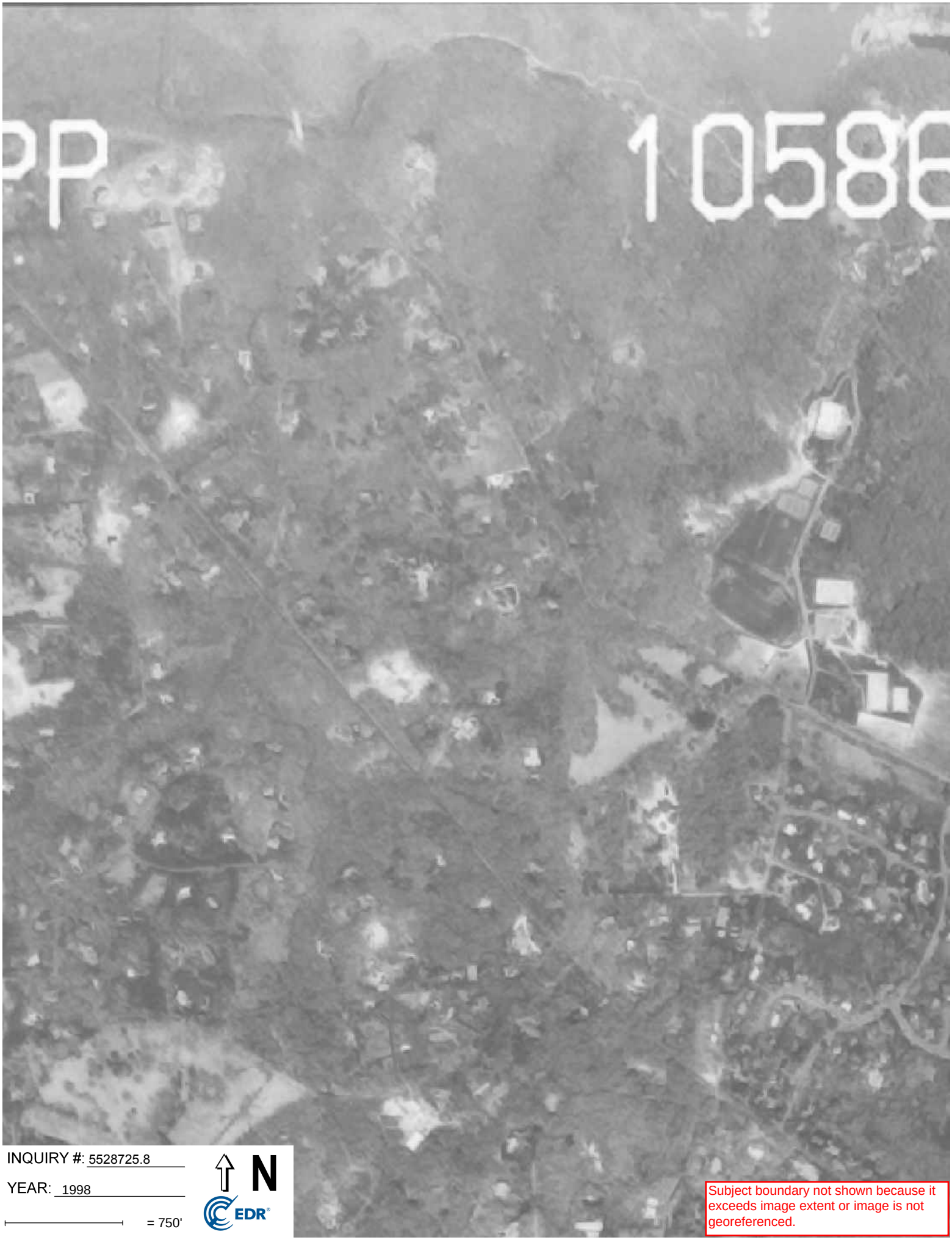
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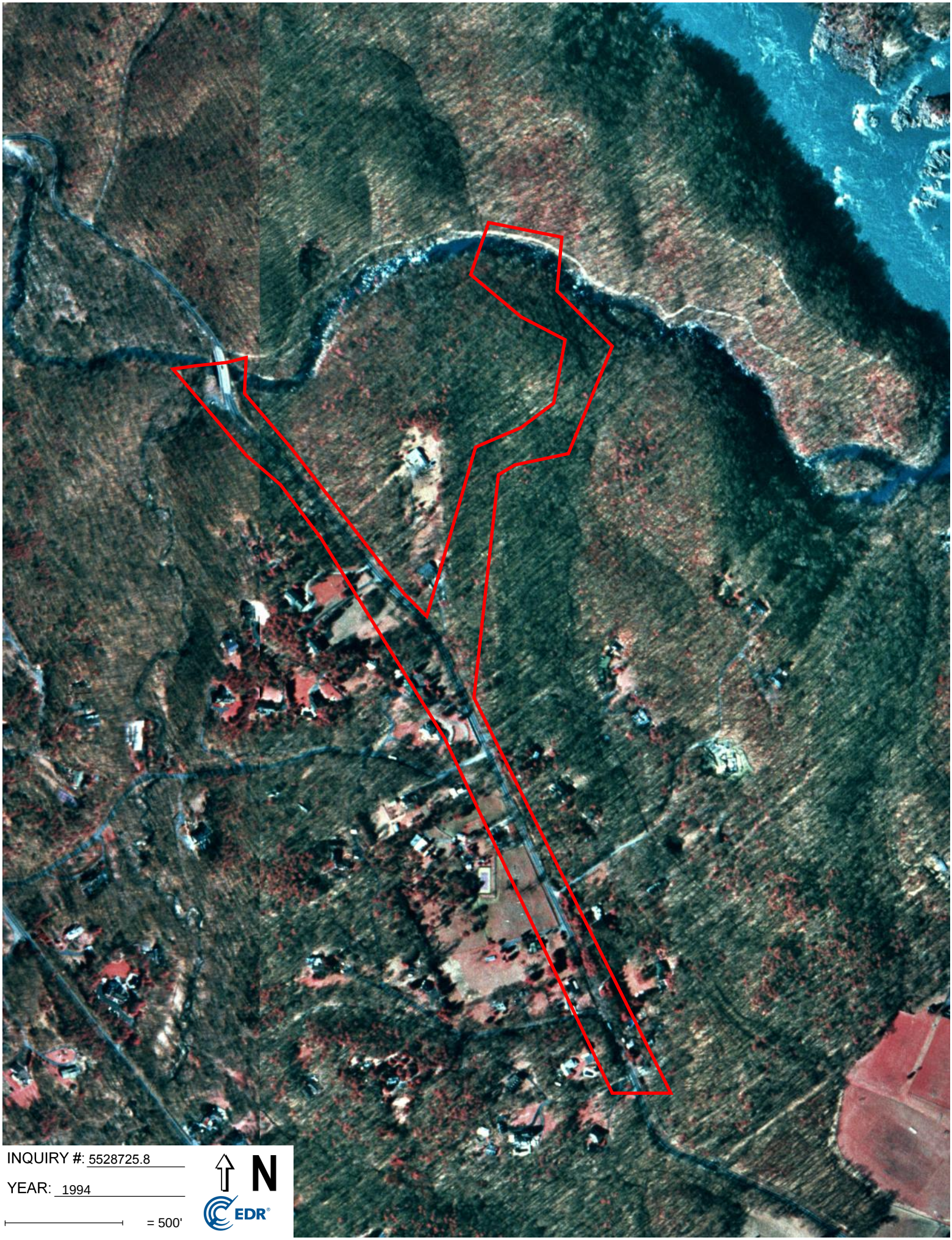
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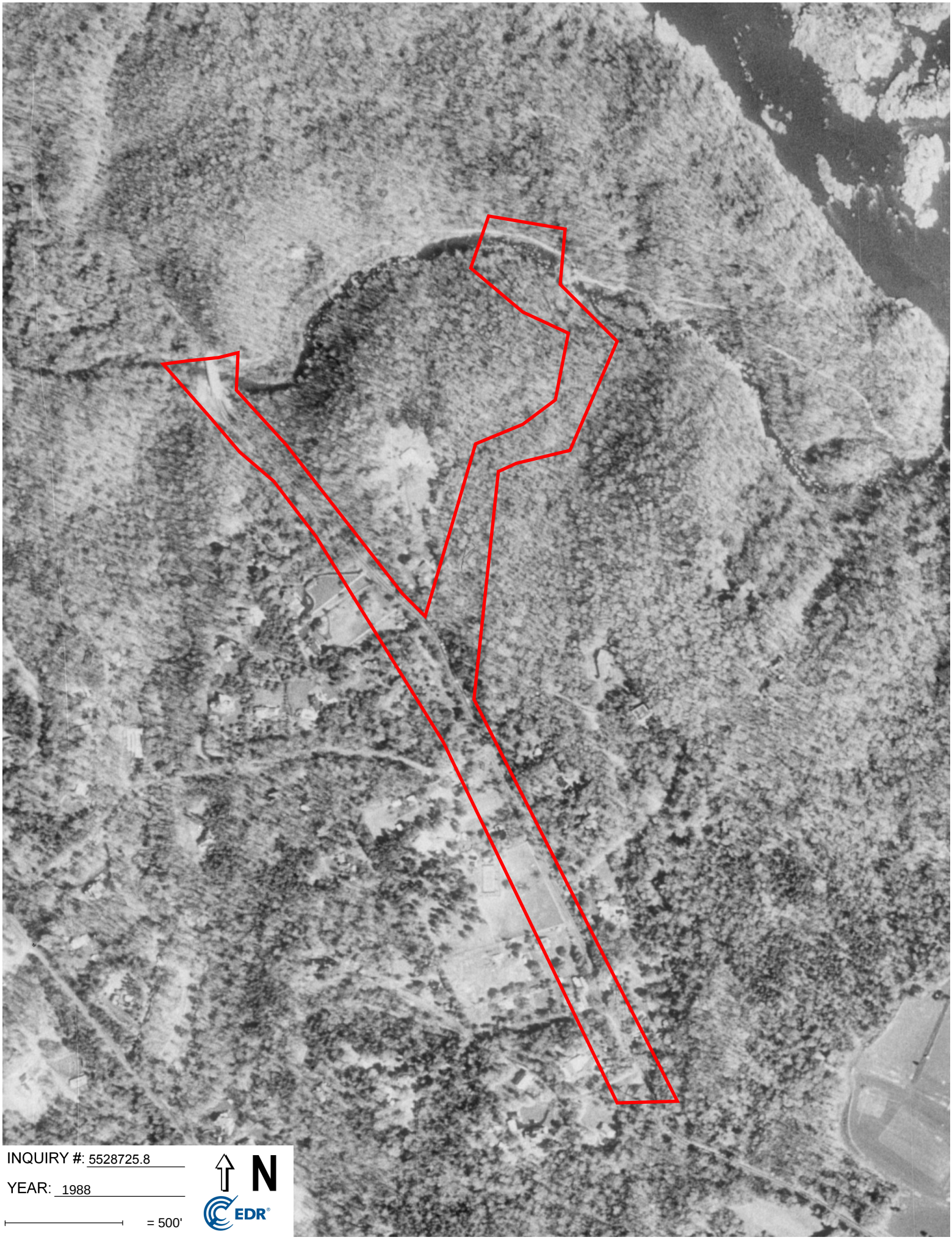
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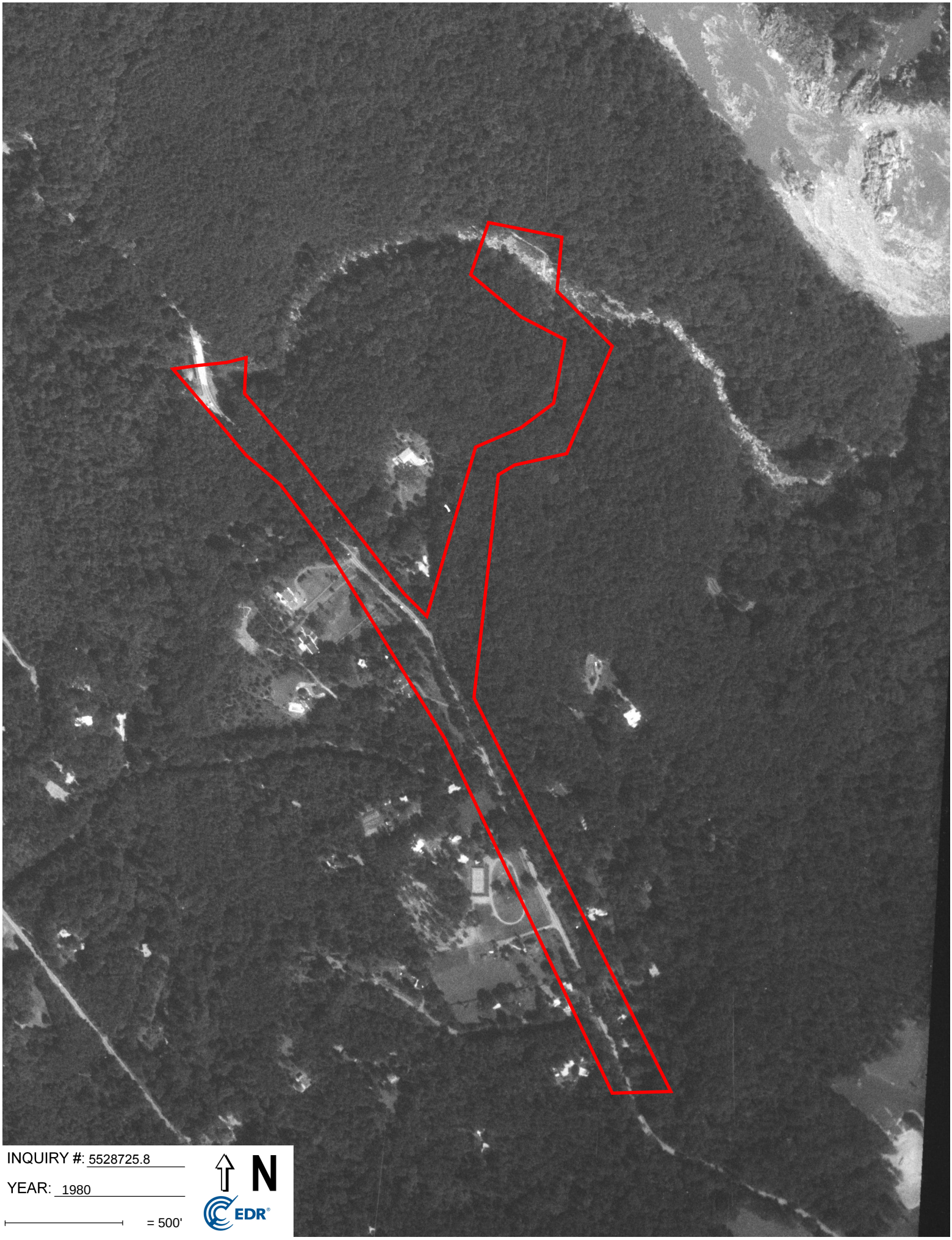
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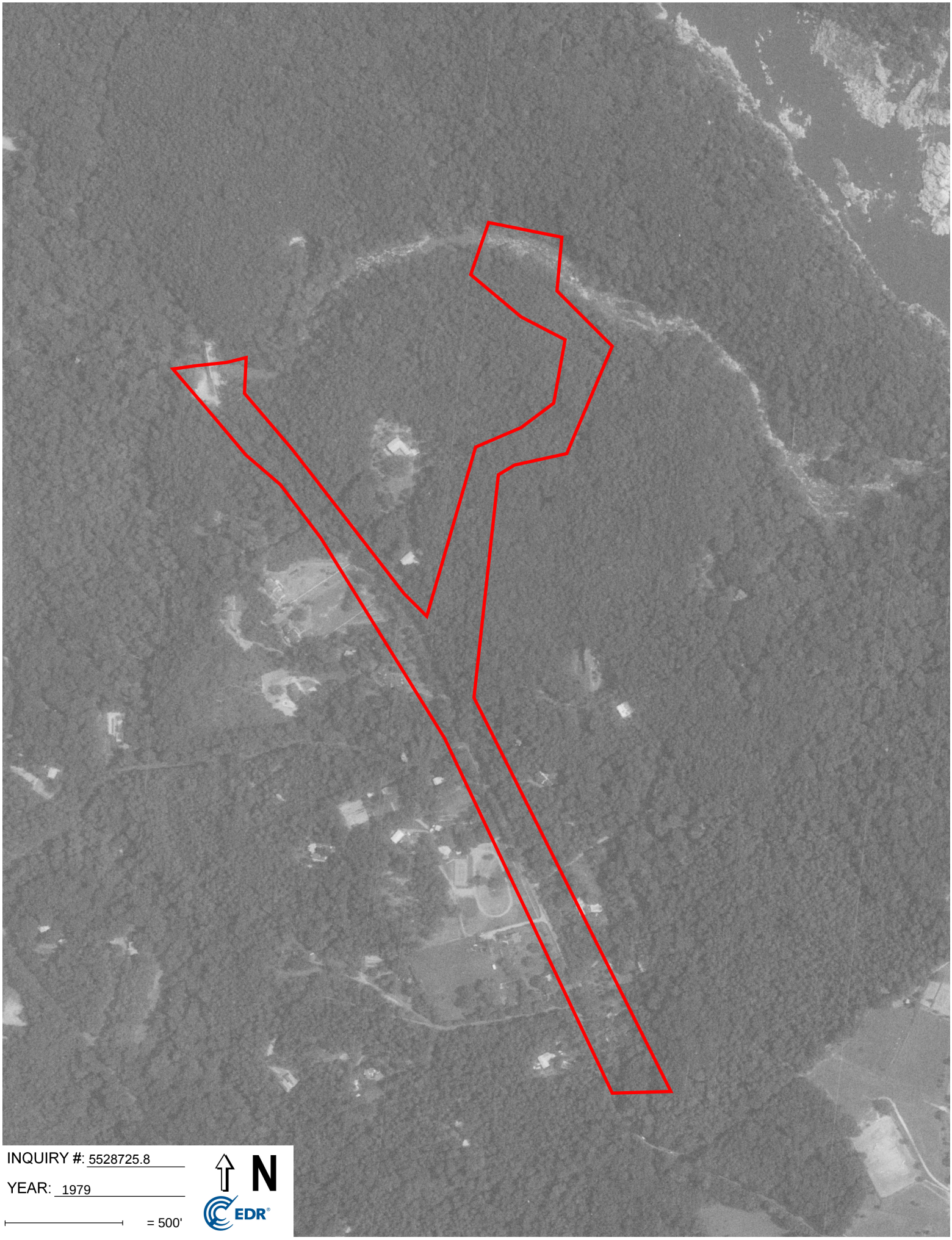
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YEAR: 1980
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EDR



INQUIRY #: 5528725.8

YEAR: 1979

= 500'

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INQUIRY #: 5528725.8

YEAR: 1970

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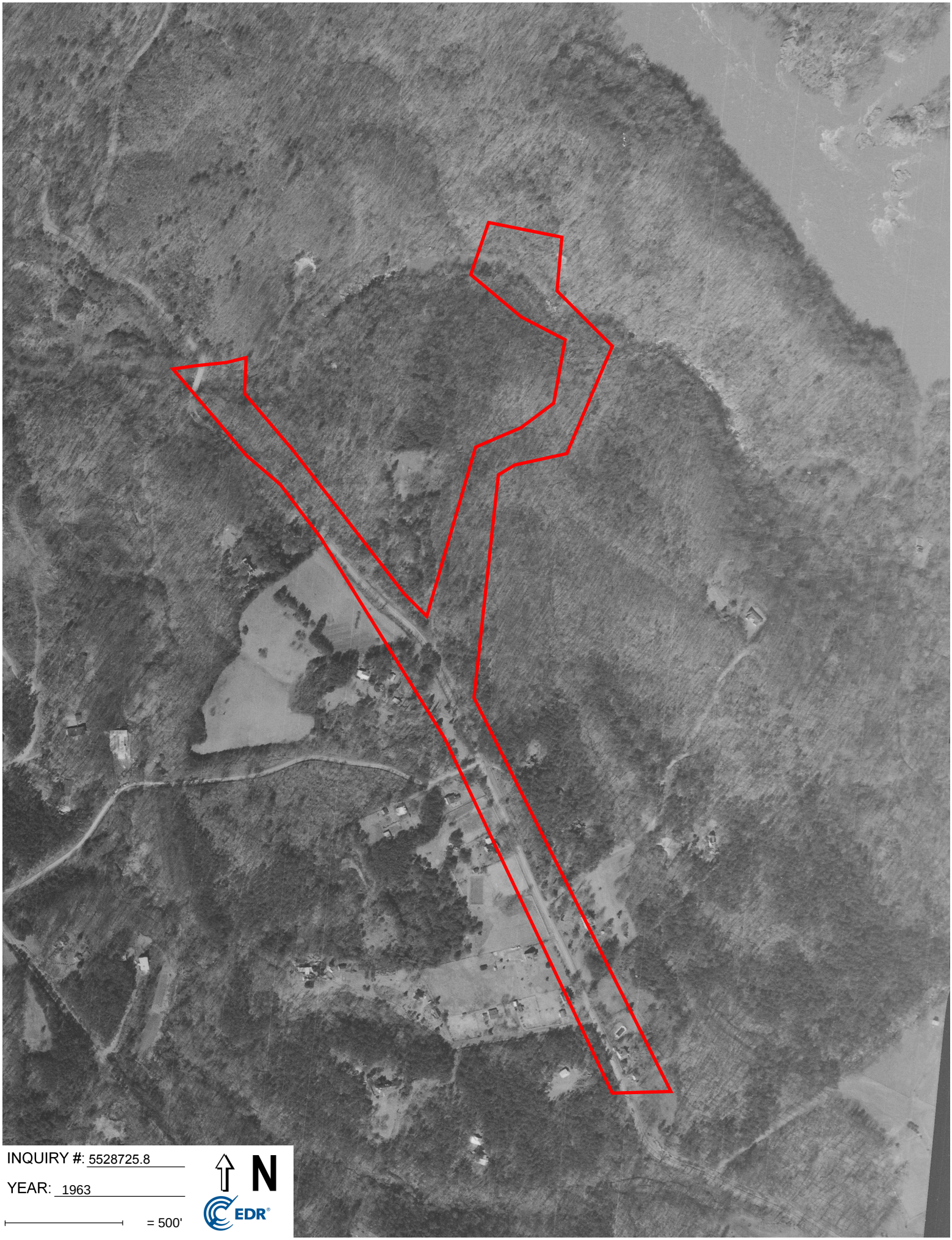
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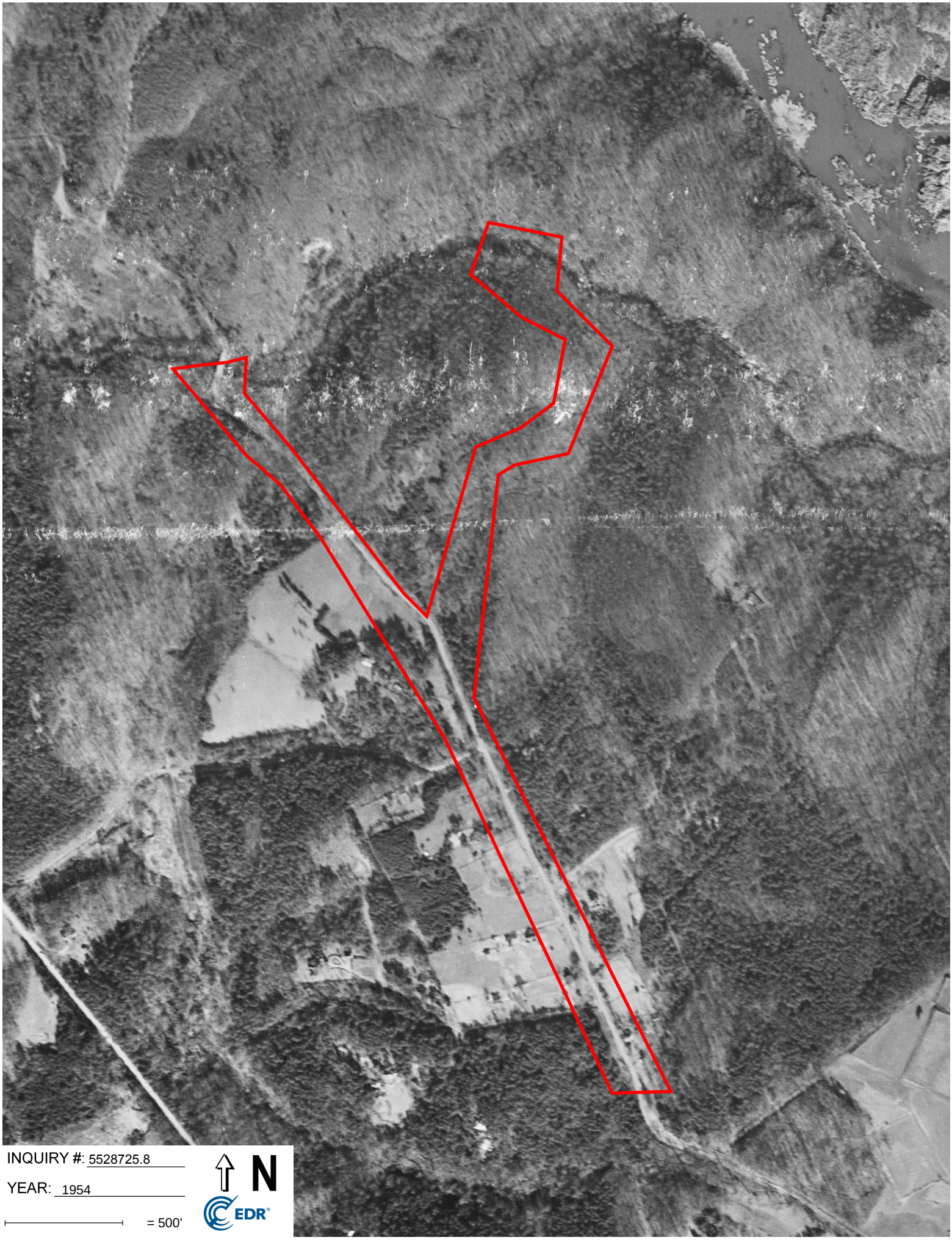
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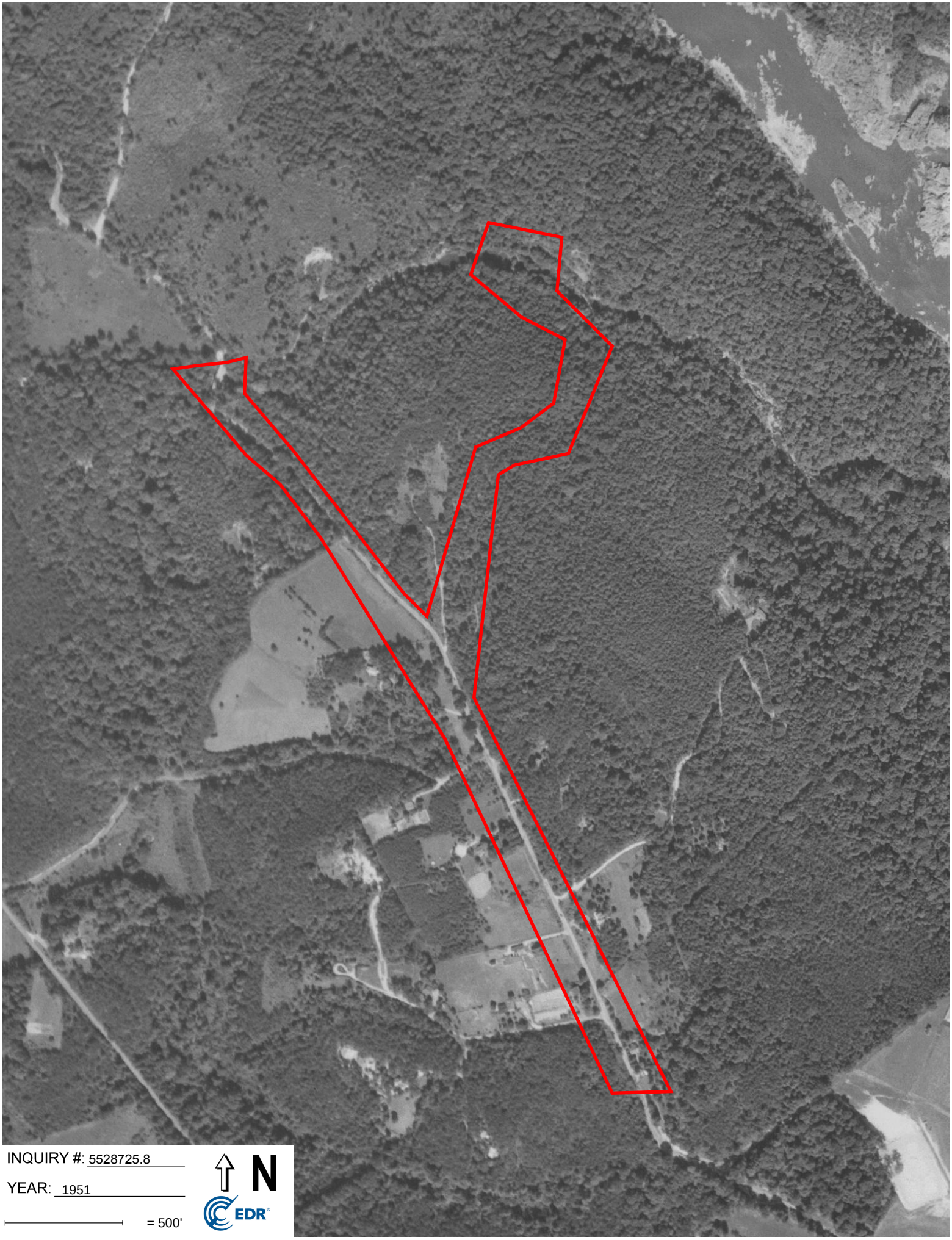
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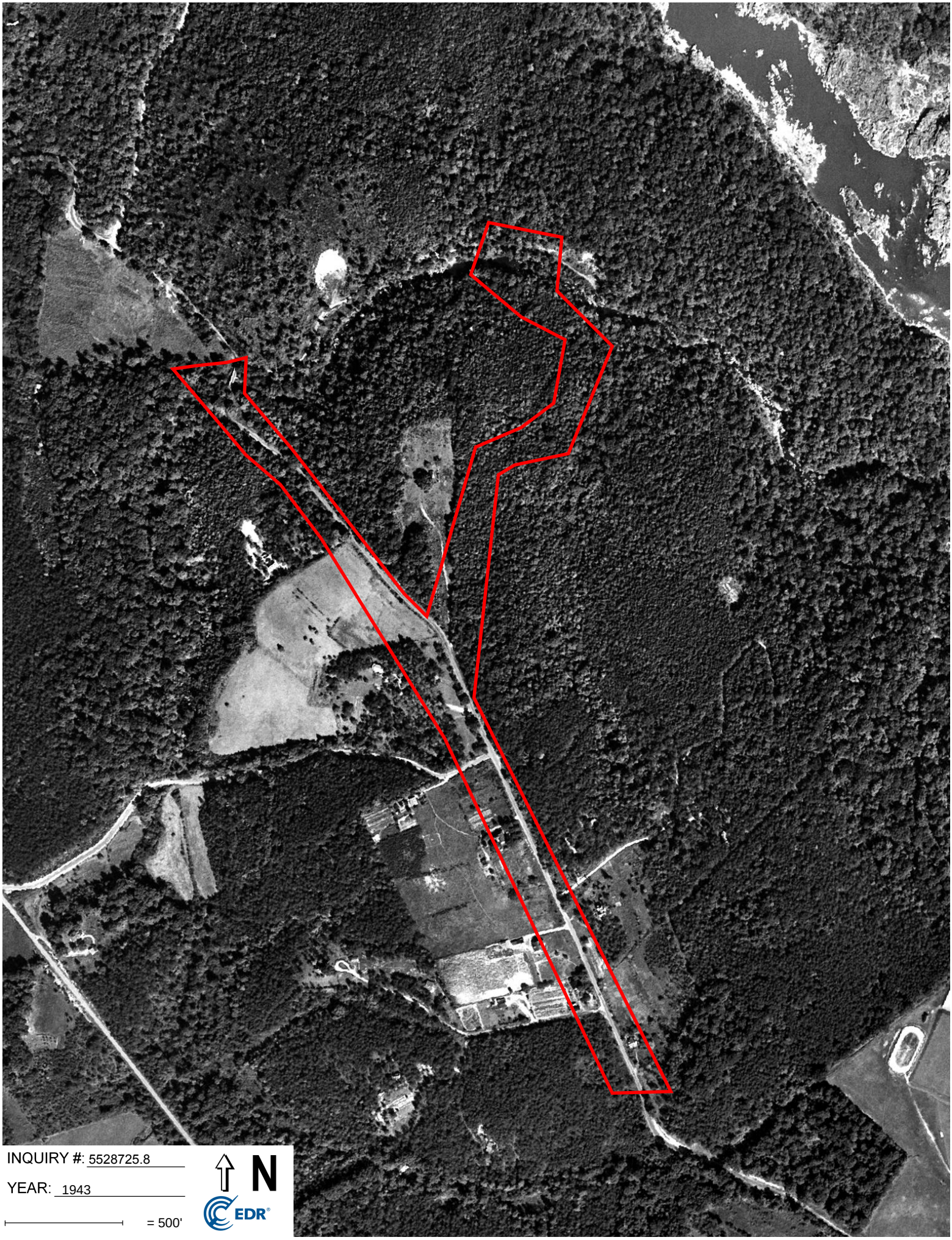
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YEAR: 1943
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INQUIRY #: 5528725.8
YEAR: 1937
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ATTACHMENT E

HISTORIC RESOURCES REVIEW

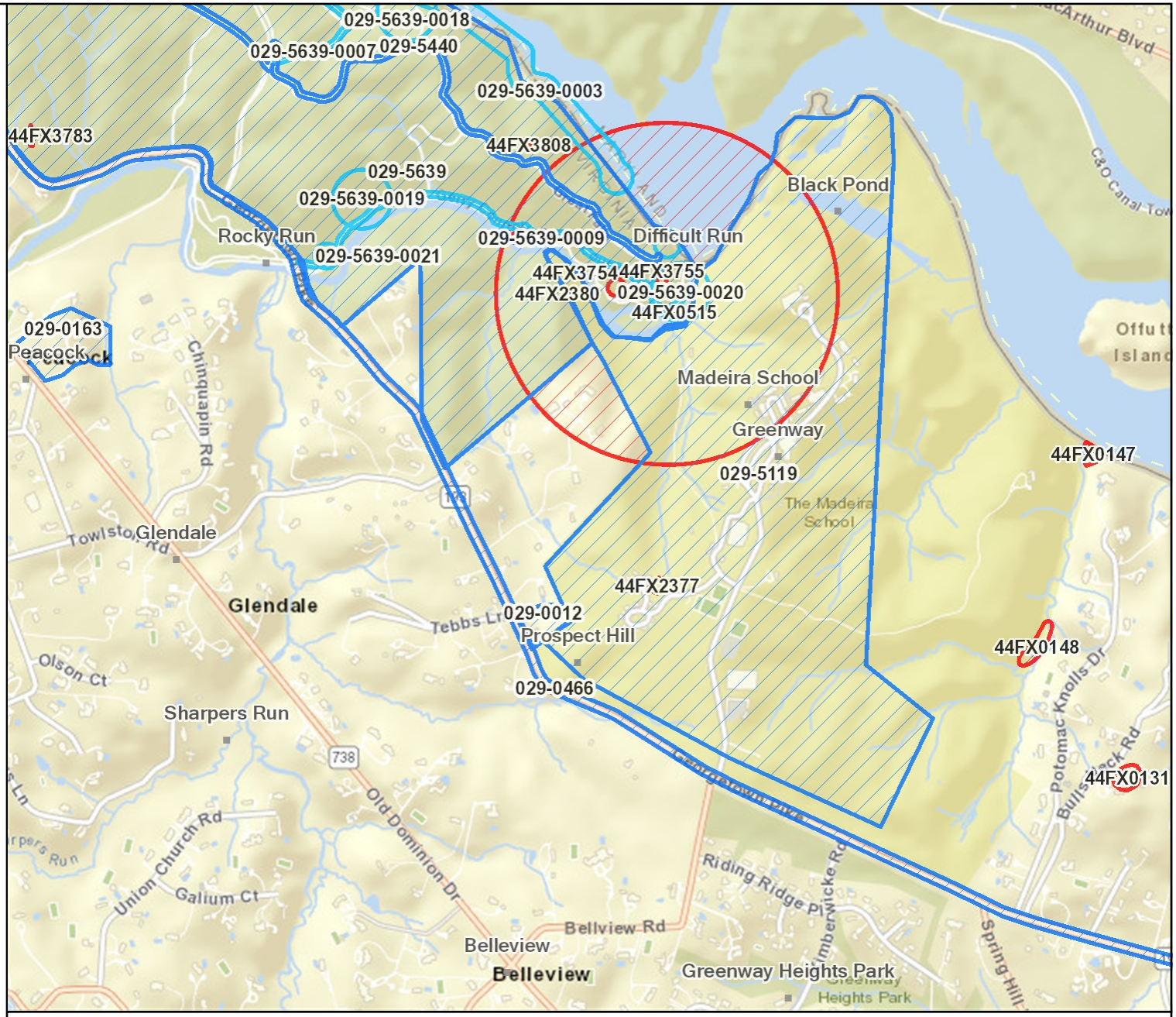
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- USGS GIS Place names
- County Boundaries



N

Feet

0 500 1000 1500 2000

1:18,056 / 1"=1,505 Feet

Title: Georgetown Pike **Date: 11/1/2018**

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Property Information

Property Names

Name Explanation	Name
Alternate Spelling	Drovers Rest
Historic	W.S. Oliver Place
Historic/Current	Drover's Rest

Property Evaluation Status

DHR Board Det. Eligible

Property Addresses

Current - 8526 Old Georgetown Pike Route 123

County/Independent City(s): Fairfax (County)
Incorporated Town(s): *No Data*
Zip Code(s): 22067, 22102
Magisterial District(s): Dranesville
Tax Parcel(s): 20-1-001-13
USGS Quad(s): FALLS CHURCH

Additional Property Information

Architecture Setting: Suburban
Acreage: 2
Site Description:

1971: Located on 2 acres, adjacent to the Madeira School property on Georgetown Pike (Route 193). The house faces east, with its south side very close to the road. The house is well screened from Georgetown Pike by extensive plantings and fencing.

At one time, there was a country store and post office in the structure that is now the garage. When Drover's Rest served an active clientele, there was a race course and also a dancing pavilion nearby.

2006: Drovers Rest itself sits very close to Georgetown Pike, at the far west end of the parcel. There is a garage southeast of the house and two outbuildings (the "slave quarters" and the stable) to the east. The stable is now used as a caretaker's cottage, and the slave quarters serve as an office and library. Another small outbuilding is northeast of the house, and a stone well is at the southest corner of the house. The site slopes down slightly towards the east, but just beyond the slave quarters the slope begins a steep ascent. The area surrounding the buildings is grass; the rest of the parcel, especially to the south, and the east, is forested. The forested portion is very steep. Madeira School owns the land to the east and the south, providing a wooded buffer. Despite its location on a busy road and in a developed area, Drovers Rest is very tranquil.

2008 PIF: Drover’s Rest, the main building, sits in the west side of the property, quite close to Georgetown Pike. There is a garage southeast of the house, which may have been used as a post office/general store. East of the house lies two outbuildings – one currently serving as a library and the other as the caretaker’s cottage. The library is built on to what is presumed to have been the original slave quarters, and the cottage was formerly the stables. Three additional, minor outbuildings sit to the north and northeast of the house, functioning as storage. An old, stone well is at the southeast corner of the house. The land slopes away from the Georgetown Pike, somewhat steeply at points, before a sharp ascent at the far eastern end. The landscape is grass with naturalized plantings, heavily forested at the eastern and southern lines of the parcel. The forested area is owned by neighboring Madeira School for Girls. Despite being so close to an increasingly busy road and heavily developed area of Fairfax County, Drover’s Rest is a peaceful haven.

Garage, Library, Caretaker's Cottage, and a structure referred to as "the slave quarters." Further research could be applied to the structure referred to as "the slave quarters."

Surveyor Assessment:

1957: Drover's Rest (originally known as W.S. Oliver Place) is currently owned by David P. and Elizabeth G. Gibbs and in use as a house. George Washington reportedly stayed here during construction of Potomac locks, most probably because it was a common stopping place used by many persons of that era.

