April 29, 2022

To whom it may concern:

The National Parks Conservation Association (NPCA) is a nationwide nonprofit that works to protect and enhance America's National Park System for present and future generations. We have been following this mission for the past 103 years since our founding in 1919. NPCA has over 1.6 million members and supporters nationwide, over 43,500 members and supporters in the Commonwealth of Virginia, and over 2,100 members and supporters in Prince William County. For the past 14 months, NPCA has been concerned with two distinct proposed data center developments in Prince William County that would negatively impact two units of the National Park Service.

Prince William County is home to Manassas National Battlefield Park and Prince William Forest Park, both are distinct units of the National Park Service (NPS). Prince William Forest Park is a national park just 30 miles from Washington D.C. that hosted more than 325,000 visitors in 2021. And according to a 2020 economic impact report produced by the National Park Service, the park supports 258 local jobs and resulted in more than $21 million in visitor spending. The park features 37 miles of trails along with tent, cabin, and recreational vehicle camping. Park visitors fish, hike, picnic, bird, and cycle in the largest protected natural area in the D.C. metropolitan region. Built by the Civilian Conservation Corps in the 1930s, Prince William Forest Park protects the headwaters of the Quantico Creek Watershed and is a sanctuary for numerous native plants and animals.

Manassas National Battlefield Park was established in 1940 to commemorate the history of two major Civil War battles – First Battle of Manassas, the first major land battle of the war, and Second Battle of Manassas. The Battlefield was listed on the National Register of Historic Places in 1966. Over 516,000 people visited Manassas Battlefield in 2021 to learn about the site's Civil War history, and hike or horseback ride on the more than 40 miles of trails in the 5,000-acre national park. According to a 2020 report by the National Park Service, Manassas Battlefield generates more than $33 million in visitor spending annually and supports 439 local jobs.

In March of 2021, NPCA and numerous other conservation partners spoke before the Prince William County Board of Supervisors with concerns regarding the Independent Hill Small Area Plan, which included land inside of the Congressionally Authorized Boundary of Prince William Forest Park as possibly slated for development into data centers. Despite our opposition, the Board voted to advance that proposal. Less than one year following that vote, a rezoning application was submitted for approximately 52 acres inside of the Congressionally Authorized Boundary of Prince William Forest Park. This parcel lies entirely within the watershed of Quantico Creek, which flows directly into the Prince William Forest Park where it is enjoyed by park visitors. The parcel in question has immense conservation value and an effort should be made to permanently protect the land and include it in the boundary of Prince William Forest Park.

In July of 2021, the Prince William County Board of Supervisors approved a study of the Prince William Digital Gateway despite opposition for the National Park Service and other conservation advocates such as NPCA. At the time, the study area was approximately 800 acres, but since that vote, this area has ballooned to over 2,100 acres of land eyed for possible development into data centers. This proposal is directly adjacent to Manassas Battlefield National Park, including 10 acres within the Congressionally Authorized Boundary of the park, as well as more than 100 acres identified by the American Battlefield Protection Program as "core battlefield." The majority of this development lies within the Bull Run watershed, which is the northwest and western boundary of the park. Bull Run also flows directly into the Occoquan Reservoir, a key recreation resource for the Northern Virginia region as well as a drinking water source for over 800,000 residents in the City of Alexandria, Fairfax County, Fort Belvoir, and Prince William County.

With growing concerns about these proposal's potential impact to the water quality in and around these parks, NPCA contracted with CEA Engineers to examine to scope of the potential negative impacts that these proposals could have on Quantico Creek, Bull Run, and the Occoquan Reservoir. CEA Engineers is an environmental engineering firm with significant experience examining water quality impacts from development proposals. Kevin Draganchuk, P.E., BCEE is the President and Principal Engineer of CEA Engineers. Mr. Draganchuk has over a decade of experience as an environmental engineer, he is a Board Certified Environmental Engineer (BCEE), and he is a water supply and wastewater specialist. Mr. Draganchuk completed the below Technical Evaluation to provide a technical examination of the potential impacts the proposed Potomac Technology Park and the Prince William Digital Gateway would have on water in Prince William Forest Park, Manassas National Battlefield Park, and Prince William County.

While these proposals moved forward in Prince William County, NPCA and other conservation partners continued to express concern about the impacts these proposals would have on national parks, wildlife, and water quality. We recognized that these proposals would have potentially devastating impacts on Quantico Creek, Bull Run, the Occoquan Reservoir, and eventually the Chesapeake Bay. For these reasons, we asked Kevin Draganchuk to examine the Potomac Technology Park and Prince William Digital Gateway's potential impacts on water quality in Prince William County. What Mr. Draganchuk's research shows is astounding.

If the Potomac Technology Park were to be developed, sediment losses from the site could be up to 1,350 tons, approximately 95 large dump trucks of sediment dumped directly into Quantico Creek. Following construction, an additional 7 million gallons of water per year can be expected to flow into Quantico Creek due to the increased impervious surfaces on the site. These impacts will lead to decreased water quality in Prince William Forest Park and increased risk of flooding in the park and downstream of the park. Increased sediment has the potential to impact the critically imperiled Brook Floater Mussel found in Quantico Creek.

If the Prince William Digital Gateway were fully developed as currently proposed, sediment loses from the development can be expected to be up to 57,000 tons, the equivalent of approximately 4,000 large dump trucks of sediment being dumped into the Occoquan watershed. The additional sediment would lead to decreased water quality in Bull Run and the Occoquan Reservoir, negative impacts to the recreational angling the lake offers, and decreased storage capacity of the Occoquan Reservoir. Additional impervious surfaces created by this development would cause an additional 280 million gallons of additional stormwater runoff into the Occoquan watershed annually, thus increasing the risk of flash flooding downstream and decreasing groundwater and aquifer recharge.

These impacts are just the tip of the iceberg. We urge decision makers to review the below report in its entirety for the full scope of impacts to water quality from these two proposals.

These concerns regarding water quality are shared by Prince William County's Environmental Services Watershed Management Branch, Fairfax County, and Fairfax County Water Authority. These are not minor implications that can be brushed off or mitigated. These are extensive negative impacts on drinking water, wildlife, the Chesapeake Bay, and two units of the National Park Service. The Prince William County Board of Supervisors must take the necessary steps to protect water quality from inappropriate development. NPCA calls on the Prince William County Board of Supervisors to heed the request of Fairfax County Water Authority and allow the Occoquan Basin Policy Board to convene and oversee a comprehensive study that these projects would have on the Occoquan Watershed. A full study of these impacts will allow the Prince William County Board to have the full picture of these proposals and make the best decisions for the county and the Northern Virginia region. Only after this comprehensive study is completed should the Prince William County Board of Supervisors consider any additional actions or steps on these data center proposals.

Sincerely,

Kyle W. Hart
Field Representative, Mid-Atlantic Region
National Parks Conservation Association
777 6th St., N.W., #700
Washington, DC 20001
khart@npca.org |202-400-1193

CEA Engineers, P.C.
Kevin Draganchuk, P.E., BCEE
KDraganchuk@ceaengineerspc.com

25 Dogwood Drive
Bloomingburg, NY 12721
845-372-9674
https://ceaengineerspc.com/

Technical Evaluation Report

Date: April 8, 2022

To: Kyle Hart, Mid-Atlantic Field Representative and Pamela Goddard, Senior Mid-Atlantic Program Director, National Parks Conservation Association

From: Kevin Draganchuk, P.E., BCEE

Re: Prince William County, Virginia Data Centers Environmental Impacts

CEA Engineers, P.C. Job No.: J22-04

At the request of National Parks Conservation Association, ("NPCA"), CEA Engineers, P.C. ("CEAPC") evaluated the potential for adverse environmental impacts to surface waters ("Environmental Impacts"), adverse impacts to Prince William Forest Park and Manassas National Battlefield Park, and adverse impacts to the public related to land disturbance activities and stormwater generation, collection, and management, from the potential development of two presently largely undeveloped land parcels for use as data centers in Prince William County, Virginia ("PWC") known as the Potomac Technology Park and PW Digital Gateway (collectively hereafter "PWC Data Centers").

Executive Summary

CEA Engineers, P.C. ("CEAPC") evaluated the potential for adverse environmental impacts to surface waters, adverse impacts to Prince William Forest Park and Manassas National Battlefield Park, and adverse impacts to the public related to land disturbance activities and stormwater generation, collection, and management, from the potential development of two presently largely undeveloped land parcels for use as data centers in Prince William County, Virginia ("PWC") known as the Potomac Technology Park ("PTP") and PW Digital Gateway ("PWDG") (collectively hereafter "PWC Data Centers").

Development of the PTP would result in millions of gallons of increased stormwater generation annually and increased pollutant loads to Quantico Creek, a natural and public recreation resource that traverses Prince William Forest Park. Development of the PWDG, with estimates of up to 1,200 acres of developable land, would result in hundreds of millions of gallons of increased stormwater generation annually and increased pollutant loads to Bull Run and several of its tributaries. Bull Run traverses the boundary of Manassas National Battlefield Park and is relied upon for public recreation. Bull Run flows into the Occoquan Reservoir, a vital drinking water resource for approximately 800,000 Virginians. Increased stormwater volumes and pollutant loads from the PTP and PWDG would ultimately discharges to the Chesapeake Bay, which currently is impaired for sediment and nutrients, two primary pollutants of concern

resulting from land clearing and construction activities and subsequent ongoing data center operations after construction completion.

Development of the PWC Data Centers has the potential to result in numerous adverse impacts to surface waters resulting from stormwater generation, collection, and management during construction activities and ongoing operations of the PWC Data Centers upon construction completion. Adversely impacted surface waters can result in failures for surface waters to achieve their best usages, harm to aquatic species, and the inability for the public to take full advantage of recreational activities, including to visitors to Prince William Forest Park and Manassas National Battlefield Park.

During construction activities at the PWC Data Centers, clearing land of vegetative cover and soil disturbance activities that expose soils can result in soil erosion during precipitation events and subsequent sediment transport in stormwater runoff and turbidity in receiving surface waters. Runoff from unstabilized construction sites with soils exposed to precipitation and stormwater can result in the loss of between 35 and 45 tons of sediment per acre per year. Even when properly designed, installed, constructed, inspected, and maintained, erosion and sediment control best management practices can only provide an extent of mitigation and do not entirely prevent construction-related pollution and increased pollutant loads, particularly sediment, from being discharged in stormwater during construction activities.

After construction completion and upon implementation of ongoing operations at the PWC Data Centers, impervious surfaces, including buildings, roadways, parking areas, and paved walkways, will accumulate pollutants between storm events, and landscaped areas will accumulate nutrients (phosphorus and nitrogen) if treated with fertilizers or residues if treated with pesticides or herbicides. During precipitation events, these pollutants are picked up in precipitation and stormwater runoff. Even when properly designed, installed, constructed, inspected, and maintained, post-construction stormwater management and treatment practices can only provide an extent of mitigation and do not entirely prevent stormwater-related pollution and increased pollutant loads from discharging to downstream surface waters.