1971: The name, Drover's Rest, commemorates the use of the house as an Inn, a convenient stopping place in the journey from the Shenandoah Valley and Leesburg to Georgetown. At one time, there was a country store and post office in the structure that is now the garage. When Drover's Rest served an active clientele, there was a race course and also a dancing pavilion nearby. No written documentation has been found to support the story that George Washington stayed there when he was overseeing the construction of the Potomac locks at Great Falls.

The residence is currently owned by Frederick P. Hitz.

1973: For many years used as an Ordinary on the Georgetown Pike, between Georgetown and Winchester, Virginia.

2006: This property was part of the Fairfax family's Towlston tract. Bryan Fairfax, in partnership with William Ramsay of Alexandria, built a "Merchant Mill and other houses necessary to accommodate the same" (see deed W-1, 384) sometime between 1757, when Fairfax inherited the tract after William Fairfax's death, and 1785 when William Ramsay died. Drovers Rest was one of these other houses built to accommodate the Towlston Mill. Its proximity to Georgetown Pike would suggest its use as a store, tavern or some other building catering to travelers. Samuel Walker received the deed to the property in 1836, although he was taxed for it beginning in

1832. After his death in 1845 Walker's wife Ann received the dwelling and two surrounding acres as her dower (will book U-1, 275). In 1866 she transferred the property to William Stanton Oliver, who also owned other land in the area, some of it purchased from Walker's heirs. The deed to Oliver notes that the dower lot was "assigned to the widow of Samuel Walker, dec'd, whereon he resided before his death." (G-4, 337). The month before the deed was finalized, Oliver was granted a license "to keep a house of Private Entertainment at his house in the County." (Minute Book 1863, pg 465). It is believed that Oliver operated his house of Private Entertainment at Drovers Rest. Oliver died in 1898 and his daughter Maggie inherited Drovers Rest and four surrounding acres. Maggie Oliver Leigh sold it in 1919 (L-8, 380). The current (2006) owner has owned Drovers Rest since 1975. Pearl Young, who owned and lived in Drovers Rest from 1920 - 1938, knew the Walker family and wrote of some of the family's adventures during the Civil War. Apparently, the house was raided by northern troops on more than one occasion. Oddly enough, the 1862 McDowell map appears to show W.S. Oliver at this location, with no Walkers in the vicinity. The 1860 census shows Ann Walker living in Loudoun County with two of her children. Mrs. Young also wrote that the building used as a garage was once a country store, and that there was a post office in the house at one time, and a race course "down beyond the garden where Manning Gasch's places are now (1948)."

2008 PIF: In 1737, Thomas, the Sixth Lord Fairfax commissioned John Warner and William Mayo to survey his lands of the Northern Neck of the Colony of Virginia. Completed by 1739, the map included Fairfax's Great Falls tract and Towlson Manor. In 1757, William Fairfax, of these Virginia Fairfax's, died, passing to his son, Bryan, the deed to the Towlston manor, a tract of land wherein Drover's Rest lies. On February 7, 1765, to this tract of land, Thomas, Sixth Lord Fairfax, gives to Bryan, "as a gift, the Manor of Great Falls, 12, 588 acres, adjacent to Bryan's Manor of Towlston". Between 1757 and 1785, Bryan Fairfax (close friend to Gen. George Washington) built upon a branch of Difficult Run a "Merchant Mill and other houses necessary to accommodate the same" as noted in a 1793 Tripartite Indenture between Fairfax, Richard Arell, and John Gooding [this detailed conveyance can be found attached to the Fairfax County Landmarks Inventory Report on Drover's Rest compiled by Susan Hellman]. While no remains of said Merchant Mill remain, the proximity section road crossing an offshoot of Difficult Run coupled with the 1748 Mill Act requiring mill dams support twelve foot wide public roads across their tops support the theory that the mill was close to the standing Drover's Rest. In addition, Drover's Rest abuts Georgetown Pike, lending itself well to use as store, residence, or other gathering site to a Towlston Mill. This tract of acreage passes out of the Fairfax family in 1826.
A heavily trafficked area, historic Georgetown Pike, as the route is currently known, was built by the Great Falls Turnpike Company in 1820. However, the roads in the area, as they now sit, are not dissimilar to their 18th century placement. A commonly used route, most of which was absorbed into the Pike, was known as the Sugarland Rolling Road – so named because area farmers would use it to roll their hogsheads and laden wagons from the plantations of western Fairfax (now Loudoun) County to ferry points further down the Potomac. The origin of the term "drover" has been associated not only with a livestock farmer who drives his herds or flocks to market, but also to one who drives his hogsheads from loading point to selling point. Drover's Rest sits upon this route, lending credence to its use as a contact point for Fairfax's mill business and possibly as an ordinary despite no documented license for the time period. A portion of the current Towlston Road, nearly visible from the far corner of the property, was used to facilitate Bryan Fairfax's travel from his home, Towlston Grange, to his mill – again supporting Drover's Rest was utilized during his use and residency of the tracts.

By the mid-1800s, the property rests in the hand of the Walker family (known in Great Falls). When Samuel Walker dies in 1845, the parcel is probated in dower to his widow, Ann: "laid off to her, by commissioners herein after appointed around the welling house at my mill on Difficult run". Ann is listed in the 1860 census as living on the property. By 1866 the property had been purchased by W.S. Oliver, and in September of that year, a "License is granted to W.S. Oliver to keep a house of Private Entertainment at his house in the Country, According to Law" (Minute Book 1863, 465). It is during this period that the property gains its name, Drover's Rest. From the W.S. Oliver, the deed passes into a modern chain of title.

There is a collection of folklore attached to Drover's Rest, both documented (although reliability is suspect) and through oral history. From the Family History of the Olivers, cattle drivers into Langley would stop here. Well-respected, local historian, Elizabeth Cooke, published a work compiling much of this information of the historic sites in this close area. She suggests Drover's Rest "certainly was built in the early 18th century and is excellently preserved in situ, and one of the most charming and delightful houses along the Georgetown Pike to-day" (50). While I will not argue her characterization of the charm of the house, she offers no evidence to her claim of its "early 18th century" construction.

A letter between previous owners – Pearl Young (1920-38) to Frederick and Florence Murray (1938-42) – is a trove of amusing anecdotes including meals of Brunswick stew being served to drovers, raids during the Civil War, the country-store-turned-garage, and the oyster suppers at a nearby dancing pavilion (possibly at the end of the trolley tracks?). Longstanding lore claims George Washington stayed in the house while surveying the Potowmack Canal, though with his chum, Bryan Fairfax's Towlston Grange so near, one doubts his choosing the meaner accommodations. Though evidenced corroboration of these stories is not always available, the mere fact that this old homestead serves as a gathering point for local history and prominent area families merits a certain value and supports the significance of Drover's Rest, even beyond its age and architectural worth. Elizabeth Cooke closes her report with "[t]his may very likely be the oldest building on the Georgetown Pike and is to be cherished" (50).

Surveyor Recommendation: Recommended Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category:	Domestic
Resource Type:	Single Dwelling
Date of Construction:	1785Ca
Historic Time Period:	Colony to Nation (1751 - 1789)
Historic Context(s):	Commerce/Trade, Domestic
Architectural Style:	Vernacular
Form:	*No Data*

Number of Stories: 1.5
Condition: Good
Interior Plan: *No Data*
Threats to Resource: Development, Transportation Expansion

Architectural Description:

1957: 1-1/2 story log and frame cabin, built in 1730 in the Colonial style.

1971: Early 18th century 1-1/2 story structure of clapboard-covered frame and log, with two large exterior stone end chimneys, a gable roof, and dormered windows. There were numerous alterations made in the early 19th century a well as some modernization in recent years. A very thorough restorcttion in 1932, was under the direction of Charles Whitaker, A.I.A. At that time the spaces between the logs were filled with mortar and the structure was covered with clapboard. The interior and exterior are both currently in good condition, and the building is not endangered.

June 1973: Early 18th century 1-1/2 story log cabin, restored in 1932 under the supervision of Mr. Charles Whitaker, A.I.A.

Although the original basement kitchen is now on the first floor; the exterior has been insulated and covered with weatherboard; and the loft bedrooms have been insulated and plastered with the addition of the two dormers (shown in the photo); the overall effect is very pleasing, and much of the original fabric remains.

The structure and grounds are in excellent condition, but are threatened by proposed four lane project by the Virginia Dept. of Highways.

Interior Description: See VHLC Survey (June 1973) for detailed measurements.

2006: Drovers Rest is a one-and-a-half story log structure clad in weatherboard, with a composition shingle side gabled roof. Logs and mortar construction are covered with weatherboard painted red. The original two room section of the four bay house has an uncut fieldstone foundation with a raised basement with an outside entry on the east elevation. According to the current (2006) owner, who has owned the house since 1975, the original kitchen was in the basement. The basement ceiling has round hewn logs, supporting the floor above. The roof was replaced in 1985, but the original beams were left in place beneath it.

The primary elevation faces south. The medium pitch roof has two gabled dormers on this elevation. The roofline breaks slightly at the dormers. Each dormer encompasses two six-light windows, side by side. The four bay elevation has two jib windows at the west end and a door and a jib window on the east end. The bays are unevenly spaced, with an obvious gap in the center. The jib windows are six-over-six double-hung sash, with wood paneled lower portions that could open at one time (it is unclear whether or not they may still be opened). The door, which is the second bay from the east east end, has a long eight-light window with a lower panel similar to the jib doors of the windows. The two east bays have small windows beneath them, providing light to the basement level. A small porch provides entry to the door. The roof overhangs this elevation, sheltering all openings. It is supported by piers with classical bases and capitals. The openings also have classical surrounds. All trim is painted white. A circa 1875 photo of Drovers Rest shows the porch spanning the entire south elevation.

The east elevation has a below grade cellar door at the south corner, with an adjacent exterior stone chimney. The chimney is painted shite. Windows are irregularly spaced on this elevation. The continuous sloping roof covers newer additions to the north end of the house. A dining room, kitchen, and storage area were added here. On the interior, several steps down between the original structure and the additions allow for higher ceiling height and exit onto the back patio at ground level. The interior walls of the original portion of the house display the log construction. Some of the walls have stone nogging, which 20th century owners reinforced with concrete. Other walls have plaster between the logs, so it is unclear what the original nogging was. An interior brick chimney, on the west side of the house, was moved during one of the house's renovations.

2008 PIF: The main domicile of Drover’s Rest is a one-and-a-half story log structure covered with painted weatherboard. Its principle structure is hand-hewn logs and support beams chinked with stone and mortar. The original two-room section of the four-bay house has an English basement with an uncut fieldstone foundation and an outside entry on the east elevation. It is believed that the original kitchen was in the basement; this theory being founded on the size of the stone hearth located there. The basement ceiling shows round hewn logs, supporting the floor above. The roof was replaced in 1985, but the original beams were left in place beneath it.

The primary elevation faces south, displaying its composition, side gabled roof and two gabled dormers. These dormers consist of two 6-light windows, side by side. A previous owner indicates that the dormer windows were the result of a 1932 restoration by Charles Whitaker, A.I.A. The four-bay elevation has two jib windows at the west end and a door and a jib window on the east end. The jib windows are 6-over-6 double-hung sash, with wood paneled lower portions. The main entry door has a long 8-light window with a lower panel similar to the jib doors of the windows. A small porch provides entry to the door, and the pitch of the roof overhangs the entire width of this elevation. This section of the roof is supported by piers with classical bases and capitals. The weatherboard is painted red with white trim. Changes have been made as a circa 1875 photo of Drovers Rest shows the porch spanning the entire south elevation. The east elevation has a below grade cellar door at the south corner with an adjacent exterior, painted stone chimney. Windows are irregularly spaced on this elevation. The continuous sloping roof covers newer additions to the north end of the house, including a dining room, kitchen, and full bathroom.

Much of the original material of the interior remains intact. The interior walls of the original portion of the house display the log construction. One wall in the modern, first floor bathroom (which backs the original bays) exposes the original stone nogging, currently reinforced with concrete. Other interior walls are adzed logs with plaster covering the noggin. The floor joists are adzed logs. As you enter the house, the original floors of the living room are covered and the baseboards are beaded. In the adjacent study, the original tongue-and-groove random-width pine flooring is still extant. A simple beaded mantle is also found in this room. An interior brick chimney, on the west side of the house, was moved during one of the house’s renovations. The hewing of the support beams in the basement is obvious.

Exterior Components

Component	Component Type	Material	Material Treatment
Windows	Hopper	Wood	Multiple-light
Roof	Gable, Side	Asphalt	Shingle
Windows	Sash, Double-Hung	Wood	6/6
Structural System and Exterior Treatment	Log	Wood	Weatherboard
Chimneys	Exterior End	Brick	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: *No Data*
Resource Type: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Date of Construction: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:
No Data

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: DHR Board Det. Eligible

DHR ID: 029-0012
Staff Name: DHR State Review Board
Event Date: 3/20/2014
Staff Comment

4.Drover's Rest, Fairfax County, #029-0012, Criteria A and C
A representative for the property owner said archaeological fragments are commonly found throughout the property. Chair Moore suggested the Fairfax County chapter of ASV might like to visit the property. If testing is done, Criterion D might be included in a National Register nomination. Dr. Metz asked how many log buildings remain in Fairfax County. Ms. Evans said fewer than five likely remain. Mr. Lahendro asked about architect Charles Whitaker's career. The owner representative said he was the AIA Journal editor during the 1930s. Mr. Lahendro said the gauged and undercut flooring is indicative of an early building technique.

Event Type: DHR Evaluation Committee: Eligible

DHR ID: 029-0012
Staff Name: DHR Evaluation Committee
Event Date: 12/19/2013
Staff Comment

Drover's Rest, Fairfax County, DHR File Number 029-0012
Drover's Rest is a four-bay. 1 ½-story log dwelling believed to be constructed between 1757 and 1785. The exterior was clad in weatherboard ca. 1875. The dwelling is set on a raised rubble fieldstone English basement and has a large exterior fieldstone chimney. Two front-gable dormers are located on the façade and were designed by prominent architectural critic and architect, Charles H. Whitaker, ca. 1932. The façade has a one-story porch that strongly resembles one shown in a ca. 1875 photograph. Windows vary on the different elevations of the house as it has evolved over time. The interior consists of two main blocks: the original two-room section and the one-story lean-to addition appended to the rear. The main block has retained materials from different periods including floors, mantels, doors, door and window trim, and staircase. The logs in the living room have been exposed. The rear section has been renovated in several phases from the 1950s through 2000. The basement retains its cooking fireplace and general appearance with log joists supporting the first floor. Secondary resources include the 19th-century library building (former summer kitchen), mid-20th century frame caretaker's house (former stable), mid-20th century frame garage, late 18th century stone well, ca. 2000 pool, pond, garden, and shed.

Located along Georgetown Pike, Drover's Rest is strongly associated with the region's agricultural, milling, and transportation history, and served as a center for community activity through the early twentieth century. The property earned its name from its historic use as a stopping point for travelers. As Georgetown Pike was constructed between 1813 and 1827 and as more roads were developed, the building became a primary stopping point for travelers along the historic route between Potomac River markets and rural communities to the west. Drover's Rest is one of the oldest extant log houses in Fairfax County.

Drover's Rest was previously evaluated in 1974 and 2008 and recommended not eligible for the National Register. Today, it was re-evaluated at the local level of significance under Criterion A (Exploration/Settlement; Transportation) and Criterion C (Architecture), with a period of

significance of ca. 1775-1932, representing its construction period through addition of dormers designed by architect Charles Whitaker. The property is recommended to proceed to listing with 33 points.

Event Type: DHR Evaluation Committee: Deferred

DHR ID: 029-0012
Staff Name: DHR
Event Date: 4/17/2008
Staff Comment

The resource is a 1.5 story log dwelling, now covered in weatherboard. The house may have been built circa 1785, though evidence for this is not conclusive. A 1932 renovation included the addition of dormers on the façade, and there are modern additions to the rear, including a 1-story kitchen and dining room. Interior logs are exposed, though the nogging is covered with plaster, some interior original flooring has been covered, and an internal chimney was moved during a renovation. The original owner was Bryan Fairfax, who may have built the house to accompany a mill (no longer standing). The house may have been a tavern or store during its history. Secondary resources include a garage, library, caretaker's cottage (converted stable building), a well, and 3 sheds. It was evaluated as locally significant under Criterion C (Architecture) with a period of significance of circa 1785-1932. The committee recommended do not proceed to listing with 27 points.

Event Type: PIF

Project Review File Number: *No Data*
Investigator: Jameson, Leigh
Organization/Company: DHR
Sponsoring Organization: *No Data*
Survey Date: 4/15/2008
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Estate manager of Drovers Rest.
Earlier draft of the PIF was submitted on 6/9/2007

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Susan Hellman
Organization/Company: County of Fairfax
Sponsoring Organization: *No Data*
Survey Date: 2/2/2006
Dhr Library Report Number: *No Data*
Project Staff/Notes:

No Data

Event Type: DHR Evaluation Committee: Deferred

DHR ID: 029-0012
Staff Name: VHLC
Event Date: 9/27/1974
Staff Comment

Letter indicating that Drover's Rest was turned down for inclusion on the registers by the Virginia Historic Landmarks Commission board, because of inability to verify the early date and the stories about its history attributed to it.

Event Type: NRHP Nomination

DHR ID: 029-0012
Staff Name: Junius R. Fishburne, Jr.
Event Date: 7/1/1974
Staff Comment

VHLC rough draft - nomination not completed due to inability to authenticate early construction date (see 2/27/1978 letter in file, Calder Loth to John G. Lewis).

Event Type: Survey:Phase II/Intensive

Project Review File Number: *No Data*
Investigator: Lewis, John G.
Organization/Company: VA Dept. of Historic Resources

Sponsoring Organization: *No Data*
Survey Date: 6/26/1973
Dhr Library Report Number: *No Data*
Project Staff/Notes:
VHLC staff - photos taken 4 April 1973

Event Type: Survey:HABS Inventory

Project Review File Number: *No Data*
Investigator: David, Mrs. William R.
Organization/Company: County of Fairfax
Sponsoring Organization: *No Data*
Survey Date: 6/9/1971
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Fairfax Co. Division of Planning, with one image from 1967 (E. Brietenbach)and location map.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: David, Mrs. William R.
Organization/Company: County of Fairfax
Sponsoring Organization: *No Data*
Survey Date: 5/9/1971
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Fairfax Co. Division of Planning Historic Landmarks Survey form

Event Type: Survey:HABS Inventory

Project Review File Number: *No Data*
Investigator: Gibbs, David
Organization/Company: National Park Service
Sponsoring Organization: *No Data*
Survey Date: 8/1/1957
Dhr Library Report Number: Providence Journal
Project Staff/Notes:
includes aerial and oblique images of the building

Bibliographic Information

Bibliography:
No Data

Property Notes:
Name: Mr. Anthony H. Griffin
Title: County Executive
Company 1: City of Fairfax
Company 2: Suite 552
Address 1: 12000 Government Center Pkwy
City: Fairfax
State: Virginia
ZIP: 22035
Phone 1: 703-324-2531

Name: Ms. Leigh Jameson
Title: Property Manager, Drover's Rest
Address 1: 8526 Georgetown Pike
City: McLean
State: Virginia
ZIP: 22102
Phone 1: 703-448-9119
Surveyor Notes: Property manager at time of 2008 PIF submittal.
E-mail: gardengirl70@netzero.net or leigh.jameson@gmail.com

Owner Relationship: Owner of property, Property Manager

Name: Mr. and Mrs. David & Elizabeth Gibbs
Owner Relationship: Owner of property

Name: Mr. and Mrs. Frederick P. Hitz
Owner Relationship: Owner of property

Project Bibliographic Information:

Name: 2008 PIF Bibliography
Record Type: Other
Bibliographic Notes: Bibliography:

Cooke, Elizabeth Miles. The History of the Old Georgetown Pike. Annandale, VA: Elizabeth Miles Cooke and Charlie Baptie Studios, 1977.

"The Family History of the Olivers." No author. Included in the Drover's Rest file with the Fairfax County Department of Planning and Zoning.

Hatch, Winslow R. Old Roads and New Insights: Adventures in Discovery. Reston, VA Dita Hatch, 1985.

Hellman, Susan. "Drover's Rest Chain of Title from Present to August 11, 1739." Historian I with County of Fairfax Department of Planning and Zoning. December 20, 2006.

Herrick, Carole L. Chronological History of McLean, Virginia. Lorton, VA: Capitol Advantage Publishing, 2001.

Kilmer, Kenton and Donald Sweig. The Fairfax Family in Fairfax County. Nan Netherton, ed. Fairfax, VA: Fairfax County Office of Comprehensive Planning Under the Direction of the County Board of Supervisors in Cooperation with the County History Commission, Dec. 1975. 2nd print.

Petty, Kata and Denise Williams. "A Look at the Colonial Era and the Drover's Rest Property." Nonpublished report. April 19, 1995.

Templeman, Eleanor Lee and Nan Netherton. "Drover's Rest." Northern Virginia Heritage. N.d. p.69.

Washburn, Karen. "Collateral Damage." Elan. Date unknown.

Young, Pearl E. personal letter from Young to Mr. and Mrs. Fred J. Murray (previous owners all). March 14, 1939.

Name: Nan Netherton, Eleanor Lee Templeman
Record Type: Book
Bibliographic Notes: "Drover's Rest" Northern Virginia Heritage, 1966, page 69.

DHR CRM Report Number: Providence Journal
Record Type: Article
Bibliographic Notes: Undated article from the Providence Journal of McLean, Virginia on the history of Drover's Rest (circa 1971).

Name: Hitz, Mrs. Frederick
Record Type: Oral History/Interview

Name: Young, Pearl E.
Record Type: Letter/Memorandum
Bibliographic Notes: May 1948 letter from a previous owner to the then owners of Drover's Rest, Mr. and Mrs. Fred J. Murray, on the history of Drover's Rest (transcribed on 11 June 1954 for the owner at that time, Col. David P. Gibbs).

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- USGS GIS Place names
- County Boundaries



N

Feet

0 100 200 300 400

1:4,514 / 1"=376 Feet

Title: Architecture Labels

Date: 11/1/2018

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Property Information

Property Names

Name Explanation	Name
Historic	Falls Bridge Turnpike Road
Historic	Georgetown and Leesburg Turnpike Road
Historic	Sugarlands Rolling Road
Historic	Washington and Leesburg Turnpike Road
Historic/Current	Georgetown Pike

Property Evaluation Status

NRHP Listing
VLR Listing

Property Addresses

Current - Georgetown Pike
Alternate - Route 123
Alternate - Route 193

County/Independent City(s): Arlington (County), Fairfax (County)

Incorporated Town(s): *No Data*

Zip Code(s): 22066

Magisterial District(s): *No Data*

Tax Parcel(s): *No Data*

USGS Quad(s): FALLS CHURCH, SENECA (MD), VIENNA, WASHINGTON WEST (DC)

Additional Property Information

Architecture Setting: Suburban

Acreage: 86.3

Site Description:

1995: Nomination is concerned with a 14-mile section of Georgetown Pike in Fairfax County, which was built by Falls Bridge Turnpike Company in 1813-27, as well as a 3/4-mile section built by Georgetown and Leesburg Company in what was then Alexndria County of the District of Columbia (now Arlington County). The road begins at the boundary of between District of Columbia and Virginia on the south bank of the Potomac River at Chain Bridge. It generally parallels the river through Langley Fork and Great Falls before meeting the Leesburg Pike at Dranesville near the Loudoun County border.

2012: The Georgetown Pike in Fairfax and Arlington Counties extends 14.4 miles from the District of Columbia / Virginia boundary at Chain Bridge to its intersection with the Leesburg Pike at Seneca Road near Dranesville . It includes only the VDOT-maintained right-of-way, varying from 50 feet to 60 feet in width. As is the case with many early roads accepted into the Virginia secondary road system under the Byrd Act of 1932, there is no existing survey of the right-of-way. VDOT determines boundaries, as necessary, in the field.

2012: The boundary includes the Georgetown Pike, Route 193, in its entirety and that portion of the original Georgetown Pike renamed Dolley Madison Boulevard and Chain Bridge Road, Route123, between the CIA Headquarters west boundary and Chain Bridge. Georgetown Pike covers a distance of 14.4 miles, 25 feet at either side of a center line.

Surveyor Assessment:

1993: The origins of the old Georgetown Pike lay in a prehistoric animal trail beaten out to circumvent the Great Falls of the Potomac as grazing herds ranged from the Chesapeake Bay to beyond the Blue Ridge Mountains. In 1631 Susquehannoc Indians traveled over this trail to trade furs with Captain Henry Fleete as he lay anchored at the head of the Potomac navigation below Pimmit Run near the Little Falls. The trail was further developed by both the Susquehannoc and the Iroquois from the north as the fur trade with England expanded during the course of the 17th century. With European settlement the old fur trade route became a rolling road transporting tobacco to Potomac River shipping. In 1738 a public ferry replaced the earlier McGee's Ferry at the mouth of Pimmit Run and an ordinary was built. In 1742 Thomas Lee established the Falls Warehouse at this point. The 1772 Virginia act to improve the Potomac was followed in 1784 by the incorporation of George Washington's Patowmack Company to build a canal around Great Falls and open the western Ohio lands directly to Potomac River shipping. Work on the canal began in 1785. By 1790 Matildaville at the Great Falls was chartered and Conn's Ferry established above the Falls at the site of the present Riverbend Park. Conn carried materials for construction of the Seneca Lock. The Patowmack Canal was completed in 1802 and functioned significantly as an inland waterway trade route uniting east and west. In 1826 the canal comapny dissolved and its charter passed to the Chesapeake & Ohio Canal Company. In 1814 President James Madison and his wife Dolley, fleeing the British and the burning of Washington, travelled over the rolling road through Matildaville to Conn's Ferry and escaped into Maryland. By the last quarter of the 18th century, wheat and grain had succeeded tobacco in Northern Virginia's predominantly agricultural economy. L'Enfant, planning the Federal City, recommended that a bridge be built at the mouth of Pimmit Run below Little Falls at the site of the existing public ferry. In 1791 the Georgetown Bridge Company was formed to establish a direct connection between the port of Georgetown and the existing rolling road. A wooden bridge, built in 1797, was replaced by a chain bridge in 1805. In 1813 the Georgetown & Leesburg Turnpike Company was chartered and paving of the old rolling road began. By 1820 the Falls Bridge Turnpike Company, extending the road to Drane's Tavern on the Leesburg Pike, had established a direct overland connection between Leesburg and the milling and shipping center at Georgetown. This road was important to the defenses of Washington during the Civil War. Fort Marcy, one of the Fort Circle Parks, overlooks Chain Bridge. Both Union and Confederate troops were active in the area. The action at Dranesville on December 19, 1861, in which the Pike figured prominently, was one of the few Union victories in the early part of the war. On June 27, 1863, Major Mosby led

General JEB Stuart's forces through Dranesville to cross the Potomac at Seneca before the Battle of Gettysburg. The Virginia Turnpike system did not survive the Civil War. A private toll road continued until 1934 when the Madeira School purchased it from the "Washington, Great Falls and Dranesville Highway Company" and turned it over to the State of Virginia. The rapid expansion of the Nation's Capital during and after the Civil War provided a lucrative market for farmers in Fairfax County. Georgetown Pike continued to develop as a market road. In 1881 Thompson's Dairy was established east of Georgetown on Pennsylvania Avenue near Rock Creek. It was followed by others, including Chestnut Farms, Highland Farms and Embassy dairies, thus providing a market for milk from local dairy farms. After trucks came into use, milk from 20 to 40 farms was hauled along the Georgtown Pike in 10 gallon cans to dairies in Washington for about 40 years. In 1925, Fairfax County was the third largest milk producer in the United States. Farms along the Pike contributed heavily to that production. Today, although the countryside along the Georgetown Pike has become a quasi-rural residential area, agricultural interests persist. These now include breeding and boarding horses, wine-making, small scale truck gardening, nursery stock growing, and production of specialty items such as shitake mushrooms and rspberries directly marketed to restaurants and farmers' markets in the National Capital Region.

2012: oThe period of significance begins in 1813, which represents the date when the incorporation of the Georgetown & Leesburg Turnpike Company by the U. S. Congress and the Falls Bridge Turnpike Company by the Virginia Assembly occurred. The period of significance ends with the transfer of the road to the Virginia Department off Highways in 1934.

See nomination for additional details.

Surveyor Recommendation: Legacy

Ownership

Ownership Category	Ownership Entity
State Govt	Virginia Department of Transportation

Primary Resource Information

Resource Category: Transportation
Resource Type: Road/Road Trace
Date of Construction: 1813Ca
Historic Time Period: Early National Period (1790 - 1829)
Historic Context(s): Transportation/Communication
Architectural Style: No Discernable Style
Form: *No Data*
Number of Stories: *No Data*
Condition: Good
Interior Plan: *No Data*
Threats to Resource: Deterioration, Transportation Expansion

Architectural Description:

1995: The Georgetown Pike (Route 193) runs parallel to the upper Potomac River frontage of Fairfax County from Chain Bridge at the northernmost point of Arlington County to Dranesville Tavern on the Leesburg Pike (Route 7) near Loudoun County border. The Pike is historically approximately 17 miles long. Its present Virginia Department of Transportation-owned right-of-way varies from 40' to 130' in width. Part of the Virginia primary road system, it is a two-lane undivided rural road. The present asphalt-paved hard surface roadbed is approximately 22' wide with open ditches and no shoulders.

Evolving from an animal trail circumventing the Great Falls of the Potomac, Georgetown Pike is ungraded, following the natural contours of the land. It passes through an extraordinarily scenic, environmentally fragile Potomac Valley area which includes the Great Falls and Gorge of the Potomac, ruggedly beautiful woodland, open horse country, quasi-rural residential development, and nine watersheds. There are no billboards erected along Georgetown Pike and the only commercial development, at Great Falls, is low scale and residentially oriented. In 1973, Georgetown Pike was designated the first Virginia Scenic Byway. National Register properties adjacent to Georgetwon Pike include the Langley Fork Historic District, the Patowmack Canal Historic District, Dranesville Tavern and Cornwell Farm. A number of additional adjacent structures associated with the turnpike appear to be eligible for listing in the National Register. Nomination for listing in the National Register of Historic Places is sought only for the road itself together with its VDOT-owned right-of-way.

2012: The Georgetown Pike is located in both Fairfax and Arlington Counties, Virginia. Beginning at the boundary of the District of Columbia and Arlington County at Chain Bridge on the south bank of the Potomac River, it extends .4 miles to cross the Fairfax County line, then continues 14 miles in an approximately northwesterly direction to meet the Leesburg Pike near Dranesville in Fairfax County. After beginning the ascent from Chain Bridge, the river is never again visible from the road, although it passes so close to the river at Great Falls that the roar of the water can be heard. The Georgetown Pike roadbed is approximately 20- to 24-feet wide within a 50- to 60-foot-wide right-of-way as built in 1813-1827. A crowned and graduated stone highway, constructed according to a modified Tresauget system, the Georgetown Pike surpassed the standards of the enabling legislation of both the U. S. Congress and the Assembly of Virginia. John Mason, Jr., president of the Falls Bridge Turnpike Company wrote to the Board of Public Works in 1820 that the roadbed was “paved with large stone, closely fitted together, 12 inches deep in the centre, falling off to 6 inches on the sides, and covered with broken stone 6 inches deep from side to side; making 18 inches stone in the centre, and twelve inches on the sides; the whole is covered with sand, gravel or clay, as was found most convenient.” This substantial method of construction has served the road well, as it has survived flooding, war, neglect, and adaptation for automobile traffic. The Georgetown Pike is a road built in conformance with the most advanced engineering expertise and construction resources of the early nineteenth century. Men using hand tools and horse-drawn equipment formed the roadbed, clearing, blasting, plowing, scooping, and filling the rough terrain. Stone retaining walls, culverts, arches, and bridges were built where necessary, working within the context of the natural terrain to the extent possible. An original road bridge with stone and brick viaduct at Bull Neck Run, and a massive stone retaining wall at Pimmit Run in Arlington County are notable survivors. John Templeman, builder of the Potomac Chain Bridge in 1808, served as superintendant of the road from December 1, 1817, to April 30,1818. He designed and built an additional chain bridge to carry the Pike over Difficult Run. Though this

bridge is not extant, it was described by Mason as “220 feet long, and 20 feet wide; it stands on two large stone abutments, and three stone piers 18 feet high; is further supported by three ranges of chains, extending from end to end, resting on the stone piers; and has supports of strong upright timbers between the piers where necessary.

Secondary Resource Information

Secondary Resource #1

Resource Category: *No Data*
Resource Type: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Date of Construction: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:
No Data

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: NRHP Listing

DHR ID: 029-0466
Staff Name: NPS
Event Date: 8/22/2012
Staff Comment
Georgetown Pike,
From DC/VA boundary at Chain Bridge to jct. with Leesburg Pike at Seneca Rd., Arlington, LISTED, 8/22/12

Event Type: VLR Listing

DHR ID: 029-0466
Staff Name: State Review Board
Event Date: 6/21/2012
Staff Comment
Criteria A and C

Event Type: NRHP Nomination

DHR ID: 029-0466
Staff Name: Beauchamp, Tanya Edwards
Event Date: 3/8/2012
Staff Comment
Great Falls Heritage, Inc.

Event Type: DHR Staff: Eligible

DHR ID: 029-0466
Staff Name: DHR Evaluation Committee
Event Date: 8/18/2010
Staff Comment

Marc Holma presenting:
Georgetown Pike, Fairfax County, ORC Project File No. 2010-0276, DHR File No. 029-0466
In 1993, E-team determined the Georgetown Pike to be eligible for listing with 36 points. Georgetown Pike consists of 14 miles of a 14.75 mile historic turnpike that runs from Dranesville to Alexandria. A nomination was drafted in 1995 but never pursued despite having received editorial comments by DHR. In 2002, VDOT began devising a plan to widen Route 7 (Leesburg Pike) to include the intersection with Georgetown Pike at Dranesville. The original alignment of the turnpike had already been altered in 1967, during which time the modern intersection was constructed and .15 miles of the historic road re-routed and widened at Dranesville. In the 2010 General Assembly session, Senator Howell included language in the VDOT Appropriations Act requiring the VDOT Commissioner to coordinate with the Director of DHR to ensure that the historic character of the Georgetown Pike shall not be diminished by the proposed widening of Route 7.

In 1797, a chain bridge constructed over the Potomac River inspired some to plan a turnpike that would link the western farmlands to markets in Alexandria. In 1813 the general assembly authorized appropriations for the construction of a road by the Georgetown/Leesburg Construction Company. The project consisted of a raised, paved road, 20 feet wide, and a parallel summer road, 15 feet wide. The Georgetown Pike was completed in 1827. A 1915 photograph shows the summer road still in-tact. The history of the turnpike was one marked by debt. By 1834, it was already in poor condition. During the Civil War, the turnpike was used for the movement of Union Troops. Ownership of the road was transferred to Fairfax County in 1875. In 1934 the turnpike was sold for $500 and immediately turned over to the Commonwealth, which incorporated it into the state road system in 1948. In 1974, the Georgetown Turnpike became the Commonwealth's first dedicated scenic and historic byway. The turnpike has changed very little since 1993 when it was first declared eligible. It retains much of its original historic and rural integrity, as sections of the summer road are still visible.

E-team was asked to consider three questions regarding the turnpike's eligibility. First, the committee determined that the Turnpike was still eligible for listing on the National Register. Second, E-team was asked whether the .15 miles of road from the intersection with Route 7 eastward be considered a contributing feature within the boundary. E-team found that either boundary justification for the modern intersection, placing it either within the boundary or outside of it, could work, but that it should not be considered a contributing feature as the original alignment has been changed. The area where the turnpike widens from two lanes to four lanes acts as a clear visual divide between the original two-lane road and the modern intersection and suburban infill in Dranesville. Finally, E-team was asked whether the abandoned remnant of the two-lane road that currently serves as the right hand turn land from Georgetown Pike onto Route 7 be considered a contributing feature, as it may have been part of the turnpike's original alignment. E-team determined that there was no clear visual evidence that the road was part of the original alignment, and that an archaeological survey would be required to determine if any historic road bed material remained and matched other sections of the turnpike. Additionally, VDOT provided the design plans from 1967 that shows this section of Georgetown Pike was cut seven to eight feet below the original grade during the intersection improvements. Even then, because the section is no longer connected to the main body of the turnpike, it does not have unique importance, and therefore, is not a contributing feature of the turnpike.

Event Type: NRHP Nomination

DHR ID: 029-0466
Staff Name: Beauchamp, Tanya Edwards
Event Date: 12/30/1995
Staff Comment

Draft - not submitted for listing, with suggested POS 1608-1934 (adjusted by DHR staff to 1813-1934) under Criterion A (Agriculture, Commerce, Engineering, Exploration/Settlement, Politics/Government, Transportation) and Criterion C (Architecture).

Event Type: DHR Board Det. Eligible

DHR ID: 029-0466
Staff Name: State Review Board
Event Date: 8/17/1993
Staff Comment

No Data

Event Type: DHR Staff: Eligible

DHR ID: 029-0466
Staff Name: DHR Evaluation Committee
Event Date: 6/28/1993
Staff Comment

Georgetown Pike, Fairfax County (DHR #29-466), was rated at the regional level for significance in the area of Transportation. It was found to be eligible with a score of 36.

Event Type: PIF

Project Review File Number: *No Data*
Investigator: Hodge, Jack
Organization/Company: Unknown (DSS)
Sponsoring Organization: *No Data*

Survey Date: 1/2/1993

Dhr Library Report Number: LOC 77-8140

Project Staff/Notes:

Fairfax County History Commission

Bibliographic Information

Bibliography:

No Data

Property Notes:

Name: Tanya Beauchamp
Address 1: 930 Leigh Mill Road
City: Great Falls
State: Virginia
ZIP: 22066
Phone 1: 703-759-3796
Ext: 0000
Surveyor Notes: Architectural historian commissioned by Fairfax County Park Authority to draft nomination for Georgetown Pike - 1995
Owner Relationship: Informant

Project Bibliographic Information:

Name: Beauchamp, Tanya Edwards
Record Type: Newsletter
Bibliographic Notes: Georgetown Pike: Historic Byway or Commuter Bypass?: November 1992; Fairfax County History Commission
---
Name: Cooke, Elizabeth Miles
DHR CRM Report Number: LOC 77-8140
Record Type: Book
Bibliographic Notes: The History of The Old Georgetown Pike: 1977; Annandale, VA, 76pp

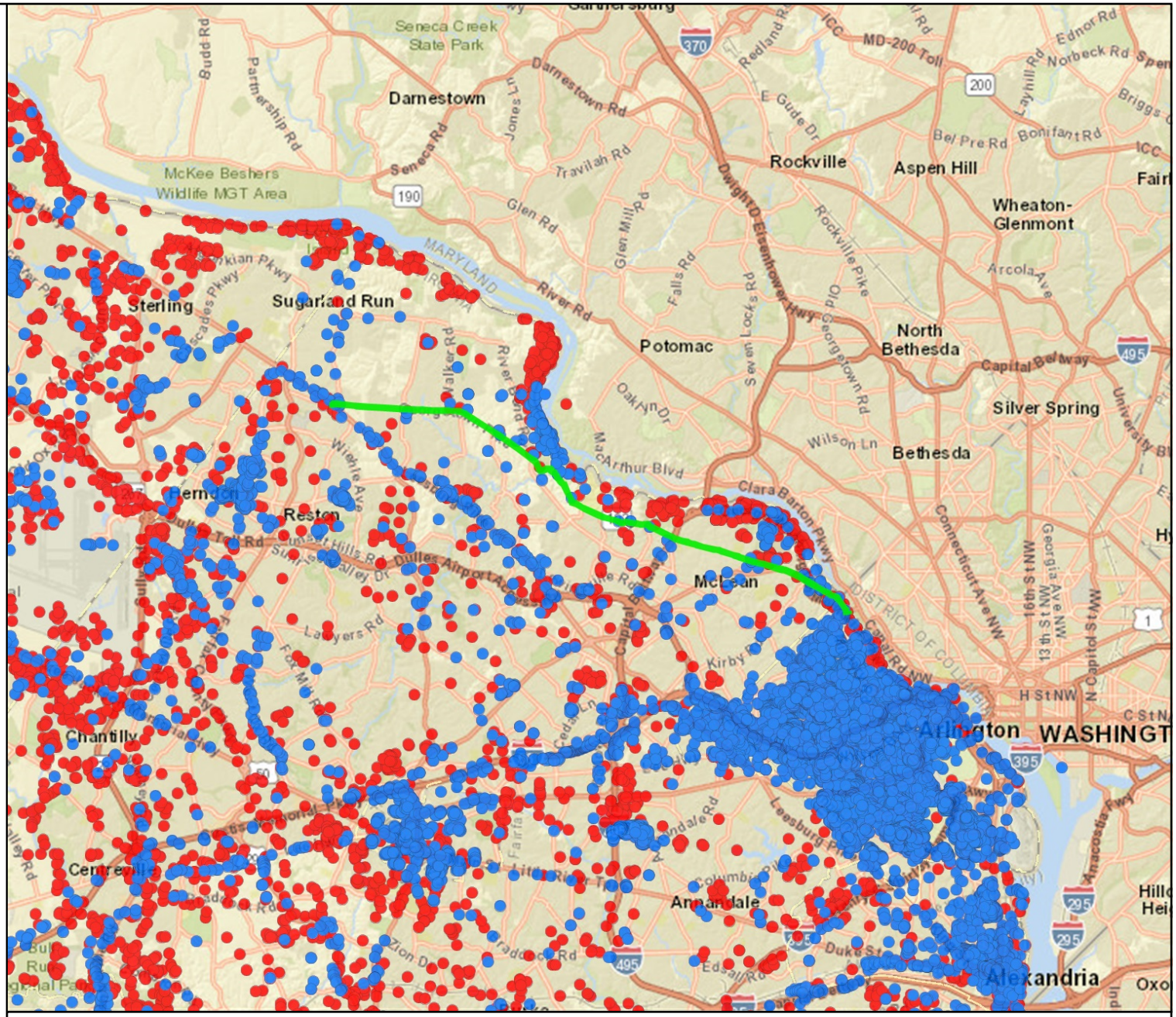
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Points
- Archaeology Points
- County Boundaries



N

Miles

0 1 2 3 4

1:288,895 / 1"=5 Miles

Title: Architecture Labels

Date: 11/1/2018

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Property Information

Property Names

Name Explanation	Name
Current Name	The Madeira School

Property Addresses

Current - 8328 Georgetown Pike Route 193

Property Evaluation Status

Not Evaluated

County/Independent City(s): Fairfax (County)
Incorporated Town(s): Great Falls
Zip Code(s): 22067, 22102
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): FALLS CHURCH

Additional Property Information

Architecture Setting: Rural
Acreage: 413

Site Description:

1984: The Madeira School is located on the Potomac River at 8328 Georgetown Pike, one of the oldest roads in Virginia. The school occupies a 413-acre wedge-shaped lot bounded by the river, the Pike, Difficult Run on the west and Potomac Knolls on the east. The east and south sides have whitewashed fences on the border. The surrounding area is sparsely developed with many parks and nature preserves and some large and exclusive houses. The grounds of the school are picturesque with commanding views of the river and the Maryland shore on the other side from the bluffs along the bank.

Surveyor Assessment:

1984: The Madeira School in Greenway, built in 1931, is the work of Waldron Faulkner, one of the most prestigious architects in Washington at the time. The layout of the buildings created a space which reflected some of Thomas Jefferson's ideals about education, and the style of architecture reflected the Northern Virginia heritage, namely Mount Vernon. Furthermore, the site and the campus show a love of the land. The buildings themselves, with their many windows and the large terrace overlooking the river, take advantage of the magnificent vistas the site has to offer. Unique in that it is a school for young ladies, Madeira reflects some intrinsic American values such as a respect for education, love of history, and a love of the land.

In 1906 Miss Lucy Madeira founded a school for the daughters of prominent Washingtonians on Dupont Circle. At the 1929 commencement Miss Madeira said, "It is hardly necessary to tell this audience that business has crept into the neighborhood…" That same year, with a loan from Washington Post mogul Eugane Meyer and the sale of Madeira School bonds, Madeira became a country school moving out to Greenway in McLean, Virginia. To Miss Madeira one of the most attractive qualities about the property was that George Washington had hunted and surveyed in the area. Washington was Miss Madeira's greatest hero. Although Faulkner's plan was less elegant (and certainly less expensive) than a previous bid made by a Boston architectural firm, Miss Madeira was consoled by the fact that, as she said, "The layout is similar to that of Mt. Vernon. Indeed, the measurement between the buildings - across the campus - is the same as that at Mt. Vernon." Part of the land had in fact belonged to William Fairfax of Belvoir and his son, Bryan Fairfax of Towlston Grange, both friends of Washington.

The buildings' architect, Waldron Faulkner, has been called the "most prominent Washington architect of his day." Born in 1898, Faulkner studied architecture at Yale both as an undergraduate and as a graduate. One of his more prestigious commissions was the restoration of the old Patent office. He also designed nine buildings for George Washington University, including the hospital, and eighteen buildings at American University. He and his firm designed over 400 buildings before his death in 1981. One of his goals as an architect in designing the "oval" at Madeira was to echo some of the architecture at the University of Virginia. Like Jefferson's academical village, the buildings were designed so that students and teachers could live and eat together, with student rooms and dining facilities laid out around a large open space. The library (as at the University of Virginia) as well as the administrative offices was in the main building at the end of this large open space. Miss Madeira called this building "the center of the life of the school."

Another of Faulkner's goals was to create a beautiful outdoor space, one which reflected the new emphasis in education on nature conservancy. In construction of the oval he was careful to leave the great oak trees which shaded the space. Only within the oval was there any landscaping - the rest of the campus was left in its pristine beauty so that students could enjoy the river, cliffs, streams and wild geese on Black Pond. Today Madeira has the largest natural growth of botanical specimens in the Washington area.

Surveyor Recommendation: Recommended Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Education
Resource Type: School
Date of Construction: 1931
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Architecture/Landscape, Education
Architectural Style: Colonial Revival
Form: *No Data*
Number of Stories: 3.0
Condition: Excellent
Interior Plan: *No Data*
Threats to Resource: None Known

Architectural Description:

1984: Completed in 1931 after the plans of prestigious Washington architect Waldron Faulkner, the buildings on the oval, the main campus, were designed in the Colonial style, according to the specifications of Lucy Madeira Wing, the headmistress. Colonial derivations are found in the pedimented door, cupola, and dormer windows. In fact, Miss Madeira liked to compare the plan to Mount Vernon, a few miles upriver.

All five buildings which compose the central "oval" are built of red brick. The four buildings on the right and left of the oval are each two stories high, while the main building at the end of the oval is three stories at the central bay and two on its flanking bays. Except for the two clubhouses at either side of the entrance, which are one-story hip-roofed squares, the buildings are pitch roofed rectangles.

The main building is made up of three bays with the central entrance bay three stories high and the flanking bays smaller and set back from the central bay about three feet. The entrance is aligned with the middle window on the second story. The door is framed in the classical style with Corinthian pilasters on either side which seemingly hold up the pediment above. There is a window between the transom and the pediment. The semicircular pediment has dentils and a lamper fixture breaking its top rim. Demarcating the first and second stories on the facade is a four-brick-wide header bond band which runs all the way across the main façade at the same level as the pediment. There are seven double sash windows across the second story and five dormers which constitute the third story. A wooden and glass cupola perches on the roof directly above the entrance. The woodwork around the door, windows, and cupola is painted the same off-white used on the other buildings. The two flanking bays of the main building are just like the central bay without the dormers.

The foyer of this central building is short and leads directly to a long hall which separates administrative offices and the library from a long sunken parlor. The floors are all dark wood. The parlor has fireplaces at either end of it, each with a pedimented mantelpiece. French doors open onto a slate terrace which affords a magnificent view of the river. The second story contains classrooms, and the third has dorm rooms for 25 girls.

The first building on the right as you face the road, the dining hall, has plain double sash windows on the first story and dormer windows on the second story. The next building down the right side, a dormitory like the rest, is a simple two story building without dormers, but with bay windows on the first story at either end. Directly opposite the oval are these two buildings in reverse, with the plain two story across from the dormer two story and vice versa.

The two clubhouses, originally gate houses, are block-like structures with fireplaces and windows on either side of the doorway and on the walls opposite the fireplaces.

Exterior Components

Component	Component Type	Material	Material Treatment
Dormer	Gable	Wood	*No Data*
Roof	Side Gable	Slate	*No Data*
Structural System and Exterior Treatment	Masonry	Brick	Coursed
Windows	Double-hung	Wood	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: *No Data*
Resource Type: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Date of Construction: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

No Data

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase II/Intensive

Project Review File Number: *No Data*
Investigator: Helen Methvin
Organization/Company: DHR
Sponsoring Organization: *No Data*
Survey Date: 11/27/1984
Dhr Library Report Number: *No Data*
Project Staff/Notes:

There is a draft NR nomination in the hard copy file for this resource and three photos from 1984. DHR staff created the survey record for the school from this information in 2014.

Bibliographic Information

Bibliography:

See draft NR nomination in the hard copy file for complete bibliography.

Property Notes:

No Data

Project Bibliographic Information:

No Data

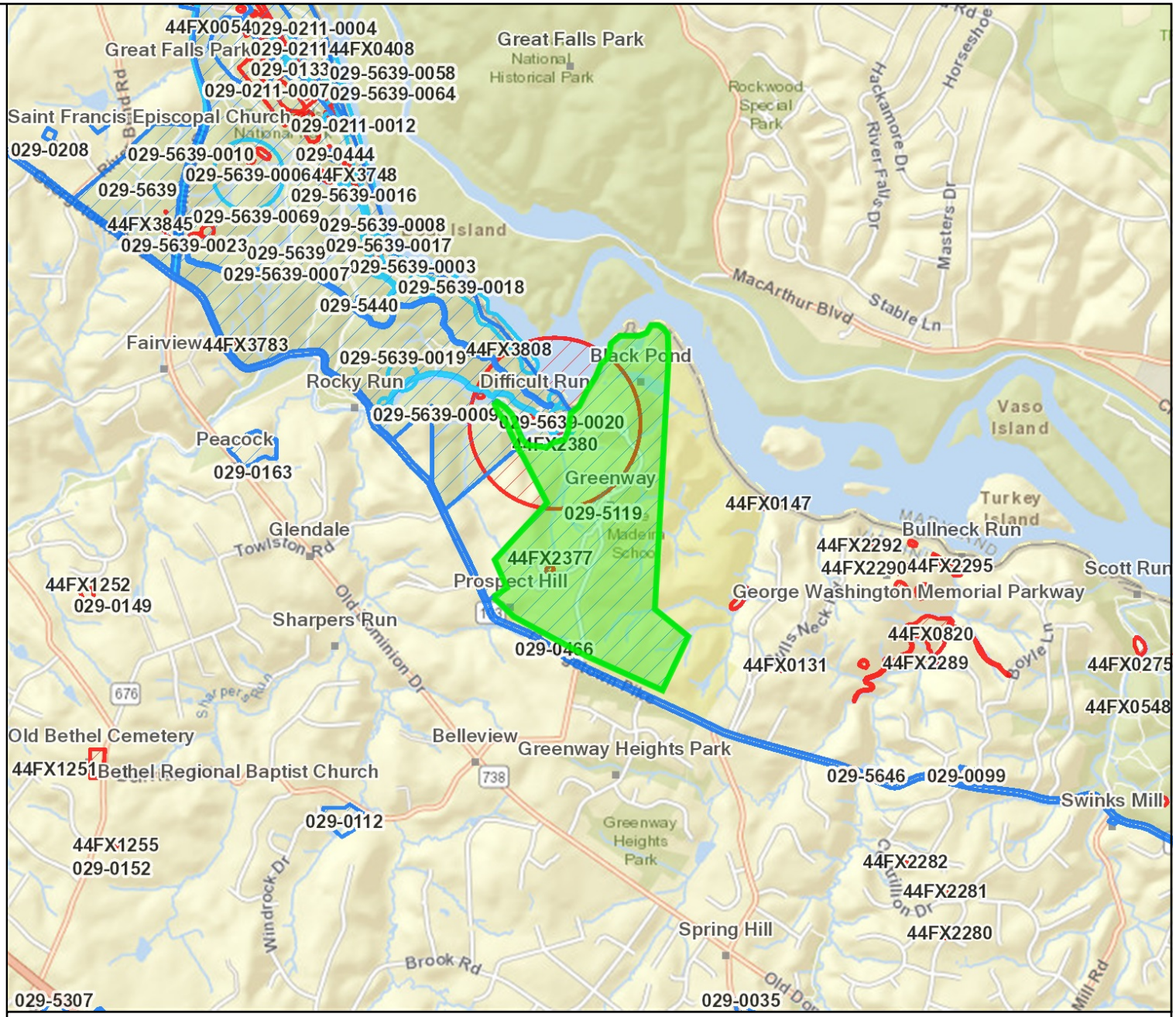
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- USGS GIS Place names
- County Boundaries



N

Feet

0 600 1200 1800 2400

1:36,112 / 1"=3,009 Feet

Title: Architecture Labels **Date: 11/1/2018**

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Property Information

Property Names

Name Explanation	Name
Historic	Patowmack Canal at Great Falls Historic District
NRHP Listing	Great Falls Park Historic District
Historic/Current	Potomac (Potowmack) (Patowmack) Canal Historic District

Property Addresses

Current - 9200 Old Dominion Drive

Property Evaluation Status

NRHP Listing
VLR Listing

This Property is associated with the George Washington Memorial Parkway; Great Falls Park Historic District.

County/Independent City(s): Fairfax (County)
Incorporated Town(s): Great Falls
Zip Code(s): 22066, 22067, 22102
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): FALLS CHURCH, SENECA, VIENNA

Additional Property Information

Architecture Setting: Rural
Acreage: 803.7

Site Description:

Nov. 2007: Great Falls Park follows the south (west) shore of the Potomac River for more than one mile, as the river cascades over the Great Falls at an area where the Potomac flows in a southerly direction. The park extends from a point north of Mine Run opposite the Aqueduct Dam across the Potomac, south to and below Difficult Run between the Georgetown Pike and the Potomac River. The topography is rugged and hilly, combined with boulder-strewn flats and marsh. At the north end of the park, the Virginia shore is at the river level. At the falls, the river drops approximately 70 feet, into a narrow passage known as Mather Gorge. From the beginning of the falls on, sheer cliffs wall the river and channel churning water down through the gorge. Tumbled jagged rocks define the tops of the cliffs. Extending back from the river is a level area, known historically as the “meadow” or glade, behind which rises Glade Hill, a narrow flat and then more undulating ground. A ridge runs to the south end of the park descending precipitously to Difficult Run near its mouth. The north end of the park is hilly and wooded with a combination of deciduous trees and evergreens.

A labyrinth of trails, paths, and roads lace through the park. They date from several periods or layers of activity in the landscape that became Great Falls Park, from the 18th century, through the Patowmack Canal period, the industrial period of the late 19th century, to the recreational use of the park through the 20th century. Today the trails provide recreational opportunities for hiking, biking, and horseback riding.

Also on the landscape are structural remnants of prior use of the land, most notably from the Patowmack Canal period of the 1780s-1820s, which is interpreted and celebrated in the park. Structures include the canal bed or prism, portions of five locks, holding basins, remnants of an iron works, grist mill and saw mill, and building remains that once were the village of Matildaville. In addition there are numerous ancillary features that were apparently associated with the canal.

While the park’s history also included a period of unsuccessful industrial use during the 19th century, and then as an amusement park in the first half of the 20th century, little visual evidence remains from these uses. Thus the general physical appearance of Great Falls Park emphasizes the natural landscape, the Patowmack Canal, and the National Park Service development of the property beginning in 1966.

2008 nomination: Verbal Boundary Description

The Great Falls Park Historic District boundary is described by the boundaries of the National Park Service owned land at Great Falls Park Virginia in Fairfax County deeds from PEPCO and the Fairfax County Park Authority for 790 acres (FX DB 2848, p. 137; FX DB 2848, p. 146). The total included acreage of approximately 790 acres is shown on the attached USGS Seneca, Vienna, and Falls Church Quadrangles by the heavy black boundary line.

Boundary Justification

The bulk of the land within the Great Falls Park Historic District boundaries has historically remained as one large tract (400-500 acres) since as early as 1769. With a few additions around the edges over the years, the Great Falls Manufacturing Company tract grew to 790 acres in the late 19th century and the current boundary reflects that acreage.

September 2016: No change since previous survey.

Surveyor Assessment:

2008 nomination: Summary of Significance

Great Falls Park, in Fairfax County Virginia, is nationally significant under National Register Criteria A, B, C, and D as the location of the Patowmack Navigation Company’s Great Falls skirting canal and lock system, an 18th century engineering achievement

spearheaded by George Washington. Navigation of the Potomac River was seen as key to securing the western territory as far as the Ohio River beginning in the 1740s. Interrupted by first the French and Indian War and then the American Revolution, George Washington enlisted friends and fellow-planters/industrialists from Virginia and Maryland including James Madison, Thomas Johnson, and John Semple to be involved in the development of the river navigation. The Patowmack Navigation Company was established in 1785 to make the necessary improvements, including the skirting canal construction around the Great Falls among others. The agreement between Virginia and Maryland to allow inter-state commerce, known as the Mount Vernon Compact, was among the foundations of the U.S. Constitution. The company records and archeological remains from the construction of the canal by free, indentured, and enslaved laborers contribute significantly to our understanding of labor in the new republic. Although the Patowmack Navigation Company failed just 18 years after the Patowmack Canal at Great Falls was completed, the engineering experience from the canal and lock system there served as preparation for the construction of the replacement transportation system of the Chesapeake & Ohio Canal.

The remnants of the town of Matildaville, which occupied the canal banks from ca.1797 to ca.1830 holds state and local significance under National Register Criteria A and D for its role in the development of the business of Potomac River transportation as well as the Great Falls Glade community. Although completely in ruins, the site of Matildaville retains important information through documents, the standing ruins, and archeological excavation.

The land encompassed by the Great Falls Park boundary is of state significance under National Register Criterion A for is role in the broad patterns of settlement, road transportation, and agriculture in Northern Virginia. The Towlston Grange, which encompassed the Great Falls Glade or Meadow, was a 5,500-acre tract conveyed by Thomas Lord Fairfax to his brother William Fairfax in 1739, where he built a mill in 1751. By 1764 the Falls Road (Trammel's Rolling Road) passed through the Great Falls Glade joining other roads already transporting tobacco and wheat to the tidewater. After the failure of the Patowmack Canal several houses in Matildaville remained occupied through the 19th century by tenant farmers and the Dickey House was used as an inn from as early as 1824 through the 1930s. Beginning with the establishment of the Great Falls & Old Dominion Railroad in 1901, the Glade was accessible by train and became a successful amusement park from 1906 to ca.1952.

The Great Falls Park Visitor Center is nationally significant under National Register Criterion C as an exceptional example of Mission 66 National Park Service modern architecture. Designed by Washington D.C. architect Kent Cooper in 1965 and constructed in 1967, it followed the Mission 66 ideal of a modern visitor facility that blends with the mission of the park with it's styling to represent canal boats.

The Period of Significance for Great Falls Park, ca.6,000 BC-1968 AD, spans the length of its use: first by Native American hunters, fishers, and travelers; then by settlers and river navigation visionaries and their laborers; by farmers and amusement park visitors; and finally ending with the construction of the Mission 66 visitor center, representing the final phase of use of the land as a National Park.

See nomination for additional History and Context.

GRFA NR 2010: The entirety of Great Falls Park, surrounding and including the Potomac Canal, expands upon and adds to the Areas of Significance defined and documented within the 1982 National Historic Landmark Nomination (NHL) for the canal itself. The original material supports the areas of Commerce under Criterion A; Politics/Government under the leadership of George Washington for Criterion B; and Engineering under Criterion C. An excerpt from the NHL summary states: "Its [Potomac Canal] history bears an astonishingly direct relationship to the unifying forces and formative events which, along with economic self-interest and other factors, led to the U.S. Constitution. In other words, it was intimately linked with important public questions of its day: the issue of Federal authority over matters pertaining to interstate commerce, the need for creation of internal improvements to link the parts of the Nation, especially the East with the West; and the role which government was to play in accomplishing such projects." Specifically stated today (2008), Great Falls Park, in Fairfax County Virginia, is nationally significant under National Register Criteria A, B, C, and D as the location of the Patowmack Navigation Company's Great Falls skirting canal and lock system, an 18th-century engineering achievement spearheaded by George Washington. The Great Falls skirting canal was part of a larger system of sluices and skirting canals along the upper Potomac River intended to make that part of the river navigable for commercial boat traffic. Navigation of the Potomac River was seen as key to securing the western territory as far as the Ohio River beginning in the 1740s. Interrupted first by the French and Indian War and then the American Revolution, George Washington enlisted friends and fellow-planters/industrialists from Virginia and Maryland including James Madison, Thomas Johnson, and John Semple to be involved in the development of the river navigation. The Patowmack Navigation Company, more commonly known as the Patowmack Company, was established in 1785 to make the necessary improvements, including the skirting canal construction around the Great Falls among others. The agreement between Virginia and Maryland to allow inter-state commerce, known as the Mount Vernon Compact, was among the foundations of the U.S. Constitution. The company records and archeological remains from the construction of the canal by free, indentured, and enslaved laborers contribute significantly to our understanding of labor in the new republic. Although the Patowmack Company failed just 18 years after the Patowmack Canal at Great Falls was completed, the engineering experience from the canal and lock system there served as preparation for the construction of the replacement transportation system of the Chesapeake & Ohio Canal.

2016 LCS: The Patowmack Canal at Great Falls is significant as one of the first major public improvements in the United States. Skirting the Great Falls of the Potomac, the canal is part of a system that offered a means to traverse the river beyond Harpers Ferry. It has integrity as a ruin.
Long Significance Description:
A realization of a dream by George Washington to open up an avenue of commerce along the Potomac, the Patowmack Company was chartered in 1785 by Maryland and Virginia and was constructed a number of canals and other riverine improvements between 1786 and 1802. The canal at Great Falls was one of a number of improvements which included skirting canals at waterfalls and rapids and the removal of obstructions from the riverbed. The canal at Great Falls was the most important of these improvements, and utilized five locks (one a triple lock among the highest yet attempted) to raise or lower boats around the 78' waterfall. Never commercially successful, the Patowmack Company was taken over by the rival Chesapeake & Ohio Canal Company in 1828 and the canal ceased operations in 1830.

The resource does not contribute to the GWMP.

Surveyor Recommendation: Recommended Eligible

Ownership

Ownership Category	Ownership Entity
Federal Govt	U.S. National Park Service

Primary Resource Information

Resource Category: Other
Resource Type: Historic District
Date of Construction: 1785Ca
Historic Time Period: Colony to Nation (1751 - 1789)
Historic Context(s): Architecture/Community Planning, Commerce/Trade, Government/Law/Political, Industry/Processing/Extraction, Other, Settlement Patterns, Technology/Engineering, Transportation/Communication
Architectural Style: Mixed (more than 3 styles from different periods, 0)
Form: *No Data*
Number of Stories: *No Data*
Condition: Good
Interior Plan: *No Data*
Threats to Resource: None

Architectural Description:

2008 nomination: As seen currently, Great Falls Park is a recreational and historical facility offering picnicking, hiking, bridle trails, scenic views of the falls, as well as rock climbing and kayaking. In addition, there are remnants of the historic Patowmack Canal (029-0211) and Matildaville (029-0133), a village that grew alongside the canal's main holding basin. A macadam road, Old Dominion Drive (the former route of the Great Falls & Old Dominion Railway), leads to the Visitor Contact/Entrance Station and parking lots with connecting aggregate-concrete-paved walkways to the visitor center. Just north of the visitor center is a large, asphalt paved parking lot. An additional paved lot is located to the north at the head of the North River Trail, opposite the Clay Pond, and another lot is located southeast of the Visitor Contact/ Entrance Station. A flat area to the southwest of the visitor center, with open ground populated with large oak trees and occasional boulders is the park's picnic ground, with a scattering of tables and charcoal grills.

Following is a descriptive inventory of historic and non-historic buildings, structures, objects, and sites as they currently appear within the Great Falls Park boundary. Each is listed by its common name, given an approximate date of construction, associated NPS List of Classified Structures (LCS) number (if it has one) and/or the State Archeological Site number. Additionally each individual resource is counted as contributing or non-contributing to the Great Falls Park National Register District. Some of the structure/ruins are more archeological in nature are not assigned LCS numbers but still contribute to the Great Falls Park National Register District. Modern buildings do not receive LCS numbers and, with the exception of the Visitor Center, do not contribute to the Great Falls Park National Register District. This descriptive inventory and the parenthetical NR (National Register) numbers correspond with the Great Falls Park Inventory Database Report generated from the Great Falls Park Inventory Access Database, prepared for this Great Falls Park National Register District nomination.

See nomination for inventory of National Park Service Resources.

Statement of Integrity

Although little archeological investigation has been completed at Great Falls Park, the prehistoric remains currently known indicate a strong potential for more intact remains below ground. The protection of potential sites afforded by the park's National Park status and the relative lack of earlier disturbance enhances the probability that these sites retain their integrity. The ruins of the canal and Matildaville as well as historic road traces recall and illustrate the colonial and new republic periods in the Great Falls area, evoking the late 18th century character of the canal and its associated buildings and structures. The canal and locks in particular retain remarkable integrity of location, setting, materials, design and workmanship. Many pieces of the canal are visible and available for interpretation, providing association with, and the feel of the late 18th century. Remnants of the late 19th century to early 20th century period are perhaps the most ephemeral of all the historic periods in Great Falls Park, and therefore retain the least tangible resources. The railway route is preserved by its use as Old Dominion Drive – retaining integrity of location and its association as a park entrance route. The Great Falls amusement park retains little visual integrity, although sites of associated buildings and structures are known and, for the most part, undisturbed. Also, several cabin sites, the camp meeting site, a prohibition-era still site, and the quarries are all from this early 20th century period, but retain few associative features and therefore lack visual integrity. New overlooks and Visitor Contact Station complement the 1967 Visitor Center, 1969 maintenance building, and restroom facilities, along with several picnic pavilions.

2016 LCS: The approximately one-mile long canal features five locks (one a triple lock), waste weirs and spillways, a collecting basin and guard locks. Associated resources include mill and forge/foundry sites and the ruins of the town of Matildaville.
Long Physical Description:
The Patowmack Canal at Great Falls begins a third of a mile above the Great Falls of the Potomac where a wing dam funneled river water into its inlet. Below the confluence of Mine Run, the waters of which the canal accepted as a suppement, a guard lock was located to control the level of water in the canal. Excess water was diiverted into a spillway, which was supplemented by a secondary spillway further down. Below the sites of Samuel Briggs Gristmill and the Potts and Wilson Iron Forge and Foundry, both of which were powered by water from the canal, the canal opened up into a collecting basin where boats could wait to pass through the locks and watermen could visit the adjacent town of Matildaville. A second guard gate at the basin could divert water into a waste weir to control the levels in the locks or to drain them for cleaning. The canal continued southeast through a series of five locks. The upper two were conventional lift locks, but the final lock was a triple lift or three part stair lock. The lower of its two locks were blasted through the cliffs in one of the earliest uses of black powder in construction; they raised or lowered boats 38 feet together, about half the total rise or fall of the canal. At the base of Lock 5, boats could rejoin the Potomac River at the Mather Gorge. Iron bolts and rings in the rock here were used to tie up boats waiting for upstream passage through the locks.

Secondary Resource Information

Secondary Resource #1

Resource Category: *No Data*
Resource Type: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Date of Construction: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:
No Data

Historic District Information

Historic District Name: George Washington Memorial Parkway; Great Falls Park Historic District
Local Historic District Name: *No Data*
Historic District Significance:

George Washington Memorial Parkway:
From 2008 NRHP: Open spaces with memorial monuments have played a vital role in the social and cultural fabric of Washington, D.C. since L' Enfant, in 1791, first penned a unifying plan for the city. Arlington Ridge Park contributes to this legacy as a unit of the George Washington Memorial Parkway (GWMP, an extension of the Mount Vernon Memorial Highway, the first federally-funded parkway), a contributing feature of the National Mall viewshed (as the Mall's western terminus), and its exceptional commemorative associations with World War II. Arlington Ridge Park is therefore eligible under Criterion A for community planning and development and transportation and Criterion Consideration F as a commemorative property. The park hosts the annual Marine Corps Marathon, concerts at the Netherlands Carillon, and daily recreational activities that make it a popular place for urban residents, and is also eligible for listing under Criterion A for entertainment/recreation. The park, through its association with renowned architects, and landscape architects such as Horace W. Peaslee, Edward F. Neild, Netherlands Carillon architect Joost W. C. Boks and the Pulitzer Prize winning photographer Joseph J. Rosenthal, is also eligible under Criterion C in the areas of art, architecture, and landscape architecture. Please see nomination for more information.

Great Falls Park Historic District:
GRFA NR 2010: The entirety of Great Falls Park, surrounding and including the Potomac Canal, expands upon and adds to the Areas of Significance defined and documented within the 1982 National Historic Landmark Nomination (NHL) for the canal itself. The original material supports the areas of Commerce under Criterion A; Politics/Government under the leadership of George Washington for Criterion B; and Engineering under Criterion C. An excerpt from the NHL summary states: "Its [Potomac Canal] history bears an astonishingly direct relationship to the unifying forces and formative events which, along with economic self-interest and other factors, led to the U.S. Constitution. In other words, it was intimately linked with important public questions of its day: the issue of Federal authority over matters pertaining to interstate commerce, the need for creation of internal improvements to link the parts of the Nation, especially the East with the West; and the role which government was to play in accomplishing such projects." Specifically stated today (2008), Great Falls Park, in Fairfax County Virginia, is nationally significant under National Register Criteria A, B, C, and D as the location of the Patowmack Navigation Company's Great Falls skirting canal and lock system, an 18th-century engineering achievement spearheaded by George Washington. The Great Falls skirting canal was part of a larger system of sluices and skirting canals along the upper Potomac River intended to make that part of the river navigable for commercial boat traffic. Navigation of the Potomac River was seen as key to securing the western territory as far as the Ohio River beginning in the 1740s. Interrupted first by the French and Indian War and then the American Revolution, George Washington enlisted friends and fellow-planters/industrialists from Virginia and Maryland including James Madison, Thomas Johnson, and John Semple to be involved in the development of the river navigation. The Patowmack Navigation Company, more commonly known as the Patowmack Company, was established in 1785 to make the necessary improvements, including the skirting canal construction around the Great Falls among others. The agreement between Virginia and Maryland to allow inter-state commerce, known as the Mount Vernon Compact, was among the foundations of the U.S. Constitution. The company records and archaeological remains from the construction of the canal by free, indentured, and enslaved laborers contribute significantly to our understanding of labor in the new republic. Although the Patowmack Company failed just 18 years after the Patowmack Canal at Great Falls was completed, the engineering experience from the canal and lock system there served as preparation for the construction of the replacement transportation system of the Chesapeake & Ohio Canal.

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Tiffany Raszick

Organization/Company: The Louis Berger Group
Sponsoring Organization: *No Data*
Survey Date: 9/1/2016
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Entering resources that overlap the George Washington Memorial Parkway and the Great Falls Park Historic District.

Light orange in spreadsheet

Event Type: NRHP Listing

DHR ID: 029-5639
Staff Name: NPS
Event Date: 12/22/2014
Staff Comment

VIRGINIA, FAIRFAX COUNTY, Great Falls Park Historic District, Bounded by Potomac R., Georgetown Pike & River Bend Rd., Great Falls vicinity, 14001079, LISTED, 12/22/14 DHR No. 029-5639

Event Type: Other

Project Review File Number: 2009-1921
Investigator: Jean McRae
Organization/Company: National Park Service
Sponsoring Organization: *No Data*
Survey Date: 1/1/2011
Dhr Library Report Number: FX-619
Project Staff/Notes:

The National Register Nomination for the Great Falls Park Historic District, which was surveyed in 2007, was listed at the state level and is under review at the national level as of January 2011. This nomination includes the previously listed Patowmack Canal at Great Falls Historic District (NRHP), and Potomac (Potowmack) (Patowmack) Canal Historic District (NHL). In 2011, in order to record the resources based on current standards for DSS, Jean McRae made adjustments to these records. This included but was not limited to the changing and addition of DSS record numbers to more accurately reflect the inventory of resources within the district.

Event Type: VLR Listing

DHR ID: 029-5639
Staff Name: State Review Board
Event Date: 12/16/2010
Staff Comment

No Data

Event Type: NRHP Nomination

DHR ID: 029-5639
Staff Name: Paula S. Reed & Associates, Inc
Event Date: 4/1/2008
Staff Comment

Paula S. Reed, architectural historian; Edie Wallace, historian

The project, as defined by the scope of work, was to create a cogent and chronological narrative of the historical development of Great Falls Park (the Park) within the context of local, regional, and national history. This historical context is intended to provide a framework within which cultural and natural resources in the Park may be managed and interpreted. The project included the identification and evaluation of existing cultural resources within the Park boundaries, and the creation of a base map on which all of the resources were be located. An updated National Register documentation was completed to include all contributing and non-contributing features within the Park's boundary using National Register criteria for eligibility. The project was completed in two phases. Phase I produced the Historic Resource Study Report and Phase II produced the National Register nomination.

Bibliographic Information

Bibliography:

No Data

Property Notes:

Name: Mr. Matthew Virta
Title: Cultural Resource Manager
Company 1: National Park Service
Company 2: Great Falls Park
Address 1: George Washington Memorial Parkway
Address 2: c/o Turkey Run Park
City: McLean
State: Virginia
ZIP: 22101
Phone 1: 703-285-2965
Property Manager, Property Manager

Project Bibliographic Information:

No Data

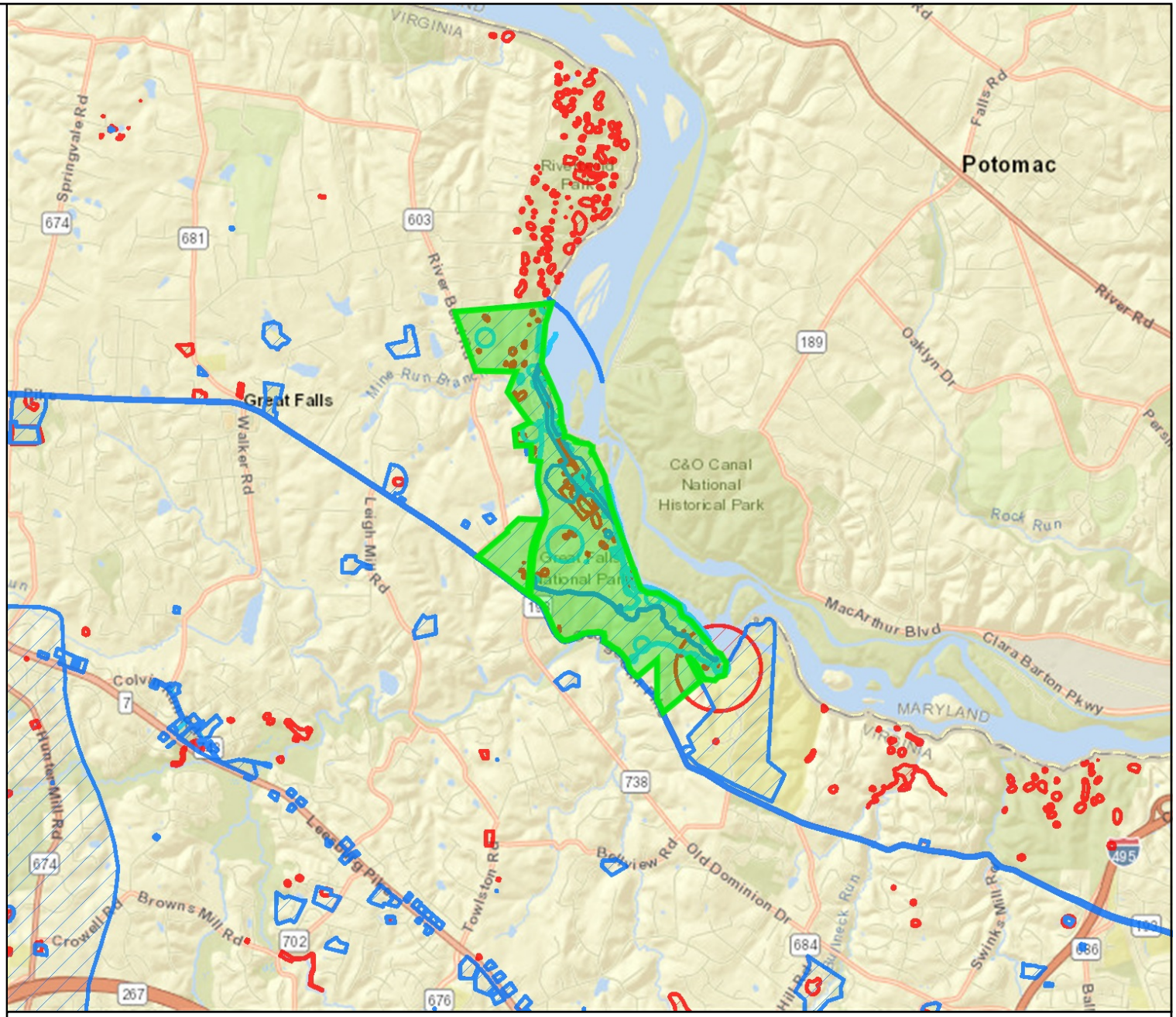
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Individual Historic District Properties
- Archaeological Resources
- DHR Easements
- County Boundaries



N

Feet

0 1200 2400 3600 4800

1:72,224 / 1"=6,019 Feet

Title: Architecture Labels

Date: 11/1/2018

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

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Property Information

Property Names

Name Explanation	Name
Descriptive	Small Quarry

Property Addresses

Current - 9200 Old Dominion Drive

County/Independent City(s): Fairfax (County)
Incorporated Town(s): *No Data*
Zip Code(s): 22066
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): FALLS CHURCH

Property Evaluation Status

Not Evaluated

This Property is associated with the George Washington Memorial Parkway; Great Falls Park Historic District.

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*

Site Description:

Nov. 2007: Great Falls Park follows the south (west) shore of the Potomac River for more than one mile, as the river cascades over the Great Falls at an area where the Potomac flows in a southerly direction. The park extends from a point north of Mine Run opposite the Aqueduct Dam across the Potomac, south to and below Difficult Run between the Georgetown Pike and the Potomac River. The topography is rugged and hilly, combined with boulder-strewn flats and marsh. At the north end of the park, the Virginia shore is at the river level. At the falls, the river drops approximately 70 feet, into a narrow passage known as Mather Gorge. From the beginning of the falls on, sheer cliffs wall the river and channel churning water down through the gorge. Tumbled jagged rocks define the tops of the cliffs. Extending back from the river is a level area, known historically as the “meadow” or glade, behind which rises Glade Hill, a narrow flat and then more undulating ground. A ridge runs to the south end of the park descending precipitously to Difficult Run near its mouth. The north end of the park is hilly and wooded with a combination of deciduous trees and evergreens.

This early 20th century quarry is located along the north side of Difficult Run, a short distance from the Georgetown Pike.

September 2016: No chance since previous survey.

Surveyor Assessment:

Start Year: 1920 ca
Date Source: Local Records

Nov. 2007: Great Falls Park Historic District is significant as the location of the Patowmack Navigation Company’s Great Falls skirting canal and lock system, an 18th century engineering achievement spearheaded by George Washington, and the associated development of the adjoining village of Matildaville. Great Falls Park additionally encompasses a rich prehistoric resource component, as well as historic domestic, agricultural, and amusement park-related resources representing the occupation of the Great Falls "meadow" after the closing of the canal in 1828 through the construction of the National Park Service Mission 66 Great Falls Park Visitor Center in 1967. The Small Quarry dates from the early 20th century and was used to produce rock for the Georgetown Pike.
GRFA NR 2010: The entirety of Great Falls Park, surrounding and including the Potomac Canal, expands upon and adds to the Areas of Significance defined and documented within the 1982 National Historic Landmark Nomination (NHL) for the canal itself. The original material supports the areas of Commerce under Criterion A; Politics/Government under the leadership of George Washington for Criterion B; and Engineering under Criterion C. An excerpt from the NHL summary states: “Its [Potomac Canal] history bears an astonishingly direct relationship to the unifying forces and formative events which, along with economic self-interest and other factors, led to the U.S. Constitution. In other words, it was intimately linked with important public questions of its day: the issue of Federal authority over matters pertaining to interstate commerce, the need for creation of internal improvements to link the parts of the Nation, especially the East with the West; and the role which government was to play in accomplishing such projects.” Specifically stated today (2008), Great Falls Park, in Fairfax County Virginia, is nationally significant under National Register Criteria A, B, C, and D as the location of the Patowmack Navigation Company’s Great Falls skirting canal and lock system, an 18th-century engineering achievement spearheaded by George Washington. The Great Falls skirting canal was part of a larger system of sluices and skirting canals along the upper Potomac River intended to make that part of the river navigable for commercial boat traffic. Navigation of the Potomac River was seen as key to securing the western territory as far as the Ohio River beginning in the 1740s. Interrupted first by the French and Indian War and then the American Revolution, George Washington enlisted friends and fellow-planters/industrialists from Virginia and Maryland including James Madison, Thomas Johnson, and John Semple to be involved in the development of the river navigation. The Patowmack Navigation Company, more commonly known as the Patowmack Company, was established in 1785 to make the necessary improvements, including the skirting canal construction around the Great Falls among others. The agreement between Virginia and Maryland to allow inter-state commerce, known as the Mount Vernon Compact, was among the foundations of the U.S. Constitution. The company records and archeological remains from the construction of the canal by free, indentured, and enslaved laborers contribute significantly to our understanding of labor in the new republic. Although the Patowmack Company failed just 18 years after the Patowmack Canal at Great Falls was completed, the engineering experience from the canal and lock system there served as preparation for the construction of the replacement transportation system of the Chesapeake & Ohio Canal.