Potomac Technology Park – Overview

The proposed Potomac Technology Park (“PTP”) is located on an approximately 52 acre land parcel that is currently zoned as an Agriculture District (“A-1”) located at 14854 Dumfries Road (Hereafter, “PTP Parcel”). A request to change the zoning of the PTP Parcel from A-1 to an Office Mid-Rise District (“O(M)”) has been submitted to and is before the Prince William County Planning Office (“PWCPO”). A special use permit to allow the PTP Parcel’s proposed

use as a data center and construction of a substation outside of the Data Center Opportunity Zone Overlay District is being processed concurrently by the PWCPO.[1,2]

The PTP Parcel is located on the south side of Dumfries Road and abuts parcels zoned A-1. The entire parcel lies within the Congressionally Authorized Boundary of Prince William Forest Park, a unit of the National Park Service.[3] The PTP Parcel is entirely wooded with medium to mature woods.[4] A high transmission voltage transmission line traverses the eastern property line. In spite of extensive opposition from the public, and organizations like the National Park Service, due to the potential for adverse community and environmental impacts, the long-term use of the majority of the PTP Parcel in the PWC Comprehensive Plan was changed in March 2021 from A-1 to Public Facility/Office ("PFO").[5,6] Data centers are considered a primary use within PFO areas. The other areas of the parcel comprising the PTP are designated in the PWC Comprehensive Plan as Parks and Open Space ("P&OS") and Environmental Resource ("ER").[7]

The PTP as presently proposed consists of development on approximately 30 acres located in the northern portion of the PTP Parcel north of Quantico Creek and its associated Resource Protection Area ("RPA") and west of the high-power transmission line (Hereafter, "PTP Development Area"). The PTP Development Area extends to and is directly adjacent to the RPA.[8,9] (See Attachment A – Environmental Constraints Analysis[10]).

The PTP Parcel includes approximately 12.6 acres of ER, including approximately 2.25 acres of wetlands and 10.35 acres of areas with steep slopes between 15% and 25% ("Steep Slopes"). The wetlands are contained in the RPA and are outside of the PTP Development Area. The

---

1 Prince William Planning Office, RE: REZ2022.00015, Potomac Technology Park Rezoning, Non-Residential, January 11, 2022.

2 Potomac Technology Park, Rezoning and Special Use Permit Narrative Statement, Owner/Applicant: Plaza Realty Management Unit, Inc., GPIN: 7991-04-7237 (the "Property") (51.667 Acres), November 17, 2021, page 1. (Hereafter, "PTP Rezoning and Special Use Permit Narrative Statement")

3 United States Department of the Interior, National Park Service, Remarks to the Prince William County Planning Commission Concerning the Independent Hill Small Area Plan/Comprehensive Plan Amendment #CPA2017-00008, December 9, 2020.

4 Eib, Benjamin, Prince William County, Environmental Services, Watershed Management Branch, Watershed Management Comments, Project: Potomac Technology Park, February 11, 2022. (Hereafter, "PWC Watershed Management Comments")

5 United States Department of the Interior, National Park Service, Remarks to the Prince William County Planning Commission Concerning the Independent Hill Small Area Plan/Comprehensive Plan Amendment #CPA2017-00008, December 9, 2020.

6 Bristow Beat, Prince William Supervisors Approve Independent Hill Plan in a 5 to 3 Vote, March 18, 2021, https://www.bristowbeat.com/stories/prince-william-supervisors-approve-independent-hill-plan-in-5-to-3-vote,6635. Accessed March 28, 2022.

7 PTP Rezoning and Special Use Permit Narrative Statement, pages 1-2.

8 TNT Environmental, Potomac Technology Park, Environmental Constraints Analysis, November 17, 2021. (Hereafter, "ECA")

9 TNT Environmental, Preservation Area Site Assessment, Potomac Technology Park (161 Data Center), Prince William County, Virginia, January 14, 2021. (Hereafter, "PTP PASA")

10 ECA.

majority of the Steep Slopes are contained within the PTP Development Area and contain highly erodible soils.[11,12,13] (See Attachment A).

The Quantico Creek and its associated RPA traverse the southwest portion of the PTP Parcel. The entire PTP Parcel is within the Quantico Creek watershed, meaning all of the stormwater presently generated within the PTP Parcel discharges to Quantico Creek and ultimately is conveyed downstream. The areas south of Dumfries Road adjacent to the PTP Parcel and portions of Dumfries Road are within the Quantico Creek watershed, indicating that it is highly probable that stormwater generated if the PTP is developed will remain within the Quantico Creek watershed for discharge to Quantico Creek and downstream conveyance (See Figure 1).

The PTP Parcel is located north of Prince William Forest Park.[14] After traversing the PTP Parcel, Quantico Creek enters into and traverses Prince William Forest Park and discharges to the Potomac River, which ultimately discharges to the Chesapeake Bay.[15,16] (See Figure 1).

Quantico Creek is hydrologically connected to the PTP Parcel through a number of established drainage courses and hydrological resources. Wetland areas directly abut Quantico Creek and extend northwards into the PTP Parcel within the RPA. The wetlands are hydrologically connected to the PTP Development Area through two ephemeral streams that originate in the Steep Slopes. Flows from the western-most ephemeral stream reemerge from the wetland area it is connected to and feeds directly into Quantico Creek. The eastern-most ephemeral stream discharges to a nearly one-acre wetland area. An intermittent stream emerges from the nearly one-acre wetland area and discharges directly to Quantico Creek.[17,18,19,20] (See Attachment B – Preservation Area Site Assessment[21]).

---

11 ECA.

12 The highly erodible soils within the Steep Slopes and PTP Development Area include Buckhall Loam, Elioak Loam, Fairfax Loam, Glenelg-Buckhall Complex and Neabsco Loam as detailed in the ECA and Appendix II, National Resource Conservation Soil Map, of the PTP PSA.

13 PWC Watershed Management Comments.

14 Dutton + Associates, Phase I Cultural Resources Survey of the +/- 20.8-Hectare (+/-51.6-Acre) 14854 Dumfries Road Project Area, November 2021, page 1.

15 Google Earth Aerial Imagery, Accessed March 4, 2022.

16 Prince William Forest Park Map, https://www.nps.gov/prwi/planyourvisit/upload/PRWImap1.jpg.

17 PTP PASA, Sheet 1.

18 ECA.

19 As defined by the United States Geologic Survey, an ephemeral stream is "a stream or part of a stream that flows only in direct response to precipitation; it receives little or no water from springs, melting snow, or other resources; its channel is at all times above the water table." (https://water.usgs.gov/water-basics_glossary.html#E)

20 As defined by the United States Geologic Survey, an intermittent stream is "a stream that flows only when it receives water from rainfall runoff or springs, or from surface sources such as snow melt." (https://water.usgs.gov/water-basics_glossary.html#I)

21 . PTP PASA.

PW Digital Gateway - Overview

The proposed PW Digital Gateway ("PWDG") is located on land parcels totaling approximately 2,170 acres that are currently zoned A-1 and designated in the PWC Comprehensive Plan as areas of Agricultural or Estate ("AE") and ER (See Figure 2). The potential developable land in the PWDG is estimated at between 600 and 1,200 acres.[22] A portion of or all of the parcels that comprise the PWDG are located in the Rural Area Boundary and Airport Security, Domestic Fowl, 100-Year Flood Hazard, Resources Protection Area Overlay District, Cemetery Preservation Areas, and the Silver Lake Dam Inundation Zone.[23,24,25] A request to change the long-range land use of the PWDG in the PWC Comprehensive Plan from AE and ER to Technology/Flex ("T/F") with a T-3 Transect to create a "Digital Corridor" has been submitted to and is before the PWCPO.[26]

A request to change the zoning of the 342 acres within the southern portion of the PWDG from A-1 to O(M) and to change the zoning of 470 acres in the northern portion of the PWDG to Office High Rise District ("O(H)") has been submitted to and is before the PWCPO.[27,28] Figure 2 shows the locations of the proposed areas for rezoning within the PWDG.

The southern portion of the PWDG directly abuts the Manassas National Battlefield Park ("MNBP") and approximately 10 acres of preserved battlefield areas adjacent to MNBP that fall within the Congressionally designated part of Manassas National Battlefield Park.[29,30,31]

Numerous surface waters traverse the PWDG and ultimately discharge to Bull Run including (See Figure 2):

- Little Bull Run (direct tributary to Bull Run)
- Lick Branch (tributary to Little Bull Run)
- Catharpin Creek (tributary to Little Bull Run)
- Youngs Branch (direct tributary to Bull Run)

---

22 Letter from Christina Winn, Prince William County Department of Economic Development, to Parag Agrawal, Department of Planning, July 15, 2021.

23 Prince William Planning Office, RE: CPA2021-00004 PW Digital Gateway Comprehensive Plan Amendment, Amendment Without Rezoning, Residential, January 19, 2022.

24 Christopher Consultants, PW Digital Gateway Comprehensive Plan Map Amendment #CPA2021-00004, Gainesville Magisterial District, Prince William County Virginia, January 12, 2022, Sheet No. 2 – Property Owner Expressed Interest Map. (Hereafter, "Comprehensive Plan Amendment Drawings")

25 Prince William County, Current Planning Case Information, Comprehensive Plan Amendment CPA2021-00004, December 14, 2021, page 8. (Hereafter, "Current Planning Case Information, CPA")

26 Prince William Planning Office, RE: CPA2021-00004 PW Digital Gateway Comprehensive Plan Amendment, Amendment Without Rezoning, Residential, January 19, 2022.

27 Digital Gateway South Rezoning Application Narrative, February 28, 2022.

28 Digital Gateway North Rezoning Application Narrative, February 28, 2022.

29 Current Planning Case Information CPA, page 8 and 9.

30 Comprehensive Plan Amendment Drawings, Sheet 2.

31 Odin, Feldman, Pittlemen PC, Re: Applicant Response to NPS Comments dated 12/3/2021 Prince William County CPA #2021-00004 PW Digital Gateway, January 7, 2022.

- Dogans Branch (tributary to Youngs Branch)

Bull Run traverses adjacent to and passes through a portion of the MNBP and discharges to the Occoquan Reservoir. The Occoquan Reservoir empties into the Occoquan River, which discharges into the Potomac River and ultimately the Chesapeake Bay.[32,33]

The watershed within the PWDG that discharges to Little Bull Run and ultimately to the entire portion of Bull Run adjacent to and within MNBP for ultimate downstream discharge into the Chesapeake Bay comprises 2,128 acres, approximately 98% of the PWDG. The remaining portions of the PWDG discharge to Youngs Branch and Dogans Branch (for subsequent discharge to Youngs Branch) (See Figure 2).

Water Quality Standards and Best Uses

All surface waters in Virginia are designated with usages including recreational uses (e.g., swimming, boating); the propagation and growth of a balanced, indigenous population of aquatic life, including game fish reasonably expected to inhabit them; propagation and growth of wildlife; and production of edible and marketable natural resources (e.g., fish, shellfish).[34] All surface waters in Virginia must be free of substances or wastes in concentrations or quantities that contravene water quality standards, interfere with designated uses, or are inimical or harmful to human, animal, plant, or aquatic life. Specific substances to be controlled in discharges to surface waters include turbidity, toxic substances, floatables, oils, and substances which nourish (e.g., nitrogen, phosphorus) undesirable or nuisance aquatic plant life (e.g., algal blooms).[35]

Best Uses and Recreational Benefits of Quantico Creek within Prince William Forest Park

Quantico Creek traverses south from the PTP Parcel, enters Prince William Forest Park, and is a valuable recreational resource for visitors to Prince William Forest Park (See Figure 1 and Attachment C – Prince William Forest Park Map). Fishing is permitted in Quantico Creek, including a constructed impoundment along Quantico Creek downstream of the PTP Parcel.[36] Quantico Creek in Prince William Forest Park supports numerous fish species and aquatic organisms that present the public with recreational fishing activities.[37,38]

---

32 Google Earth Aerial Imagery, Accessed March 4, 2022.

33 PW Digital Gateway (CPA2021-00004) Environmental Features.

34 Virginia Administrative Code, Title 9. Environment, Agency 25. State Water Control Board, Chapter 260. Water Quality Standards, Part I. Surface Water Standards with General, Statewide Application, 10. Designation of Uses, February 1, 2010.

35 Virginia Administrative Code, Title 9. Environment, Agency 25. State Water Control Board, Chapter 260. Water Quality Standards, Part I. Surface Water Standards with General, Statewide Application, 20. General criteria, February 1, 2010.

36 The South Fork of Quantico Creek also traverses Prince William Forest Park and is impounded to permit fishing. (see Attachment C - Prince William Park Map)

37 U.S. Department of the Interior, National Park Service, Prince William Forest Park Virginia, Fishing, April 12, 2019, https://www.nps.gov/prwi/planyourvisit/fishing.htm. Accessed March 11, 2022.

38 U.S. Department of the Interior, National Park Service, Prince William Forest Park Virginia Park Map, August 28, 2021, https://www.nps.gov/prwi/planyourvisit/maps.htm. Accessed March 11, 2022.

Hiking along Quantico Creek provides the public scenic, hiking, recreational activities. The Potomac National Heritage Scenic Trail is located directly adjacent to Quantico Creek. Two other hiking trails abut Quantico Creek within Prince William Forest Park.[39]

Between 2010 and 2021, Prince William Forest Park received between approximately 280,000 and 386,000 visitors annually to recreate within and enjoy its natural resources, including Quantico Creek.[40]

Best Uses and Recreational Benefits of Bull Run within Manassas National Battlefield Park

Bull Run traverses directly adjacent to the northern boundary of MNBP and a small section enters and traverses MNBP in the vicinity of the Stone Bridge, a location along the historic tour of the MNBP (See Figure 2 and Attachment D – Manassas National Battlefield Park Map).[41] Bull Run is a valuable recreational resource for visitors to MNBP. Fishing is permitted anywhere along Bull Run within MNBP that Virginia regulations apply with no additional restrictions.[42] A walking trail is located directly adjacent to Bull Run between Farm Ford and the Stone Bridge.[43]

Between 2010 and 2021, MNBP received between approximately 500,000 and 660,000 visitors annually to recreate within and enjoy its resources, including Bull Run.[44]

Potential Adverse Environmental Impacts to Surface Waters, National Parks, and the Public from the PWC Data Centers

Development of the PWC Data Centers has the potential to result in numerous adverse impacts to surface waters resulting from stormwater generation, collection, and management during construction activities and ongoing operations of the PWC Data Centers upon construction completion. The potential adverse surface water impacts from the PWC Data Centers extend not only to surface waters receiving direct stormwater discharges and pollutant loads during construction activities and upon construction completion, but extend to downstream, sensitive surface waters, including the Chesapeake Bay. Adversely impacted surface waters can result in

39 U.S. Department of the Interior, National Park Service, Prince William Forest Park Virginia Park Map, August 28, 2021, https://www.nps.gov/prwi/planyourvisit/maps.htm. Accessed March 11, 2022.

40 U.S. Department of the Interior, National Park Service, Park Reports, Annual Park Recreation Visits (1941 – Last Calendar Year), Prince William Forest Park, March 11, 2022. https://irma.nps.gov/STATS/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=PRWI.

41 U.S. Department of the Interior, National Park Service, Manassas National Battlefield Park Maps, October 25, 2021, https://www.nps.gov/mana/planyourvisit/maps.htm. Accessed March 11, 2022.

42 U.S. Department of the Interior, National Park Service, Manassas National Battlefield Park Virginia, Fishing, April 10, 2015, https://www.nps.gov/mana/planyourvisit/fishing.htm. Accessed March 11, 2022.

43 U.S. Department of the Interior, National Park Service, Manassas National Battlefield Park Maps, October 25, 2021, https://www.nps.gov/mana/planyourvisit/maps.htm. Accessed March 11, 2022.

44 U.S. Department of the Interior, National Park Service, Park Reports, Annual Park Recreation Visits (1941 – Last Calendar Year), Manassas National Battlefield Park, March 11, 2022. https://irma.nps.gov/STATS/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=MANA

failures for surface waters to achieve their best usages, harm to aquatic species, and the inability for the public to take full advantage of recreational activities, including visitors to Prince William Forest Park and MNBP.

Potential Adverse Environmental Impacts from Stormwater Discharges during PWC Data Centers Construction Activities

During construction activities at the PWC Data Centers, clearing land of vegetative cover and soil disturbance activities (e.g. excavation, grading, etc.) that expose soils can result in soil erosion during precipitation events and subsequent sediment transport in stormwater runoff that directly discharges to receiving surface waters, including, but not limited to, Quantico Creek, Lick Branch, Dogans Branch, Youngs Branch, Little Bull Run and the tributaries to Little Bull Run, (collectively, "Directly Impacted Surface Waters").[45] Stormwater discharges and pollutant loads would subsequently be conveyed downstream from surface waters within the PWDG to Bull Run and subsequently downstream to the Occoquan Reservoir, the Occoquan River, the Potomac River and ultimately to the Chesapeake Bay. Stormwater discharges and pollutants loads from the PTP would subsequently be conveyed downstream in Quantico Creek to the Potomac River and ultimately to the Chesapeake Bay (collectively, "Downstream Impacted Surface Waters").

The quantity of sediment in stormwater runoff from construction sites is typically between ten and twenty times greater than agricultural lands and between 1,000 and 2,000 times greater than forested lands, the primary current condition of the land comprising the PWC Data Centers. As a result, construction site runoff can contribute more sediment to downstream receiving surface waters during a relatively brief time period of construction activity than would have naturally occurred over decades. Sediment-laden stormwater discharges can cause physical and biological harm to aquatic species, degrade water quality, and result in sedimentation that fills in and reduces capacity in receiving surface waters, especially stagnant waterbodies such as ponds, lakes, or reservoirs.[46]

In addition to eroded soils and organic material, sediment-laden stormwater produced during construction activities can result in the discharge of other common construction-related pollutants including nutrients, floatable debris, and oil and grease from spills of petroleum-based fluids, into Directly Impacted Surface Waters and Downstream Impacted Surface Waters.[47]

During construction of the PWC Data Centers, erosion and sediment control ("E&SC") best management practices ("BMPs") need to be properly designed, installed, constructed, inspected, and maintained in order to achieve their primary purpose of protecting surface waters and

---

45 Virginia Department of Environmental Quality, Virginia Erosion and Sediment Control Handbook, Third Edition, 1992.

46 South Carolina Department of Health and Environmental Control, Bureau of Water, Stormwater, Best Management Practices (BMPs), 2019, https://scdhec.gov/bow/stormwater/best-management-practices-bmps. Accessed March 24, 2022.

47 Virginia Department of Environmental Quality, Virginia Erosion and Sediment Control Handbook, Third Edition, 1992.

mitigating the potential adverse impacts of sediment-related pollution. A failure to properly design, install, construct, inspect, and maintain the E&SC BMPs used during construction activities at the PWC Data Centers can result in excessive soil erosion, the discharge of sediment-laden stormwater and excessive sediment loads into Directly Impacted Surface Waters and subsequent conveyance to Downstream Impacted Surface Waters.[48,49] Even when properly designed, installed, constructed, inspected, and maintained, E&SC BMPs can only provide an extent of mitigation and do not entirely prevent construction-related pollution and increased pollutant loads, particularly sediment, from being discharged in stormwater during construction activities.[50]

Sediment-laden stormwater discharges increase suspended sediment concentrations that cause turbidity in receiving surface waters. Turbidity is the measure of the relative clarity of a liquid. Materials that result in turbidity in waterbodies include clay, silt, and small inorganic and organic matter that becomes suspended in water and are common pollutants resulting from soil erosion and stormwater sediment transport during ground disturbing construction activities. Turbidity has been shown to have an adverse impact on receiving surface waters, their best usages, and aquatic life.[51]

Surface waters in Virginia have a narrative water quality standard for turbidity requiring that surface waters must be free of substances or wastes in concentrations or quantities that contravene water quality standards, interfere with designated uses, or are inimical or harmful to human, animal, plant, or aquatic life.[52]

No numerical water quality standard has been instituted in Virginia. A lack of a numerical water quality standard for turbidity creates difficulties in monitoring receiving surface water quality, the ability of receiving surface waters to achieve their best usages, and the impacts of turbidity on receiving surface waters, including those potentially impacted by the PWC Data Centers.[53,54] Other jurisdictions within United Stated Environmental Protection Agency Region 3, which includes Virginia, have enforced numeric water quality standards for turbidity, including Delaware, Washington DC, and Maryland. Maryland's numeric turbidity maximum standard at

---

48 USEPA, Developing Your Stormwater Pollution Prevention Plan, A Guide for Construction Site, EPA-833-06-004, May 2007, page 2. (Hereafter, "USEPA Construction SWPPP Guide")

49 Virginia Department of Environmental Quality, Virginia Erosion and Sediment Control Handbook, Third Edition, 1992.

50 USEPA Construction SWPPP Guide, pages 2 and 17 – 23.

51 United States Geological Survey, Water Science School, Turbidity and Water, https://www.usgs.gov/special-topic/water-science-school/science/turbidity-and-water?qt-science_center_objects=0#qt-science_center_objects. Accessed January 17, 2020.

52 Virginia Administrative Code, Title 9. Environment, Agency 25. State Water Control Board, Chapter 260. Water Quality Standards, Part I. Surface Water Standards with General, Statewide Application, 20. General criteria, February 1, 2010.

53 Virginia Administrative Code, Title 9. Environment, Agency 25. State Water Control Board, Chapter 260. Water Quality Standards, 2022.

54 Vogelsong, Sarah, Virginia Mercury, Virginia regulators accused of slow-walking new turbidity standard, October 2, 2020, https://www.virginiamercury.com/2020/10/02/virginia-regulators-accused-of-slow-walking-new-turbidity-standard/. Accessed March 10, 2022.

any time is 150 NTU and its monthly average turbidity standard is 50 NTU.[55] Attachment E provides examples of water samples of various turbidity levels, which visually demonstrate how little suspended sediment or particulate matter can result in turbidity levels that adversely impact surface waters, aquatic life, surface water best usage achievement, and the public.[56] Attachment F shows construction stormwater runoff containing turbidity levels far in excess of neighboring Maryland's numeric turbidity water quality standards, clearly contradicting Virginia's narrative turbidity water quality standard, and presenting a clear risk of adverse impacts to receiving surface waters.[57]

Stormwater flows during construction activities or upon completion of construction activities that result in increased turbidity in and sediment loading to surface waters cause a multitude of adverse impacts to aquatic species. Sediment-laden stormwater discharges to receiving surface waters can decrease the abundance of benthic organisms that fish prey on by smothering the benthic layer, decrease the ability for fish to feed opportunistically, clog fish gills, reduce fish navigational abilities, increase fish stress levels, reduce fish growth rate, and reduce resistance to disease.[58,59,60,61] Increased turbidity and sediment loading to surface waters can reduce the amount of sunlight available to aquatic plants and reduce aquatic species spawning habitat.[62] Turbidity and suspended sediment trap heat in surface waters, which can adversely impact aquatic species adapted to particular temperature ranges. Turbid water can adversely impact other aquatic species such as amphibians and turtles. Particulate matter attributed with turbidity, including sediments resulting from soil erosion, often adsorb other pollutants such as metals and bacteria.[63,64]

Furthermore,[65]

> "Both suspended and deposited sediments can have adverse effects on aquatic life in streams, lakes and estuaries. Turbidity resulting from sediment can reduce light penetration for submerged aquatic vegetation critical to estuary health. In addition, the reflected energy from light reflecting off of suspended sediment can increase water temperatures (Kundell and Rasmussen, 1995). Sediment can physically alter habitat by

55 State of Maryland, Title 26 Department of the Environment, Subtitle 08, Chapter 03-3(A)(5).
56 USGS, Visualization of turbidity, December 22, 2016, https://www.usgs.gov/media/images/visualization-turbidity. Accessed March 10, 2022.
57 USEPA, Developing Your Stormwater Pollution Prevention Plan, A Guide for Construction Site, EPA-833-06-004, May 2007.
58 USEPA, Quality Criteria for Water 1986, EPA 440/5-86-001, May 1, 1986.
59 Birtwell, Ian K., The Effects of Sediment on Fish and Their Habitat, Canadian Stock Assessment Secretariat, Research Document 99/139, 1999.
60 USEPA Construction SWPPP Guide.
61 USEPA, 1998 National Water Quality Inventory Report to Congress, EPA 841-R-00-001, June 2000.
62 USEPA Construction SWPPP Guide.
63 USGS, Water Science School, Turbidity and Water, June 6, 2018, https://www.usgs.gov/special-topics/water-science-school/science/turbidity-and-water. Accessed March 10, 2022.
64 USEPA, 1998 National Water Quality Inventory Report to Congress, EPA 841-R-00-001, June 2000.
65 New York State Department of Environmental Conservations, Stormwater Management Design Manual, January 2015.

destroying the riffle-pool structure in stream systems and smothering benthic organisms such as clams and mussels. Finally, sediment transports many other pollutants to the water resource."