September 2016: No chance since previous survey. This resource does not contribute to the GWMP.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Federal Govt	U.S. National Park Service

Primary Resource Information

Resource Category: Industry/Processing/Extraction
Resource Type: Quarry
Date of Construction: 1920Ca
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Technology/Engineering, Transportation/Communication
Architectural Style: Other
Form: *No Data*
Number of Stories: *No Data*
Condition: Ruinous
Interior Plan: *No Data*
Threats to Resource: None Known
Architectural Description:

GRFA NR 2010: This early-20th-century quarry is located along the north side of Difficult Run, a short distance from the Georgetown Pike. It dates from the early 20th century and was used to produce rock for the Georgetown Pike.

2016: No change

Secondary Resource Information

Secondary Resource #1

Resource Category: *No Data*
Resource Type: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Date of Construction: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

No Data

Historic District Information

Historic District Name: George Washington Memorial Parkway; Great Falls Park Historic District
Local Historic District Name: *No Data*
Historic District Significance: George Washington Memorial Parkway:
From 2008 NRHP: Open spaces with memorial monuments have played a vital role in the social and cultural fabric of Washington, D.C. since L' Enfant, in 1791, first penned a unifying plan for the city. Arlington Ridge Park contributes to this legacy as a unit of the George Washington Memorial Parkway (GWMP, an extension of the Mount Vernon Memorial Highway, the first federally-funded parkway), a contributing feature of the National Mall viewshed (as the Mall's western terminus), and its exceptional commemorative associations with World War II. Arlington Ridge Park is therefore eligible under Criterion A for community planning and development and transportation and Criterion Consideration F as a commemorative property. The park hosts the annual Marine Corps Marathon, concerts at the Netherlands Carillon, and daily recreational activities that make it a popular place for urban residents, and is also eligible for listing under Criterion A for entertainment/recreation. The park, through its association with renowned architects, and landscape architects such as Horace W. Peaslee, Edward F. Neild, Netherlands

Carillon architect Joost W. C. Boks and the Pulitzer Prize winning photographer Joseph J. Rosenthal, is also eligible under Criterion C in the areas of art, architecture, and landscape architecture. Please see nomination for more information.

Great Falls Park Historic District:
GRFA NR 2010: The entirety of Great Falls Park, surrounding and including the Potomac Canal, expands upon and adds to the Areas of Significance defined and documented within the 1982 National Historic Landmark Nomination (NHL) for the canal itself. The original material supports the areas of Commerce under Criterion A; Politics/Government under the leadership of George Washington for Criterion B; and Engineering under Criterion C. An excerpt from the NHL summary states: "Its [Potomac Canal] history bears an astonishingly direct relationship to the unifying forces and formative events which, along with economic self-interest and other factors, led to the U.S. Constitution. In other words, it was intimately linked with important public questions of its day: the issue of Federal authority over matters pertaining to interstate commerce, the need for creation of internal improvements to link the parts of the Nation, especially the East with the West; and the role which government was to play in accomplishing such projects." Specifically stated today (2008), Great Falls Park, in Fairfax County Virginia, is nationally significant under National Register Criteria A, B, C, and D as the location of the Patowmack Navigation Company's Great Falls skirting canal and lock system, an 18th-century engineering achievement spearheaded by George Washington. The Great Falls skirting canal was part of a larger system of sluices and skirting canals along the upper Potomac River intended to make that part of the river navigable for commercial boat traffic. Navigation of the Potomac River was seen as key to securing the western territory as far as the Ohio River beginning in the 1740s. Interrupted first by the French and Indian War and then the American Revolution, George Washington enlisted friends and fellow-planters/industrialists from Virginia and Maryland including James Madison, Thomas Johnson, and John Semple to be involved in the development of the river navigation. The Patowmack Navigation Company, more commonly known as the Patowmack Company, was established in 1785 to make the necessary improvements, including the skirting canal construction around the Great Falls among others. The agreement between Virginia and Maryland to allow inter-state commerce, known as the Mount Vernon Compact, was among the foundations of the U.S. Constitution. The company records and archaeological remains from the construction of the canal by free, indentured, and enslaved laborers contribute significantly to our understanding of labor in the new republic. Although the Patowmack Company failed just 18 years after the Patowmack Canal at Great Falls was completed, the engineering experience from the canal and lock system there served as preparation for the construction of the replacement transportation system of the Chesapeake & Ohio Canal.

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Tiffany Raszick
Organization/Company: The Louis Berger Group
Sponsoring Organization: *No Data*
Survey Date: 9/1/2016
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Entering resources that overlap the George Washington Memorial Parkway and the Great Falls Park Historic District.

Light orange in spreadsheet

Event Type: Other

Project Review File Number: *No Data*
Investigator: McRae, Jean
Organization/Company: Unknown (DSS)
Sponsoring Organization: *No Data*
Survey Date: 1/1/2011
Dhr Library Report Number: *No Data*
Project Staff/Notes:

The National Register Nomination for the Great Falls Park Historic District, which was surveyed in 2007, was listed at the state level and is under review at the national level as of January 2011. This nomination includes the previously listed Patowmack Canal at Great Falls Historic District (NRHP), and Potomac (Potowmack) (Patowmack) Canal Historic District (NHL). In 2011, in order to record the resources based on current standards for DSS, Jean McRae made adjustments to these records. This included but was not limited to the changing and addition of DSS record numbers to more accurately reflect the inventory of resources within the district.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 029-5639-0019
Investigator: Paula S. Reed & Assoc

Organization/Company: Unknown (DSS)
Sponsoring Organization: *No Data*
Survey Date: 11/1/2007
Dhr Library Report Number: *No Data*
Project Staff/Notes:

The project, as defined by the scope of work, was to create a cogent and chronological narrative of the historical development of Great Falls Park (the Park) within the context of local, regional, and national history. This historical context is intended to provide a framework within which cultural and natural resources in the Park may be managed and interpreted. The project included the identification and evaluation of existing cultural resources within the Park boundaries, and the creation of a base map on which all of the resources were be located. An updated National Register documentation was completed to include all contributing and non-contributing features within the Park's boundary using National Register criteria for eligibility. The project was completed in two phases. Phase I produced the Historic Resource Study Report and Phase II produced the National Register nomination.

Bibliographic Information

Bibliography:

No Data

Property Notes:

Name: Matthew Virta
Title: Cultural Resource Manager
Company 1: National Park Service
Company 2: Great Falls Park
Address 1: George Washington Memorial Parkway
Address 2: c/o Turkey Run Park
City: McLean
State: Virginia
ZIP: 22101
Phone 1: 703-285-2965
Ext: 0000
Phone 2: 000-000-0000
Ext: 0000
Owner Relationship: Property Manager

Project Bibliographic Information:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- USGS GIS Place names
- County Boundaries



N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

Title: Architecture Labels

Date: 11/1/2018

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Snapshot

Date Generated: November 01, 2018

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): No Data
Site Type(s): No Data
Other DHR ID: No Data
Temporary Designation: 014-3P01

Site Evaluation Status

Not Evaluated

Locational Information

USGS Quad: No Data
County/Independent City: Fairfax (County)
Physiographic Province: No Data
Elevation: No Data
Aspect: No Data
Drainage: No Data
Slope: No Data
Acreage: No Data
Landform: No Data
Ownership Status: No Data
Government Entity Name: No Data

Site Components

Component 1

Category: No Data
Site Type: No Data
Cultural Affiliation: No Data
DHR Time Period: No Data
Start Year: No Data
End Year: No Data
Comments: No Data

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

Archaeological site data is protected under the Archaeological Resource Protection Act (ARPA 1979).

CRM Events

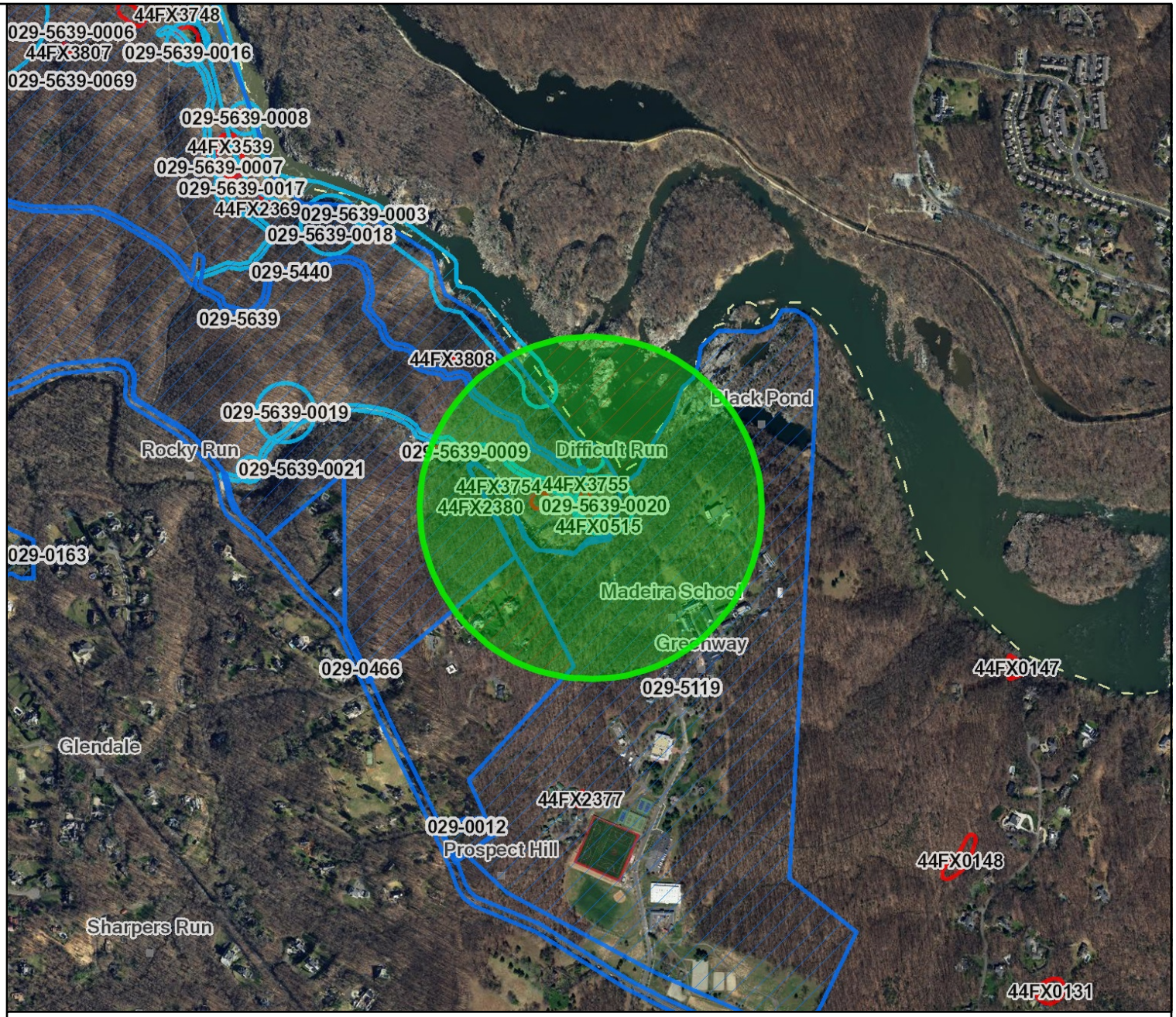
Virginia Dept. of Historic Resources

V-CRIS

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Legend

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N

Feet

0 500 1000 1500 2000

1:18,056 / 1"=1,505 Feet

Title: Archaeological Resources

Date: 11/1/2018

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ATTACHMENT F

ENVIRONMENTAL JUSTICE REVIEW

QT-P6

Race Alone or in Combination and Hispanic or Latino: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/sf1.pdf.

Geography: Virginia

Subject	Number	Percent
Total population (all races)	8,001,024	100.0
WHITE		
White alone or in combination [1]	5,681,937	71.0
Hispanic or Latino	340,608	4.3
White alone	5,486,852	68.6
Hispanic or Latino	300,402	3.8
BLACK OR AFRICAN AMERICAN		
Black or African American alone or in combination [1]	1,653,563	20.7
Hispanic or Latino	42,202	0.5
Black or African American alone	1,551,399	19.4
Hispanic or Latino	27,695	0.3
AMERICAN INDIAN AND ALASKA NATIVE		
American Indian and Alaska Native alone or in combination [1]	80,924	1.0
Hispanic or Latino	17,946	0.2
American Indian and Alaska Native alone	29,225	0.4
Hispanic or Latino	8,546	0.1
ASIAN		
Asian alone or in combination [1]	522,199	6.5
Hispanic or Latino	10,096	0.1
Asian alone	439,890	5.5
Hispanic or Latino	3,592	0.0
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER		
Native Hawaiian and Other Pacific Islander alone or in combination [1]	15,422	0.2
Hispanic or Latino	2,752	0.0
Native Hawaiian and Other Pacific Islander alone	5,980	0.1
Hispanic or Latino	919	0.0
SOME OTHER RACE		
Some Other Race alone or in combination [1]	301,435	3.8
Hispanic or Latino	275,347	3.4
Some Other Race alone	254,278	3.2
Hispanic or Latino	238,940	3.0

X Not applicable.
[1] The race concept "alone or in combination" includes people who reported a single race alone (e.g., Asian) and people who reported that race in combination with one or more of the other race groups (i.e., White, Black or African American, American Indian and Alaska

Native, Native Hawaiian and Other Pacific Islander, and Some Other Race). The "alone or in combination" concept, therefore, represents the maximum number of people who reported as that race group, either alone, or in combination with another race(s). The sum of the six individual race "alone or in combination" categories may add to more than the total population because people who reported more than one race are tallied in each race category.
Source: U.S. Census Bureau, 2010 Census.

Summary File 1,Tables P5 and P7.

QT-P6

Race Alone or in Combination and Hispanic or Latino: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/sf1.pdf.

Geography: Fairfax County, Virginia

Subject	Number	Percent
Total population (all races)	1,081,726 (r49532)	100.0
WHITE		
White alone or in combination [1]	715,447	66.1
Hispanic or Latino	97,358	9.0
White alone	677,990	62.7
Hispanic or Latino	87,368	8.1
BLACK OR AFRICAN AMERICAN		
Black or African American alone or in combination [1]	109,843	10.2
Hispanic or Latino	5,122	0.5
Black or African American alone	99,218	9.2
Hispanic or Latino	3,140	0.3
AMERICAN INDIAN AND ALASKA NATIVE		
American Indian and Alaska Native alone or in combination [1]	9,903	0.9
Hispanic or Latino	4,139	0.4
American Indian and Alaska Native alone	3,884	0.4
Hispanic or Latino	2,041	0.2
ASIAN		
Asian alone or in combination [1]	212,647	19.7
Hispanic or Latino	2,440	0.2
Asian alone	189,661	17.5
Hispanic or Latino	924	0.1
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER		
Native Hawaiian and Other Pacific Islander alone or in combination [1]	2,599	0.2
Hispanic or Latino	470	0.0
Native Hawaiian and Other Pacific Islander alone	864	0.1
Hispanic or Latino	85	0.0
SOME OTHER RACE		
Some Other Race alone or in combination [1]	78,134	7.2
Hispanic or Latino	72,013	6.7
Some Other Race alone	66,194	6.1
Hispanic or Latino	62,835	5.8

(r49532) This count has been revised.
Revised count: **1,081,699**
Revision date: **09-20-2013**
For more information, see 2010 Census Count Question Resolution.

X Not applicable.
[1] The race concept "alone or in combination" includes people who reported a single race alone (e.g., Asian) and people who reported that race in combination with one or more of the other race groups (i.e., White, Black or African American, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, and Some Other Race). The "alone or in combination" concept, therefore, represents the maximum number of people who reported as that race group, either alone, or in combination with another race(s). The sum of the six individual race "alone or in combination" categories may add to more than the total population because people who reported more than one race are tallied in each race category.

Source: U.S. Census Bureau, 2010 Census.

Summary File 1,Tables P5 and P7.

QT-P6

Race Alone or in Combination and Hispanic or Latino: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/sf1.pdf.

Geography: Block Group 3, Census Tract 4801, Fairfax County, Virginia

Subject	Number	Percent
Total population (all races)	841	100.0
WHITE		
White alone or in combination [1]	767	91.2
Hispanic or Latino	13	1.5
White alone	748	88.9
Hispanic or Latino	13	1.5
BLACK OR AFRICAN AMERICAN		
Black or African American alone or in combination [1]	13	1.5
Hispanic or Latino	3	0.4
Black or African American alone	13	1.5
Hispanic or Latino	3	0.4
AMERICAN INDIAN AND ALASKA NATIVE		
American Indian and Alaska Native alone or in combination [1]	3	0.4
Hispanic or Latino	0	0.0
American Indian and Alaska Native alone	2	0.2
Hispanic or Latino	0	0.0
ASIAN		
Asian alone or in combination [1]	65	7.7
Hispanic or Latino	0	0.0
Asian alone	47	5.6
Hispanic or Latino	0	0.0
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER		
Native Hawaiian and Other Pacific Islander alone or in combination [1]	0	0.0
Hispanic or Latino	0	0.0
Native Hawaiian and Other Pacific Islander alone	0	0.0
Hispanic or Latino	0	0.0
SOME OTHER RACE		
Some Other Race alone or in combination [1]	15	1.8
Hispanic or Latino	11	1.3
Some Other Race alone	11	1.3
Hispanic or Latino	11	1.3

X Not applicable.
[1] The race concept "alone or in combination" includes people who reported a single race alone (e.g., Asian) and people who reported that race in combination with one or more of the other race groups (i.e., White, Black or African American, American Indian and Alaska

Native, Native Hawaiian and Other Pacific Islander, and Some Other Race). The "alone or in combination" concept, therefore, represents the maximum number of people who reported as that race group, either alone, or in combination with another race(s). The sum of the six individual race "alone or in combination" categories may add to more than the total population because people who reported more than one race are tallied in each race category.
Source: U.S. Census Bureau, 2010 Census.

Summary File 1,Tables P5 and P7.

QT-P6

Race Alone or in Combination and Hispanic or Latino: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/sf1.pdf.

Geography: Block Group 4, Census Tract 4801, Fairfax County, Virginia

Subject	Number	Percent
Total population (all races)	712	100.0
WHITE		
White alone or in combination [1]	560	78.7
Hispanic or Latino	29	4.1
White alone	529	74.3
Hispanic or Latino	28	3.9
BLACK OR AFRICAN AMERICAN		
Black or African American alone or in combination [1]	40	5.6
Hispanic or Latino	0	0.0
Black or African American alone	31	4.4
Hispanic or Latino	0	0.0
AMERICAN INDIAN AND ALASKA NATIVE		
American Indian and Alaska Native alone or in combination [1]	6	0.8
Hispanic or Latino	0	0.0
American Indian and Alaska Native alone	0	0.0
Hispanic or Latino	0	0.0
ASIAN		
Asian alone or in combination [1]	128	18.0
Hispanic or Latino	0	0.0
Asian alone	107	15.0
Hispanic or Latino	0	0.0
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER		
Native Hawaiian and Other Pacific Islander alone or in combination [1]	4	0.6
Hispanic or Latino	0	0.0
Native Hawaiian and Other Pacific Islander alone	0	0.0
Hispanic or Latino	0	0.0
SOME OTHER RACE		
Some Other Race alone or in combination [1]	11	1.5
Hispanic or Latino	6	0.8
Some Other Race alone	10	1.4
Hispanic or Latino	5	0.7

X Not applicable.
[1] The race concept "alone or in combination" includes people who reported a single race alone (e.g., Asian) and people who reported that race in combination with one or more of the other race groups (i.e., White, Black or African American, American Indian and Alaska

Native, Native Hawaiian and Other Pacific Islander, and Some Other Race). The "alone or in combination" concept, therefore, represents the maximum number of people who reported as that race group, either alone, or in combination with another race(s). The sum of the six individual race "alone or in combination" categories may add to more than the total population because people who reported more than one race are tallied in each race category.
Source: U.S. Census Bureau, 2010 Census.

Summary File 1,Tables P5 and P7.

QT-P6

Race Alone or in Combination and Hispanic or Latino: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/sf1.pdf.

Geography: Block Group 2, Census Tract 4803, Fairfax County, Virginia

Subject	Number	Percent
Total population (all races)	757	100.0
WHITE		
White alone or in combination [1]	663	87.6
Hispanic or Latino	28	3.7
White alone	649	85.7
Hispanic or Latino	27	3.6
BLACK OR AFRICAN AMERICAN		
Black or African American alone or in combination [1]	7	0.9
Hispanic or Latino	1	0.1
Black or African American alone	5	0.7
Hispanic or Latino	1	0.1
AMERICAN INDIAN AND ALASKA NATIVE		
American Indian and Alaska Native alone or in combination [1]	5	0.7
Hispanic or Latino	0	0.0
American Indian and Alaska Native alone	0	0.0
Hispanic or Latino	0	0.0
ASIAN		
Asian alone or in combination [1]	88	11.6
Hispanic or Latino	2	0.3
Asian alone	81	10.7
Hispanic or Latino	1	0.1
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER		
Native Hawaiian and Other Pacific Islander alone or in combination [1]	0	0.0
Hispanic or Latino	0	0.0
Native Hawaiian and Other Pacific Islander alone	0	0.0
Hispanic or Latino	0	0.0
SOME OTHER RACE		
Some Other Race alone or in combination [1]	8	1.1
Hispanic or Latino	6	0.8
Some Other Race alone	8	1.1
Hispanic or Latino	6	0.8

X Not applicable.
[1] The race concept "alone or in combination" includes people who reported a single race alone (e.g., Asian) and people who reported that race in combination with one or more of the other race groups (i.e., White, Black or African American, American Indian and Alaska

Native, Native Hawaiian and Other Pacific Islander, and Some Other Race). The "alone or in combination" concept, therefore, represents the maximum number of people who reported as that race group, either alone, or in combination with another race(s). The sum of the six individual race "alone or in combination" categories may add to more than the total population because people who reported more than one race are tallied in each race category.
Source: U.S. Census Bureau, 2010 Census.

Summary File 1,Tables P5 and P7.

MADEIRA

June 11, 2018

William Niedringhaus, President
Potomac Heritage Trail Association (PHTA)
805 N. Croydon St.
Sterling, VA 20164

Dear Bill:

The Madeira School and its Board of Trustees have reviewed your proposal of January 11, 2018. After considerable deliberation and review, we are not inclined to pursue your recommendation at this time. It is notable and appreciated that the PHTA has sought and offered a proposal that contains support for the elimination of the Fairfax County inclusion for a stream valley trail along the school's property at the Potomac River. This remains a primary issue for Madeira. However, your request for a public access easement along our western boarder to construct a public trail raises serious concerns for our school related to student safety, community tranquility, and environmental disruption similar to those raised by the Fairfax County trail plan. Finally, we feel that there are alternative trail proposals under consideration that would meet your goals of a continuous route without crossing through the private property of Madeira or its neighbors, for which the easement across the front of our property along Georgetown Pike has already been granted.

As you are aware from the well-documented history related to the Fairfax County trail plan, Madeira and its neighbors maintain that any public trail through or across our properties pose a substantial threat to safety, security, and the ecosystem. The terrain of the trail area is harsh and in many places requires more than a novice skillset to traverse. We note that Madeira is currently used many times a year as a point of coordination for rescue operations related to people injured on the rocks or by the river requiring helicopter rescue and transfer to ambulance on our fields. Inviting a larger population into the area will only increase these instances. Construction of any trail to address this issue will require costly and intrusive alterations to the landscape.

Our school and its various facilities supports children of all ages and educates girls of high school age. Many of these girls live on campus. Considering these vulnerable populations from a safety and security perspective, we feel our programs are best run with limited exposure to the open public [many of our facilities are open to non-Madeira users]. As you know, there have been incidents of crime, including a brutal and tragic murder of a Madeira student by an assailant who accessed our campus through the woods and concealed his attack in the terrain for many hours. That history serves as an important reminder when we structure how to deliver our educational and recreational programming. Currently Madeira is seeking to increase its use of the property for both Madeira and non-Madeira students for environmental education and incorporate more of our programming throughout our acreage. Opening the campus to non-mission related foot traffic around the

area is a direct threat to our ability to deliver that programming safely. It will also be a disruption to our quiet enjoyment of our natural undeveloped property. The proposed trail creates a new trail that is not along a road and is difficult to secure. While a trail that traverses the campus instead of one that runs through it is an improvement over the current Fairfax County Trail map plan, we feel our emphasis on student safety would require a fence along the proposed western trail to prevent access to the Madeira property, as well as additional personnel and equipment requirements to our security team. This fence, which would incur monetary cost for the initial installation and the continuing maintenance and repair, would also become intrusive and disruptive to both the Madeira community and to the residents whose properties abut to the school's western boundary.

We understand that the PHTA has put a significant amount of thought and study into its proposal, including coordinating and communicating with the County Supervisor's office and we are appreciative of those efforts. Madeira can only respond on its own behalf, but we feel it should be recognized and addressed that our community neighbors and property owners on both sides of our campus need to be informed about your proposal and provided an opportunity to provide you with their own feedback. We do not see this as Madeira's role nor should the school be put in a position to be seen as an advocate for either the existing trail plan map or your proposed alternative until such conversations can be successfully navigated. Our board does believe that if community support can be garnered, the school would be more favorably inclined to reconsider its position. This community support would need to be unanimous and include a provision for the needed fence between the trail and our property, indemnity for Madeira against all actions and claims related to the trail, and a guarantee of the elimination of any other trails around or through the entirety of the Madeira campus and the Potomac River shoreline.

It would be Madeira's preference and recommendation to pursue trail connectivity via the existing trail easement along Georgetown Pike. The Georgetown Pike Footpath Feasibility Study kicked off on April 3rd presents a series of options for trail connectivity along Georgetown Pike that we feel have a much greater chance of being supported, funded, and constructed than any trail that runs along the river or through the property of Madeira or the neighboring residents' lots. The existing easement along our frontage and the associated monetary escrow account that the school previously contributed to for its development is well situated to support that option. I was encouraged by the conversation at the meeting and look forward to monitoring the progress of the feasibility study.

Sincerely,

Alexander C. Heiberger
Chief Financial Officer



Appendix F – Information Provided by Fairfax County Park Authority

- Photos of recent FCPA pedestrian bridge construction projects
- Presentation on Stream Valley Bridge crossing challenges
- Gabrielson Bridge: Bridge Details – Basis of Design
- Liberty Bell Trail Bridge Shop Drawings
- Luria Abutment Drawing for Building Permit
- Section 13000 Steel Bridge and Helical Anchor Specifications

Fairfax County Park Authority Bridges



100-ft-long X 12-ft wide Bridge over Accotink Creek



100-ft-long X 12-ft wide Bridge over Accotink Creek



100-ft Bridge over Accotink Creek in flood



100-ft Bridge over Accotink Creek in flood

Fairfax County Park Authority Bridges



60-ft Bridge over Pohick Creek – abutment construction



60-ft Bridge over Pohick Creek – steel truss setting



60-ft long, 10-ft wide Bridge over Pohick Creek



100-ft Bridge over Accotink Creek in flood

Fairfax County Park Authority Bridges



60-ft long X 14-ft wide Bridge over Pohick Creek



60-ft long X 14-ft wide Bridge over Pohick Creek



60-ft long X 14-ft wide Bridge over Pohick Creek



60-ft long X 14-ft wide Bridge over Pohick Creek

Fairfax County Park Authority Bridges



60-ft Bridge over Holmes Run
in Luria Park











Fairfax County Park Authority Bridges



4-ft wide Bridge over South Run



Stream Valley Crossing Challenges

- Large watershed with flash flooding potential
- A bridge will be inundated during floods
- Large volume of debris during floods
- Bridge structures must be able to withstand significant stream loads

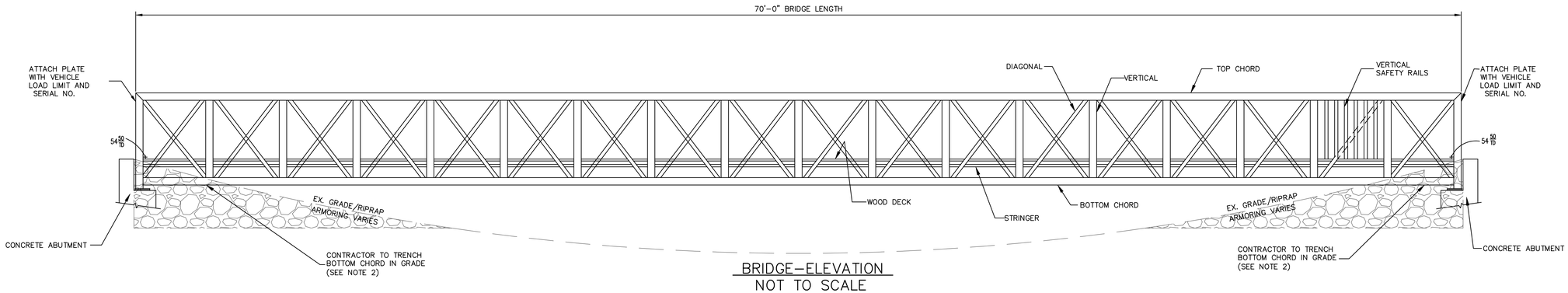


Fairfax County Park Authority

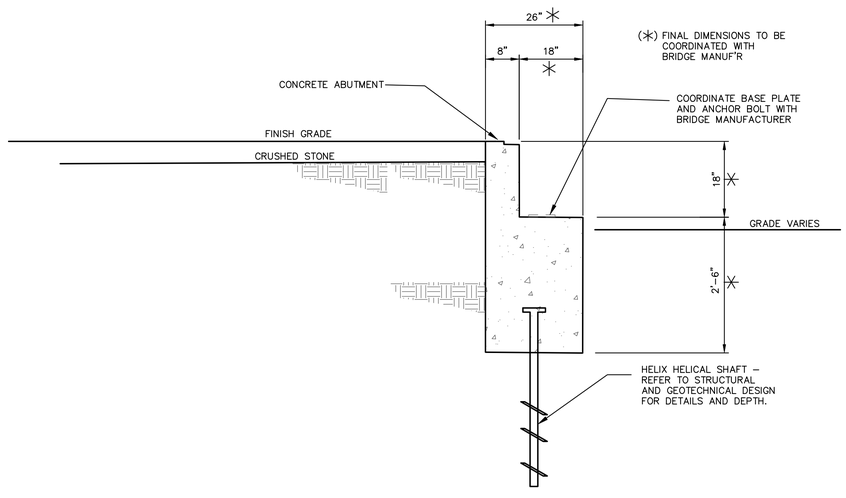
Other Bridge Considerations

- Sufficient set back from stream bank to avoid erosion
- Low maintenance design for expected 75-year lifespan
- Deck and width per County standards or other funding requirements
- Suitable size for pedestrian, bicycle, and equestrian uses

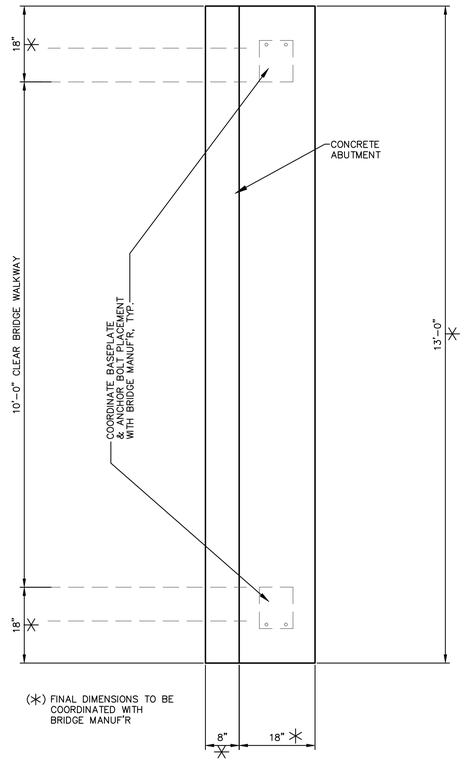




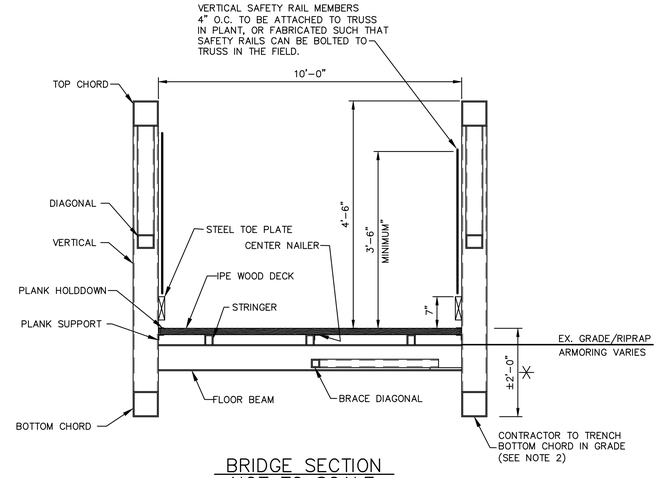
BRIDGE–ELEVATION
NOT TO SCALE



ABUTMENT SECTION VIEW
NOT TO SCALE



ABUTMENT PLAN VIEW
NOT TO SCALE



BRIDGE SECTION
NOT TO SCALE

NOTE:
1) CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWING DOCUMENTS, INCLUDING BRIDGE, CONCRETE ABUTMENT, & HELICAL PIER, SIGNED AND SEALED BY ENGINEER CERTIFIED IN THE COMMONWEALTH OF VIRGINIA, TO OWNER FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIALS.
2) THE PROPOSED BRIDGE DECK IS AT THE SAME ELEVATION AS THE EXISTING RIP RAP ARMORED STREAM BANK. RIP RAP STONES IN THE PATH OF THE BRIDGE BOTTOM CHORD RAIL SHALL BE REMOVED AND TRENCHED DURING CONSTRUCTION. THE MEANS AND METHODS OF CONSTRUCTION ARE AT THE DISCRETION OF THE CONTRACTOR.

THIS SHEET NOT FOR CONSTRUCTION - INFORMATION ONLY!!!

PLAN STATUS	
12/21/18	PRELIMINARY PLAN
05/07/19	75% PLAN
06/22/19	100% PLAN
DATE	DESCRIPTION

Bowman CONSULTING
Bowman Consulting Group, Ltd.
13461 Sunrise Valley Drive
Suite 500
Herndon, Virginia 20171
Phone: (703) 464-1000
Fax: (703) 481-9720
www.bowmanconsulting.com

FAIRFAX COUNTY PARK AUTHORITY
12055 Government Center Pkwy.
Fairfax, Virginia 22035

BRIDGE DETAILS - BASIS OF DESIGN

GABRIELSON GARDENS BRIDGE REPLACEMENT

MINOR SITE PLAN
SULLY DISTRICT FAIRFAX COUNTY, VIRGINIA

Designed By: CLI | Checked By: DP
Date: JULY 2019
Scale: N/A
FCPA Project Number: ST-000031-003
Map Section: 037-1-((23))-0005
Sheet: 9 of 12
FCPA File Number:

BG JOB NO. 4000-01-019 FILE NO. 4000-D-CD-001

LIBERTY BELL TRAIL PEDESTRIAN BRIDGE

BURKE, VA

DELTA MARINE CONSTRUCTION

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV 0	REV 1	REV 2	REV 3
1	TITLE PAGE	09/27/2016	10/11/2016	10/13/2016	10/17/2016
2	GENERAL NOTES	09/27/2016	–	–	–
3	BEARING REACTION & ANCHOR BOLT LAYOUT	09/27/2016	–	–	–
4	ELEVATION & PLAN VIEW	09/27/2016	–	–	–
5	CROSS SECTION	09/27/2016	10/11/2016	–	–
6	WELD DETAILS	09/27/2016	10/11/2016	10/13/2016	10/17/2016
7	BEARING ELEVATIONS & PLATE DETAILS	09/27/2016	–	–	10/17/2016

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Index	Description	Author	Date
3	WELD DETAIL MOVED	RAR	10/17/2016

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(970) 356-9600 · Fax:(970) 356-9621 · www.bigrbridge.com

60'-0" x 14'-2"
LIBERTY BELL TRAIL PEDESTRIAN BRIDGE
BURKE, VA
DELTA MARINE CONSTRUCTION

COMMONWEALTH OF VIRGINIA
MICHAEL WILLIAM PHILPOT
Lic. No. 36346
PROFESSIONAL ENGINEER
10/31/16

BR16-00372	
DESIGN BY	OM
DRAWN BY	RAR
CHECKED BY	OM
SHEET NO.	1

GENERAL NOTES

1) BIG R BRIDGE IS AISC QUALITY CERTIFIED BRIDGE FABRICATION – INTERMEDIATE (MAJOR) WITH A FRACTURE CRITICAL AND SOPHISTICATED PAINT ENDORSEMENT, AND CWB CERTIFIED TO CSA STANDARD W47.1 DIVISION 2.

2) DESIGN IS IN ACCORDANCE WITH THE "LRFD GUIDE SPECIFICATION FOR DESIGN OF PEDESTRIAN BRIDGES" BY AASHTO, DECEMBER 2009.

3) MATERIALS (UNLESS NOTED OTHERWISE):
   a) HSS SECTIONS: ASTM A847 WEATHERING STEEL Fy = 50 ksi MIN.
   b) STEEL SHAPES: ASTM A588 WEATHERING STEEL Fy = 50 ksi
   c) STEEL PLATES: ASTM A588 WEATHERING STEEL Fy = 50 ksi
   d) STRUCTURAL BOLTS: ASTM A325 TYPE 3

4) DESIGN LOADINGS:
   a) BRIDGE DEAD LOAD PLUS IPE DECKING LOAD OF 8.75 PSF.
   b) UNIFORM PEDESTRIAN LIVE LOAD OF 100 PSF.
   c) VEHICLE LIVE LOAD OF H10 TRUCK.
   d) WIND LOAD FROM 90 MPH WIND AT A MAX HEIGHT OF 32.8' ABOVE GRADE.
   e) SNOW LOAD OF 20 PSF.
   f) SEISMIC LOADING PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.10:
      SITE CLASS: D
      PGA = 0.039
      S_s = 0.16
      S_1 = 0.053
      PERIOD OF BRIDGE = T_m = 0.062566063 SEC
   g) STREAM CURRENT LOAD OF 75 PSF.

5) BRIDGE TO BE BUILT TO THE REQUIREMENTS OF AWS D1.1

6) ALL SHOP WELDING SHALL USE THE GAS METAL ARC WELDING OR FLUX CORED ARC WELDING PROCESS.

7) FINISH:
   ALL EXPOSED SURFACES OF STRUCTURAL STEEL TO BE BRUSH-OFF BLAST CLEANED IN ACCORDANCE WITH SSPC-SP7. EXPOSED SURFACES OF STEEL SHALL BE DEFINED AS THOSE SURFACES SEEN FROM THE DECK OR FROM THE OUTSIDE AND BOTTOM OF THE STRUCTURE.

8) ALL BOLTED CONNECTIONS ARE CONSIDERED TO BE PRETENSIONED OR SLIP-CRITICAL CONNECTIONS. ALL BOLTS ARE TO BE PRETENSIONED PER THE REQUIREMENTS OF SECTION 8.2 OF THE SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS BY RCSC.

9) ALL BOLTS AND NUTS SHALL BE FURNISHED IN THE AMOUNT OF 5% IN EXCESS OF THE NUMBER REQUIRED FOR EACH SIZE AND LENGTH.

10) IF BOLTS DO NOT SMOOTHLY ENGAGE UP TO SNUG-TIGHT, THERE MAY BE AN OBSTRUCTION WITHIN THE THREADS. THE BOLT SHOULD BE REMOVED, THE THREADS ON THE BOLT AND NUT CLEANED AND RETAPPED IF NECESSARY TO ALLOW SMOOTH INSTALLATION OF THE BOLT. (IF APPLICABLE)

11) MAINTENANCE NOTE: DO NOT APPLY DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS TO ANY PART OF THE BRIDGE STRUCTURE.