Sediment-laden stormwater discharges and increased receiving water turbidity resulting from the construction of the PWC Data Centers has the potential to adversely impact the aquatic species that rely upon the Directly Impacted Surface Waters and Downstream Impacted Surface Waters for survival, including the critically imperiled Brook Floater Mussel found in the Quantico Creek.[66,67] As a result, recreational and fishing opportunities for the public would be adversely impacted, a best usage of surface waters in Virginia. For example, the Occoquan Reservoir fishery supports Largemouth Bass, Bluegill, Redear Sunfish, Black & White Crappie, Warmouth, Yellow Perch, and Flathead and Channel Catfish.[68]

Specific Potential Adverse Environmental Impacts from Stormwater Discharges during PWC Data Centers Construction Activities

Runoff from unstabilized construction sites with soils exposed to precipitation and stormwater can result in the loss of between 35 and 45 tons of sediment per acre per year.[69] Conservatively assuming that construction activities, regardless of construction and development phasing, result in construction activities occurring over any given acre within the PWC Data Centers for one year results in the following potential sediment losses:

- PTP: Based on the current proposed development area of 30 acres, sediment losses can potentially range from between 1,050 and 1,350 tons, or the equivalent of between approximately 75 and 95 large dump trucks of sediment.[70]
- PWDG: Based on the current proposed development area range of between 600 and 1,200 acres, sediment losses can potentially range from between 21,000 and 27,000 tons (between approximately 1,500 and 1,900 large dump trucks of sediment) if 600 acres are developed to between 42,000 and 57,000 tons (between approximately 3,000 and 4,000 large dump trucks of sediment) if 1,200 acres are developed.
- PWDG: Based on the proposal to rezone 812 acres of the PWDG from A-1 to O(H) and O(M), sediment losses can potentially range from between 28,000 and 37,000 tons (between approximately 2,000 and 2,600 large dump trucks of sediment).

66 Northeast Association of Fish and Wildlife Agencies (NEAFWA) Regional Conservations Needs Grant Program, The conservation status of the brook floater mussel, Alasmidonta varicosa, in the Northeastern United States: trends in distribution, occurrence, and condition of populations,

67 Presence of the Brook Floater Mussel based on statement made by Prince Willian Forest Park Resource Manager to NPCA in March 2022.

68 Virginia Department of Wildlife Resources, Occoquan Fisheries Management Report, Federal Aid Project – F111R, February 2022.

69 USEPA Construction SWPPP Guide.

70 Lynch Truck Center, How Much Can a Dump Truck Carry?, 2022, https://www.lynchtruckcenter.com/how-much-can-a-dump-truck-carry/. Accessed March 24, 2022.

The risk of increased soil erosion and subsequent sediment discharge to Quantico Creek is heightened due to the 10.35 acres of Steep Slopes consisting of highly erodible soils within the PTP. Furthermore, the Steep Slopes are located directly adjacent and discharge stormwater to the wetlands and ephemeral streams that discharge stormwater flows to Quantico Creek and ultimately the Chesapeake Bay, thus increasing the risk of adverse surface water impacts (See Attachment A).[71]

The PWC Environmental Services Watershed Management Branch concurs that the PTP as proposed is highly probable to adversely impacting surface waters within and downstream of the PTP due to disturbance of the Steep Slopes and has recommended that the proposed limits of disturbance for the PTP be modified to exclude all Steep Slopes to remain consistent with the PWC Comprehensive Plan.[72] Based on the belief and best information available, despite the recommendation of the PWC Environmental Services Watershed Management Branch, there has been no plan or commitment to modify the proposed area of development at the PTP.

Recognizing that between 600 acres and 1,200 acres are considered developable in the PWDG and an application to rezone over 800 acres from A-1 to O(H) and O(M) magnifies the potential for adverse environmental impacts to Bull Run, Little Bull Run, Lick Branch, and Downstream Impacted Surface Waters, including drinking water resources such as Quantico Reservoir and impaired surface waters, such as the Chesapeake Bay.

Potential Adverse Environmental Impacts from Stormwater Discharges from PWC Data Centers during Ongoing Operations

After construction completion and upon implementation of ongoing operations at the PWC Data Centers, impervious surfaces, including buildings, roadways, parking areas, and paved walkways, will be created that will increase impervious surfaces by potentially hundreds of acres and will generate stormwater volumes and stormwater pollutant concentrations and loads that dramatically exceed those generated by existing conditions at the PWC Data Centers.[73]

Impervious surfaces at the PWC Data Centers will accumulate pollutants between storm events from atmospheric deposition, fluid leaks and metals deposition from vehicles, human error (e.g. inadvertent fluid spills) or disregard (e.g. trash accumulation on ground surfaces rather than proper receptacles), and windblown erosion from adjacent areas.[74] Landscaped areas will accumulate nutrients (phosphorus and nitrogen) if treated with fertilizers or residues if treated with pesticides or herbicides. During precipitation events, these pollutants are picked up in precipitation and stormwater runoff and can be conveyed to Directly Impacted Surface Waters and subsequently conveyed to Downstream Impacted Surface Waters.

Increased pollutant loads in stormwater flows as a result of the PWC Data Centers have the potential to result in increased pollutant loads to Directly Impacted Surface Waters and

71 ECA.
72 PWC Watershed Management Comments.
73 USEPA, Environmental Assessment, Stormwater Discharges.
74 USEPA, National Water Quality Inventory: Report to Congress, EPA 841-R-16-011, August 2017.

Downstream Impacted Surface Waters, especially if post-construction stormwater management and treatment practices are not properly designed, constructed, and maintained.[75] Even when properly designed, installed, constructed, inspected, and maintained, post-construction stormwater management and treatment practices can only provide an extent of mitigation and do not entirely prevent stormwater-related pollution and increased pollutant loads from discharging to downstream surface waters.[76]

The Fairfax County Water Authority ("FCWA") concurs that the PWDG as proposed has the potential to adversely impact the water quality of the Occoquan Reservoir, a drinking water resource for approximately 800,000 Virginians. The FCWA has expressed concern regarding increased concentrations within the Occoquan Reservoir of nutrients, metals, organic carbon, sediments, sodium, dissolved salts, and synthetic chemicals, all pollutants that can be expected to be generated from development and ongoing operation of the PWDG in quantities far exceeding what the current land use produces. FCWA is concerned not only regarding the potential adverse impacts on aquatic life and water quality, but also on the impacts to the chemical treatment processes relied upon to provide the public safe drinking water. To ensure protection of the Occoquan Reservoir, FCWA has recommended that PWC request a comprehensive study to evaluate the potential impact to water quality in the Occoquan Reservoir from the PWDG ("Comprehensive Study").[77] Based on the belief and best information available, despite the recommendation of the FCWA, there has been no plan or commitment to perform the Comprehensive Study.

Increased stormwater volumes and peak discharges, if not properly attenuated, can cause flooding and streambank and channel erosion in Directly Impacted Surface Waters and Downstream Impacted Surface Waters. Flooding and streambank and channel erosion can degrade the biological habitat of aquatic species, such as the loss of benthic layer sediments and benthic aquatic populations relied upon by fish as a food source, and increase in-stream sediment loads and turbidity, resulting in further potential adverse impacts.[78,79,80,81]

The average annual increase in stormwater runoff volumes generating during ongoing operations upon construction completion for the PWC Data Centers can be conservatively estimated to be:[82]

- PTP – 7 million gallons

---

75 USEPA Construction SWPPP Guide.

76 Center for Watershed Protection, National Pollutant Removal Performance Database, Version 3, September 2007.

77 Fairfax County Water Authority, Comments on Prince William County Comprehensive Plan Update, Digital Gateway Corridor and Data Center Opportunity Overlay District, March 21, 2022.

78 USEPA Construction SWPPP Guide.

79 USEPA, Quality Criteria for Water 1986, EPA 440/5-86-001, May 1, 1986.

80 Birtwell, Ian K., The Effects of Sediment on Fish and Their Habitat, Canadian Stock Assessment Secretariat, Research Document 99/139, 1999.

81 Virginia Department of Conservation and Recreation, Virginia Stormwater Management Handbook, First Edition, 1999.

82 United States Department of Agriculture, Natural Resources Conservation Service, Conservation Engineering Division, Urban Hydrology for Small Watersheds, Technical Release 55, June 1986.

- PWDG at 1,200 developed acres: 280 million gallons
- PWDG at 600 developed acres: 155 million gallons
- PWDG at 800 developed acres: 200 million gallons

Increased concentrations and loads of toxic chemicals, such as metals, petroleum-based chemicals, pesticides, and herbicides, resulting from the PWC Data Centers have the potential to adversely impact aquatic species, which can be highly sensitive to toxic chemicals. In severe cases, such as chemical spills, direct exposure can kill aquatic species. The concentrations of toxic chemicals commonly found in stormwater discharges lead to lower levels of toxic chemical exposure for aquatic species that can result in deformities, sores, or loss of reproductive success. The long-term impact of stormwater discharges of toxic chemicals and the biological stresses they cause can result in an alteration or loss of biological integrity for aquatic species communities.[83] Loss of aquatic species in the Directly Impact Surface Waters and Downstream Surface Waters, such as Largemouth Bass, Bluegill, Redear Sunfish, Black & White Crappie, Warmouth, Yellow Perch, and Flathead and Channel Catfish populations supported by the Occoquan Reservoir reduces their best usages.[84] Failure to achieve best usages adversely impacts the public at large who recreate in the Directly Impact Surface Waters and Downstream Surface Waters and specifically visitors to the MNBP and Prince William Forest Park who recreate along Bull Run or Quantico Creek.

Collection and conveyance of stormwater generated on impervious surfaces at the PWC Data Centers for discharge to downstream receiving waters through municipal separate storm sewers or other conveyance mechanisms will result in a reduction in groundwater recharge. Reductions in groundwater recharge can adversely impact drinking water aquifers and sensitive habitats, such as wetlands.[85,86]

Potential Adverse Environmental Impacts To the Chesapeake Bay from PWC Data Centers Construction and Ongoing Operations

The Chesapeake Bay is at particular risk of adverse impacts resulting from increased sediment loads resulting from PWC Data Centers construction activities due to its existing impairment and established Total Maximum Daily Loads ("TMDL") due to excessive sediment and nutrient loads (e.g., nitrogen; phosphorus).[87] Stormwater runoff and streambank erosion, two potential adverse impacts resulting from the PWC Data Centers, are identified as sources of sediments and nutrients contributing to impairment of the Chesapeake Bay and need for a TMDL to protect its water quality.[88] Virginia has been identified as the state within the Chesapeake Bay watershed

83 USEPA, 1998 National Water Quality Inventory Report to Congress, EPA 841-R-00-001, June 2000.
84 Virginia Department of Wildlife Resources, Occoquan Fisheries Management Report, Federal Aid Project – F111R, February 2022.
85 USGS, Water Science School, Aquifers and Groundwater, October 16, 2019, https://www.usgs.gov/special-topics/water-science-school/science/aquifers-and-groundwater. Accessed March 24, 2022.
86 Smart, Charles, L., Kean University, Groundwater & Wetlands.
87 USEPA, Chesapeake Bay TMDL Fact Sheet, August 2021.
88 USEPA, Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus, and Sediment, December 29, 2010, page 4-1.

contributing the greatest sediment and phosphorus loads and the state with the second largest contribution of nitrogen that are adversely impacting the Chesapeake Bay.