12) SHOP SPLICES:
   a) ALL TOP AND BOTTOM CHORD SHOP SPLICES TO BE COMPLETE PENETRATION TYPE WELDS.
   b) ALL SAFETY RAIL SHOP SPLICES TO BE SEAL WELDS LOCATED AT CENTERLINE OF VERTICAL.
   c) ALL STRINGER SHOP SPLICES TO BE SEAL WELDS LOCATED OVER CENTERLINE OF FLOOR BEAM.

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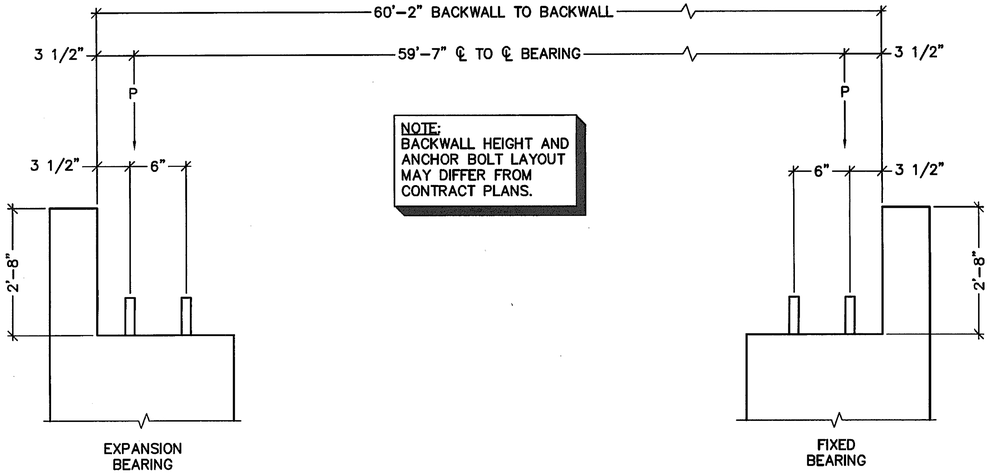
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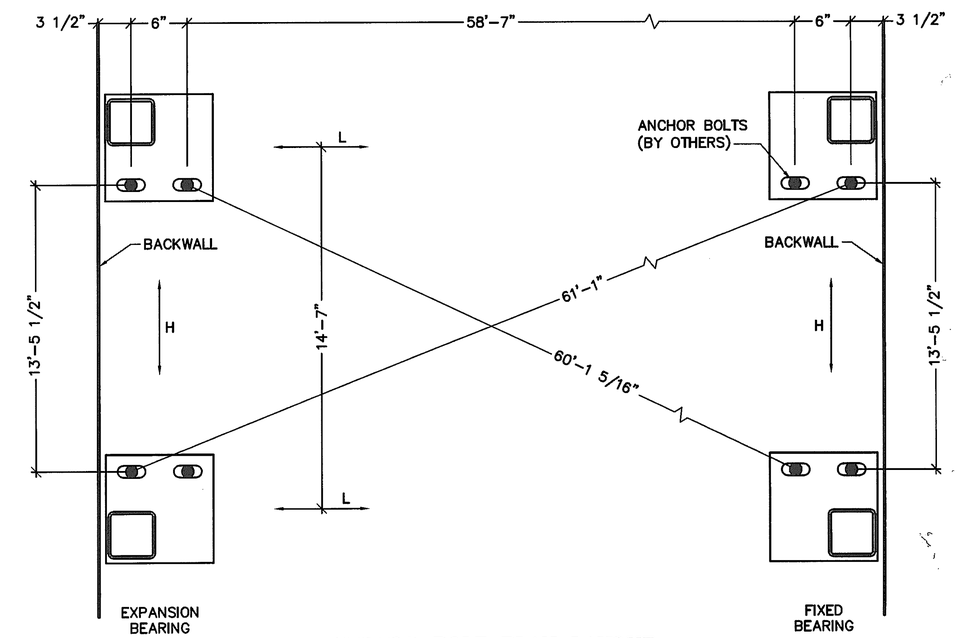
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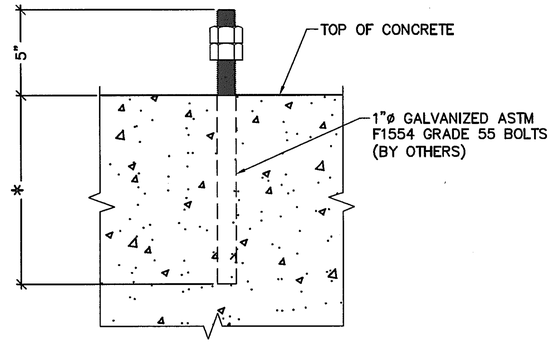
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ANCHOR BOLT ELEVATION LAYOUT



ANCHOR BOLT PLAN LAYOUT



ANCHOR BOLT DETAIL

*NOTE:
ANCHOR BOLTS ARE DESIGNED BY BIG R BRIDGE FOR STEEL STRENGTH IN SHEAR AND TENSION OF THE ANCHOR BOLT ONLY. ALL DESIGN CONSIDERATIONS REGARDING CONCRETE BREAKOUT STRENGTH IN SHEAR AND TENSION, PULLOUT STRENGTH, CONCRETE SIDE-FACE BLOWOUT STRENGTH, CONCRETE PRYOUT STRENGTH, EMBEDMENT DEPTH, TYPE OF ANCHORAGE OR ANY OTHER CONCRETE FAILURE MODES ARE NOT CONSIDERED AND ARE NOT THE RESPONSIBILITY OF BIG R BRIDGE. IF LARGER DIAMETER BOLTS ARE REQUIRED TO MEET ANY OF THESE REQUIREMENTS, THAT INFORMATION MUST BE PROVIDED TO BIG R BRIDGE PRIOR TO BEGINNING ANY FABRICATION ON THE BRIDGE.

BRIDGE REACTIONS	P (LBS)	H (LBS)	L (LBS)
DEAD	6,900		
LIVE (100 PSF)	21,300		
VEHICLE (H10)	12,400		
WIND (90 MPH)	±2,000	8,300	
OVERTURNING (20 PSF)	−6,400		
STREAM (9 FPS)	2,400	10,100	
SNOW (20 PSF)	4,300		
SEISMIC		4,500	4,500
THERMAL			1,100

"P": FOUR PER BRIDGE
"H": TWO PER BRIDGE (ONE PER ABUTMENT)
"L": FOUR PER BRIDGE

LIFTING WEIGHTS			
ITEM	QTY	UNIT WEIGHT (LBS)	TOTAL WEIGHT (LBS)
BRIDGE SECTION	2	9,870	19,720
LOOSE ITEMS		–	170
		* TOTAL BRIDGE WEIGHT:	19,890

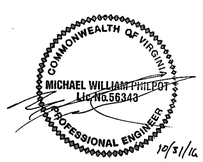
* FULL STRUCTURE NOT INCLUDING WEIGHT OF CONCRETE

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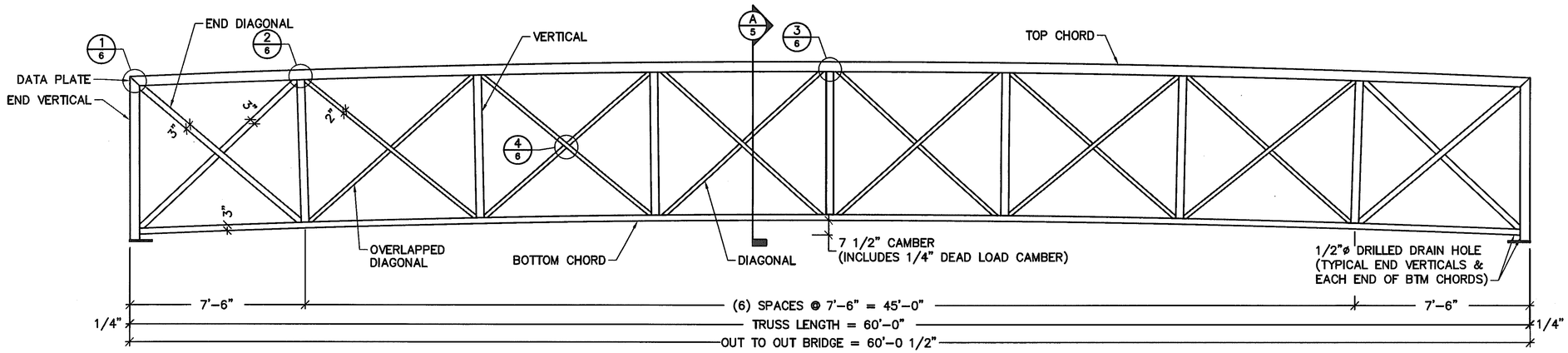
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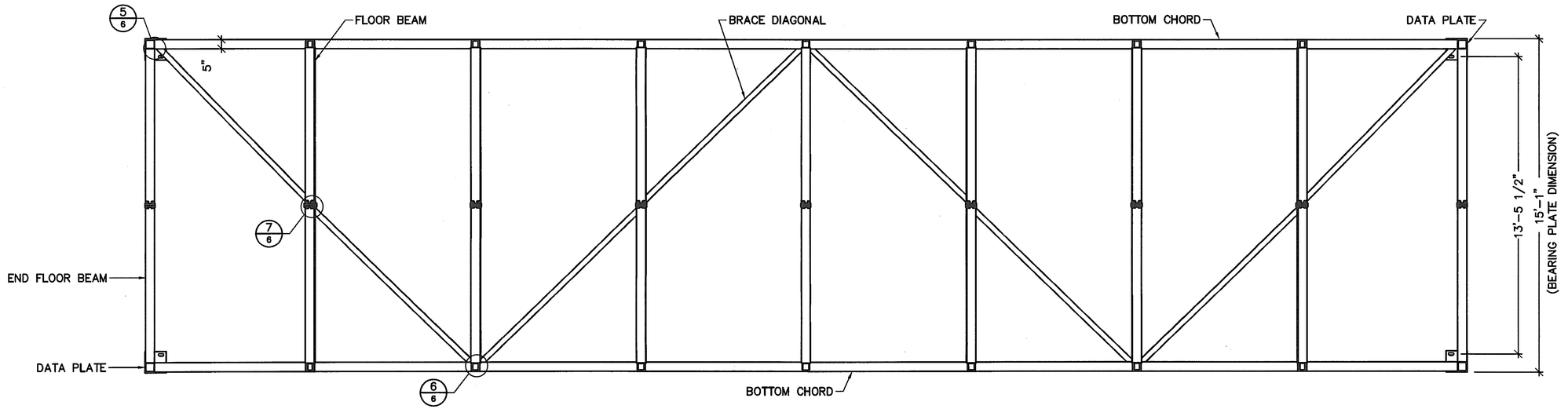


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OUTSIDE ELEVATION



BOTTOM CHORD DETAIL

MEMBERS	SIZE
TOP CHORD	HSS 5x5x1/4
BOTTOM CHORD	HSS 5x3x1/4
END VERTICAL	HSS 5x5x1/4
VERTICAL	HSS 4x4x1/4
END DIAGONAL	HSS 4x3x1/4
DIAGONAL	HSS 3x2x1/4
BRACE DIAGONAL	HSS 3x3x1/4
END FLOOR BEAM	W 14x22

MEMBERS	SIZE
FLOOR BEAM	W 14x22
STRINGER	HSS 5x3x1/4
END DAM	PL 1/4"x 6"
VERTICAL PICKETS	L 1 1/2x1 1/2x1/8
TOP PICKET RAIL	HSS 1 1/2x1 1/2x3/16
TOE PLATE	C5x6.7

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DELTA MARINE CONSTRUCTION

COMMONWEALTH OF VIRGINIA
MICHAEL WILLIAM PHILPOT
Lic. No. 036343
PROFESSIONAL ENGINEER
10/31/16

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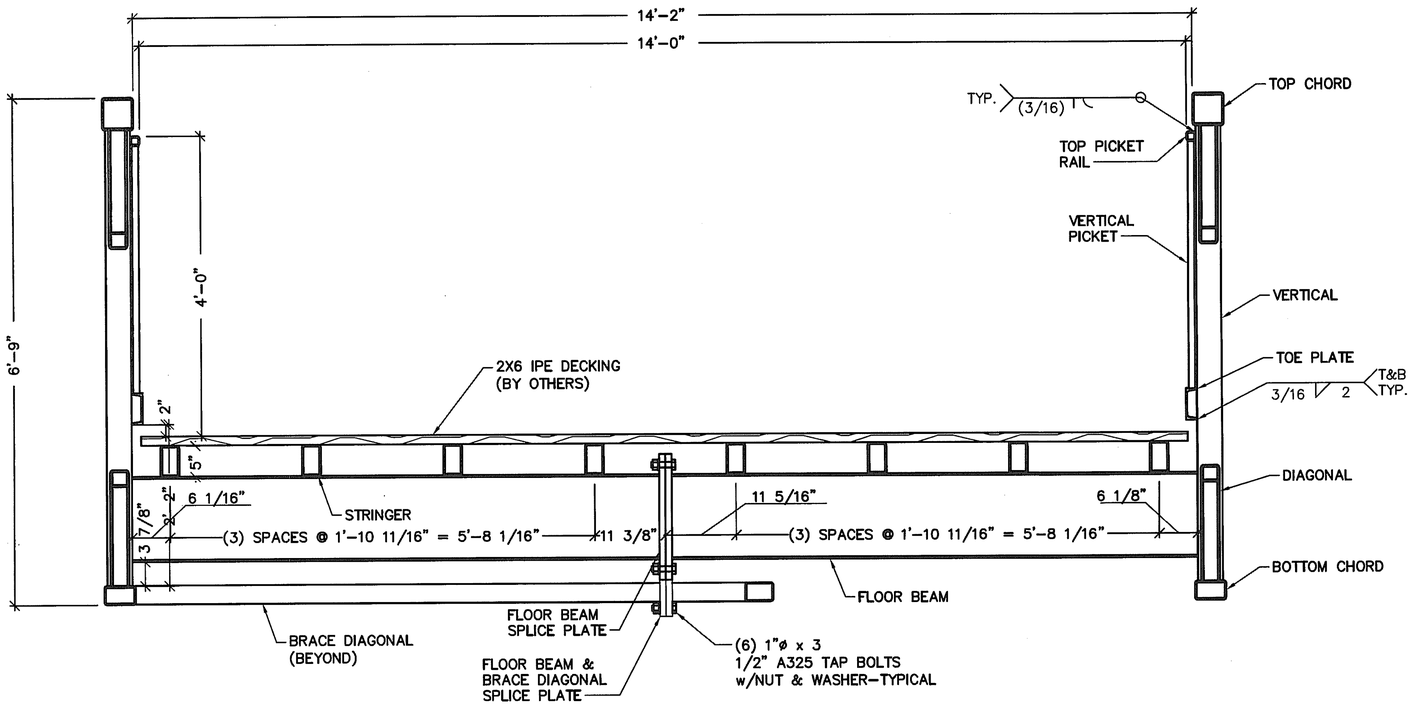
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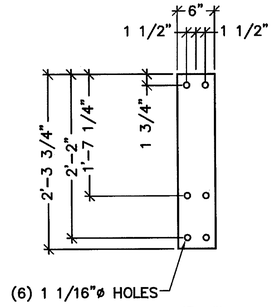
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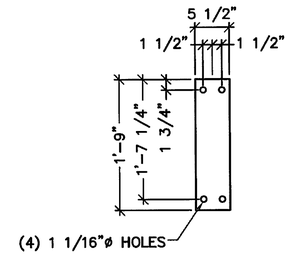


⚠ SECTION A/4



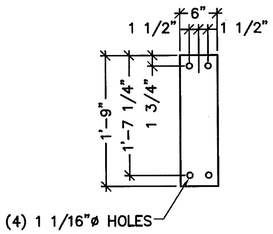
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FLOOR BEAM & BRACE DIAGONAL SPLICE PLATE DETAIL



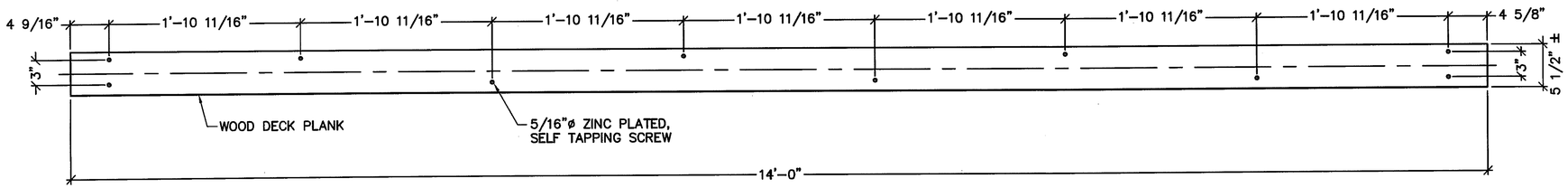
(℄ 1")

END FLOOR BEAM SPLICE PLATE DETAIL



(℄ 1")

FLOOR BEAM SPLICE PLATE DETAIL



WOOD DECK FASTENING DETAIL (DECK BY OTHERS)

(131 PLANKS REQUIRED)

Index	Description	Author	Date
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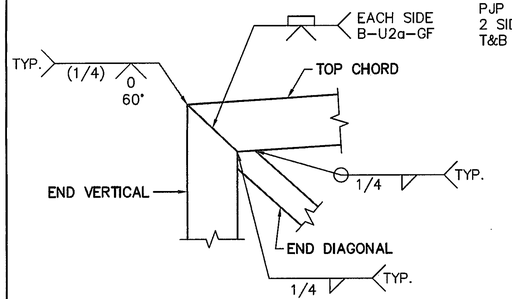
BURKE, VA

DELTA MARINE CONSTRUCTION

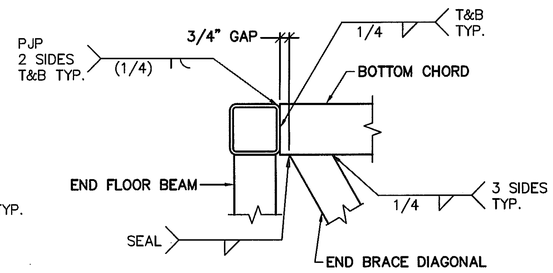
COMMONWEALTH OF VIRGINIA
MICHAEL WILLIAM PHILPOT
Lic. No. 58343
PROFESSIONAL ENGINEER
10/31/16

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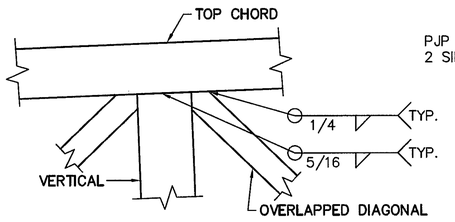
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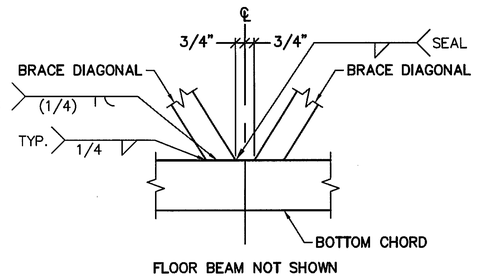
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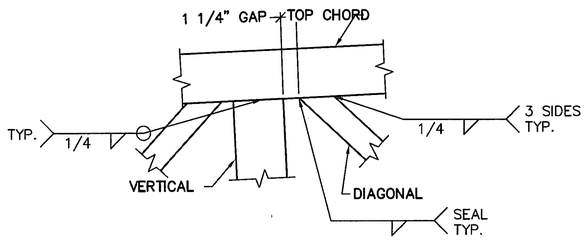
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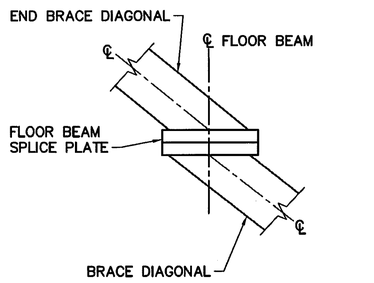
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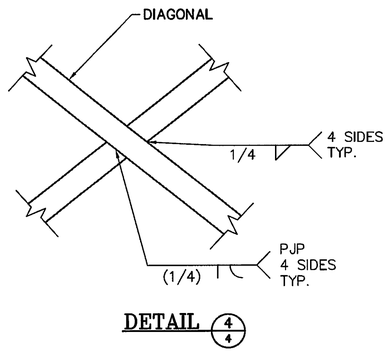
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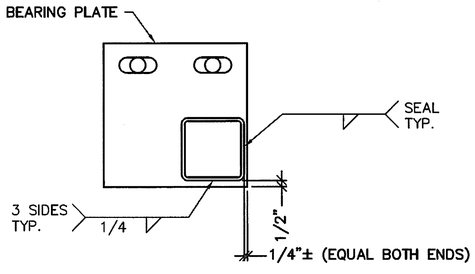
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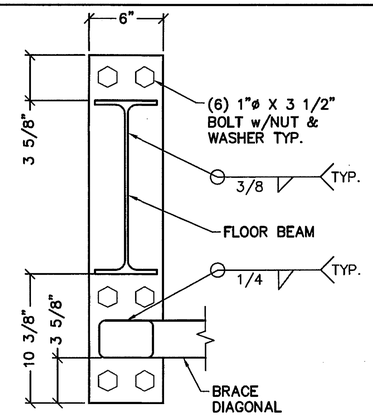
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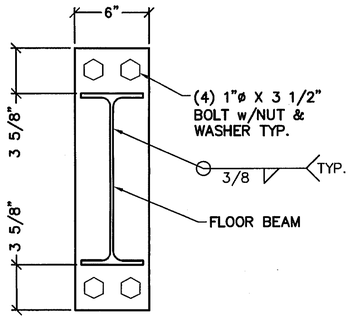
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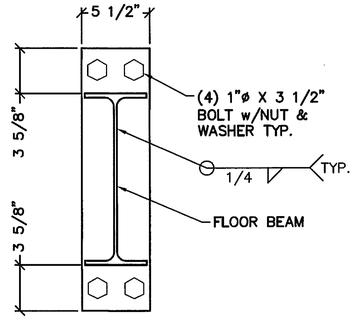
END VERTICAL WELD DETAIL



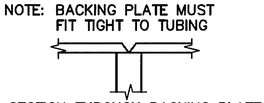
FLOOR BEAM &
BRACE DIAGONAL
SPLICE PLATE DETAIL



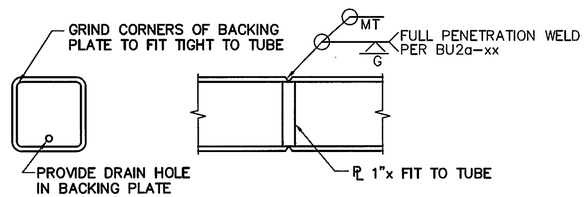
FLOOR BEAM
SPLICE PLATE DETAIL



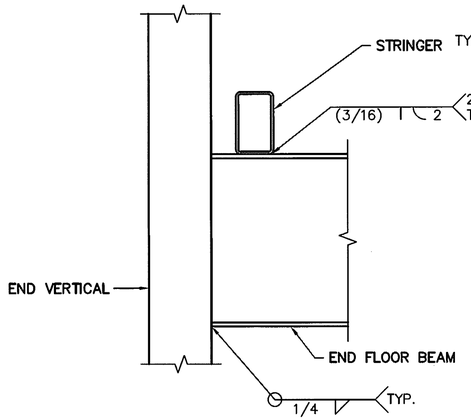
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SPLICE PLATE DETAIL



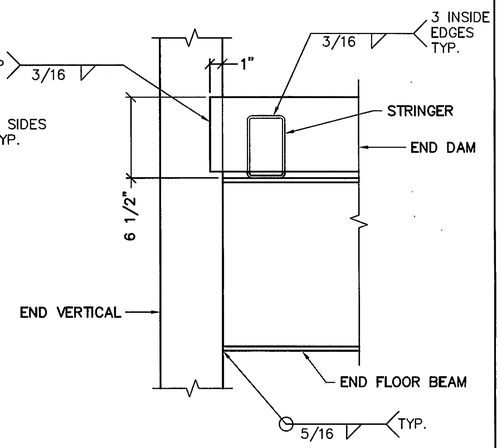
SECTION THROUGH BACKING PLATE



TYPICAL SHOP SPLICE DETAIL



FLOOR BEAM WELD DETAIL



END FLOOR BEAM WELD DETAIL

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BIG R BRIDGE

P.O. Box 1290 · Greeley, Colorado 80632-1290
(970) 356-9600 · Fax:(970) 356-9621 · www.bigrbridge.com

60'-0" x 14'-2"

LIBERTY BELL TRAIL PEDESTRIAN BRIDGE

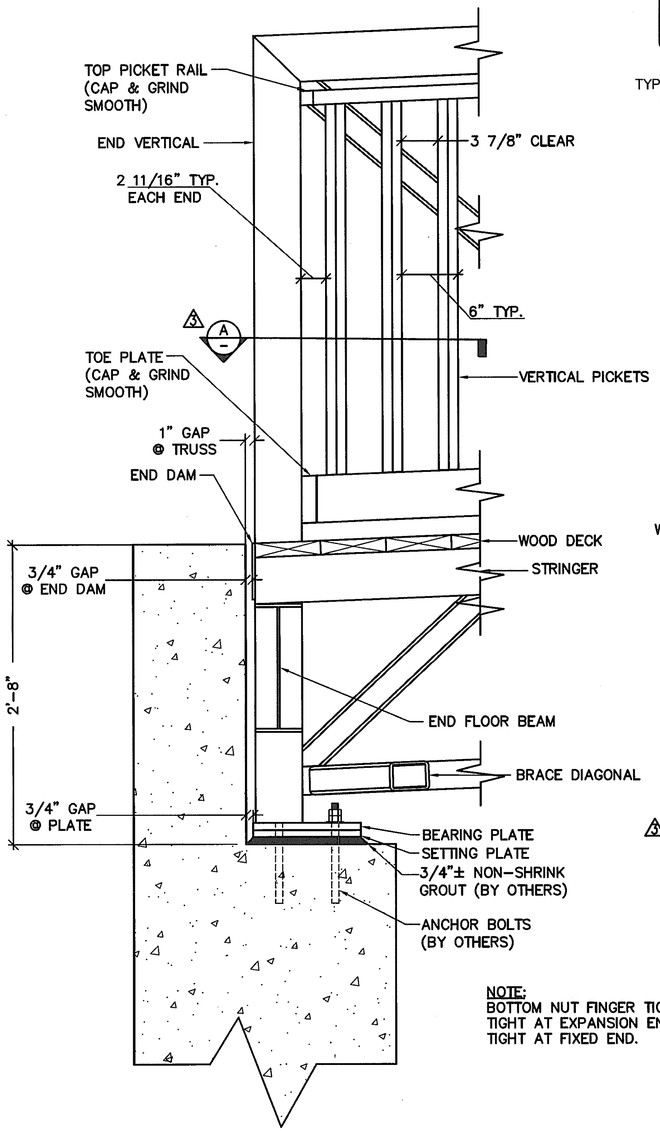
BURKE, VA

DELTA MARINE CONSTRUCTION

COMMONWEALTH OF VIRGINIA
MICHAEL WILLIAM PHILPOT
Lic. No. 56349
PROFESSIONAL ENGINEER
10/3/16

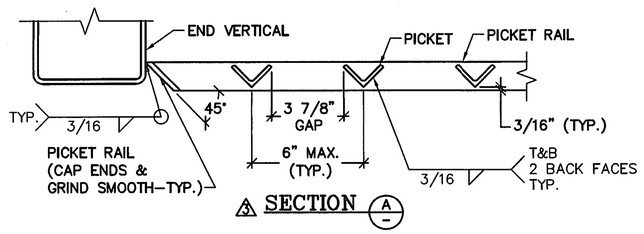
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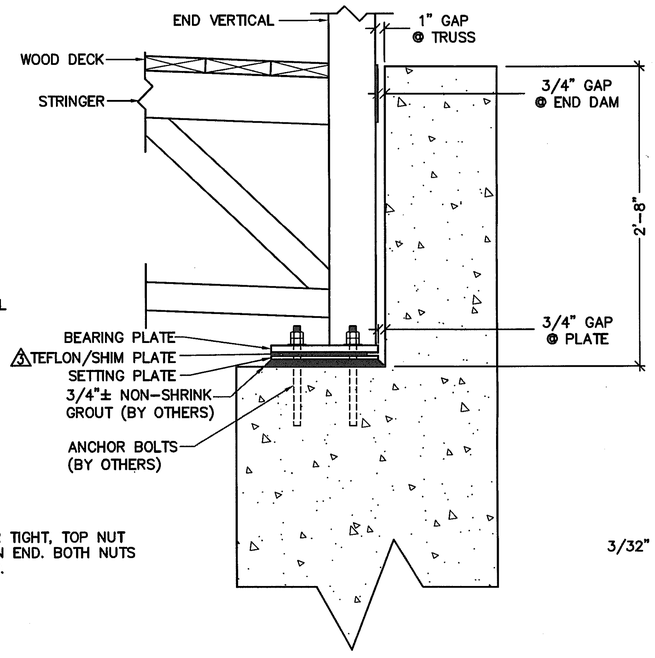
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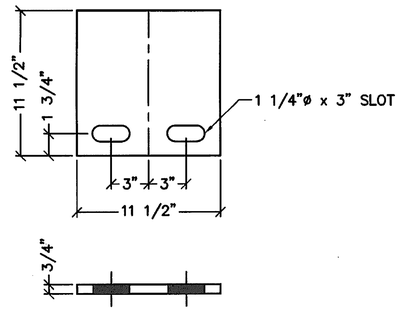
INSIDE ELEVATION
(FIXED)

NOTE:
BOTTOM NUT FINGER TIGHT, TOP NUT TIGHT AT EXPANSION END. BOTH NUTS TIGHT AT FIXED END.

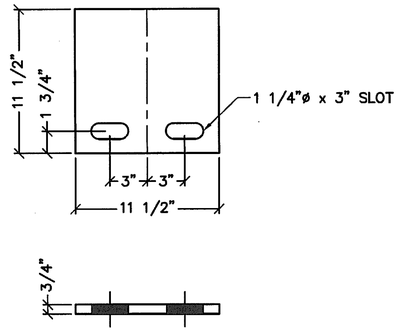




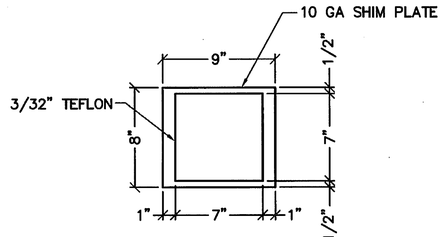
OUTSIDE ELEVATION
(EXPANSION)



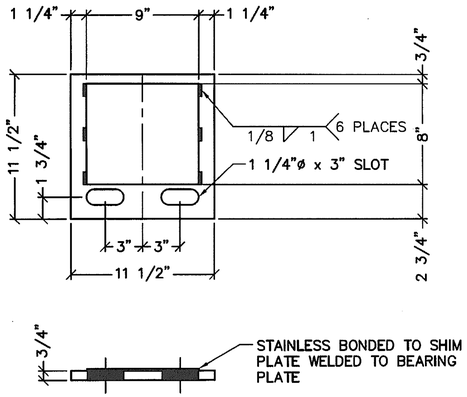
FIXED END BEARING PLATE
(2) REQUIRED



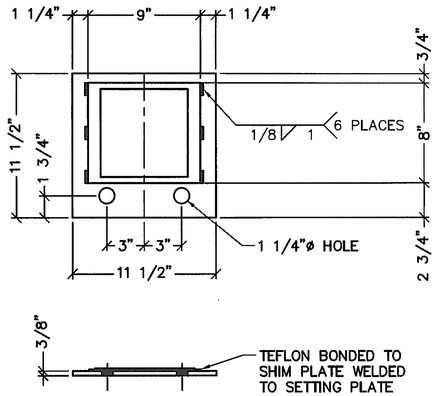
FIXED END SETTING PLATE
(2) REQUIRED



TEFLON/SHIM PLATE LAYOUT
(2) REQUIRED



EXPANSION END BEARING PLATE
(2) REQUIRED



EXPANSION END SETTING PLATE
(2) REQUIRED

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BIG R BRIDGE

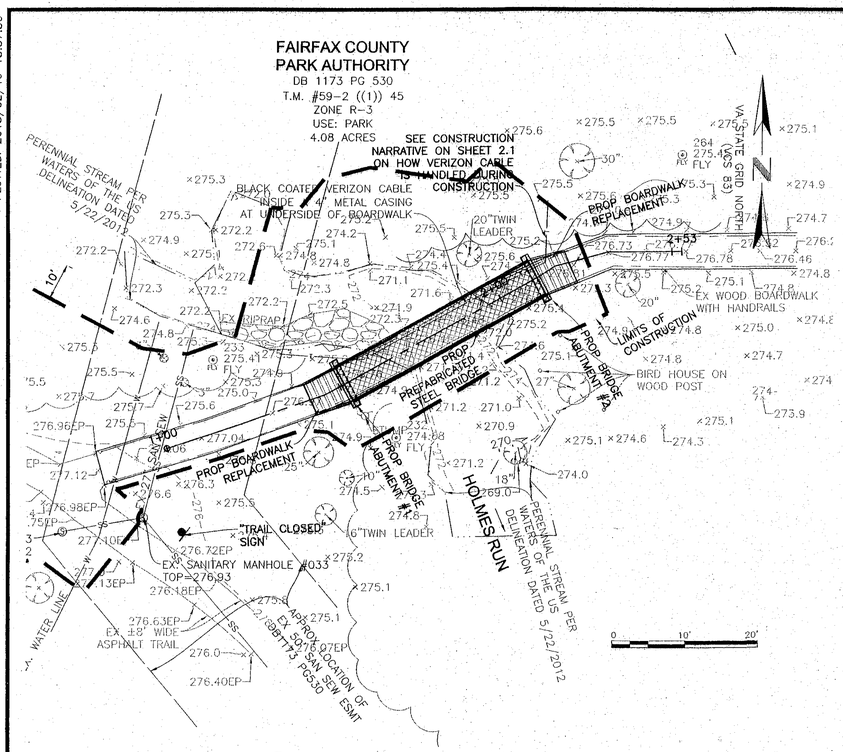
P.O. Box 1290 · Greeley, Colorado 80632-1290
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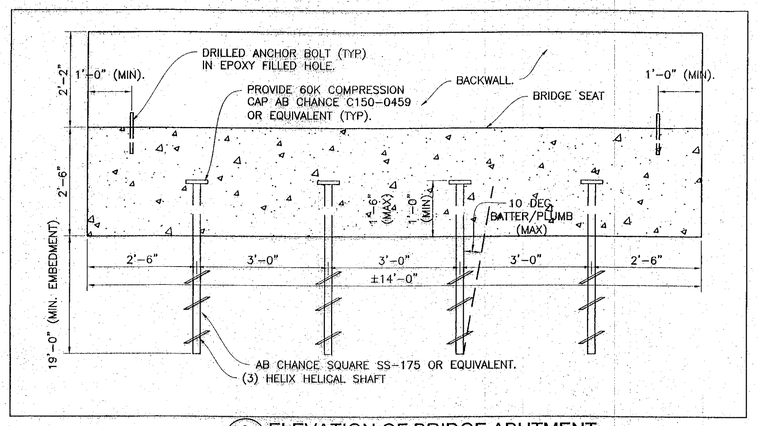
COMMONWEALTH OF VIRGINIA
MICHAEL WILLIAM PHILPOT
Lic. No. 56343
PROFESSIONAL ENGINEER
10/31/16

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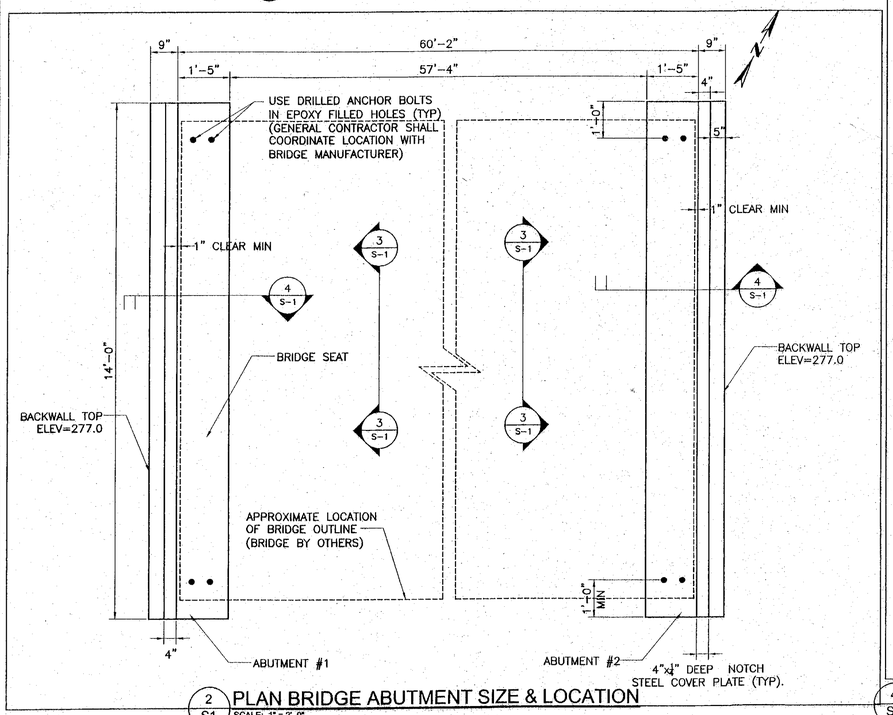
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1 S1 BRIDGE LOCATION PLAN
SCALE: 1" = 20'-0"



3 S1 ELEVATION OF BRIDGE ABUTMENT
SCALE: N.T.S.



2 S1 PLAN BRIDGE ABUTMENT SIZE & LOCATION
SCALE: 1" = 2'-0"

4 S1 SECTION OF BRIDGE ABUTMENT AT BRIDGE BEARING
SCALE: N.T.S.

STRUCTURAL NOTES FOR ABUTMENTS AND BOARDWALK FOOTINGS:

DESIGN LOADS:

CODE: VUSBC, 2009 INTERNATIONAL BUILDING CODE

BRIDGE DECK: 50 PSF DEAD LOAD
100 PSF LIVE LOAD
OR
50 PSF DEAD LOAD
10,000 lbs VEHICULAR LOAD W/ IMPACT (AASHTO H5)

WIND: WIND SPEED (3 SEC GUST) = 90 MPH
USE 30 PSF ON VERTICAL SURFACE AS THOUGH FULLY ENCLOSED

SEISMIC: IE = 1.0, SS = 0.16, S1 = 0.053, SOIL SITE CLASS = D, SDS = 0.178, SD1 = 0.091
DESIGN CATEGORY = B

LATERAL ACTIVE EARTH LOAD: ABUTMENTS DESIGNED FOR 45 PCF ACTIVE EQUIVALENT FLUID PRESSURE.

A SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING SERVICES REPORT WAS PREPARED FOR THIS PROJECT BY BURGESS & NIPLE, INC. VIRGINIA DATED JUNE 26TH, 2012. ALL RECOMMENDATIONS CONTAINED IN THE REPORT SHALL BE FOLLOWED. A MAXIMUM ALLOWABLE SOIL BEARING PRESSURE OF 1500 PSF WAS USED FOR DESIGN PURPOSES AS STATED IN THE REPORT.

HELICAL PIER ANCHORS:

EACH ABUTMENTS SHALL BE SUPPORTED ON (4)- ABCHANCE SS-175 HELICAL PIERS OR EQUIVALENT HELIPILES WITH AN ALLOWABLE LOAD CAPACITY OF 20 KIPS ACHIEVED BY THE REQUIRED TORQUE DEVELOPED DURING ANCHORING AS RECOMMENDED BY THE MANUFACTURER. HELICAL PIERS SHALL INCLUDE 60 K COMPRESSION CAP ASSEMBLY C150-0459 WITH (2)-#6 HORIZONTAL RE-BARS WELDED ON THE PLATE.

ALL HELICAL PIER STEEL SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A153.
THE CONTRACTOR SHALL SUBMIT A RECORD OF HELICAL PIER SIZE, CONFIGURATION, TORQUE ACHIEVED AT APPROPRIATE INTERVALS AND AT TERMINATION DEPTH.

BACKFILL:

SATISFACTORY BACKFILL MATERIALS SHALL INCLUDE GP, GW, GM, GC, SW, SM, SC, SP AND SC-SP BUT EXCLUDE HIGHLY PLASTIC CLAY AND SILT CH, MH, ML, CL, OL AND OH PER SOIL GROUPS DEFINED BY ASTM D-2487. BACKFILL SHALL BE FREE OF TOPSOIL, ORGANIC CONTAMINATED SOIL AND ROCK FRAGMENTS HAVING A MAJOR DIMENSION GREATER THAN 2". ALL MATERIALS SUITABLE FOR BACKFILL ARE SUBJECT TO THE FOLLOWING RESTRICTIONS:

MAXIMUM DRY DENSITY ASTM D-1557 105 PCF
LIQUID LIMIT =< 40
PLASTICITY INDEX =< 15

COMPACTION EQUIPMENT USED BEHIND THE ABUTMENT OR WINGWALLS SHOULD BE RESTRICTED TO LIGHT COMPACTION EQUIPMENT SUCH AS HAND-OPERATED TAMPERS OR JUMPING JACKS TO PREVENT CRACKING OF WALLS. CONCRETE WALL SHALL CURE AT LEAST 28 DAYS OR UNTIL 100% OF THE DESIGN STRENGTH HAS BEEN ATTAINED PRIOR TO BEGINNING BACKFILL ACTIVITIES.

CONCRETE:

ALL CONCRETE WORK SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE'S ACI-318 AND 301, LATEST EDITION, AND THE CONCRETE REINFORCING STEEL INSTITUTE'S DESIGN HANDBOOK STANDARDS. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

MINIMUM CONCRETE COVER OVER REINFORCING STEEL SHALL BE AS FOLLOWS:
3" FOR BOTTOM SURFACES POURED ON THE GROUND;
2" FOR FORMED SURFACES IN CONTACT WITH THE GROUND
OR EXPOSED TO WEATHER

USE AIR-ENTERING ADMIXTURE IN ALL CONCRETE, PROVIDING 6% ENTRAINED TOTAL AIR CONTENT, PLUS OR MINUS 1%.

REINFORCING STEEL:

DEFORMED REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60. REINFORCING BAR SPLICES SHALL BE LAPPED A MINIMUM OF 42 BAR DIAMETERS.

POSITION, SUPPORT AND SECURE REINFORCEMENT AGAINST DISPLACEMENT. LOCATE AND SUPPORT WITH METAL CHAIRS, RUNNERS, BOLSTERS, SPACERS, AND HANGERS, AS REQUIRED.

CONSTRUCTION BRACING:

CONTRACTOR SHALL ADEQUATELY BRACE FORMS AND CONCRETE WALLS TO WITHSTAND WIND AND CONSTRUCTION LOADS UNTIL THE BRIDGE IS INSTALLED AND SECURELY IN PLACE.

SPECIAL INSPECTIONS:

THE FOLLOWING MATERIALS AND WORK REQUIRE SPECIAL INSPECTIONS:
FOUNDATION SUBGRADE
CONCRETE INCLUDING REBAR

COMMONWEALTH OF VIRGINIA
JOHN W. DEALE
LIC. NO. 004158
PROFESSIONAL ENGINEER
10/2/12

REVIEWED STRUCTURAL 20[illegible]

NO.	DESCRIPTION	REV.	APPROVED	D

REVISION APPROVED BY
OFFICE OF SITE DESIGN SERVICES

FAIRFAX COUNTY PARK AUTHORITY
12055 Government Center Pkwy.
Fairfax, Virginia 22035

BRIDGE ABUTMENT PLAN AND SECTIONS
HOLMES RUN SV
LURIA PARK BOARDWALK RENOVATIONS
PROVIDENCE DISTRICT #1
FAIRFAX COUNTY, VA

FCPA REVISIONS	
Subject	Date

PROJ#
V-

C-4827

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Section 13000

PREFABRICATED STEEL BRIDGE

1.0 GENERAL

All work under this section is subject to the Special and General Conditions and Instructions to Bidders forming a part of these specifications, as well as to applicable provisions of the current Fairfax County Public Facilities Manual, the Virginia Department of Transportation (VDOT) Road and Bridge Specifications, and the American Institute of Steel Construction (AISC), or AASHTO Load and Resistance Factor (AASHTO LRFD). The Contractor shall be responsible for and be governed by all requirements there under.

2.0 SCOPE

This work consists of providing and installing a prefabricated steel structure, wood deck, pedestrian, bicycle, and light vehicular bridge shown on the plans and specified herein. Truss and Abutment Details shown are preliminary and for bidding purposes only.

Bridge manufacturer shall supply all necessary engineering documents needed to obtain a building permit including a complete Truss Shop Drawing and Abutment Design Package, with supporting computations and graphics, signed and sealed by a Professional Engineer registered in the Commonwealth of Virginia, who shall certify that the design fulfills and complies with those design intents and specifications, for review and approval by the Owner, prior to ordering materials and construction. The cost to prepare this work is part of this bid and the responsibility of the contractor.

3.0 GENERAL FEATURES OF BRIDGE

3.1 Span

Bridge shall be 60’ (straight line dimension) and shall be measured from each end of the bridge structure.

3.2 Width

Bridge width shall be a minimum of 14’-0” as measured from the inside face of the handrails.

3.3 Bridge System Type

Bridge shall be designed as a 'Continental Bridge' Half-Through Pony System, Link truss style or equal, that has two diagonals per panel in an 'X' pattern and plumb end vertical members. Interior vertical members shall be perpendicular to the chord faces.

3.3.1 Floor beam shall be attached per manufacturer's specifications

3.3.2 The bridge manufacturer shall determine the distance from the top of the deck to the top and bottom truss members based upon structural and/or shipping requirements.

3.3.3 The top of the top chord shall not be less than 54 inches above deck (measured from the high point of deck) on this bridge that will be used for pedestrian and bicycle traffic.

3.4 Member Components

All members of the vertical trusses (top and bottom chords, verticals and diagonals) shall be fabricated from structural steel shapes or square and/or rectangular structural steel tubing. Other structural members and bracing shall be fabricated from structural steel shapes or square and rectangular structural steel. To provide lateral support for the top flange of open shape stringers (w-shapes or channels), a minimum of one stiffener shall be provided in each stringer at every floor beam location.

3.5 Attachments

3.5.1 Safety Rails

Vertical safety rails or pickets shall be placed on the structure to a minimum height 48" above the deck surface. The pickets shall be spaced so as to prevent a 4" sphere from passing through the truss. Pickets shall be welded to the truss and may be placed on the inside or outside of the structure at the bridge fabricators' option. The top of the vertical pickets shall have a continuous cap angle or some other means to prevent bridge users from cutting or scraping their hands.

The rail / picket safety system shall be designed for an infill loading of 200 pounds, applied horizontally at right angles, to a one square foot area at any point in the system.

All rails shall have a smooth inside surface with no protrusions or depressions. All ends of angles and tubes shall be closed and ground smooth.

3.5.2 Toe Plate

A 5" steel channel toe plate shall be located 2" above the floor deck on both sides of the walkway.

3.6 Camber

The bridge shall have a vertical camber dimension at mid-span equal to 100% of the full dead load deflection plus 1% of the full length of the bridge.

3.7 Elevation Difference

The bridge abutments shall be constructed at the same elevation on both ends of the bridge.

4.0 ENGINEERING STANDARDS

Structural design of the bridge structure shall be performed by or under the direct supervision of a Virginia licensed Professional Engineer and done in accordance with recognized engineering practices and principals. All shop drawings and calculations shall be sealed by the Professional Engineer.

4.1 Design Loads

4.1.1 Dead Load

Normal bridge load as calculated by the bridge designer.

4.1.2 Live Loads

4.1.2.1 Pedestrian Live Load

Bridge members, including trusses, stringers and deck shall be designed for an evenly distributed pedestrian live load of 100 pounds per square foot of bridge walkway area. The pedestrian live load shall be applied in those areas of the walkway so as to produce maximum stress in the member being designed. No live load reductions shall be allowed.

4.1.2.2 Vehicle Live Load

Bridge shall be designed to withstand a moving concentrated load of a vehicle weighing up to 20,000 pounds (H10) with impact load (per AASHTO). The vehicle load shall be in addition to 20 pounds per square foot evenly distributed live load (snow). The vehicle load shall be distributed such that 80% of the load is on the rear axle (per AASHTO).

4.1.3 Lateral Loads

4.1.3.1 Wind Load

Bridge shall be designed for a minimum wind load of 30 pounds per square foot for a Design Wind Speed (V3) of 90 miles per hour. The wind load shall be calculated on the entire vertical surface of the bridge as if fully enclosed. The effect of wind forces tending to overturn the structure shall be calculated assuming that the wind direction is at right angles to the longitudinal axis of the structure. In addition, an upward force shall be applied at the windward quarter point of the transverse superstructure width. This force shall be 20 pounds per square foot of deck.

4.1.3.2 Seismic Load

Bridge shall be designed for earthquake spectral response acceleration factors of 0.16 for short periods and 0.053 for one second periods, and as per local / state codes, whichever is greater.

4.1.3.3 Stream Current Load

Assuming bridge is completely inundated, bridge shall be designed for a horizontal load of 75 pounds per square foot, based on water velocity of 6 miles per hour or 9 feet per second. Water pressure shall be calculated on the entire vertical surface of the bridge, assuming the surface is completely filled with floating debris. Note that unlike wind or seismic loads, stream current pressure is only one directional. The bridge spans north-south and the stream flow is from east to west at the bridge crossing.

4.1.4 Temperature Loads

4.1.4.1 Bridge shall be designed to accommodate a temperature differential of 120 degrees Fahrenheit. Slip pads of UHMW polyethylene shall be placed

between the smooth surface of the setting plate and the smooth bearing pads of the bridge. A minimum of one (1) inch, and a maximum of one and one-half (1-1/2) inch of clearance shall be provided between the bridge and the concrete abutments.

4.1.5 Top Chord, Guard & Railing Loads

4.1.5.1 Bridge truss top chord, guards and handrails shall be designed for 50 pounds per lineal foot or a 200 pound point load, whichever produces greater stresses, applied in any direction at any point along their length.

4.2 Design Limitations

4.2.1 Deflection

4.2.1.1 Vertical Deflections

The vertical deflection of the main trusses due to service pedestrian live load shall not exceed L/400 of the span length. Service pedestrian live load shall be a minimum of 600 pounds per linear foot of bridge length.

The vertical deflection of the main trusses due to vehicular loads shall not exceed L/800 of the span length.

The deflection of the floor system members (floor beams and stringers) due to pedestrian live load shall not exceed L/360 of their respective spans.

4.2.1.2 Horizontal Deflection

The horizontal deflection of the structure due to lateral wind or seismic loads shall not exceed L/500 of the span.

4.2.2 Minimum Thickness of Metal

The minimum thickness of all structural steel members shall be 3/16" normal and be in accordance with the AISC Manual of Steel Constructions' "Standard Mill Practice Guidelines". For ASTM A500 and ASTM A847 tubing, the section properties used for design shall be per the Steel Tube Institute of North America's Hollow Structural Sections "Dimensions and Section Properties".

4.2.3 Vibration

The bridge design shall be tuned to have a minimum fundamental frequency of 3 Hz. It shall be the responsibility of the Contractor / Truss Manufacturer to demonstrate compliance with the specifications

4.3 Governing Design Codes / References

Structural members shall be designed in accordance with recognized engineering practices and principals as follows:

4.3.1 Structural Steel Allowable Stresses

American Institute of Steel Construction (AISC).

Structural steel design shall be in accordance with those sections of the "Manual of Steel Construction: Allowable Stress Design" related to design requirements and allowable stresses.

Or

AASHTO -Load and Resistance Factor (AASHTO LRFD)

4.3.2 Welded Tubular Connections

American National Standards Institute / American Welding Society (ANSI/AWS).

All welded tubular connections shall be checked, when within applicable
limits, for the limiting failure modes outlined in the ANSI/AWS Dl.1

Structural Welding Code.

As well, all field welds shall be performed in accordance with Fairfax County Standards.

All tubular joints shall be plain unstiffened joints (made without the use of reinforcing plates) except as follows:

• Floor beams hung beneath the lower chord of the structure may be connected with or without stiffener (or gusset) plates, as required by design.

• Floor beams which frame directly into the truss verticals (H-Section bridges) may be designed with or without end stiffening plates as required by design.

• Where chords, end floor beams and in high profiles the top end struts weld to the end verticals, the end verticals (or connections) may require stiffening to transfer the forces from these members into the end vertical. The connection of bridge end posts to top chord shall be a mitered joint with the exposed welds ground smooth.

• Truss vertical to chord connections.

NOTE: The effects of fabrication tolerances shall be accounted for in the design of the structure. Special attention shall be given to the actual fit-up gap at welded truss joints.

4.3.4 Wood

(AF&PA).

Sawn lumber shall be designed in accordance with the ANSIJAF&PA NDS, “National Design Standard for Wood Construction”, as published by the American Forest & Paper Association or the “Timber Construction Manual” as published by the Institute of Timber Construction (AITC). Design properties for naturally durable hardwoods shall be in accordance with “Tropical Timbers of the World” as published by the U.S. Forest Products Laboratory.

4.3.5 Top Chord Stability

Structural Stability Research Council (SSRC), formerly Column Research Council.

The top chord shall be considered as a column with elastic lateral supports at the panel joints. The critical buckling force of the column, so determined, shall exceed the maximum force from dead load and live load (uniform or vehicular) in any panel of the top chord by not less than 50 percent for parallel chord truss bridges or 100 percent

for bowstring bridges. The design approach to prevent top chord buckling shall be as outlined by E.C. Holt's, or Lutz-Fisher Equation research in conjunction with the Column Research Council on the stability of the top chord of a half-through truss.

For uniformly loaded bridges, the vertical truss members, the floor beams and their connections (transverse frames) shall be proportioned to resist a lateral force of not less than 0.01 times the top chord compressive load, but not less than 0.004 times that top chord load, applied at the top chord panel points of each truss. The top chord is determined by using the larger top chord axial force in the members on either side of the "U-frame" being analyzed. For end frames, the same concept applies except the transverse force is 1% of the axial load in the end post member.

The bending forces in the transverse frames, as determined above, act in conjunction with all forces produced by the actual bridge loads as determined by an appropriate analysis which assumes that the floor beams are "fixed" to the trusses at each end.

NOTE: The effects of three dimensional loading (including "U-frame" requirements) shall be considered from a three dimensional analysis of the bridge.

5.0 MATERIALS

5.1 Steel

5.1.1 Unpainted Weathering Steel

Bridges which are not to be painted shall be fabricated from high strength, low alloy, atmospheric corrosion resistant ASTM A847 cold-formed welded square and rectangular tubing and/or ASTM A588, or ASTM A242, ASTM A606 plate and structural steel shapes (Fy = 50,000 psi). The minimum corrosion index of atmospheric corrosion resistant steel, as determined in accordance with ASTM Gl0l, shall be 5.8.

5.2 Decking

5.2.1 Minimum acceptable decking shall be 2x6 with a nominal thickness (minimum: 1 1/2" x 5 1/2") planks unless approved otherwise. Final

stock dimensions to be determined by manufacturer in accordance with design loads.

5.2.2 Wood decking shall be naturally durable hardwood Ipe (Tabebuia Spp) LapachoGroup or Cumaru (Dipteryx Odora). All planks shall be partially air dried to a moisture content of 15% to 20%, and shall be supplied S4S (surfaced four sides) with one face "hit or miss" allowed up to 10% of the total length, E4E (eased four edges), with the edges eased to a radius of 1/8".

5.2.3 Measured at 30% moisture content, the width and thickness shall not vary from specified dimensions by more than ± 0.04 inches. All planks shall be supplied with the end sealed with "Anchorseal" Mobil CER-M or an equal wax log sealer.

5.2.4 All planks shall be graded as FEQ-CAH (First Export Quality — Clear All Heart) or F1F (First One Face) grading rules, defined as follows:

- Lumber shall be graded both faces and both edges.
- Lumber shall be straight grained and parallel cut without heart center.
- Lumber shall be all heartwood.
- Lumber shall be in sound condition.
- Allowable Imperfections are:

All faces: Natural drying checks, discoloration caused by weathering or chemical reaction, maximum bow or spring of 0.08 inch per timbers' length. On one face only: firm sapwood, worm holes not going through to the other face, closed knots with maximum of one knot per 4 foot of timber length, rowy grain and tear-out.

- Imperfections not allowed:

Longitudinal heart cracks, internal cracks, soft sap wood, splits, end splits, ring shades, fungi affects (blue to gray, brown to red, white to yellow, or incipient decay), deformation (twisting or cupping) which cannot be removed using normal installation methods and tools.

5.2.5 All planks shall meet or exceed the following mechanical properties (based on the 2" standard) as defined by the U.S. Forest Products Laboratory publications and testing data:

MC%	Modulus of Rupture	Modulus of Elasticity	Max. Crush Strength
12%	27,270 psi	3,030,000 psi	13,720 psi

Janka side harness is 3540 lbs. at 12% moisture content.
Average air-dry density is 62 to 81 pcf.

Basic specific gravity is 0.80-0.91.

All planks shall be naturally fire resistant without the use of any fire resistant preservatives to meet NFPA Class A and UBC Class I.

5.2.6 Planks shall be supplied that meet or exceed the Static Coefficient of Friction for both Neolite and leather shoes in accordance with ASTM Test Method C 1028-89.

	FORCE IN POUNDS	
SHOE MATERIAL	DRY	WET
Neolite	0.73	0.69
Leather	0.55	0.79

5.3 Wood Decking Attachment

- At time of installation, planks shall be placed tight together with no gaps.
- Every plank shall be attached with at least one fastener at each end.
- All fasteners to be zinc plated. Hex-head bolts, with a steel plank hold down, shall be used at the ends of planks. Self-tapping screws or carriage bolts shall be used as interior connection fasteners when required. Power actuated fasteners will not be allowed.
- Planks shall be drilled prior to installation of bolts and/or screws.
- In addition to at least one fastener at each end of every plank (typical for all installations), planks for bridges with widths of 72” to 120” shall have one fastener near the center of the bridge width. Bridges wider than 120” shall have two fasteners located at a minimum of two interior stringer locations, approximately at the third points of the bridge width.

NOTE: Attachments at the ends of the planks may be modified as required when obstructions, such as interior safety system elements, prevent installation of the specified hold down system.

6.0 WELDING

6.1 Welding

Welding and weld procedure qualification tests shall conform to the provisions of ANSI/AWS Dl.1 “Structural Welding Code”, current edition. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification (i.e. AWS A5.28 for the GMAW Process). For exposed, bare, unpainted applications of corrosion resistant steels (i.e. ASTM A588 and A847), the filler metal shall be in accordance with AWS Dl. 1, Section 3.7.3.

6.2 Welders

Welders shall be properly accredited operators, each of whom shall submit certification of satisfactorily passing AWS standard qualification tests for all positions with unlimited thickness of base metal, have a minimum of 6 months experience in welding tubular structures, and have demonstrated the ability to make uniform sound welds of the type required.

7.0 SUBMITTALS

7.1 Submittal Drawings

Schematic drawings and diagrams shall be submitted to the Owner for their review after receipt of order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the work to be done. All relative design information such as member sizes, bridge reactions and general notes shall be clearly specified on the drawings.

7.2 Structural Calculations

Structural calculations for the bridge superstructures shall be submitted by the bridge manufacturer and reviewed by the approving engineer. All calculations shall be signed and sealed by a Professional Engineer who is licensed in Virginia. The calculations shall include all design information necessary to determine the structural adequacy of the bridge. The calculations shall include the following:

- All AISC allowable stress checks for axial, bending and shear forces in the critical member of each truss member type (i.e. top chord, bottom chord, floor beam, vertical, etc.).

- Checks for the critical connection failure modes for each truss member type (i.e. vertical, diagonal, floor beam, etc.). Special attention shall be given to all welded tube on tube connections (see Section 4.3.2 for design check requirements).

- All bolted splice connections, if applicable

- Main truss deflection checks.

- U-Frame stiffness checks (used to determine 'K' factors for out-of-plane buckling of the top chord) for all half through or "pony" truss bridges.

- Deck design.

NOTE: The analysis and design of triangulated truss bridges shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered.

7.3 Welder certifications in compliance with AWS standard qualification tests.

7.4 Welding procedures in compliance with Section 6.1.

8.0 FABRICATION

8.1 General Requirements

8.1.1 Drain Holes

When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.

8.1.2 Welds

Special attention shall be given to developing sufficient weld throats on tubular members. Fillet weld details shall be in accordance with AWS D1.1, Section 3.9 (See AWS Figure 3.2). Unless determined otherwise by testing, the loss factor "Z" for heel welds shall be in accordance with AWS Table 2.8. Fillet welds which run onto the radius of a tube shall be built-up to obtain the full throat thickness (See Figure 7.1). The maximum root openings of fillet welds shall not exceed 3/16" in conformance with AWS D1.1, Section 5.22. Weld size or effective throat dimensions shall be increased in accordance with this same section when applicable.

The fabricator shall have verified that the throat thickness of partial joint penetration groove welds (primarily matched edge welds or the flare- bevel-groove welds on under hung floor beams) shall be obtainable with their fit-up and weld procedures. Matched edge welds shall be "flushed" out when required to obtain the full throat or branch member wall thickness.

For full penetration butt welds of tubular members, the backing material shall be fabricated prior to installation in the tube so as to be continuous around the full tube perimeter, including corners. Backing may be of four types:

- A "box" welded up from four (4) plates.
- Two "channel" sections, bent to fit inside the radius of the tube, welded together with full penetration welds.
- A smaller tube section which slides inside the spliced tube.
- A solid plate cut to fit the inside radius of the tube.

Corners of the "box" backing, made from four plates, shall be welded and ground to match the inside corner radii of the chords. The solid plate option shall require a weep hole either in the chord wall above the "high- side" of the plate or in the plate itself. In all types of backing, the minimum fit-up tolerances for backing must be maintained at the corners of the tubes as well as across the "flats".

8.2 Quality Certification

8.2.1 Bridge shall be fabricated by a fabricator who is currently certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability and commitment to produce fabricated structural steel for the category "Simple Steel Bridges" as set forth in the AISC Certification Program. Quality control shall be in accordance with procedures outlined for AISC certification.

8.2.2 The bridge fabricator shall be considered an "Approved Fabricator", as defined under Chapter 17, Structural Tests and Special Inspections, of the 2003 International Building Code (IBC). The fabricator shall provide documentation and testing results as necessary to obtain approval from the Fairfax County Building Official to be considered an Approved Fabricator. The fabricator shall also, at the completion of the project, provide the Owner with an "Inspection Certificate", as defined in Chapter 17 of the IBC, for the pre-manufactured bridge.

9.0 FINISHING

9.1 Blast Cleaning

9.1.1 Bare applications of enhanced corrosion resistant steels.

To aid in providing a uniformly “weathered” appearance, all exposed surfaces of steel shall be blast cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7, Brush-Off Blast Cleaning, SSPC-SP7, latest edition.

Exposed surfaces of steel shall be defined as those surfaces seen from the deck and from outside of the structure. Stringers, floor beams, lower brace diagonals and the inside face of the truss below deck and bottom face of the bottom chord need not be blasted.

10.0 DELIVERY AND ERECTION

10.1 Delivery

Delivery shall be made to a location nearest the site that is readily accessible to normal over-the-road tractor/trailer equipment. All trucks delivering bridge materials shall be unloaded at the time of arrival. Hauling permits and freight charges shall be the responsibility of the bridge manufacturer.

10.2 Erection

The manufacturer will provide detailed, written instruction in the proper lifting procedures and splicing procedures (if required). The method and sequence of erection shall be the responsibility of the General Contractor. The bridge manufacturer shall provide written inspection and maintenance procedures to be followed by the bridge owner. Unloading, splicing, bolting and proper lifting equipment shall be the responsibility of the General Contractor.

11.0 BEARING

11.1 Bearing Devices

Bridge bearings shall consist of steel setting or side plate placed on the abutment with a grout pad. The bridge bearing plate, which is welded to the bridge structure, shall bear on a Teflon pad and this setting plate. One end of the bridge will be fixed by fully tightening the nuts on the anchor bolts at that end. The opposite end shall have finger tight nuts to allow movement under thermal expansion or contraction.

The bridge bearing shall sit in a recessed pocket on the concrete abutment. Minimum 28-day strength for the abutment concrete shall be 4000 psi. The bearing seat shall be a minimum of 18”wide, final width to be determined

by the bridge manufacturer. The step height (from bottom of bearing to top-of-deck) shall be determined by the bridge manufacturer.

12.0 FOUNDATIONS

Unless specified otherwise, the bridge manufacturer shall determine the number, diameter, minimum grade and finish of all anchor bolts. The anchor bolts shall be designed to resist all horizontal and uplift forces to be transferred by the superstructure to the supporting foundations. The General Contractor shall provide all materials for (including anchor bolts) and construction of the bridge supporting foundations. The General Contractor shall install the anchor bolts in accordance with the bridge manufacturer's anchor bolt spacing dimensions.

13.0 WARRANTY

The bridge manufacturer shall warrant steel structure(s) to be free of design, material and workmanship defects for a period of fifteen years from the date of delivery. Naturally durable hardwood decking and hardwood attachments shall carry a fifteen-year warranty against rot, termite damage or fungal decay. This warranty shall not cover defects in the bridge caused by abuse, misuse, overloading, accident, improper maintenance, alteration or any other cause not the result of defective materials or workmanship.

END OF SECTION

Section 13100

Helical Pile Installation

1. GENERAL

1.1 Purpose of Specification

The purpose of this specification is to detail the furnishing of all designs, materials, tools, equipment, labor and supervision, and installation techniques necessary to install Helical Piles as detailed on the drawings, including connection details. This shall include provisions for load testing that may be part of the scope of work

1.2 Scope of Work

This work consists of furnishing all necessary engineering and design services (if required), supervision, labor, tools, materials, and equipment to perform all work necessary to install the Helical Piles, per the specifications described herein, and as shown on the drawings. The Contractor shall install a Helical Pile that will develop the load capacities as detailed on the drawings. This may also include provisions for load testing to verify Helical Pile capacity and deflection, if part of the scope of work.

1.3 Qualifications of the Helical Pile Contractor

The Helical Pile Contractor shall be experienced in performing design and construction of Helical Piles and shall furnish all materials, labor, and supervision to perform the work. The Contractor shall be trained and certified by the helical pile manufacturer in the proper methods of design and installation of Helical Piles. The Contractor shall provide names of on-site personnel materially involved with the work, including those who carry documented certification from the helical pile manufacturer. At a minimum, these personnel shall include foreman, machine operator, and project engineer/manager.

1.4 Related Project Specifications

Section 13000 - Fiber Reinforced Polymer (Fiberglass) Bridges

1.5 Definitions

All “Types” in this section refer to products by CHANCE Civil Construction or equivalent.

Coupling: Central steel shaft connection means formed as integral part of the plain extension shaft material. For square shaft & round shaft Helical Piles, couplings are internal or external sleeves, or hot upset forged sockets.

Coupling Bolt(s): High strength, structural steel fasteners used to connect Helical Pile segments together. For Square shaft segments, the coupling bolt transfers axial load. For round shaft segments, the coupling bolts transfer both axial and torsional forces.

Helical Extension: Helical Pile foundation component installed immediately following the lead or starter section, if required. This component consists of one or more helical plates welded to a central steel shaft of finite length. Function is to increase bearing area.

Helix Plate: Generally round steel plate formed into a ramped spiral. The helical shape provides the means to install the helical pile, plus the plate transfers load to soil in end bearing. Helix plates are available in various diameters and thickness.

HELICAL PULLDOWN® Micropile: A small diameter, soil displacement, cast-in-place Helical Pile, in which most of the applied load is resisted by the central steel shaft and steel reinforcement, if installed. Load transfer to soil is both end bearing and friction.

Helical Pile: A bearing type foundation element consisting of a lead or starter section, helical extension (if so required by site conditions), plain extension section(s), and a pile cap. A.k.a. helical screw pile, screw pile, helical screw foundation.

Installation Torque(T): The resistance generated by a Helical Pile when installed into soil. The installation resistance is a function of the soil type, and size and shape of the various components of the Helical Pile.

Lead Section: The first Helical Pile foundation component installed into the soil, consisting of single or multiple helix plates welded to a central steel shaft. A.k.a. Starter Section.

Pile Cap: Connection means by which structural loads are transferred to the Helical Pile. The type of connection varies depending upon the requirements of the project and type of Helical Pile material used.

Round Shaft (RS): Round steel pipe central **S**haft elements ranging in diameter from 2-7/8" to 10". A.k.a. Hollow Shaft (Type HS), Type T/C, Type PIF.

Plain Extension: Central steel shaft segment without helix plates. It is installed following the installation of the lead section or helical extension (if used). The segments are connected with integral couplings and bolts. Plain extensions are used to extend the helix plates beyond the specified minimum depth and into competent load bearing stratum.

Safety Factor: The ratio of the ultimate capacity to the working or design load used for the design of any structural element.

Square Shaft (SS): Solid steel, round-cornered-**S**quare central **S**haft elements ranging in size from 1-1/4" to 2-1/4". A.k.a. Type SQ.

Torque Strength Rating: The maximum torque energy that can be applied to the helical pile foundation during installation in soil, a.k.a. allowable, or safe torque.

1.6 Allowable Tolerances

The tolerances quoted in this section are suggested maximums. The actual values established for a particular project will depend on the structural application.

1.6.1 Centerline of Helical Piles shall not be more than 3 inches from indicated plan location.

1.6.2 Helical Pile plumbness shall be within 2° of design alignment.

1.6.3 Top elevation of Helical Pile shall be within +1 inch to –2 inches of the design vertical elevation.

1.7 Quality Assurance

1.7.1 Helical Piles shall be installed by authorized helical pile manufacturer certified Contractor. These Contractors shall have satisfied the certification requirements relative to the technical aspects of the product and installation procedures as therein specified. Certification documents shall be provided upon request to the Owner or their representative.

1.7.2 The Contractor shall employ an adequate number of skilled workers who are experienced in the necessary crafts and who are familiar with the specified requirements and methods needed for proper performance of the work of this specification.

1.7.3 All Helical Piles shall be installed in the presence of a designated representative of the Owner unless said representative informs the Contractor otherwise. The designated representative shall have the right of access to any and all field installation records and test reports.

1.7.4 Helical Pile components as specified therein shall be manufactured by a facility whose quality systems comply with ISO (International Organization of Standards) 9001 requirements. Certificates of Registration denoting ISO Standards Number shall be presented upon request to the Owner or their representative.

1.7.5 The manufacturer shall provide a standard one-year warranty on materials and workmanship of the product.

1.7.6 Design of Helical Piles shall be performed by an entity as required in accordance with existing local code requirements or established local practices. This design work may be performed by a licensed professional engineer, a Contractor certified by helical pile manufacturer, or designer depending upon local requirements or practices.

2 REFERENCED CODES AND STANDARDS

a. Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title, or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation. In case of conflict, the particular requirements of this specification shall prevail. The latest publication as of the issue of this specification shall govern, unless indicated otherwise.

2.1 American Society for Testing and Materials (ASTM):

2.1.1 ASTM A29/A29M Steel Bars, Carbon and Alloy, Hot-Wrought and Cold Finished.
2.1.2 ASTM A36/A36M Structural Steel.
2.1.3 ASTM A53 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
2.1.4 ASTM A153 Zinc Coating (Hot Dip) on Iron and Steel Hardware.
2.1.5 ASTM A252 Welded and Seamless Steel Pipe Piles.
2.1.6 ASTM A775 Electrostatic Epoxy Coating
2.1.7 ASTM A193/A193M Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service.
2.1.8 ASTM A320/A320M Alloy-Steel Bolting Materials for Low Temperature Service.
2.1.9 ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
2.1.10 ASTM A500 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
2.1.11 ASTM A513 Standard Specification for Electric Resistance Welded Carbon and Alloy Steel Mechanical Tubing.
2.1.12 ASTM A536 Standard Specifications for Ductile Iron Castings
2.1.13 ASTM A572 HSLA Columbium-Vanadium Steels of Structural Quality.
2.1.14 ASTM A618 Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing.
2.1.15 ASTM A656 Hot-Rolled Structural Steel, High-Strength Low-Alloy Plate with Improved Formability.
2.1.16 ASTM A958 Standard Specification for Steel Castings, Carbon, and Alloy, with Tensile Requirements, Chemical Requirements Similar to Wrought Grades.
2.1.17 ASTM A1018 Steel, Sheet and Strip, Heavy Thickness Coils, Hot Rolled, Carbon, Structural, High-Strength Low-Alloy, Columbium or Vanadium, and High-Strength Low-Alloy with Improved Formability.
2.1.18 ASTM D1143 Method of Testing Piles Under Static Axial Compressive Load.
2.1.19 ASTM D3689 Method of Testing Individual Piles Under Static Axial Tensile Load.

2.2 American Welding Society (AWS):

2.2.1 AWS D1.1 Structural Welding Code – Steel.
2.2.2 AWS D1.2 Structural Welding Code – Reinforcing Steel.

2.3 American Society of Civil Engineers (ASCE):

2.3.1 ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations.

2.4 Deep Foundations Institute (DFI):

2.4.1 *Guide to Drafting a Specification for High Capacity Drilled and Grouted Micropiles for Structural Support*, 1st Edition, Copyright 2001 by the Deep Foundation Institute (DFI).

2.5 Society of Automotive Engineers (SAE):

2.5.1 SAE J429 Mechanical and Material Requirements for Externally Threaded Fasteners.

3 SUBMITTALS

3.1 Construction Submittals

3.1.1 The Contractor shall prepare and submit to the Owner, for review and approval, working drawings and design calculations for the Helical Piles intended for use per the General and Special Conditions. All submittals shall be signed and sealed by a Registered Professional Engineer currently licensed in the State of Virginia.

3.1.2 The Contractor shall submit a detailed description of the construction procedures proposed for use to the Owner for review. This shall include a list of major equipment to be used.

3.1.3 The Working Drawings shall include the following:

- 3.1.3.a Helical Pile number, location and pattern by assigned identification number
- 3.1.3.b Helical Pile design load
- 3.1.3.c Type and size of central steel shaft
- 3.1.3.d Helix configuration (number and diameter of helix plates)
- 3.1.3.e Minimum effective installation torque
- 3.1.3.f Minimum overall length
- 3.1.3.g Inclination of Helical Pile
- 3.1.3.h Cut-off elevation
- 3.1.3.i Helical Pile attachment to structure relative to grade beam, column pad, pile cap, etc.

If the number of helix plates per Helical Pile required for the project is not shown on the Working Drawings, the Contractor shall have the option of performing subsurface tests using methods subject to the review and acceptance of the Owner. The data collected along with other information pertinent to the project site shall be used to determine the required helix configuration.

3.1.4 The Contractor shall submit shop drawings for all Helical Pile components, including corrosion protection and pile top attachment to the Owner for review and approval. This includes Helical Pile lead/starter and extension section identification (manufacturer's catalog numbers).

3.1.5 The Contractor shall submit to the Owner copies of calibration reports for each torque indicator or torque motor, and all load test equipment to be used on the project. The calibration tests shall have been performed within forty five (45) working days of the

date submitted. Helical Pile installation and testing shall not proceed until the Owner has received the calibration reports. These calibration reports shall include, but are not limited to, the following information:

3.1.5.a Name of project and Contractor
3.1.5.b Name of testing agency
3.1.5.c Identification (serial number) of device calibrated
3.1.5.d Description of calibrated testing equipment
3.1.5.e Date of calibration
3.1.5.f Calibration data

3.1.6 Work shall not begin until all the submittals have been received and approved by the Owner. The Contractor shall allow the Owner a reasonable time to review, comment, and return the submittal package after a complete set has been received. All costs associated with incomplete or unacceptable submittals shall be the responsibility of the Contractor.

3.2 Installation Records

The Contractor shall provide the Owner copies of Helical Pile installation records within 24 hours after each installation is completed. Records shall be prepared in accordance with the specified division of responsibilities as noted in Table-1. Formal copies shall be submitted on a weekly basis. These installation records shall include, but are not limited to, the following information.

3.2.1 Name of project and Contractor
3.2.2 Name of Contractor's supervisor during installation
3.2.3 Date and time of installation
3.2.4 Name and model of installation equipment
3.2.5 Type of torque indicator used
3.2.6 Location of Helical Pile by assigned identification number
3.2.7 Actual Helical Pile type and configuration – including lead section (number and size of helix plates), number and type of extension sections (manufacturer's SKU numbers)
3.2.8 Helical Pile installation duration and observations
3.2.9 Total length of installed Helical Pile
3.2.10 Cut-off elevation
3.2.11 Inclination of Helical Pile
3.2.12 Installation torque at one-foot intervals for the final 10 feet
3.2.13 Comments pertaining to interruptions, obstructions, or other relevant information
3.2.14 Rated load capacities

3.3 Closeout Submittals

3.3.1 Warranty: Warranty documents specified herein
3.3.1.a Project Warranty: Refer to Conditions of the Contract for project warranty provisions

Warranty Period: 1 year commencing on date of Substantial Completion

3.3.1.b Manufacturer's Warranty: Submit, for Owner's Acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights the Owner may have under Contract Document.

4 PRODUCTS AND MATERIALS

4.1 Central Steel Shaft:

The central steel shaft, consisting of lead sections, helical extensions, and plain extensions, shall be Square shaft(Square Shaft) or RS (Round Shaft) or a combination of the two (SS to RS Combo Pile) as manufactured by CHANCE Civil Construction (Centralia and Independence, MO) or equivalent.

4.1.1 *SS5 1-1/2" Material*: Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting dimensional and workmanship requirements of ASTM A29. The bar shall be modified medium carbon steel grade (similar to AISI 1044) with improved strength due to fine grain size.

4.1.1.a Torque strength rating = 5,500 ft-lb
4.1.1.b Minimum yield strength = 70 ksi

4.1.2 *SS125 1-1/4"; SS1375 1-3/8"; SS150 1-1/2"; SS175 1-3/4; SS200 2"; SS225 2-1/4" Material*: Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting the dimensional and workmanship requirements of ASTM A29. The bar shall be High Strength Low Alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size.

4.1.2.a Torque strength rating: SS125 = 4,000 ft-lb; SS1375 = 5,500 ft-lb; SS150 = 7,000 ft-lb; SS175 = 11,000 ft-lb; SS200 = 16,000 ft-lb; SS225 = 23,000 ft-lb
4.1.2.b Minimum yield strength = 90 ksi

4.1.3 *Type RS2875 2-7/8" OD Material*: Structural steel tube or pipe, welded or seamless, in compliance with ASTM A500 or A513. Wall thickness is 0.165", 0.203" or 0.262".

4.1.3.a Torque strength rating: RS2875.165 = 4,500 ft-lb; RS2875.203 = 5,500 ft-lb; RS2875.262 = 7,500 ft-lb.
4.1.3.b Minimum yield strength = 50 ksi

4.1.4 *Type RS3500 3-1/2" OD Material*: Shall be structural steel tube or pipe, seamless or straight-seam welded, per ASTM A53, A252, ASTM A500, or ASTM A618. Wall thickness is 0.300" (schedule 80).

4.1.4.a Torque strength rating = 13,000 ft-lb
4.1.4.b Minimum yield strength = 50 ksi

4.1.5 *Type RS4500 4-1/2" OD Material*: Shall be structural steel tube or pipe, seamless or straight-seam welded, per ASTM A500 or A513. Wall thickness is 0.337" (schedule 80).

4.1.5.a Torque strength rating = 23,000 ft-lb
4.1.5.b Minimum yield strength = 50 ksi

4.1.6 *SS to RS2875 Combo Pile Material*: Shall be Square Shaft and RS2875 material as described above with a welded adapter for the transition from SS to RS2875.

4.1.7 *SS to RS3500 Combo Pile Material*: Shall be Square Shaft and RS3500 material as described above with a welded adapter for the transition from SS to RS3500.

4.1.8 *SS to RS4500 Combo Pile Material*: Shall be Square Shaft and RS4500 material as described above with a welded adapter for the transition from SS to RS4500.

4.2 Helix Bearing Plate:

Shall be hot rolled carbon steel sheet, strip, or plate formed on matching metal dies to true helical shape and uniform pitch. Bearing plate material shall conform to the following ASTM specifications.

4.2.1 *SS5 Material*: Per ASTM A572, or A1018, or A656 with minimum yield strength of 50 ksi. Plate thickness is 3/8".
4.2.2 *SS125 and SS1375 Material*: Per ASTM A572 with minimum yield strength of 50 ksi. Plate thickness is 3/8" or ½".
4.2.3 *SS150 and SS175 Material*: Per ASTM A656 or A1018 with minimum yield strength of 80 ksi. Plate thickness is 3/8" or ½".
4.2.4 *SS200 and SS225 Material*: Per ASTM A656 or A1018 with minimum yield strength of 80 ksi. Plate thickness is ½".
4.2.5 *RS2875 Material*: Per ASTM A36, or A572, with minimum yield strength of 36 ksi. Plate thickness is 3/8" or ½".
4.2.6 *RS3500 Material*: Per ASTM A36, or A572, or A1018, or A656 depending on helix diameter, per the minimum yield strength requirements cited above. Plate thickness is 3/8" or ½".
4.2.7 *RS4500 Material*: Per ASTM A572 with minimum yield strength of 50 ksi. Plate thickness is ½".