In order to improve the water quality of Chesapeake Bay, the TMDL includes approximately:[89]

- 201,000,000 pounds/year of total nitrogen
- 12,500,000 pounds/year of total phosphorus
- 6,450,000,000 pounds/year of sediment.

Sediments can adsorb sources of nitrogen and phosphorus, thus magnifying the adverse impacts of sediments on the Chesapeake Bay beyond increases in turbidity, suspended solids, and sedimentation. Use of fertilizers during ongoing operations at the PWC Data Centers can increase discharges of nutrients in stormwater discharges to Directly Impacted Surface Waters, which are tributaries to the Chesapeake Bay. The excessive nutrients and sediment loads impacting the Chesapeake Bay cause algal blooms, which reduce sunlight available to sustain aquatic vegetation, such as Bay grasses, and reduces dissolved oxygen concentrations critical to the survival of aquatic species, such as crabs, fish, and oysters.[90] Construction and subsequent operations of the PWC Data Centers has the potential to exacerbate the already impaired condition of the Chesapeake Bay.

Potential Adverse Environmental Impacts from Ephemeral Stream Elimination at Potomac Technology Park

The proposed limits of disturbance for the PTP include and would eliminate the existing ephemeral streams on the PTP Parcel that are hydrologically connected to the existing wetlands and Quantico Creek.[91] Elimination of hydrological connectivity can adversely impact the existing wetlands and Quantico Creek and their associated flora and fauna by removing a hydrological source. The ability of wetland habitats to effectively exist and function to support their existing flora and fauna can be dramatically reduced by hydrological losses.[92] Wetlands remove pollutants through physical and biological processes prior to subsequent discharge to downstream surface waters.[93]

The PWC Environmental Services Watershed Management Branch concurs that the PTP would adversely impact surface waters within and downstream of PTP and has recommended that the proposed limits of disturbance for the PTP be modified to retain the ephemeral streams and their essential hydrological function to the RPA, including Quantico Creek.[94]

---

89 USEPA, Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus, and Sediment, December 29, 2010, pages 9-1 – 9-16 and Tables 9-1, 9-2, and 9-3.

90 USEPA, Chesapeake Bay TMDL Fact Sheet, August 2021.

91 ECA.

92 USGS, National Water Summary on Wetland Resources, Water Supply Paper 2425, Technical Aspects of Wetlands, Wetland Hydrology, Water Quality, and Associated Functions, March 7, 1997.

93 Strecker, Eric W., et al., USEPA Region 4, Wetlands Section, Water Division, The Use of Wetlands for Controlling Stormwater Pollution, April 1992.

94 PWC Watershed Management Comments.

Conclusions

Stormwater discharges from the proposed PWC Data Centers to Directly Impacted Surface Waters and Downstream Surface Waters, all of whose best usages include recreational uses, the propagation and growth of a balanced, indigenous population of aquatic life, including game fish reasonably expected to inhabit them, propagation and growth of wildlife, and production of edible and marketable natural resources, present the potential for significant adverse environmental impacts during and after construction activities. Significant potential adverse environmental impacts include increases in soil erosion during construction, discharges of sediment-laden, turbid stormwater during construction, and discharges of pollutants in stormwater common to construction sites and the future uses of the PWC Data Centers, including, but not limited to, petroleum based contaminants, nutrients, sediment, and metals, that result in the potential for decreased water quality, increased turbidity, and adverse impacts to aquatic species, best usages, adjacent National Park resources, and the public.

Figures:

- Figure 1 – Potomac Technology Park and Adjacent Drainage Areas
- Figure 2 – Prince William Digital Gateway and Adjacent Drainage Areas

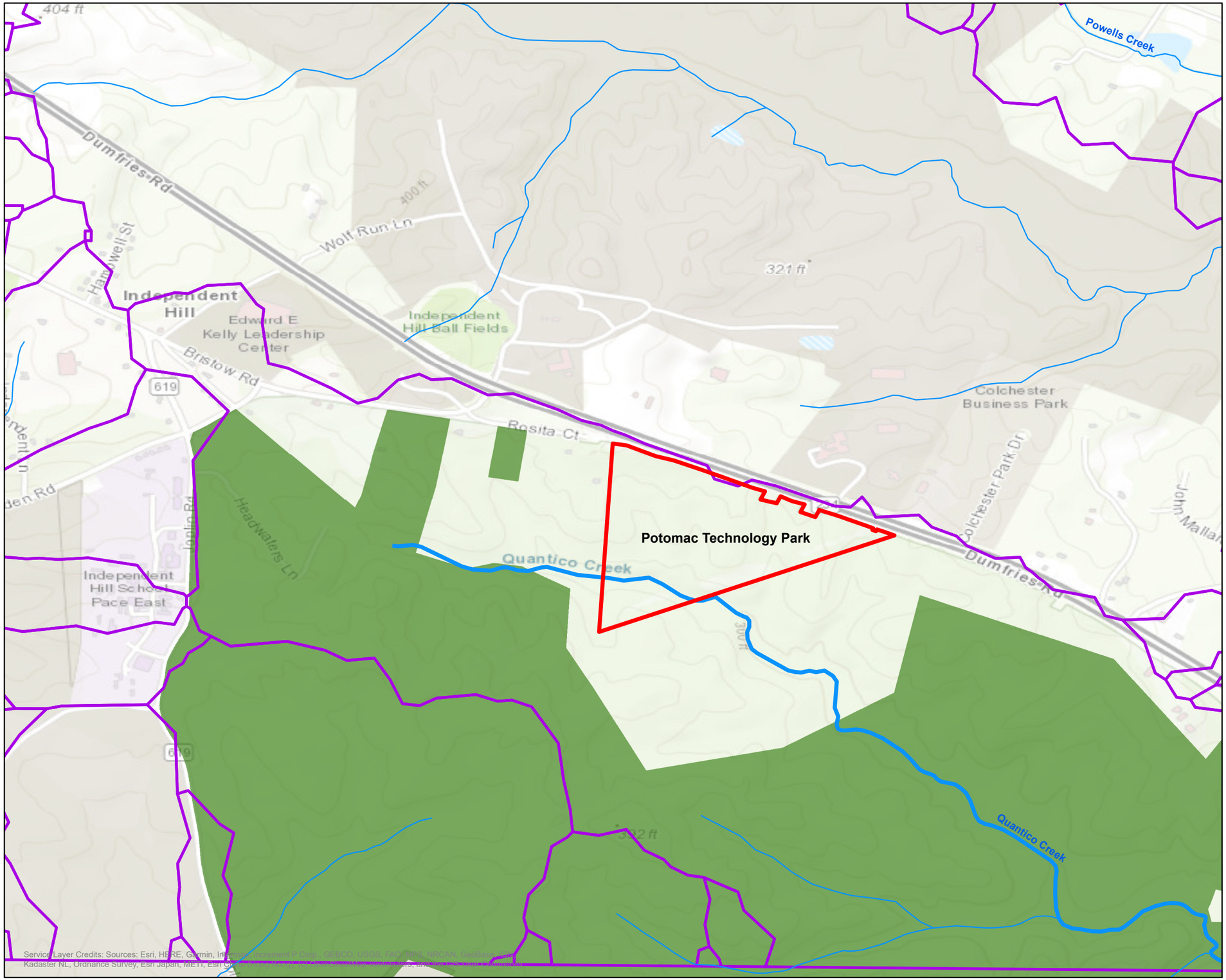
Attachments

- Attachment A – Environmental Constraints Analysis Map
- Attachment B – Preservation Area Site Assessment
- Attachment C – Prince William Forest Park Map
- Attachment D – Manassas National Battlefield Park Map
- Attachment E – Water Samples of Various Turbidity Levels
- Attachment F – Sediment-Laden, Turbid Construction Site Stormwater Discharge

Sincerely,

Kevin Draganchuk, P.E., BCEE

CEA Engineers, P.C., President



N
W E
S

Legend

- NHD Flowline
- Quantico Creek
- Potomac Technolgy Park
- Watershed Drainage Basins
- Prince William Forest Park

Figure 1

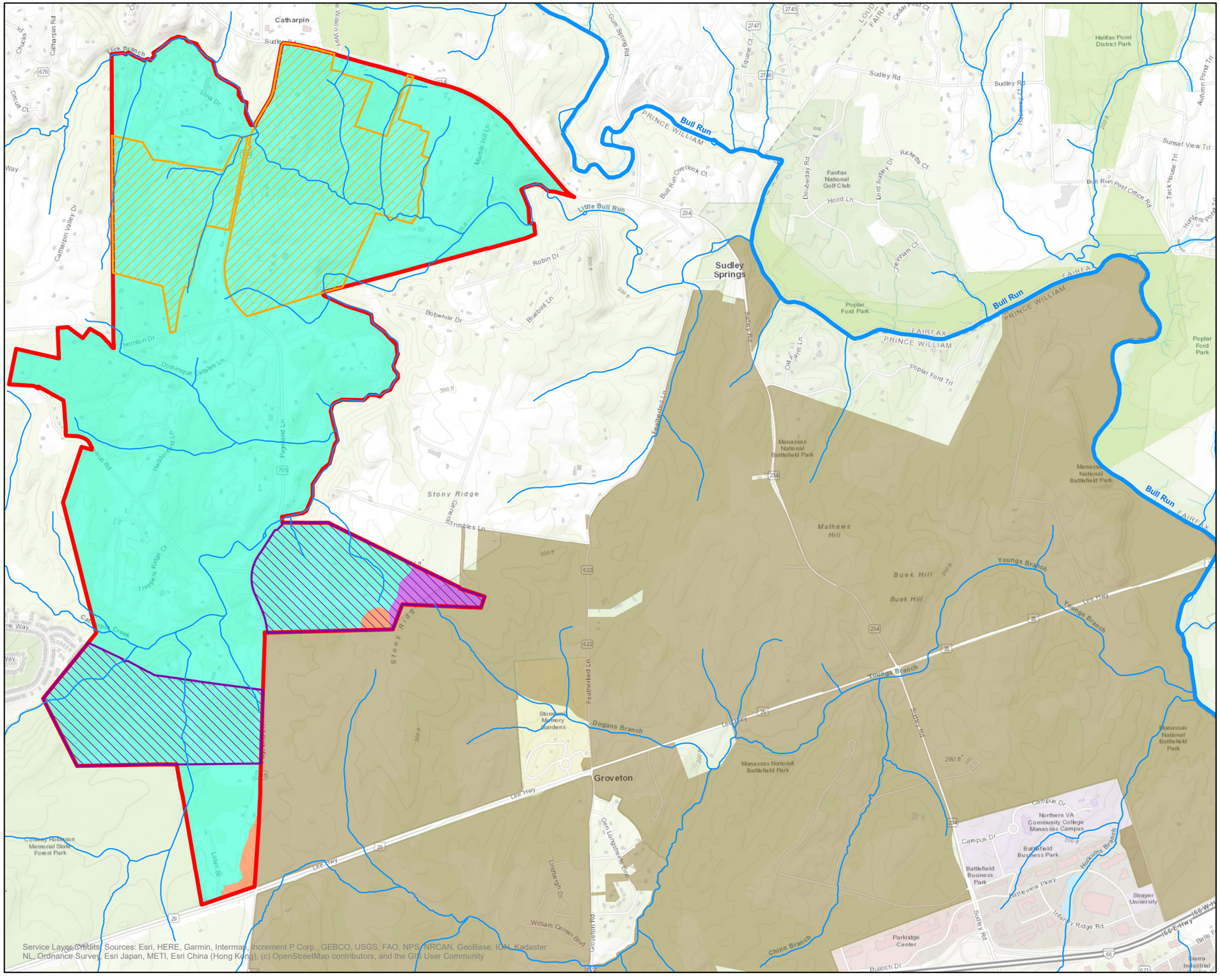
Potomac Technology Park
and Adjacent Drainage Areas