4.3 Bolts:

The size and type of bolts used to connect the central steel shaft sections together shall conform to the following ASTM specifications.

4.3.1 *SS125 1-1/4" Material*: 5/8" diameter bolt (2 per coupling) per SAE J429 Grade 8.
4.3.2 *SS1375 1-3/8" Material*: ¾" diameter bolt (2 per coupling) per SAE J429 Grade 8.
4.3.3 *SS5 and SS150 1-1/2" Material*: ¾" diameter bolt per ASTM A320 Grade L7 or ASTM A325.
4.3.4 *SS175 1-3/4" Material*: 7/8" diameter bolt per ASTM A193 Grade B7.
4.3.5 *SS200 2" Material*: 1-1/8" diameter bolt per ASTM A193 Grade B7.
4.3.6 *SS225 2-1/4" Material*: 1-1/4" diameter bolt per ASTM A193 Grade B7.
4.3.7 *RS2875 2-7/8" OD Material*: ¾" diameter bolts (2 or 4 per coupling) per SAE J429 Grade 5 or 8.
4.3.8 *RS3500 3-1/2" OD Material*: ¾" diameter bolts (3 or 4 per coupling) per SAE J429 Grade 5 or 8.
4.3.9 *RS4500 4-1/2" OD Material*: ¾" diameter bolts (4 per coupling) per SAE J429 Grade 8.

4.4 Couplings:

For type SS5, SS150, SS175, SS200, and SS225 material, the coupling shall be formed as an integral part of the plain and helical extension material as hot upset forged sockets. For Type SS125 and SS1375 material, the coupling shall be a cast steel sleeve with two holes for connecting shaft sections together.

For Type RS2875, RS3500, and RS4500 material, the couplings shall either be formed as an integral part of the plain and helical extension material as hot forge expanded sockets, or as internal sleeve wrought steel connectors. The steel connectors can be either tubing or solid steel bar with holes for connecting shaft sections together.

4.5 Plates, Shapes, or Pile Caps:

Depending on the application, the pile cap shall be a welded assembly consisting of structural steel plates and shapes designed to fit the pile and transfer the applied load. Structural steel plates and shapes for HELICAL PILE top attachments shall conform to ASTM A36 or ASTM A572 Grade 50.

4.6 Corrosion Protection

4.6.1 Galvanization: All Hubbell Power Systems, Inc./A. B. Chance Square shaftmaterial (or equivalent) shall be hot-dipped galvanized in accordance with ASTM A153 after fabrication. All Hubbell Power Systems, Inc./A. B. Chance Type RS material (or equivalent) shall be hot-dipped galvanized in accordance with ASTM A153 or A123 as specified after fabrication.

5 EXECUTION

5.1 Site Conditions

5.1.1 Prior to commencing Helical Pile installation, the Contractor shall inspect the work of all other trades and verify that all said work is completed to the point where Helical Piles may commence without restriction.

5.1.2 The Contractor shall verify that all Helical Piles may be installed in accordance with all pertinent codes and regulations regarding such items as underground obstructions, right-of-way limitations, utilities, etc.

5.1.3 In the event of a discrepancy, the Contractor shall notify the Owner. The Contractor shall not proceed with Helical Pile installation in areas of discrepancies until said discrepancies have been resolved. All costs associated with unresolved discrepancies shall be the responsibility of the Owner.

5.2 Installation Equipment

5.2.1 Shall be rotary type, hydraulic power driven torque motor with clockwise and counter-clockwise rotation capabilities. The torque motor shall be capable of continuous adjustment to revolutions per minute (RPM's) during installation. Percussion drilling equipment shall not be permitted. The torque motor shall have torque capacity 15% greater than the torsional strength rating of the central steel shaft to be installed.

Helical Piles should be installed with high torque, low RPM torque motors, which allow the helical screw plates to advance with minimal soil disturbance.

5.2.2 Equipment shall be capable of applying adequate down pressure (crowd) and torque simultaneously to suit project soil conditions and load requirements. The equipment shall be capable of continuous position adjustment to maintain proper Helical Pile alignment.

5.3 Installation Tooling

5.3.1 Shall consist of a Kelly Bar Adapter (KBA) and Square shaft or RS drive tools as manufactured by CHANCE Civil Construction or equivalent and used in accordance with the manufacturers written installation instructions.

Installation tooling should be maintained in good working order and safe to operate at all times. Flange bolts and nuts should be regularly inspected for proper tightening torque. Bolts, connecting pins, and retainers should be periodically inspected for wear and/or damage and replaced with identical items provided by the manufacturer. Heed all warning labels. Worn or damaged tooling should be replaced.

5.3.2 A torque indicator shall be used during Helical Pile installation. The torque indicator can be an integral part of the installation equipment or externally mounted in-line with the installation tooling. Torque indicators may be available from the helical pile manufacturer.

- 5.3.2.a Shall be capable of providing continuous measurement of applied torque throughout the installation.
- 5.3.2.b Shall be capable of torque measurements in increments of at least 500 ft-lb

5.3.2.c Shall be calibrated prior to pre-production testing or start of work. Torque indicators which are an integral part of the installation equipment, shall be calibrated on-site. Torque indicators which are mounted in-line with the installation tooling, shall be calibrated either on-site or at an appropriately equipped test facility. Indicators that measure torque as a function of hydraulic pressure shall be calibrated at normal operating temperatures.

5.3.2.d Shall be re-calibrated, if in the opinion of the Owner and/or Contractor reasonable doubt exists as to the accuracy of the torque measurements.

5.4 Installation Procedures

5.4.1 *Central Steel Shaft: (Lead and Extension Sections)*

5.4.1.a The Helical Pile installation technique shall be such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project.

5.4.1.b The lead section shall be positioned at the location as shown on the working drawings. Battered Helical Piles can be positioned perpendicular to the ground to assist in initial advancement into the soil before the required batter angle shall be established. The Helical Pile sections shall be engaged and advanced into the soil in a smooth, continuous manner at a rate of rotation of 5 to 20 RPM's. Extension sections shall be provided to obtain the required minimum overall length and installation torque as shown on the working drawings. Connect sections together using coupling bolt(s) and nut torqued to 40 ft-lb.

5.4.1.c Sufficient down pressure shall be applied to uniformly advance the Helical Pile sections approximately 3 inches per revolution. The rate of rotation and magnitude of down pressure shall be adjusted for different soil conditions and depths.

5.5 Termination Criteria

5.5.1 The torque as measured during the installation shall not exceed the torsional strength rating of the central steel shaft.

5.5.2 The minimum installation torque and minimum overall length criteria as shown on the working drawings shall be satisfied prior to terminating the Helical Pile installation.

5.5.3 If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to achieving the minimum overall length required, the Contractor shall have the following options:

5.5.3.a Terminate the installation at the depth obtained subject to the review and acceptance of the Owner, or:

5.5.3.b Remove the existing Helical Pile and install a new one with fewer and/or smaller diameter helix plates. The new helix configuration shall be subject to review and acceptance of the Owner. If re-installing in the same location, the top-most helix

of the new Helical Pile shall be terminated at least (3) three feet beyond the terminating depth of the original Helical Pile.

It is generally not recommended to re-use Square shaftHelical Pile shaft material after it has been permanently twisted during a previous installation. Likewise, it is generally not recommended to re-use Type RS Helical Pile shaft material after the coupling bolt holes have been noticeably elongated during a previous installation.

5.5.3.c If the minimum installation torque as shown on the working drawings is not achieved at the minimum overall length, and there is no maximum length constraint, the Contractor shall have the following options:

5.5.3.d Install the Helical Pile deeper using additional extension sections, or:

5.5.3.e Remove the existing Helical Pile and install a new one with additional and/or larger diameter helix plates. The new helix configuration shall be subject to review and acceptance of the Owner. If re-installing in the same location, the top-most helix of the new Helical Pile shall be terminated at least (3) three feet beyond the terminating depth of the original Helical Pile.

5.5.3.f De-rate the load capacity of the Helical Pile and install additional Helical Pile(s). The de-rated capacity and additional Helical Pile location shall be subject to the review and acceptance of the Owner.

5.5.4 If the Helical Pile is refused or deflected by a subsurface obstruction, the installation shall be terminated and the pile removed. The obstruction shall be removed, if feasible, and the Helical Pile re-installed. If the obstruction can't be removed, the Helical Pile shall be installed at an adjacent location, subject to review and acceptance of the Owner.

5.5.5 If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to proper positioning of the last plain extension section relative to the final elevation, the Contractor may remove the last plain extension and replace it with a shorter length extension. If it is not feasible to remove the last plain extension, the Contractor may cut said extension shaft to the correct elevation. The Contractor shall not reverse (back-out) the Helical Pile to facilitate extension removal.

5.5.6 The average torque for the last three feet of penetration shall be used as the basis of comparison with the minimum installation torque as shown on the working drawings. The average torque shall be defined as the average of the last three readings recorded at one-foot intervals.

The average torque can be empirically related to the Helical Pile's ultimate capacity in end-bearing. This well-known attribute of helical piles can be used as a production control method to indicate the Helical Pile's end-bearing capacity.

APPENDIX

TABLE-1A

MECHANICAL STRENGTH RATINGS – SQUARE SHAFT HELICAL PILES

RATING TYPE	CENTRAL STEEL SHAFT PRODUCT FAMILY						
	SS125 1-1/4" RCS	SS1375 1-3/8" RCS	SS5 1-1/2" RCS	SS150 1-1/2" RCS	SS175 1-3/4" RCS	SS200 2" RCS	SS225 2-1/4" RCS
Torque Strength Rating (ft-lb)	4,000	5,500	5,500	7,000	11,000	16,000	23,000
Ultimate Strength Per Helix (kip) (Tension/Compression)	*30	*35	*40	*40	*50	60	60
Uplift/Compression Capacity Limit[1] (kip)	40	55	55	70	110	#150	#200
Ultimate Tension Strength[2] (kip)	60	75	70	70	100	150	b. 200

*** For 14" Dia. 3/8" Thick Helix Plates, Reduce the Ultimate Capacity by 20%**

1 - Based on torque rating – Uplift/Compression Capacity Limit = Torque Rating x Kt

"Default" Kt for Square shaft= 10

2 – Based on mechanical strength of coupling

 # - Based on mechanical strength of coupling bolt

NOTE: Actual installed capacities are dependent on site specific soil conditions.

APPENDIX

TABLE-1B

MECHANICAL STRENGTH RATINGS – ROUND SHAFT HELICAL PILES

RATING TYPE	CENTRAL STEEL SHAFT PRODUCT FAMILY				
	RS2875.165 2-7/8" OD Pipe Shaft	**RS2875.203 2-7/8" OD Pipe Shaft**	**RS2875.262 2-7/8" OD Pipe Shaft**	**RS3500.300 3-1/2" OD Pipe Shaft**	**RS4500.337 4-1/2" OD Pipe Shaft**
Torque Strength Rating (ft-lb)	4,500	5,500	7,500	13,000	23,000
Ultimate Strength Per Helix (kip) (Tension/Compression)	*40	*40	*40	50	60
Uplift/Compression Capacity Limit[1] (kip)	36	44	60	91	138
Ultimate Tension Strength[2] (kip)	50	60	100	120	140

*** For 14" Dia. 3/8" Thick Helix Plates, Reduce the Ultimate Capacity by 20%**

1 - Based on torque rating – Uplift/Compression Capacity Limit = Torque Rating x Kt

"Default" Kt for Type RS2875 Series = 8, for Type RS3500.300 = 7, for Type RS4500.337 = 6

2 – Based on mechanical strength of coupling

NOTE: Actual installed capacities are dependent on site specific soil conditions.

APPENDIX

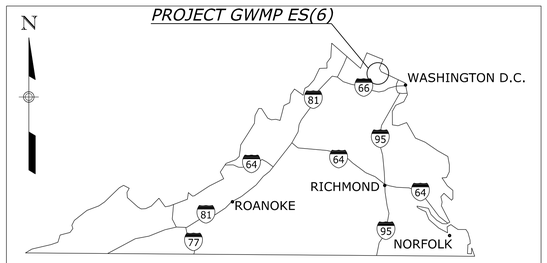
TABLE-2

GUIDANCE OF GROUND AGGRESSIVENESS CLASSIFICATION

Soil tests may be performed to measure the aggressiveness of the soil environment, especially if field observations indicate corrosion of existing structures. The most common and simplest tests are for electrical resistivity, pH, chloride, and sulfates. The designation for these tests and the critical values defining whether an aggressive soil environment exists, are as shown below. Per FHWA-RD-89-198, the ground is considered aggressive if any one of these indicators shows critical values.

Property	Test Designation	Critical Values
Resistivity	ASTM G 57 AASHTO T-288	below 2,000 ohm-cm
pH	ASTM G 51 AASHTO T-289	below 5
Sulfate	ASTM D 516M ASTM D 4327	above 200 ppm
Chloride	ASTM D 512 ASTM D 4327 AASHTO T-291	above 100 ppm
Organic Content	AASHTO T-267	1% max

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	A.1



KEY MAP
STATE OF VIRGINIA

70 0 70

SCALE IN MILES

U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

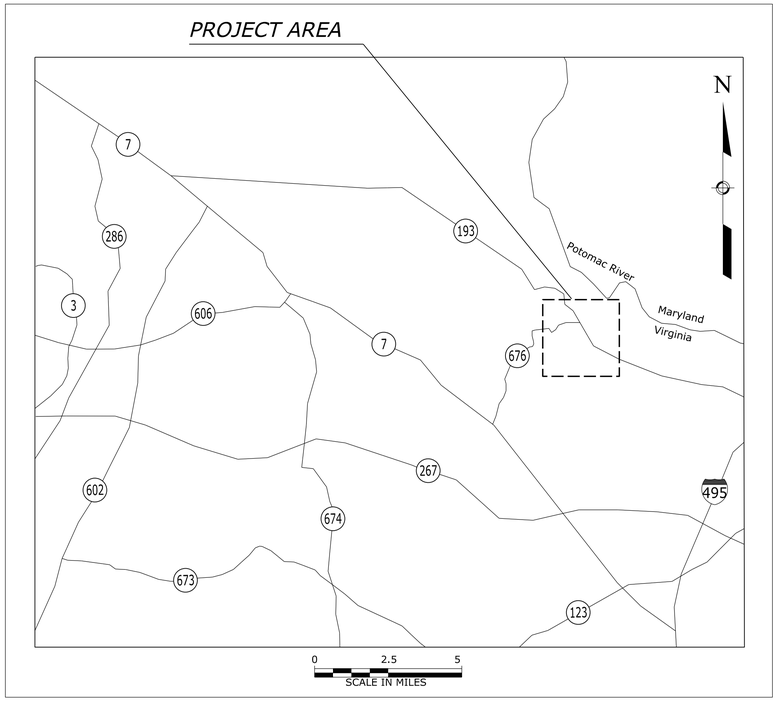
GREAT FALLS PARK

PLANS FOR PROPOSED

GEORGETOWN PIKE FOOTPATH

FEASIBIILTY STUDY FOR A FOOTPATH BETWEEN DIFFICULT RUN TRAIL WITHIN GREAT FALLS PARK TO GEORGETOWN PIKE (VA 193) AT TOWLSTON ROAD (VA 676) AND EAST TO EASEMENT AT MADEIRA SCHOOL

FAIRFAX COUNTY, VIRGINIA



INDEX TO SHEETS

SHEET NO	DESCRIPTION
A.1	Title Sheet
A.2	Symbols And Abbreviations
A.3	Location Map
A.4	Horizontal Alignment Information
B.1	Typical Sections
C.1	Tabulation of Quantities
D.1-D.4	Plans
D.5-D.7	Profiles

SUBMITTAL DATE: SEPTEMBER 2019

DESCRIPTION OF PROJECT

IMPROVEMENT: FEASIBILITY STUDY FOR A 6-FOOT WIDE FOOTPATH FROM DIFFICULT RUN TRAIL WITHIN GREAT FALLS PARK, OVER DIFFICULT RUN VIA A STEEL TRUSS BRIDGE, TO INTERSECTION OF GEORGETOWN PIKE (VA 193)/TOWLSTON ROAD (VA 676) AND EAST ALONG GEORGETOWN PIKE TO WEST END OF PUBLIC ACCESS (TRAIL) EASEMENT ALONG THE FRONTAGE OF MADEIRA SCHOOL.

TRAIL:	LENGTH	WIDTH	SURFACE	BASE
Alignment 1	4,150 LF	6'	Crushed stone/Paved	Crushed stone
Alignment 2	3,540 LF	6'	Crushed stone/Paved	Crushed stone
Alignment 3	4,750 LF	6'	Crushed stone/Paved	Crushed stone
Alignment 4	3,775 LF	6'	Crushed stone/Paved	Crushed stone

BRIDGE:	LENGTH	TYPE
Alignment 1	120'	Steel Truss
Alignment 2	120'	Steel Truss
Alignment 3	120'	Steel Truss
Alignment 4	120'	Steel Truss

SPECIFICATIONS:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.
Virginia Department of Transportation (VDOT) Road and Bridge Specifications and Standards

NOTES:

Conceptual design was completed using GIS information only and is subject to change during final design with information from a topographic survey of the project area

Project Manager	Lead Designer
Keith Aimone	Leif Van Acker

Know what's below. Call before you dig.

30% CONCEPT PLANS

PLANS PREPARED FOR

U.S. Department of Transportation
Federal Highway Administration

EASTERN FEDERAL LANDS HIGHWAY DIVISION
21400 RIDGETOP CIRCLE
STERLING, VIRGINIA 20166

PLANS PREPARED BY

Kimley»Horn

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Abutment	Abut.
Aggregate	aggr.
Ahead	AH
Alternate	alt.
Average daily traffic	ADT
Back	BK
Backslope Anchor Terminal	BAT
Balance point	BP
Bearing	brg.
Beginning	beg.
Bench mark	BM
Broken White	BW
Centerline	℄
Center to center	cc, c-c or c. to c.
Centers	ctrs.
Clear	clr.
Column	col.
Connection	conn.
Construction joint	Constr. jt.
Continuous	cont.
Corrugated metal pipe	CMP
Culvert	culv.
Curve central angle (spiral curve transitions)	$\triangle_c$
Curve total angle (curve delta or deflection)	$\triangle$
Design hourly volume	DHV
Design speed	V
Diagonal	diag.
Diameter	D, dia., or
Diaphragm	diaph.
Distance	dist.
Double Solid Yellow	DSY
Drawing(s)	dwg(s), or drwg(s)
Drop Inlet	DI
East	E
Edge of pavement	EP or EOP
Elevation	elev.
Elevation with number	El. 94.161 [El. 94.16]
Embankment	emb.
End section	ES
Equation	EQ or eq.
Equivalent Single Axle Load	ESAL
Excavation	exc.
Expansion joint	exp. jt.
Flared Anchor Terminal	FAT
Footing	ftg.
Galvanized	galv.
Gage(gauge)	ga.
Gyratory Mix, Asphalt Concrete Pavement	GACP
Headwall	hdwl.
Hexagon	hex.
High water	HW
Inside diameter	ID
Joint	jt.
Lamination	lam.
Latitude	lat.
Left	lt., Lt. or LT
Length of curve(simple curve)	L
Length of curve (spiral curve transition)	Lc
Length of spiral	Ls
Longitudinal(longitude)	long.
Low water	LW
Mainline	M.L.
Material	matl.
Maximum	max.
Mile[Kilometer] post	M.P[K.P.]
Minimum	min.
Monument	mon. or MON
Mechanically stabilized embankment	MSE
Nominal Max. Size Aggregate	NMSA
Normal crown	NC or NCR
North	N
Original ground	OG
Out to out	o. to o.
Outside diameter	OD
On centers	o. c.
Pavement	pvmt.
Plate	pl.
Point of compound curve	PCC
Point of curve	PC
Point of curve to spiral	PCS or CS
Point of intersection	PI
Point of spiral to curve	PSC or SC
Point of spiral to reverse spiral	SRS
Point of spiral to tangent	PST or ST
Point of tangent	PT
Point of tangent to spiral	PS or TS
Point on curve	POC
Point on spiral	POS
Point on tangent	POT
Radius	R
Reinforcement (reinforced)	reinf.
Required	reqd.
Right	Rt., rt.or RT
Right-of-way	R/W
Riparian Area	RPA
Roadway	Rdwy.
Route	Rte.
Section	Sec.
Solid White	SW
South	S
Spacing, spaces or spaced	spa.
Spiral central angle	s
Standard	std.
Station	Sta.
Steel Backed Timber	SBT
Stiffener	stiff.
Stringer	stgr.
Structure	struc.
Superelevation rate	e
Symmetrical	sym.
Tangent distance (tangent length)	T
Tangent distance (spiral curve transition)	Ts
Temporary benchmark	TBM
Temporary construction easement	TCE
Thread	thd.
Township	T.
Typical	typ.
Vehicle per hour	vph
Vertical point of intersection	VPI
West	W

TOWNSHIP or RANGE LINE

SECTION LINE

1/4 SECTION LINE

1/16 SECTION LINE

NATIONAL PARK or FOREST BOUNDARY

PROPERTY LINE — P/L

TRAVERSE POINT (Horizontal & Vertical) Top of Triangle Points North — T-45, 2,646.9

TRAVERSE POINT (Horizontal) — T-3

BRASS CAP

STEEL PIN

HUB & TACK

SPOT ELEVATION — 99.9

COORDINATE GRID TICK

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE	R/W	R/W
RIGHT-OF-WAY LINE with MONUMENT	R/W	R/W
SECTION CORNER	FOUND 36 31 1 6	PROJECTED 36 31 1 6
1/4 SECTION CORNER	15 22	15 22
1/16 SECTION		
PROPERTY CORNER		No Symbol
PARCEL NUMBER	No Symbol	400
EASEMENT (Permanent - Construction)	P/E	C/E

ROUTE NUMBERS: 26 INTERSTATE; 25 U.S.; 694 STATE

SLOPE STAKE: TOP OF CUT; TOE OF FILL; TRANSITION

ROADWAY, EXISTING: EOP; EOG

RAILROAD: SINGLE TRACK; MULTIPLE TRACK

INTERMITTENT DRAINAGE/ SMALL CREEK

SPRING

LARGE CREEK/RIVER

LAKE, POND or RESERVOIR; MARSHLAND

PAVEMENT REMOVAL/ROADWAY OBLITERATION

FULL DEPTH PAVEMENT

SIDEWALK ASPHALT/CONCRETE

MILL AND OVERLAY

OVERLAY

AREA PATTERN

SILT FENCE

DIVERSION BERM

DIVERSION CHANNEL

CHECK DAM

RIPRAP/CULVERT RIPRAP

BORING LOCATION — B-1

TEST PIT — TP-1

NORTH ARROW — N

MATERIAL SOURCE

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	A.2

	EXISTING	PROPOSED
FENCE	X — X	XX — XX
GATE with FENCE	X X	XX XX
CATTLEGUARD		
GUARDRAIL		
MEDIAN & SIDE (CONCRETE) BARRIER		
SIGNS — POST MOUNTED		
SIGNS — PORTABLE	No Symbol	
RETAINING WALL		wall face
OVERHEAD(POWER POLE) UTILITIES P=Electrical for transmission line E=Electrical for distribution line T=Telephone, E&T=Joint Electrical and Telephone FO=Fibre optics	P	P
SUPPORT POLE with ANCHOR		
TELEPHONE BOOTH or PEDESTAL	TB or TP	TB or TP
STREET LIGHT	or	or
UNDERGROUND UTILITIES G=gas, O=oil, P=power, SS=sanitary sewer, SD=storm drain, T=telephone, W=water E=electrical, FO=fiber optics	W	W
BRIDGE		
PIPE CULVERT (arrow shows flow)		
PIPE CULVERT with END SECTION		
PIPE CULVERT with HEADWALL		
CULVERT with DROP INLET		
BOX CULVERT		
UNDERDRAIN	UD	UD
BUILDING		
TREELINE; TREE		

PROJECT SPECIFIC SYMBOLS AND ABBREVIATIONS:-

- LIMITS OF CONSTRUCTION
- RETAINING WALL
- FOOTPATH SURFACE
- ESTIMATED LIMITS OF BRIDGE SURFACE
- RESOURCE PROTECTION AREA
- FLOODPLAIN
- GUARDRAIL

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

SYMBOLS AND ABBREVIATIONS

SEPTEMBER 2019

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	A.3

DIFFICULT RUN TRAIL

ALIGNMENT 1A - ALTERNATIVE BRIDGE CROSSING

GREAT FALLS NATIONAL PARK

GREAT FALLS PARK PROPERTY BOUNDARY

END PROJECT
GWMP ES(6)
END ALIGNMENT 1

12' PUBLIC ACCESS (TRAIL) EASEMENT

ALIGNMENT 1

SHEET D.4

GWMP ES(6)
END ALIGNMENT 4

SHEET D.1

ALIGNMENT 1

BEGIN PROJECT
GWMP ES(6)
STA. 100+00
BEGIN ALIGNMENT 1

SHEET D.3

ALIGNMENT 4

ALIGNMENT 2

GWMP ES(6)
END ALIGNMENT 3

GWMP ES(6)
END ALIGNMENT 2

ALIGNMENT 1

GEORGETOWN PIKE

GREAT FALLS NATIONAL PARK

ALIGNMENT 3

TOWLSTON RD.

DIFFICULT RUN RIVER

SHEET D.2

ALIGNMENT 4

GWMP ES(6)
BEGIN ALIGNMENT 3 & 4
STA. 300+00 & 400+00

BEGIN PROJECT
GWMP ES(6)
STA. 200+00
BEGIN ALIGNMENT 2

ALIGNMENT 2A - ALTERNATIVE BRIDGE CROSSING

N

0 120 240
SCALE IN FEET

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

LOCATION MAP

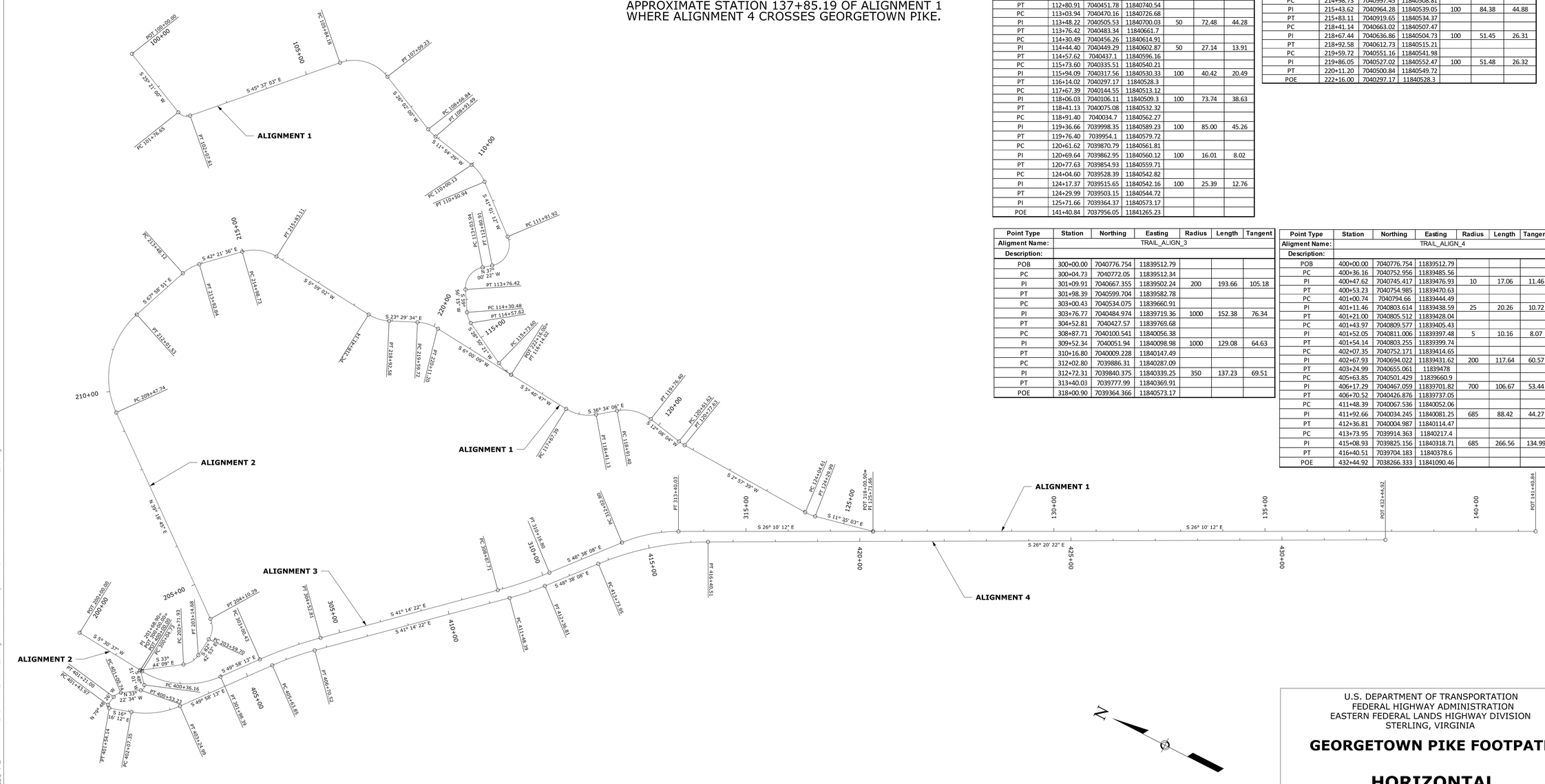
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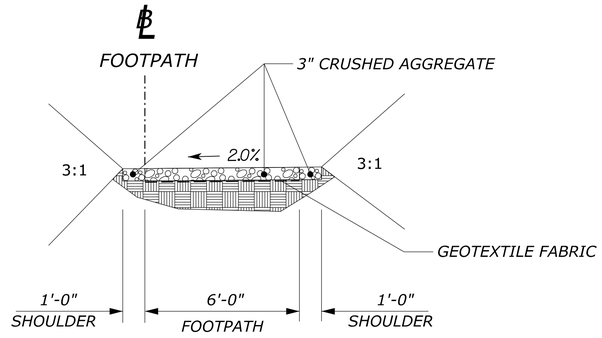
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	A.4

NOTE:

1. ALIGNMENT 2 INCLUDES THE BRIDGE CROSSING NEAR GEORGETOWN PIKE. ALIGNMENTS 3 AND 4 BOTH BEGIN AT THE SOUTH SIDE OF THE BRIDGE AT STATION 201+68.90 OF ALIGNMENT 2.
2. THE END OF ALIGNMENT 2 IS LOCATED AT APPROXIMATE STATION 116+14.02 OF ALIGNMENT 1.
3. THE END OF ALIGNMENT 3 IS LOCATED AT APPROXIMATE STATION 125+71.66 OF ALIGNMENT 1.
4. THE END OF ALIGNMENT 4 IS LOCATED AT APPROXIMATE STATION 137+85.19 OF ALIGNMENT 1 WHERE ALIGNMENT 4 CROSSES GEORGETOWN PIKE.


POT 100+00.00
100+00
S 25° 21' 40" W
PC 101+76.65
PT 102+07.61
S 45° 37' 03" E
PC 105+84.18
105+00
PT 107+09.23
S 36° 02' 00" W
PC 108+66.84
PT 108+91.49
S 11° 54' 29" W
110+00
PC 110+00.13
PT 110+90.94
S 47° 01' 21" W
PC 111+91.92
PT 113+03.94
PC 113+48.91
N 37° 00' 22" W
PT 113+76.42
PC 114+30.48
PT 114+57.62
N 39° 55' 15" W
115+00
PC 115+73.60
POT 115+96.00
PT 116+14.00
S 48° 38' 21" W
S 64° 00' 09" W
220+00
S 23° 29' 34" E
PC 218+41.14
PT 218+76.58
PC 219+59.72
PT 220+11.30
S 5° 59' 02" W
PC 214+98.73
PT 213+83.11
PC 213+48.12
S 42° 21' 36" E
215+00
PT 213+92.84
S 67° 58' 51" E
PT 212+01.53
210+00
PC 209+47.74
ALIGNMENT 2
N 39° 18' 47" E
205+00
POT 200+00.00
200+00
S 5° 30' 37" W
PT 204+10.39
PT 203+14.68
PC 202+71.93
PT 202+68.90
PC 202+00.00
POT 200+00.00
PC 200+00.74
PC 203+30.43
S 33° 44' 09" E
PC 203+69.78
S 49° 58' 13" E
ALIGNMENT 3
PT 304+52.81
305+00
S 41° 14' 22" E
410+00
PC 408+87.71
310+00
PT 310+16.80
S 48° 38' 08" E
PC 312+00.00
PT 313+03.03
315+00
S 26° 10' 12" E
415+00
PC 411+48.29
PT 412+26.81
PC 413+23.95
PT 416+40.51
420+00
S 2° 57' 39" W
PC 123+04.61
PT 124+29.29
S 11° 35' 03" E
125+00
POT 318+00.90=
PT 125+77.66
ALIGNMENT 1
130+00
S 26° 10' 12" E
135+00
S 26° 20' 22" E
425+00
430+00
POT 432+44.92
140+00
POT 141+40.84
ALIGNMENT 4
PC 117+07.39
PT 118+44.13
PC 118+91.40
S 36° 34' 06" E
120+00
PT 119+76.80
S 12° 08' 04" W
PC 125+51.62
PT 125+77.62
ALIGNMENT 1
PC 213+48.12
S 67° 58' 51" E
PT 212+01.53
PC 214+98.73
PT 213+92.84
S 5° 59' 02" W
PC 218+41.14
PT 218+76.58
PC 219+59.72
PT 220+11.30
S 23° 29' 34" E
S 64° 00' 09" W
S 48° 38' 21" W
115+00
PC 115+73.60
POT 115+96.00
PT 116+14.00
S 5° 40' 47" W

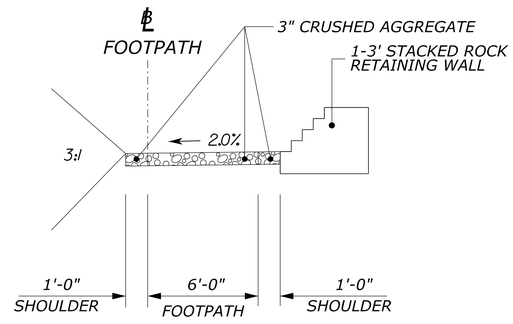
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	B.1



TYPICAL FOOTPATH SECTION

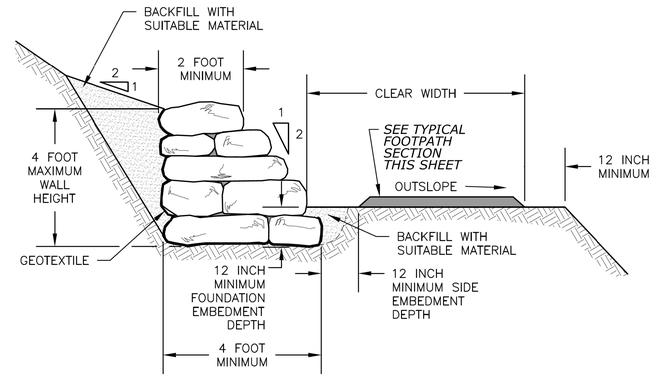
ALIGNMENT 1:
STA.100+00.00 TO STA.125+71.66

ALIGNMENT 2:
STA.200+00.00 TO STA.204+67.53
STA.208+71.45 TO STA.222+16.00



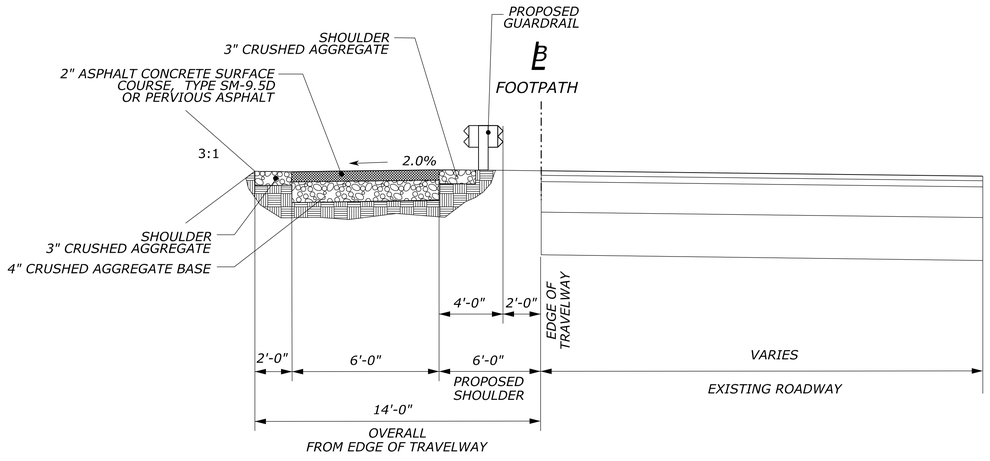
TYPICAL FOOTPATH SECTION WITH RETAINING WALL

ALIGNMENT 2:
STA.204+67.53 TO STA.208+71.45



STACKED ROCK RETAINING WALL - UPHILL SECTION DETAIL

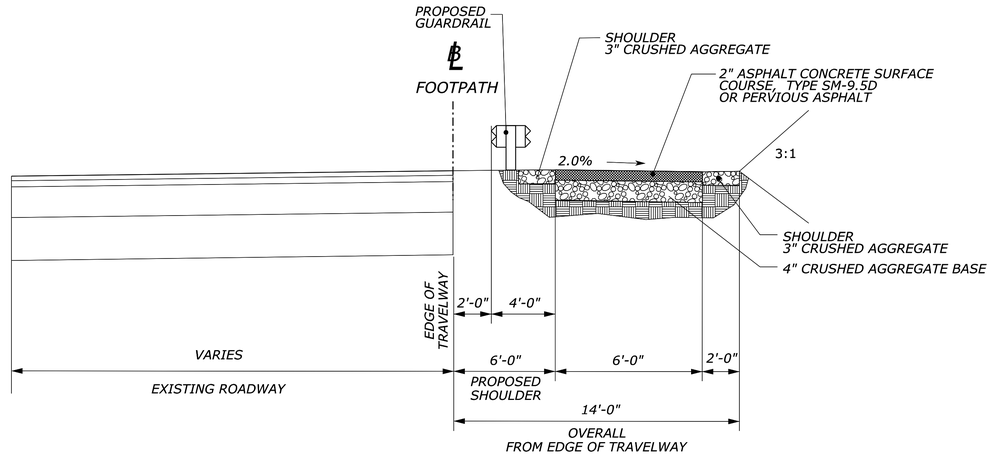
SOURCE: USDA FOREST SERVICE STANDARD TRAIL PLANS AND SPECIFICATIONS



TYPICAL ROADSIDE FOOTPATH SECTION

ALIGNMENT 1:
STA.125+71.66 TO STA.141+40.84

ALIGNMENT 3:
STA.300+00 TO STA.318+00.90



TYPICAL ROADSIDE FOOTPATH SECTION

ALIGNMENT 4:
STA.400+00 TO STA.432+44.92

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

TYPICAL SECTIONS

SEPTEMBER 2019

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	C.1

TABULATION OF QUANTITIES

SHEET	STATION	Pay Item 20101-0000 **Clearing and Grubbing** Acre	Pay Item 20401-0000 **Roadway Excavation** CY	Pay Item 20403-0000 **Unclassified Borrow** CY	**Steel Truss Bridge** LF	Pay Item 30111-1000 **Crushed Aggregate** SY	Pay Item 40302-0100 **2" Asphalt Concrete Surface Course** SY	Pay Item 61701-3900 **Guardrail** LF	Pay Item 25403-0000 **Stacked Rock Retaining Wall** SF
D1	Alignment 1 100+00 to 116+45	0.39	320	6	110-130	1,462			
	Alignment 2 210+24 to 222+16 (and as part of 1)	0.45	732	119		1,095			
D2	Alignment 2 200+00 to 210+24	0.59	488	79	110-130	760			1,000
	Alignment 3 300+00 to 309+24	0.43	720	117	110-130	828	621	733	
	Alignment 4 400+00 to 410+56	0.58	865	177	110-130	1,030	773	1,004	
D3	Alignment 1 16+45 to 25+36	0.35	46	52		1,120	246	369	
	Alignment 2 (as part of 1)	0.35	46	52		1,120	246	369	
	Alignment 3 309+24 to 318+01	0.46	723			2,067	1,550	1,236	
	Alignment 4 410+56 to 423+97	0.41	235	49		1,104	828	1,242	
D4	Alignment 1 129+39 to 141+41	0.43	240	53		1,069	802	1,203	
	Alignment 2 (as part of 1)	0.43	240	53		1,069	802	1,203	
	Alignment 3 (as part of 1)	0.43	240	53		1,069	802	1,203	
	Alignment 4 423+97 to 432+45 (and as part of 1)	0.45	464			1,069	802	1,203	
Alignment 1 Totals:		1.17	606	111	110-130	3,652	1,048	1,572	
Alignment 2 Totals:		1.82	1,506	303	110-130	4,044	1,048	1,572	
Alignment 3 Totals:		1.33	1,683	170	110-130	3,964	2,973	3,172	
Alignment 4 Totals:		1.45	1,564	226	110-130	3,204	2,403	3,449	