3/31/2022

CEAPC Job No.: J22-04

0 500 1,000 2,000 3,000 Feet

CEA ENGINEERS



N
W E
S

Legend

- NHD Flowline
- Bull Run
- Prince William Digital Gateway
- Drainage Basin to Little Bull Run 2,128 acres
- Drainage Basin to Dogans Branch 23 acres
- Drainage Basin to Youngs Branch 16 acres
- Manassas National Battlefield Park
- Proposed Office Mid-Rise District
- Proposed Office High-Rise District

Figure 2

Prince William Digital Gateway and Adjacent Drainage Areas

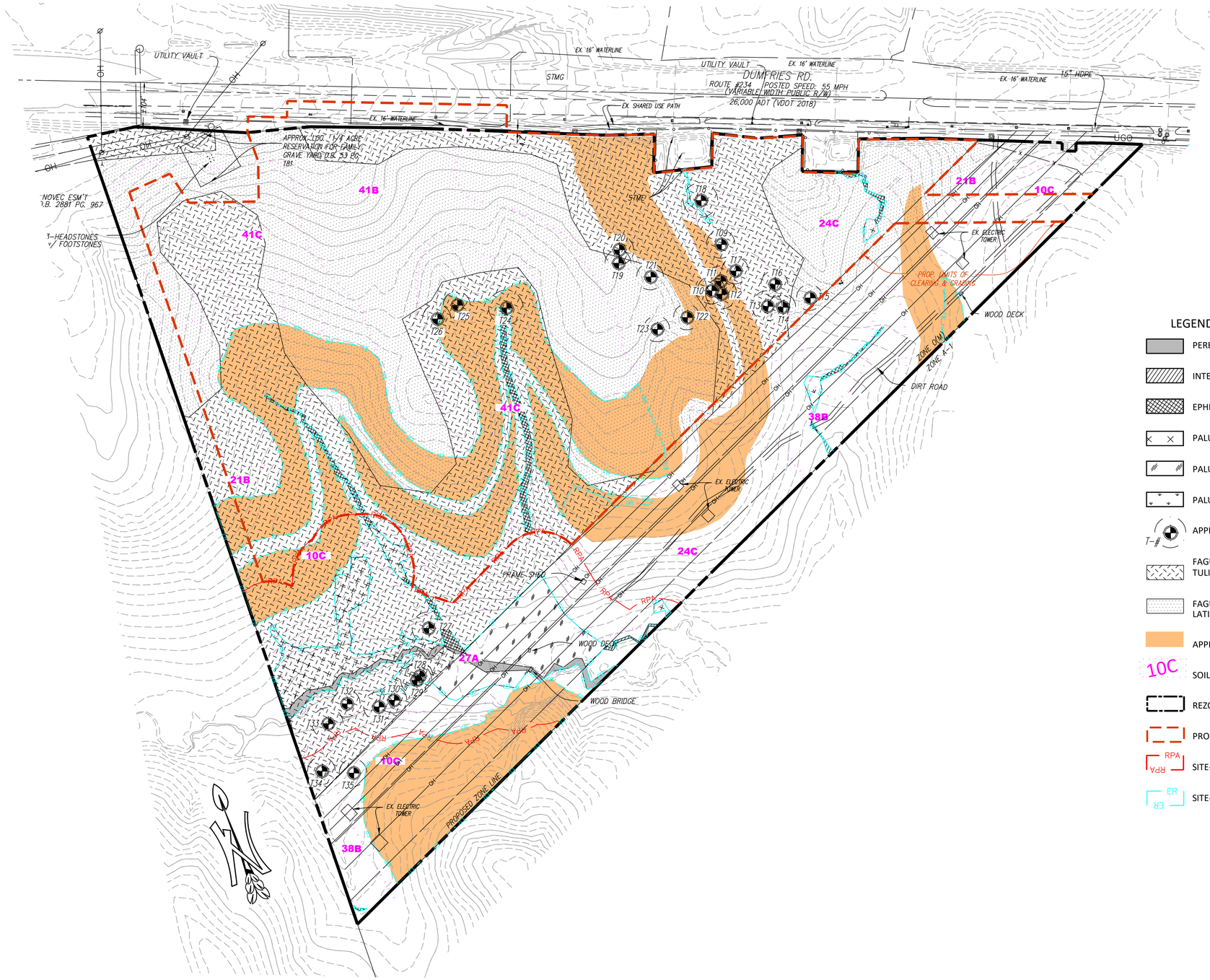
3/31/2022

CEAPC Job No.: J22-04

0 1,000 2,000 4,000 6,000 Feet

CEA ENGINEERS

Attachment A



LEGEND

- PERENNIAL WATERS (R3)
- INTERMITTENT WATERS (R4)
- EPHEMERAL WATERS (R6)
- PALUSTRINE FORESTED (PFO) WETLAND
- PALUSTRINE SCRUB-SHRUB (PSS) WETLAND
- PALUSTRINE EMERGENT (PEM) WETLAND
- T-# APPROX. SPECIMEN TREE LOCATION
- FAGUS GRANDIFOLIA - QUERCUS (ALBA, RUBRA) - LIRIODENDRON TULIPIFERA /(ILEX OPACA) / POLYSTICHUM ACROSTICHOIDES FOREST
- FAGUS GRANDIFOLIA - PINUS VIRGINIANA FOREST/(ILEX OPACA)/KALMIA LATIFOLIA FOREST
- APPROX. 15-25 %SLOPES
- 10C SOIL MAP UNIT BOUDARY
- REZONING PROPERTY BOUNDARY
- PROPOSED LIMITS OF DISTURBANCE
- RPA SITE-SPECIFIC RESOURCE PROTECTION AREA (RPA)
- ER SITE-SPECIFIC ENVIRONMENTAL RESOURCE (ER)

SCALE (IN FEET)
60 120
120 0

4455 Brookfield Corporate Drive, Suite 100
Chantilly, VA 20151
PH: 703-466-5123 WWW.TNTENVIRONMENTALINC.COM
TNT ENVIRONMENTAL

POTOMAC TECHNOLOGY PARK

PRINCE WILLIAM COUNTY

ENVIRONMENTAL CONSTRAINTS ANALYSIS

REVISIONS

DATE	COMMENTS

SHEET 1 OF 2

SCALE: 1" = 120'

PROJECT DATE: 11/17/21

DRAFT: JSM | CHECK: AMS

FILE NUMBER: 1980

ECA NARRATIVE AND NOTES:

1. PROPERTY BOUNDARY, TOPOGRAPHY AND OTHER SURVEY INFORMATION PROVIDED BY LAND DESIGN CONSULTANTS (LDC), 2020.

2. THE PROPOSED SITE AREA CONSISTS OF APPROXIMATELY 51.67 ACRES. APPROXIMATELY 7.83 ACRES OF UNDISTURBED OPEN SPACE ARE PROPOSED.

3. THE WETLANDS AND WATERS WERE DELINEATED BY TNT ENVIRONMENTAL, INC. (TNT) IN 2020 PER THE CORPS OF ENGINEERS' WETLANDS DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL: EASTERN MOUNTAINS & PIEDMONT REGION. A JURISDICTIONAL DETERMINATION IS CURRENTLY PENDING.

4. ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP (FIRM) NO. 51153C0193D, NO FLOODPLAIN IS MAPPED WITHIN THE SUBJECT SITE'S BOUNDARIES.

5. AN ANALYSIS OF THE TWO-FOOT CONTOUR TOPOGRAPHIC SURVEY (SURVEY PROVIDED BY LDC) INDICATES THAT SLOPES GREATER THAN 15 PERCENT ARE PRESENT ON THE SUBJECT SITE AS SHOWN ON THIS PLAN.

6. HIGHLY ERODIBLE SOILS ONSITE INCLUDE BUCKHALL LOAM (10C), ELIOAK LOAM (19B), FAIRFAX LOAM (21B), GLENELG-BUCKHALL COMPLEX, AND NEABSCO LOAM (41B, 41C). HIGHLY PERMEABLE SOILS MAPPED ONSITE PER THE PRINCE WILLIAM COUNTY HIGHLY PERMEABLE SOILS MAP INCLUDES HATBORO-CODORUS COMPLEX (27A).

7. VEGETATION COVER TYPES WERE CLASSIFIED ONSITE BY TNT CERTIFIED ARBORISTS AS DEPICTED HEREON. A MATURE (12"-40" DBH) FAGUS GRANDIFOLIA - QUERCUS (ALBA, RUBRA) - LIRIODENDRON TULIPIFERA /(ILEX OPACA) / POLYSTICHUM ACROSTICHOIDES FOREST COMPRISES MUCH OF THE SITE . THE REMAINDER OF THE SITE AS GRAPHICALLY DEPICTED HEREON CONSISTS OF A MEDIUM-AGED TO MATURE (8" TO 20" DBH) FAGUS GRANDIFOLIA - PINUS VIRGINIANA FOREST/(ILEX OPACA)/KALMIA LATIFOLIA FOREST.

8. SPECIMEN TREES WERE IDENTIFIED BY TNT CERTIFIED ARBORISTS AND ARE DEPICTED HEREON; THE LOCATIONS OF THESE SPECIMEN TREES ARE APPROXIMATE.

9. BASED ON THE PERENNIAL FLOW DETERMINATION COMPLETED BY TNT, PERENNIAL STREAMS AND RESOURCE PROTECTION AREAS (RPAS) WERE IDENTIFIED ONSITE. THE PERENNIAL FLOW DETERMINATION AND PRESERVATION AREA SITE ASSESSMENT HAVE BEEN SUBMITTED TO AND APPROVED BY PRINCE WILLIAM COUNTY AS PLAN NUMBERS ASP2022-00014 AND ASP2022-00015, RESPECTIVELY.

10. TNT CONDUCTED A SEARCH OF THE VIRGINIA DGIF WILDLIFE INFORMATION SERVICE DATABASE FOR THE PRESENCE OF PROTECTED SPECIES WITHIN A 2-MILE RADIUS; THIS SEARCH RADIUS WAS SELECTED BECAUSE IT IS THE STANDARD RADIUS PROVIDED FOR REVIEW BY DGIF. NO STATE-THREATENED SPECIES, WERE LISTED AS HAVING POTENTIAL HABITAT WITHIN TWO MILES OF THE SUBJECT SITE.

TNT ALSO CONDUCTED A REVIEW OF THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ONLINE INFORMATION FOR PLANNING AND CONSERVATION DATABASE. THE USFWS IDENTIFIED THE HARPERELLA, A FEDERALLY ENDANGERED FLOWERING PLANT, AS HAVING THE POTENTIAL TO OCCUR WITHIN THE PROJECT SITE. ADDITIONALLY, THE SMALL WHORLED POGONIA, A FEDERALLY-THREATENED PLANT, WAS ALSO IDENTIFIED AS HAVING THE POTENTIAL TO OCCUR WITHIN THE PROJECT SITE. A SMALL WHORLED POGONIA SURVEY WAS CONDUCTED IN JUNE 2020; NO SPECIES OF SMALL WHORLED POGONIA WERE FOUND WITHIN THE AREA SUBJECT TO THE REZONING. THE HARPERELLA PREFERS HABITATS NEAR PERENNIAL STREAMS. CONSTRUCTION FOR THIS PROJECT IS NOT ANTICIPATED TO TAKE PLACE WITHIN OR NEAR PERENNIAL STREAMS, THEREFORE ADVERSE IMPACTS TO THIS SPECIES IS NOT ANTICIPATED.

IN ADDITION TO THESE SPECIES, THE NORTHERN LONG-EARED BAT IS LISTED AS POTENTIALLY BEING PRESENT WITHIN THE GEOGRAPHIC AREA OF THE PROJECT. NO MATERNITY ROOSTS OR HIBERNACULA ARE RECORDED WITHIN THE VICINITY OF THE PROJECT.