NOTES:
1. PAY ITEMS TO BE MEASURED AND DEFINED BY STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS; FP-14 PAY ITEM LISTING
2. CONCEPTUAL DESIGN WAS COMPLETED WITH GIS INFORMATION ONLY. QUANTITIES ARE APPROXIMATE AND MAY CHANGE WITH FINAL DESIGN AND TOPOGRAPHIC SURVEY
3. BRIDGE CROSSING LENGTHS TO BE DETERMINED AFTER COMPLETION OF DETAILED SURVEY AND IN COORDINATION WITH HYDRAULIC STUDY DURING FINAL DESIGN PHASE
4. CRUSHED AGGREGATE QUANTITY INCLUDES COMINBED SQUARE YARDAGE OF 3" CRUSHED AGGREGATE SURFACE COURSE FOR THE FOOTPATH AND 4" CRUSHED AGGREGATE BASE FOR THE ROADSIDE FOOTPATH

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

TABULATION OF QUANTITIES

SEPTEMBER 2019

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	D.1

STEEL TRUSS BRIDGE

SEE INSET 1 THIS SHEET

POT 100+00.00
100+00
101+00
102+00
103+00
104+00
105+00
106+00
107+00
108+00
109+00
110+00
111+00
112+00
113+00
114+00
115+00
116+00
211+00
212+00
213+00
214+00
215+00
216+00
217+00
218+00
219+00
220+00
221+00
222+00

PC 101+76.65
PT 102+07.61
PC 105+84.18
PT 107+09.23
PC 108+66.84
PT 108+91.49
PC 110+60.13
PT 110+50.94
PC 111+91.92
PC 113+03.94
PT 112+80.91
PT 113+76.42
PC 114+30.48
PT 114+57.62
PC 115+73.60
POT 222+16.00=
PT 116+14.02
PC 213+48.12
PT 213+92.86
PC 214+98.73
PT 215+83.11
PC 218+41.14
PT 218+92.58
PC 219+59.72
PT 220+11.20
PT 212+01.93

FLOODPLAIN

DIFFICULT RUN TRAIL

DIFFICULT RUN RIVER

ALIGNMENT 1

LIMITS OF CONSTRUCTION

RPA

GREAT FALLS PARK

RPA

PARK BOUNDARY

ALIGNMENT 2

ALIGNMENT 1

MATCHLINE - SEE SHEET D.2

MATCHLINE - SEE SHEET D.3

ALIGNMENT 1A - ALTERNATIVE BRIDGE CROSSING

STATION 105+84.18

INSET 1

LEGEND

- LIMITS OF CONSTRUCTION
- FOOTPATH SURFACE
- ESTIMATED LIMITS OF BRIDGE SURFACE
- LIMITS OF RPA
- LIMITS OF FLOODPLAIN
- PARK BOUNDARY

NOTES:

1. ALIGNMENTS 1 & 2 INTERSECT AT STA. 116+14.02 OF ALIGNMENT 1 AND STA. 222+16.00 OF ALIGNMENT 2
2. BRIDGE CROSSING LOCATIONS AND LENGTHS TO BE DETERMINED AFTER COMPLETION OF DETAILED SURVEY AND DURING FINAL DESIGN

N

0 50 100
SCALE IN FEET

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

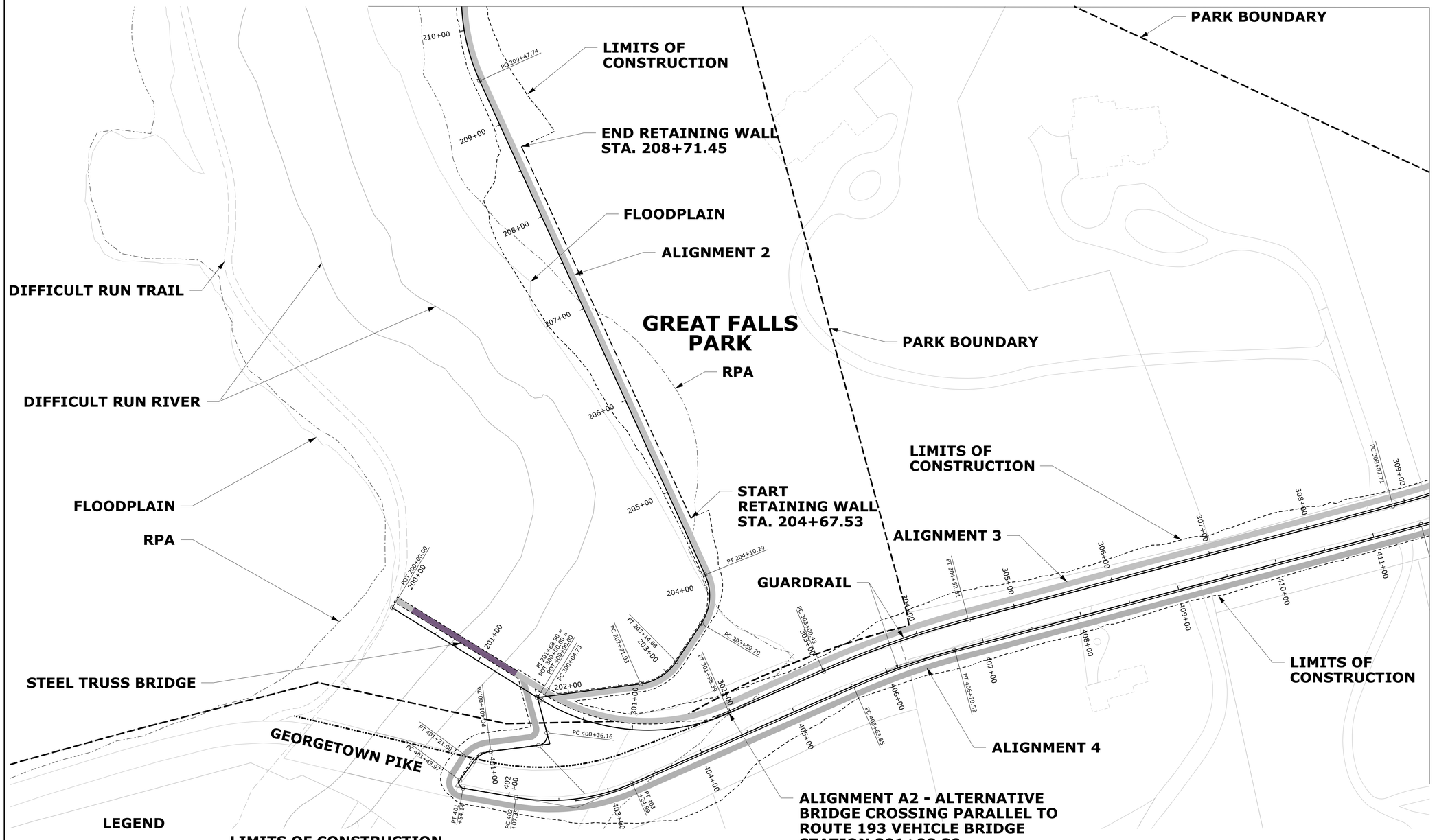
PLAN SHEET 1

ALIGNMENT 1 - STA 100+00 TO STA 116+45
ALIGNMENT 2 - STA 210+24 TO STA 222+16

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	D.2



LEGEND

- LIMITS OF CONSTRUCTION
- RETAINING WALL
- FOOTPATH SURFACE
- ESTIMATED LIMITS OF BRIDGE SURFACE
- LIMITS OF RPA
- LIMITS OF FLOODPLAIN
- PARK BOUNDARY
- GUARDRAIL

NOTES:

1. ALIGNMENT 2 INCLUDES THE BRIDGE CROSSING OF DIFFICULT RUN.
2. ALIGNMENTS 3 AND 4 BEGIN AT THE SOUTH SIDE OF DIFFICULT RUN AT STATION 201+68.90 OF ALIGNMENT 2
3. BRIDGE CROSSING LOCATIONS AND LENGTHS TO BE DETERMINED AFTER COMPLETION OF DETAILED SURVEY AND DURING FINAL DESIGN

N

0 50 100
SCALE IN FEET

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

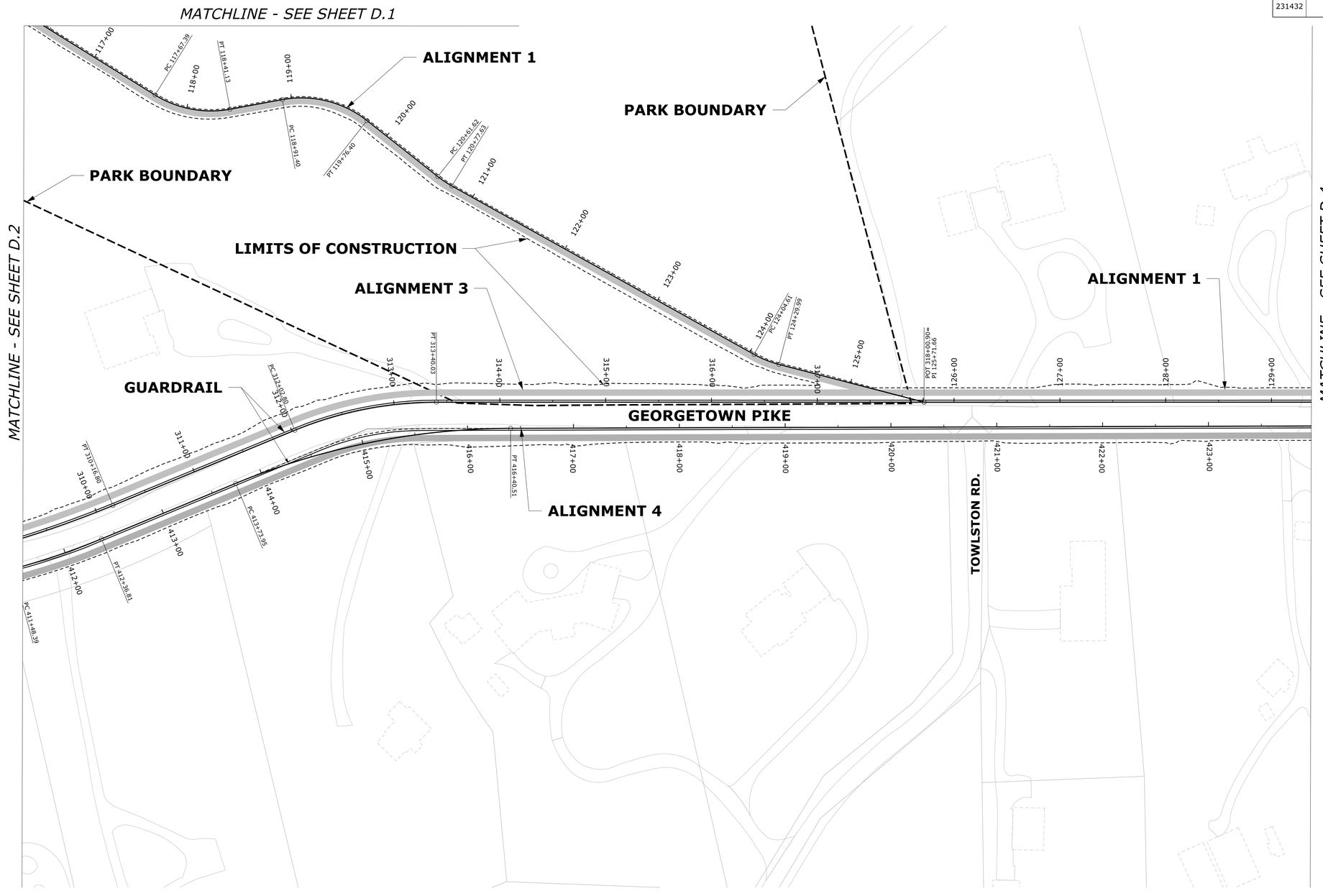
PLAN SHEET 2

ALIGNMENT 2 - STA 200+00 TO STA 210+24
ALIGNMENT 3 - STA 300+00 TO STA 309+24
ALIGNMENT 4 - STA 400+00 TO STA 411+55

SEPTEMBER 2019

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	D.3



LEGEND

- LIMITS OF CONSTRUCTION
- FOOTPATH SURFACE
- ESTIMATED LIMITS OF BRIDGE SURFACE
- GUARDRAIL
- PARK BOUNDARY

NOTES:

1. ALIGNMENTS 1 AND 3 INTERSECT AT STATION 125+71.66 OF ALIGNMENT 1.
2. ALIGNMENT 1 CONTINUES SOUTH EAST ALONG GEORGETOWN PIKE

N

0 50 100
SCALE IN FEET

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

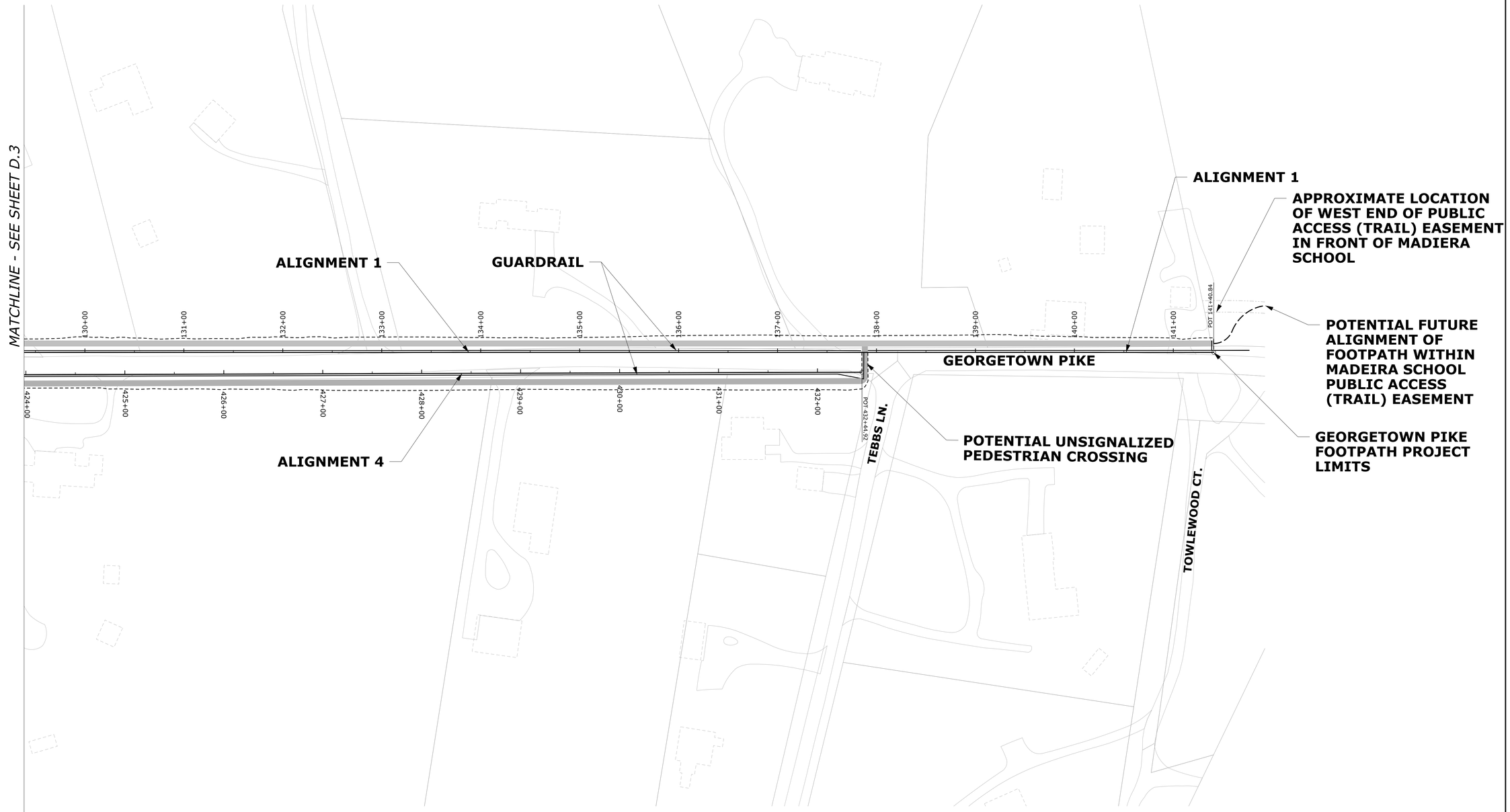
PLAN SHEET 3

ALIGNMENT 1 - STA 116+45 TO STA 129+38
ALIGNMENT 2 - STA 309+24 TO STA 423+97
ALIGNMENT 3 - STA 411+55 TO STA 425+70

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	D.4



LEGEND

- LIMITS OF CONSTRUCTION
- FOOTPATH SURFACE
- ESTIMATED LIMITS OF BRIDGE SURFACE
- GUARDRAIL

NOTES:

1. ALIGNMENTS 1 AND 4 INTERSECT AT STATION 137+86 OF ALIGNMENT 1.
2. ALIGNMENT 1 CONTINUES SOUTH EAST ALONG GEORGETOWN PIKE

N

0 50 100
SCALE IN FEET

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

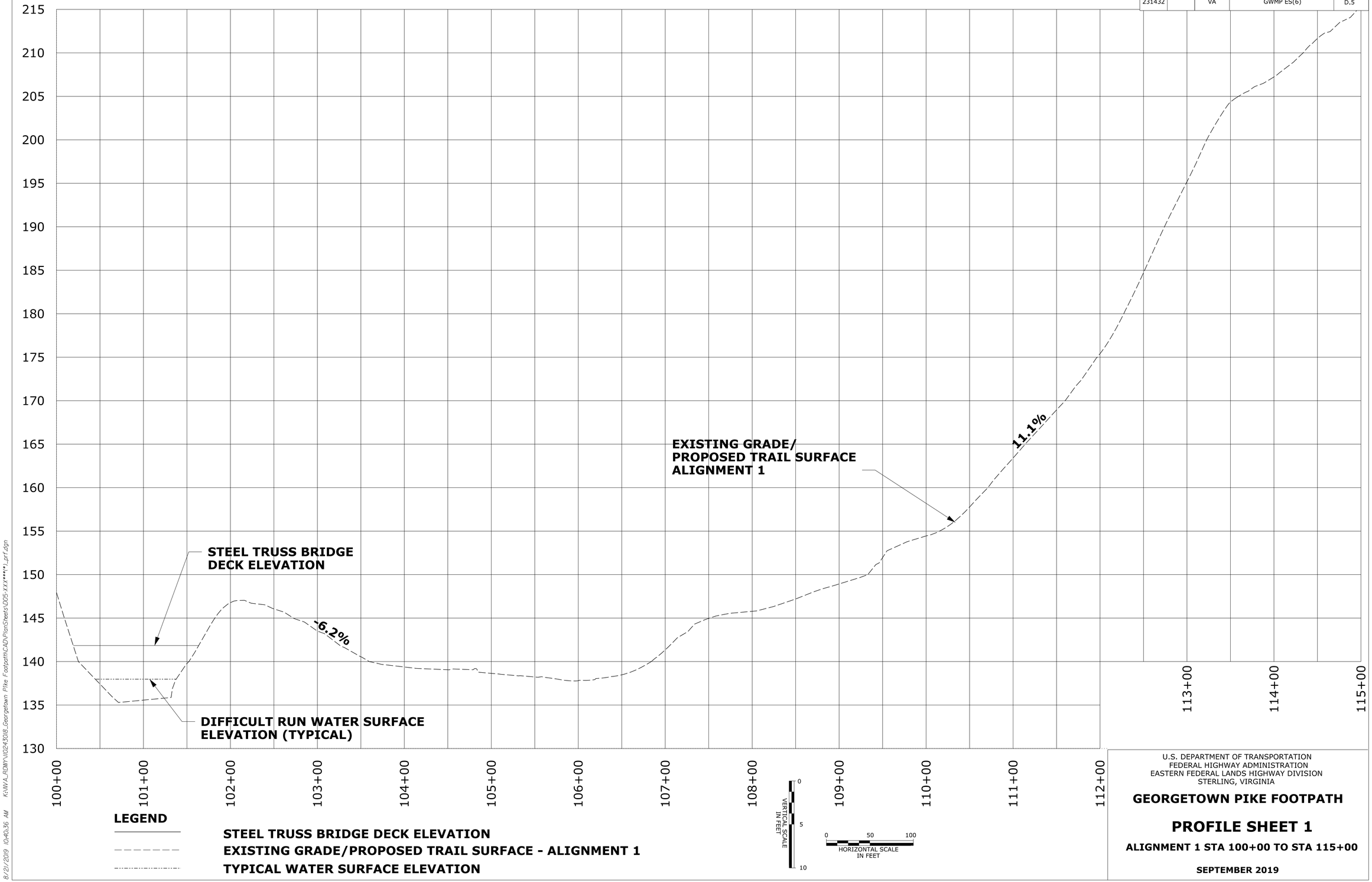
PLAN SHEET 4

ALIGNMENT 1 - STA 129+38 TO STA 141+40.84
ALIGNMENT 4 - STA 423+97 TO STA 432+44.92

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	D.5



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EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

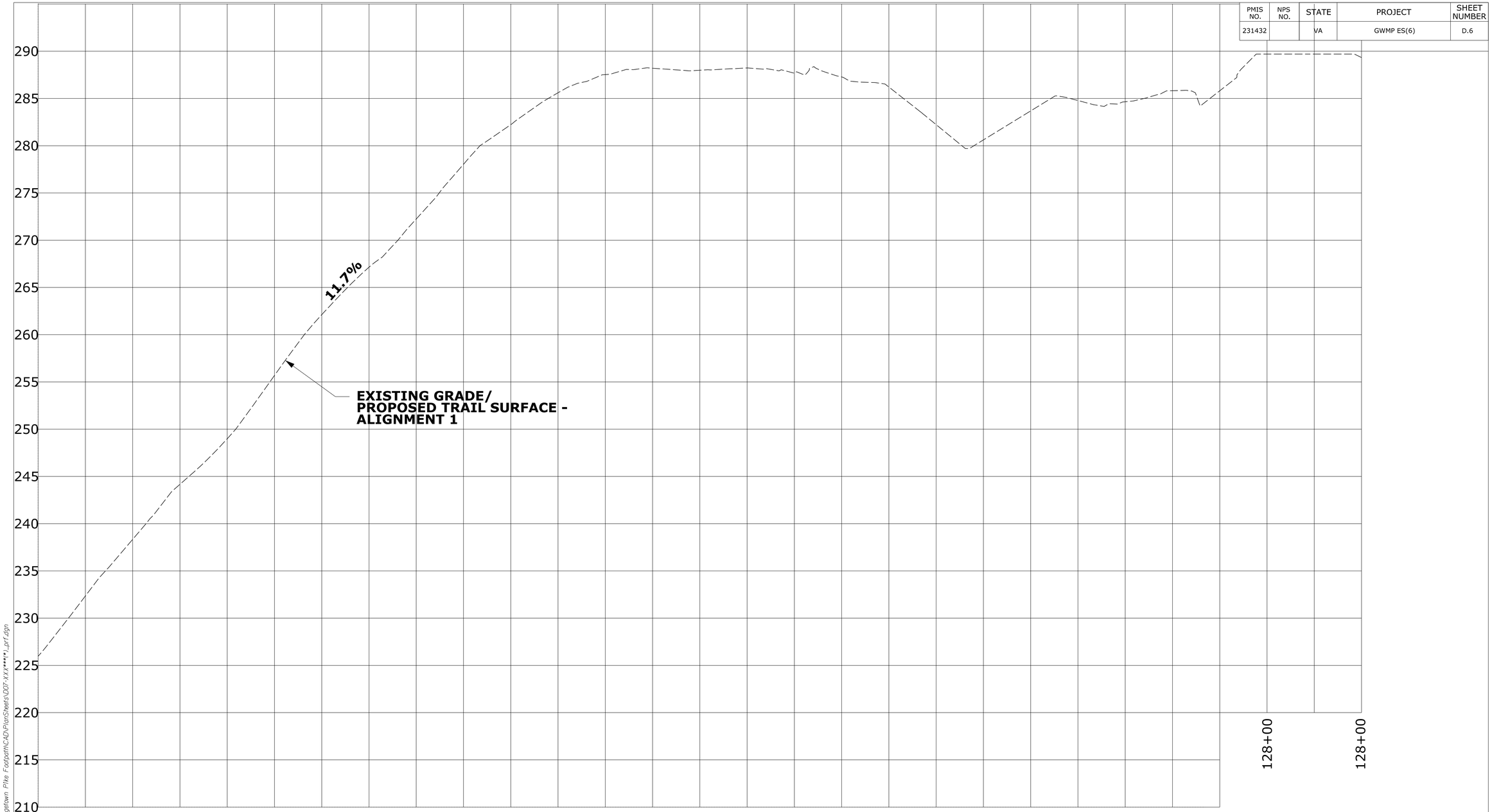
PROFILE SHEET 1

ALIGNMENT 1 STA 100+00 TO STA 115+00

SEPTEMBER 2019

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	D.6



LEGEND

– – – – – – – **EXISTING GRADE/PROPOSED TRAIL SURFACE - ALIGNMENT 1**

VERTICAL SCALE IN FEET: 0, 5, 10

HORIZONTAL SCALE IN FEET: 0, 50, 100

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STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

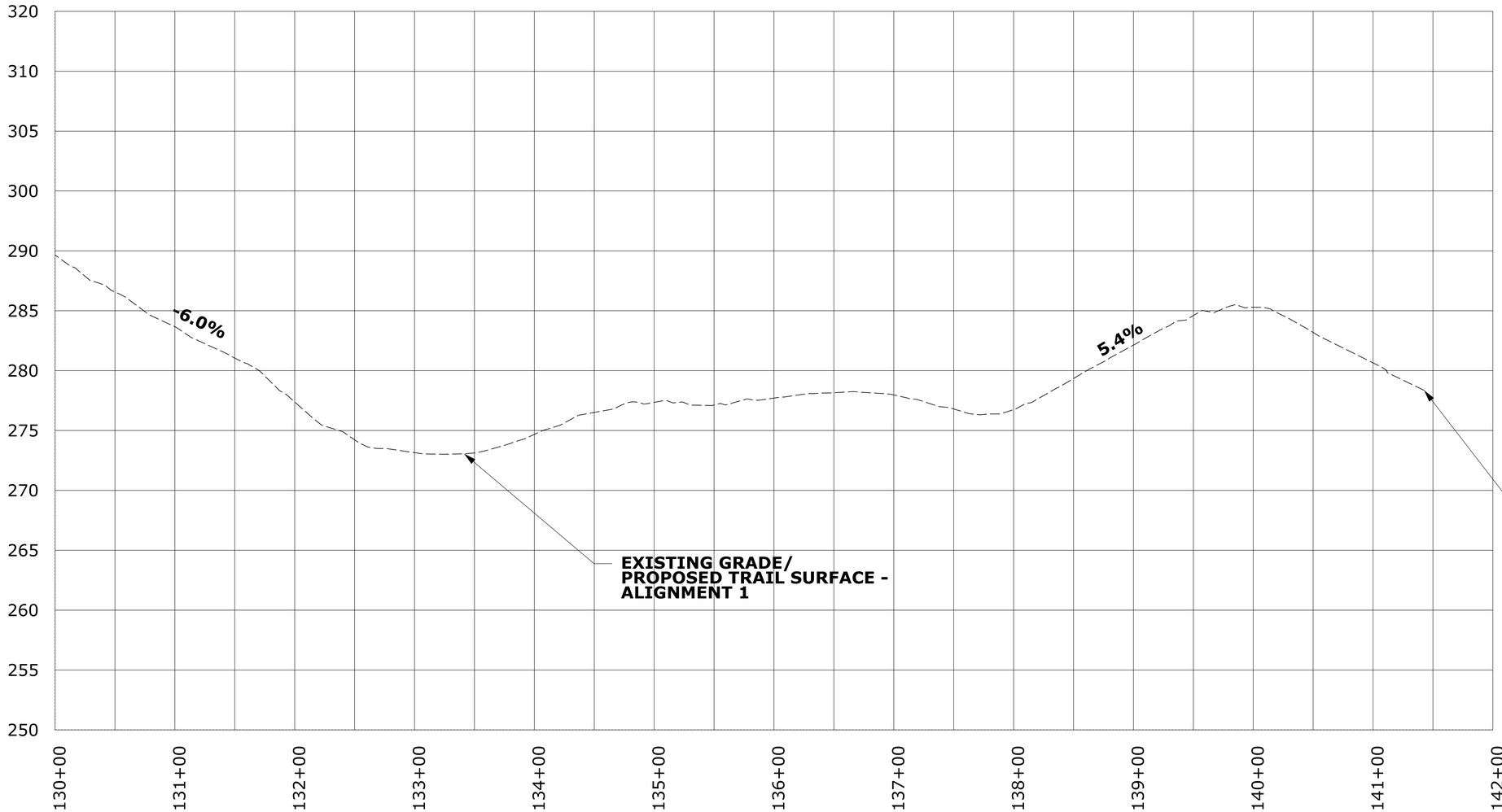
PROFILE SHEET 2

ALIGNMENT 1 - STA 115+00 TO STA 128+00

SEPTEMBER 2019

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
231432		VA	GWMP ES(6)	D.7



LEGEND

EXISTING GRADE/PROPOSED TRAIL SURFACE - ALIGNMENT 1

VERTICAL SCALE IN FEET
0
5
10

HORIZONTAL SCALE IN FEET
0
50
100

U.S. DEPARTMENT OF TRANSPORTATION
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STERLING, VIRGINIA

GEORGETOWN PIKE FOOTPATH

PROFILE SHEET 3

ALIGNMENT 1 - STA 130+00 TO 142+00

SEPTEMBER 2019

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Georgetown Pike Footpath Feasibility Study

PRELIMINARY OPINION OF PROBABLE COST

SUMMARY

	Alignment 1	Alignment 2	Alignment 3	Alignment 4
Preliminary Engineering	$ 222,626	$ 268,452	$ 296,385	$ 314,631
ROW / Utilities	$ 963,325	$ 963,325	$ 1,335,000	$ 1,365,325
Construction	$ 1,855,215	$ 2,237,100	$ 2,469,875	$ 2,621,925
Subtotal:	$ 3,041,166	$ 3,468,877	$ 4,101,259	$ 4,301,881
Contingency (30%)	$ 556,565	$ 671,130	$ 740,962	$ 786,578
CEI (18.5%)	$ 343,215	$ 413,864	$ 456,927	$ 485,056
Project Total:	$ 3,940,945	$ 4,553,871	$ 5,299,149	$ 5,573,515
Project Total (Rounded):	$ 3,940,000	$ 4,550,000	$ 5,300,000	$ 5,570,000

General Assumptions:

1. Alignments assume pedestrian bridge length to span Difficult Run wthin floodplain as depicted on plans.
2. Unit prices are based on publicly available 2-year VDOT historical averages.
3. Foot bridge for all alignments based on assumed cost of $5000/LF for a 6-ft wide (clear path) truss bridge.
4. Right-of-way costs in Great Falls, Virginia is estimated conservatively at $25/SF based on recent sales in the area and included cost for the acquisition process.
5. Alignment 1 has an additional bridge mobilization cost due to the more remote nature of this location.
6. Stacked rock retaining wall for Alignment 2 is based on an assumed cost of $250/SF of wall face.

Georgetown Pike Footpath Feasibility Study

PRELIMINARY OPINION OF PROBABLE COST

Alignment 1

VDOT R&B SPEC #	ITEM NO.	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICES	TOTAL ITEM PRICE
		General Items				$ 320,515
513	100	Mobilization	1	LS	$ 116,915	$ 116,915
517	101	Construction Surveying	1	LS	$ 50,000	$ 50,000
301	111	Clearing and Grubbing	1.17	Acre	$ 70,000	$ 81,900
303	120	Regular Excavation	717	CY	$ 100	$ 71,700
		Drainage Items				$ 150,000
510	42765	Drainage Lump Sum Estimate	1	EA	$ 150,000	$ 150,000
		Pavement Items				$ 674,700
309	10128	Aggregate Base Material, Type I, #21B (4" subbase)	1,400	SY	$ 75	$ 105,000
315	10635	Aggregate Surface Course (3" trail surface in Great Falls Park)	2,252	SY	$ 125	$ 281,500
390	61701	MGS1 Guardrail	1,572	LF	$ 50	$ 78,600
315	10642	Asphalt Concrete Pavement (trial surface on Georgetown Pike)	1,048	SY	$ 200	$ 209,600
		Erosion & Sediment Control Items				$ 20,000
606	27327	Lump Sum E&S Estimate	1	EA	$ 20,000	$ 20,000
		Structure & Bridge Items				$ 690,000
ATTD	13544	Pedestrian Truss Bridge and Foundation	120	LF	$ 5,000	$ 600,000
ATTD	13544	Pedestrian Bridge Construction Access	15%	LS	$ 90,000	$ 90,000
		Construction Cost Subtotal				$ 1,855,215
		Contingency	30%	of construction cost		$ 556,565
		CEI	18.5%	of construction cost		$ 343,215
		TOTAL CONSTRUCTION ESTIMATE				$ 2,754,994
		Engineering Design	12%	of construction cost		$ 222,626
		Land Acquisition and Utilities Estimate				$ 963,325
		Right of Way (Permanent Public Access ESMT)	22,533	SF	$ 25	$ 563,325
		Utility Relocation Contingency	1	LS	$ 400,000	$ 400,000
		TOTAL ALIGNMENT 1 OPINION OF PROBABLE COST				$ 3,940,945

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Georgetown Pike Footpath Feasibility Study

PRELIMINARY OPINION OF PROBABLE COST

VDOT R&B SPEC #	ITEM NO.	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICES	TOTAL ITEM PRICE
		General Items				$ 743,400
513	100	Mobilization	1	LS	$ 135,100	$ 135,100
517	101	Construction Surveying	1	LS	$ 50,000	$ 50,000
301	111	Clearing and Grubbing	1.82	Acre	$ 70,000	$ 127,400
ATTD	13544	Stacked Rock Retaining Wall	1,000	SF	$ 250	$ 250,000
303	120	Regular Excavation	1,809	CY	$ 100	$ 180,900
		Drainage Items				$ 150,000
510	42765	Drainage Lump Sum Estimate	1	EA	$ 150,000	$ 150,000
		Pavement Items				$ 723,700
309	10128	Aggregate Base Material, Type I, #21B (4" subbase)	1,400	SY	$ 75	$ 105,000
315	10635	Aggregate Surface Course (3" trail surface in Great Falls Park)	2,644	SY	$ 125	$ 330,500
390	61701	MGS1 Guardrail	1,572	LF	$ 50	$ 78,600
315	10642	Asphalt Concrete Pavement (trial surface on Georgetown Pike)	1,048	SY	$ 200	$ 209,600
		Erosion & Sediment Control Items				$ 20,000
606	27327	Lump Sum E&S Estimate	1	EA	$ 20,000	$ 20,000
		Structure & Bridge Items				$ 600,000
ATTD	13544	Pedestrian Truss Bridge and Foundation	120	LF	$ 5,000	$ 600,000
		Construction Cost Subtotal				$ 2,237,100
		Contingency	30%	of construction cost		$ 671,130
		CEI	18.5%	of construction cost		$ 413,864
		TOTAL CONSTRUCTION ESTIMATE				$ 3,322,094
		Engineering Design	12%	of construction cost		$ 268,452
		Land Acquisition and Utilities Estimate				$ 963,325
		Right of Way (Permanent Public Access ESMT)	22,533	SF	$ 25	$ 563,325
		Utility Relocation Contingency	1	LS	$ 400,000	$ 400,000
		TOTAL ALIGNMENT 2 OPINION OF PROBABLE COST				$ 4,553,871

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Georgetown Pike Footpath Feasibility Study

PRELIMINARY OPINION OF PROBABLE COST

VDOT R&B SPEC #	ITEM NO.	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICES	TOTAL ITEM PRICE
		General Items				$ 484,375
513	100	Mobilization	1	LS	$ 146,185	$ 146,185
517	101	Construction Surveying	1	LS	$ 60,000	$ 60,000
301	111	Clearing and Grubbing	1.33	Acre	$ 70,000	$ 92,890
303	120	Regular Excavation	1,853	CY	$ 100	$ 185,300
		Drainage Items				$ 300,000
510	42765	Drainage Lump Sum Estimate	1	EA	$ 300,000	$ 300,000
		Pavement Items				$ 1,050,500
309	10128	Aggregate Base Material, Type I, #21B (4" subbase)	3,964	SY	$ 75	$ 297,300
315	10635	Aggregate Surface Course (3" trail surface in Great Falls Park)	-	SY	$ 125	$ -
390	61701	MGS1 Guardrail	3,172	LF	$ 50	$ 158,600
315	10642	Asphalt Concrete Pavement (trial surface on Georgetown Pike)	2,973	SY	$ 200	$ 594,600
		Erosion & Sediment Control Items				$ 35,000
606	27327	Lump Sum E&S Estimate	1	EA	$ 35,000	$ 35,000
		Structure & Bridge Items				$ 600,000
ATTD	13544	Pedestrian Truss Bridge and Foundation	120	LF	$ 5,000	$ 600,000
		Construction Cost Subtotal				$ 2,469,875
		Contingency	30%	of construction cost		$ 740,962
		CEI	18.5%	of construction cost		$ 456,927
		TOTAL CONSTRUCTION ESTIMATE				$ 3,667,764
		Engineering Design	12%	of construction cost		$ 296,385
		Land Acquisition and Utilities Estimate				$ 1,335,000
		Right of Way (Permanent Public Access ESMT)	29,400	SF	$ 25	$ 735,000
		Utility Relocation Contingency	1	LS	$ 600,000	$ 600,000
		TOTAL ALIGNMENT 3 OPINION OF PROBABLE COST				$ 5,299,149

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Georgetown Pike Footpath Feasibility Study

PRELIMINARY OPINION OF PROBABLE COST

VDOT R&B SPEC #	ITEM NO.	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICES	TOTAL ITEM PRICE
		General Items				$ 493,575
513	100	Mobilization	1	LS	$ 153,425	$ 153,425
517	101	Construction Surveying	1	LS	$ 60,000	$ 60,000
301	111	Clearing and Grubbing	1.45	Acre	$ 70,000	$ 101,150
303	120	Regular Excavation	1,790	CY	$ 100	$ 179,000
		Drainage Items				$ 350,000
510	42765	Drainage Lump Sum Estimate	1	EA	$ 350,000	$ 350,000
		Pavement Items				$ 893,350
309	10128	Aggregate Base Material, Type I, #21B (4" subbase)	3,204	SY	$ 75	$ 240,300
315	10635	Aggregate Surface Course (3" trail surface in Great Falls Park)	-	SY	$ 125	$ -
390	61701	MGS1 Guardrail	3,449	LF	$ 50	$ 172,450
315	10642	Asphalt Concrete Pavement (trial surface on Georgetown Pike)	2,403	SY	$ 200	$ 480,600
		Erosion & Sediment Control Items				$ 40,000
606	27327	Lump Sum E&S Estimate	1	EA	$ 40,000	$ 40,000
		Structure & Bridge Items				$ 845,000
ATTD	13544	Pedestrian Truss Bridge and Foundation	169	LF	$ 5,000	$ 845,000
		Construction Cost Subtotal				$ 2,621,925
		Contingency	30%	of construction cost		$ 786,578
		CEI	18.5%	of construction cost		$ 485,056
		TOTAL CONSTRUCTION ESTIMATE				$ 3,893,559
		Engineering Design	12%	of construction cost		$ 314,631
		Land Acquisition and Utilities Estimate				$ 1,365,325
		Right of Way (Permanent Public Access ESMT)	34,613	SF	$ 25	$ 865,325
		Utility Relocation Contingency	1	LS	$ 500,000	$ 500,000
		TOTAL ALIGNMENT 4 OPINION OF PROBABLE COST				$ 5,573,515

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