11. THE LIMITS OF DISTURBANCE ARE SHOWN HEREON AND HAVE BEEN MINIMIZED TO AVOID IMPACTS TO WETLANDS AND WATERS AS WELL AS SOME SPECIMEN TREES AS SHOWN HEREON.

ENVIRONMENTAL RESOURCES (PER COMPREHENSIVE PLAN)

Onsite Wetlands and Waters	Total
Palustrine Emergent (PEM)	2,235 SF (0.05 AC)
Palustrine Srcub-Shrub (PSS)	47,392 SF (1.09 AC)
Palustrine Forested (PFO)	48,891 SF (1.12 AC)
Perennial Stream (R3)	913 LF (10,884 SF)
Intermittent Stream (R4)	211 LF (1,113 SF)
Ephemeral Stream (R6)	1,703 LF (14,323 SF)
Other Environmental Resource Calculations	**Total**
Approx. Acreage of Natural Undisturbed Open Space (exclusive of transmission easement)	7.83 Acres
Acreage of Land to Remain Undisturbed	21.80 Acres
Acreage of Land to Be Disturbed	29.87 Acres
Total Acreage of ER Onsite (Wetlands, Highly Erodible Steep Slopes 15-25%)	12.55 Acres
Total Acreage of Proposed ER to Be Disturbed	7.62 Acres

**ADDITIONAL ENVIRONMENTAL RESOURCES INCLUDING SLOPES 15%-25% AND SPECIMEN TREES ARE MAPPED ONSITE AS SHOWN HEREON.*

SPECIMEN TREES TABLE

Tree #	Tree Species (Common Name)	DBH (inches)	Critical Root Zone (feet)	Condition	To Be Saved?	Notes
9	Tulip Poplar	33.0	33.0	Good	No	
10	White Oak	32.0	32.0	Good	No	Some dieback, and dead limbs
11	Northern Red Oak	34.0	34.0	Fair	No	Galls on trunk, dieback, and dead limbs
12	Tulip Poplar	36.0	36.0	Good	No	Double trunk, and some small dead limbs
13	Red Maple	35.0	35.0	Fair	No	Dead limbs, and deadwood
14	Red Maple	31.0	31.0	Good	No	Double trunk, some dead limbs, and deadwood
15	Tulip Poplar	30.0	30.0	Good	No	
16	Tulip Poplar	31.0	31.0	Good	No	
17	Northern Red Oak	31.0	31.0	Fair	No	Exposed hardwood in lower trunk, and some decay
18	Tulip Poplar	40.0	40.0	Fair	No	Double trunk
19	White Oak	30.0	30.0	Fair	No	Some dead limbs, dieback, and deadwood
20	Tulip Poplar	35.0	35.0	Fair	No	Co-dominant leaders
21	Tulip Poplar	31.0	31.0	Fair	No	Deadwood
22	White Oak	30.0	30.0	Fair	No	Dieback, dead limbs, and dead tree leaning on large branch
23	White Oak	30.0	30.0	Fair	No	Dieback, dead limbs, and watersprouts
24	Southern Red Oak	40.0	40.0	Fair	No	Dieback, and dead limbs
25	White Oak	31.0	31.0	Good	No	
26	Tulip Poplar	33.0	33.0	Good	No	Double trunk
27	Willow Oak	37.0	37.0	Good	Yes	Some watersprouts, and dead limbs
28	Red Maple	32.0	32.0	Fair	Yes	Watersprouts, and some dead limbs
29	Tulip Poplar	36.0	36.0	Good	Yes	
30	Red Maple	31	31.0	Good	Yes	Watersprouts, and some dead limbs
31	Red Maple	34	34.0	Fair	Yes	Multi trunk, some dead limbs, and dead tree leaning on trunk
32	Tulip Poplar	32	32.0	Fair	Yes	Watersprouts
33	Tulip Poplar	36	36.0	Fair	Yes	Double trunk, and included bark
34	Pignut Hickory	32	32.0	Fair	Yes	Watersprouts
35	White Oak	32	32.0	Fair	Yes	Some dead limbs, and deadwood

PROPOSED APPROXIMATE WETLAND IMPACTS TABLE

Onsite Wetlands and Waters	Total Proposed Impacts
Palustrine Forested (PFO)	2,117 SF (0.05 AC)
Ephemeral Stream (R6)	1,079 LF (11,706 SF)

SOIL SUMMARY TABLE

Map Unit	Map Unit Name	Highly Permeable?	Highly Erodibile?
10C	Buckhall loam	No	Yes
19B	Elioak loam	No	Yes
21B	Fairfax loam	No	Yes
24C	Glenelg-Buckhall complex	No	Yes
27A	Hatboro-Codorus	Yes	No
38B	Meadowville loam	No	No
41B	Neabsco loam	No	Yes
41C	Neabsco loam	No	Yes

PERVIOUS VS IMPERVIOUS SURFACES TABLE

	Impervious Acreage	Pervious Acreage
Existing Conditions	±0 Acres	±51.67 Acres
Proposed Conditions	±16.23 Acres	±35.44 Acres

4455 Brookfield Corporate Drive, Suite 100
Chantilly, VA 20151
PH: 703-466-5123 WWW.TNTENVIRONMENTALINC.COM
ENVIRONMENTAL

POTOMAC TECHNOLOGY PARK
PRINCE WILLIAM COUNTY

ENVIRONMENTAL CONSTRAINTS ANALYSIS

REVISIONS

DATE	COMMENTS

SHEET 2 OF 2

SCALE: NTS

PROJECT DATE: 11/17/21

DRAFT: JSM | CHECK: AMS

FILE NUMBER: 1980

Attachment B

NOTES:
1. THE WETLAND DELINEATION WAS CONDUCTED BY TNT ENVIRONMENTAL, INC. (TNT) IN JUNE 2020. EXISTING CONDITION, TOPOGRAPHY AND WETLAND FLAGS WERE SURVEYED BY LAND DESIGN CONSULTANTS (2020).

2. THE WETLAND AND OTHER WATERS BOUNDARIES DEPICTED HEREON ARE PRELIMINARY UNTIL CONFIRMED DURING A JURISDICTIONAL DETERMINATION WITH THE US ARMY CORPS OF ENGINEERS (USACE).

3. *THE STREAM CLASSIFICATIONS AND SITE-SPECIFIC RESOURCE PROTECTION AREA (RPA) BOUNDARY SHOWN HEREON SHOULD BE CONSIDERED PRELIMINARY UNTIL APPROVED BY PRINCE WILLIAM COUNTY.

4. THE STREAM ASSESSMENTS CONDUCTED ARE BASED ON THE FAIRFAX COUNTY "PERENNIAL STREAM FIELD IDENTIFICATION PROTOCOL", DATED MAY 2003.

5. THIS DELINEATION WAS PERFORMED PER THE *CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL*, TECHNICAL REPORT Y-87-1 (1987 MANUAL) AND SUBSEQUENT GUIDANCE AND MODIFICATION BY THE *REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL:EASTERN MOUNTAINS AND PIEDMONT REGION* (VERSION 2.0) DATED APRIL 2012. THE ROUTINE ON-SITE WETLAND DETERMINATION METHOD FOR SITES GREATER THAN 5 ACRES WAS USED FOR THIS SITE.

LEGEND

- PERENNIAL WATERS (R3)
- INTERMITTENT WATERS (R4)
- EPHEMERAL WATERS (R6)
- PALUSTRINE FORESTED (PFO) WETLAND
- PALUSTRINE SCRUB-SHRUB (PSS) WETLAND
- PALUSTRINE EMERGENT (PEM) WETLAND
- OFFSITE PERENNIAL WATERS (R3)
- DP– APPROX. DATAPOINT LOCATION
- PFD-# APPROX. PFD LOCATION
- STUDY AREA
- RPA *SITE-SPECIFIC RESOURCE PROTECTION AREA (RPA)

SCALE (IN FEET)
75 150
150 0

4455 Brookfield Corporate Drive, Suite 100
Chantilly, VA 20151
PH: 703-466-5123 WWW.TNTENVIRONMENTALINC.COM
TNT ENVIRONMENTAL

POTOMAC TECHNOLOGY PARK (161 DATA CENTER)
PRINCE WILLIAM COUNTY

PRESERVATION AREA SITE ASSESSMENT
PWC PLAN NUMBER: ASP2022-00015501

REVISIONS

DATE	COMMENTS

SHEET 1 OF 1

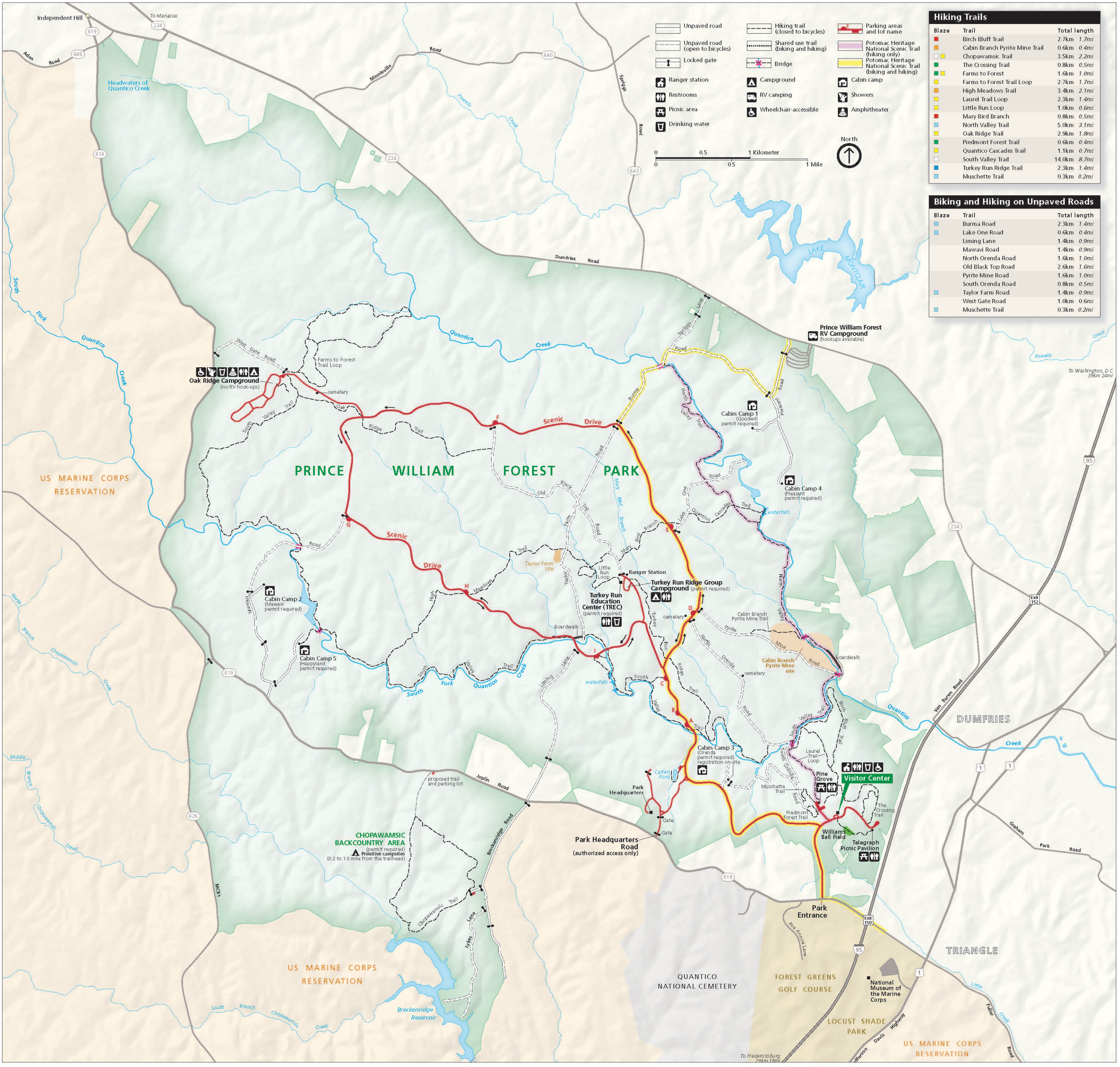
SCALE: 1" = 150'

PROJECT DATE: 1-14-21

DRAFT: JSM | CHECK: AMS

FILE NUMBER: 1980

Attachment C



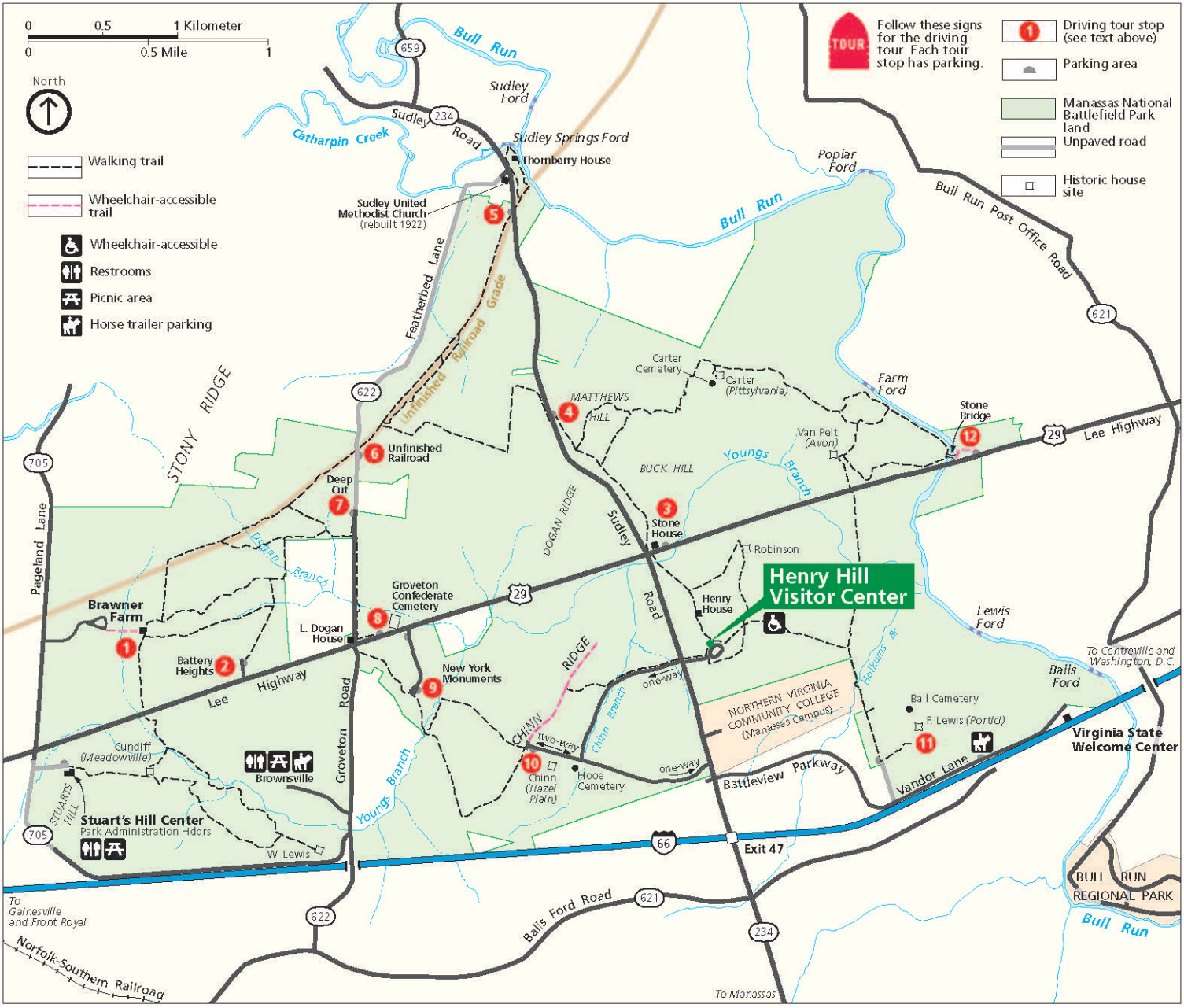
Hiking Trails

Blaze	Trail	Total length
	Birch Bluff Trail	2.7km 1.7mi
	Cabin Branch Pyrite Mine Trail	0.6km 0.4mi
	Chopawamsic Trail	3.5km 2.2mi
	The Crossing Trail	0.8km 0.5mi
	Farms to Forest	1.6km 1.0mi
	Farms to Forest Trail Loop	2.7km 1.7mi
	High Meadows Trail	3.4km 2.1mi
	Laurel Trail Loop	2.3km 1.4mi
	Little Run Loop	1.0km 0.6mi
	Mary Bird Branch	0.8km 0.5mi
	North Valley Trail	5.0km 3.1mi
	Oak Ridge Trail	2.9km 1.8mi
	Piedmont Forest Trail	0.6km 0.4mi
	Quantico Cascades Trail	1.1km 0.7mi
	South Valley Trail	14.0km 8.7mi
	Turkey Run Ridge Trail	2.3km 1.4mi
	Muschette Trail	0.3km 0.2mi

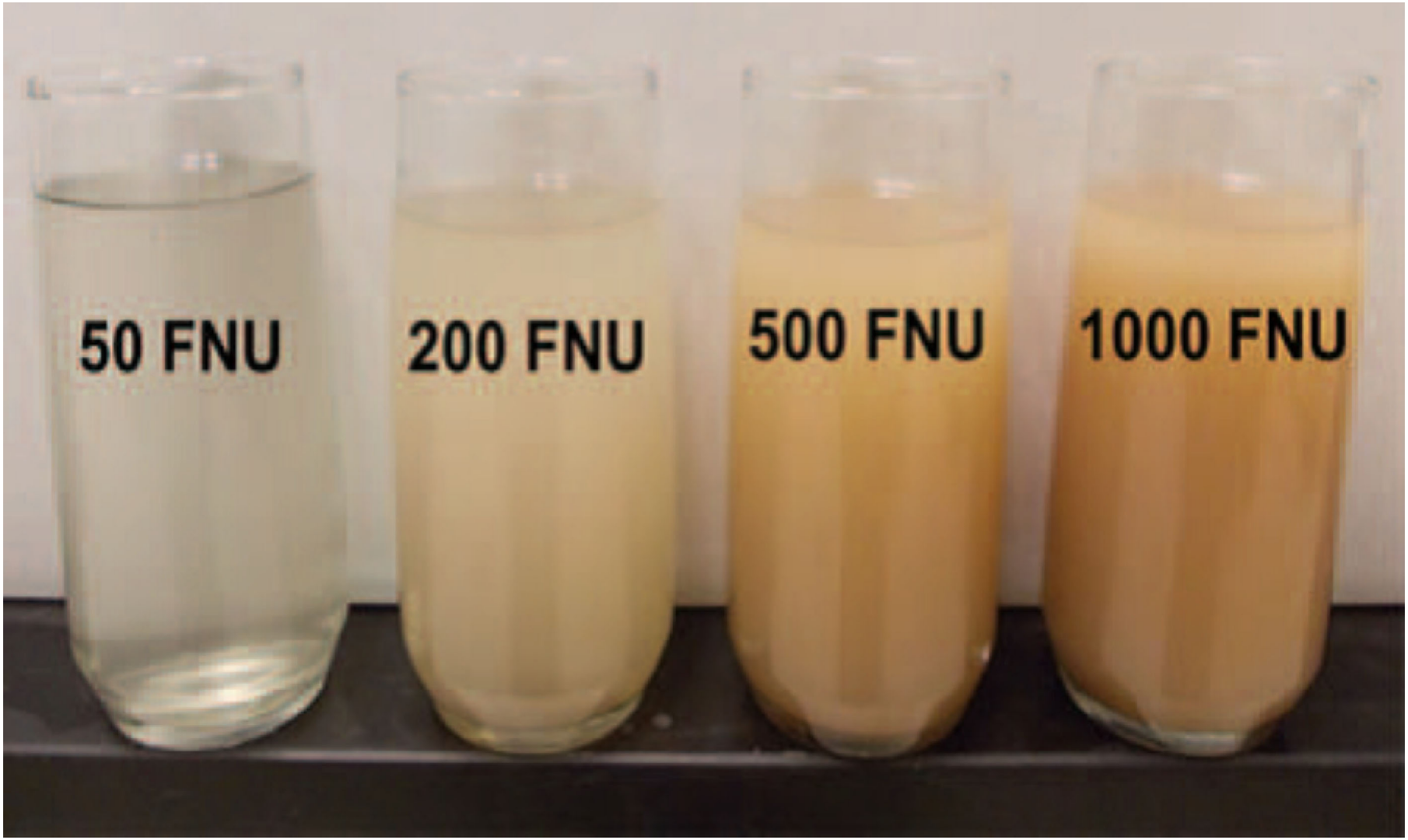
Biking and Hiking on Unpaved Roads

Blaze	Trail	Total length
	Burma Road	2.3km 1.4mi
	Lake One Road	0.6km 0.4mi
	Liming Lane	1.4km 0.9mi
	Mawavi Road	1.4km 0.9mi
	North Orenda Road	1.6km 1.0mi
	Old Black Top Road	2.6km 1.6mi
	Pyrite Mine Road	1.6km 1.0mi
	South Orenda Road	0.8km 0.5mi
	Taylor Farm Road	1.4km 0.9mi
	West Gate Road	1.0km 0.6mi
	Muschette Trail	0.3km 0.2mi

Attachment D


0 0.5 1 Kilometer
0 0.5 Mile 1
North
Walking trail
Wheelchair-accessible trail
Wheelchair-accessible
Restrooms
Picnic area
Horse trailer parking
TOUR
Follow these signs for the driving tour. Each tour stop has parking.
Driving tour stop (see text above)
Parking area
Manassas National Battlefield Park land
Unpaved road
Historic house site
Bull Run
Sudley Ford
Catharpin Creek
Sudley Road
Sudley Springs Ford
Thornberry House
Sudley United Methodist Church (rebuilt 1922)
Poplar Ford
Bull Run Post Office Road
Featherbed Lane
Unfinished Railroad Grade
Carter Cemetery
Carter (Pittsylvania)
Farm Ford
Stone Bridge
Lee Highway
MATTHEWS HILL
BUCK HILL
Youngs Branch
Van Pelt (Avon)
Unfinished Railroad
Deep Cut
STONY RIDGE
DOGAN RIDGE
Sudley Road
Stone House
Robinson
Henry House
Henry Hill Visitor Center
Lewis Ford
Pageland Lane
Brawner Farm
Dogan Branch
Groveton Confederate Cemetery
L. Dogan House
Battery Heights
Lee Highway
Groveton Road
New York Monuments
RIDGE
CHINN
Chinn Branch
one-way
two-way
Holkums Br
To Centreville and Washington, D.C.
Balls Ford
NORTHERN VIRGINIA COMMUNITY COLLEGE (Manassas Campus)
Ball Cemetery
F. Lewis (Portici)
Virginia State Welcome Center
Cundiff (Meadowville)
Brownsville
STUARTS HILL
Stuart's Hill Center
Park Administration Hdqrs
Youngs Branch
W. Lewis
Chinn (Hazel Plain)
Hooe Cemetery
Battleview Parkway
Vandor Lane
Exit 47
BULL RUN REGIONAL PARK
Bull Run
To Gainesville and Front Royal
Norfolk-Southern Railroad
Balls Ford Road
To Manassas
659
234
621
622
705
29
66

Attachment E


50 FNU
200 FNU
500 FNU
1000 FNU

Attachment F