Washington Freedom Field

Fairfax County, Virginia

WSSI # P.WSI0000203

Environmental Impact Report

October 2023

Prepared for:
Washington Freedom
2600 Tower Oaks Blvd. Suite 700
Rockville MD 20852

Prepared by:

1620 Brook Road
Richmond, Virginia 23220
Tel: 804-442-3330 Email: contactus@wetlands.com
www.wetlands.com

This page intentionally left blank.

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS ii

ACRONYMS AND ABBREVIATIONS v

1.0 INTRODUCTION 6

1.1 Purpose of the Environmental Impact Report 6

1.2 State Environmental Review Requirement 6

1.3 Purpose of and Need for the Proposed Action 11

1.4 Site Location and Description 11

1.5 Description of the Proposed Action 11

2.0 DEVELOPMENT OF PROJECT ALTERNATIVES 14

3.0 AFFECTED ENVIRONMENT 15

3.1 Topography 15

3.2 Geology 15

3.3 Soils 15

3.4 Water Resources 16

3.4.1 Groundwater 16

3.4.2 Waters of the United States and Water Quality 16

3.4.3 Floodplains 17

3.4.4 Wild and Scenic Rivers 17

3.4.5 Chesapeake Bay Preservation 17

3.4.6 Coastal Zone Management Program 18

3.5 Biological Resources 18

3.6 Cultural Resources 19

3.7 Hazardous Substances and Solid Wastes 19

3.8 Land Use and Zoning 20

3.9 Aesthetic Considerations 20

3.10 Environmental Justice, Relocation Considerations, and Property Acquisition 20

3.11 Community Facilities 21

3.12 Transportation and Access 21

3.13 Air Quality 21
3.14 Climate Change 22
3.15 Noise 22
4.0 ENVIRONMENTAL CONSEQUENCES: IMPACTS & MITIGATION 23
4.1 Topography 23
4.2 Geology 23
4.3 Soils 23
4.4 Water Resources 24
4.4.1 Groundwater 24
4.4.2 Waters of the United States and Water Quality 24
4.4.3 Floodplains 24
4.4.4 Wild and Scenic Rivers 24
4.4.5 Chesapeake Bay Preservation 24
4.4.6 Coastal Zone Management Program 25
4.5 Biological Resources 26
4.6 Cultural Resources 26
4.7 Hazardous Substances and Solid Waste 27
4.8 Land Use and Zoning 27
4.9 Aesthetic Considerations 27
4.10 Environmental Justice, Relocation Considerations, and Property Acquisition 28
4.11 Community Facilities 28
4.12 Transportation and Access 28
4.13 Air Quality 28
4.14 Climate Change 29
4.15 Noise 29
4.16 Irreversible Environmental Changes 29
4.17 Summary of Unavoidable Impacts and Minimization/Mitigation Measures 29
4.18 Secondary and Cumulative Impacts 30
4.19 Relationship between Short-Term Use of the Environment and Maintenance and Enhancement of Long-Term Productivity 31
5.0 REFERENCES 32

Appendix A – Threatened and Endangered Species 35
Appendix B – Cultural Resources 36
Appendix C – Environmental Justice 37

Tables **Page**

Table 1: NRCS Mapped Soils in the Project Site 15
Table 2: Protected Species with the Potential to Occur near the Project Site Based on Database Results 18
Table 3: Archeological Resources 19
Table 4: EJScreen Results 21
Table 5: Potential Impacts of Proposed Action and Proposed Minimization/Mitigation Measures 30

Figures **Page**

Figure 1: Project Vicinity 7
Figure 2: USGS Topographic Map 8
Figure 3: Natural Color Aerial Imagery 9
Figure 4: Natural Color Aerial Imagery 10
Figure 5: Project Elements 12

ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
BMP	Best Management Practice
CBPA	Chesapeake Bay Preservation Act
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DCR	Department of Conservation and Recreation
DEQ	Department of Environmental Quality
DHR	Department of Historic Resources
DWR	Department of Wildlife Resources
E&SC	Erosion and Sediment Control
EIR	Environmental Impact Report
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GHG	Greenhouse Gas
GMU	George Mason University
LOD	Limits of Disturbance
NHDE	Natural Heritage Data Explorer
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OSHA	Occupational Safety and Health Administration
RMA	Resource Management Area
RPA	Resource Protection Area
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VaFWIS	Virginia Fish and Wildlife Information Service
V-CRIS	Virginia Cultural Resource Information System
VDOT	Virginia Department of Transportation
VSQG	Very Small Quantity Generator
VCZMP	Virginia Coastal Zone Management Plan

1.0 INTRODUCTION

Review Agency Virginia Department of Environmental Quality (State Agency Code 440)

Project Washington Freedom Cricket Stadium, Fairfax County, VA

Sponsor Agency George Mason University (State Agency Code 247)

Sponsor Agency Contact Andrew Lieber
George Mason University Athletics
4400 University Dr., MS 3A5
alieber2@gmu.edu>

1.1 Purpose of the Environmental Impact Report

This Environmental Impact Report (EIR) assesses the environmental consequences associated with construction of a temporary stadium and ancillary facilities to host World-Cup Warm-Up matches & Major League Cricket matches (the Proposed Action) at George Mason University (GMU) in Fairfax County, Virginia. Since its cost would exceed $500,000, the Proposed Action is classified as a "major State project." While the Proposed Action would be funded entirely with private monies, it would be undertaken on the campus of GMU, a state-owned public university. Therefore, an EIR is required under Code of Virginia §10.1-1188. This EIR was prepared in accordance with the Virginia Department of Environmental Quality's (DEQ) *Procedure Manual - Environmental Impact Review of Major State Facilities* (DEQ 2021).

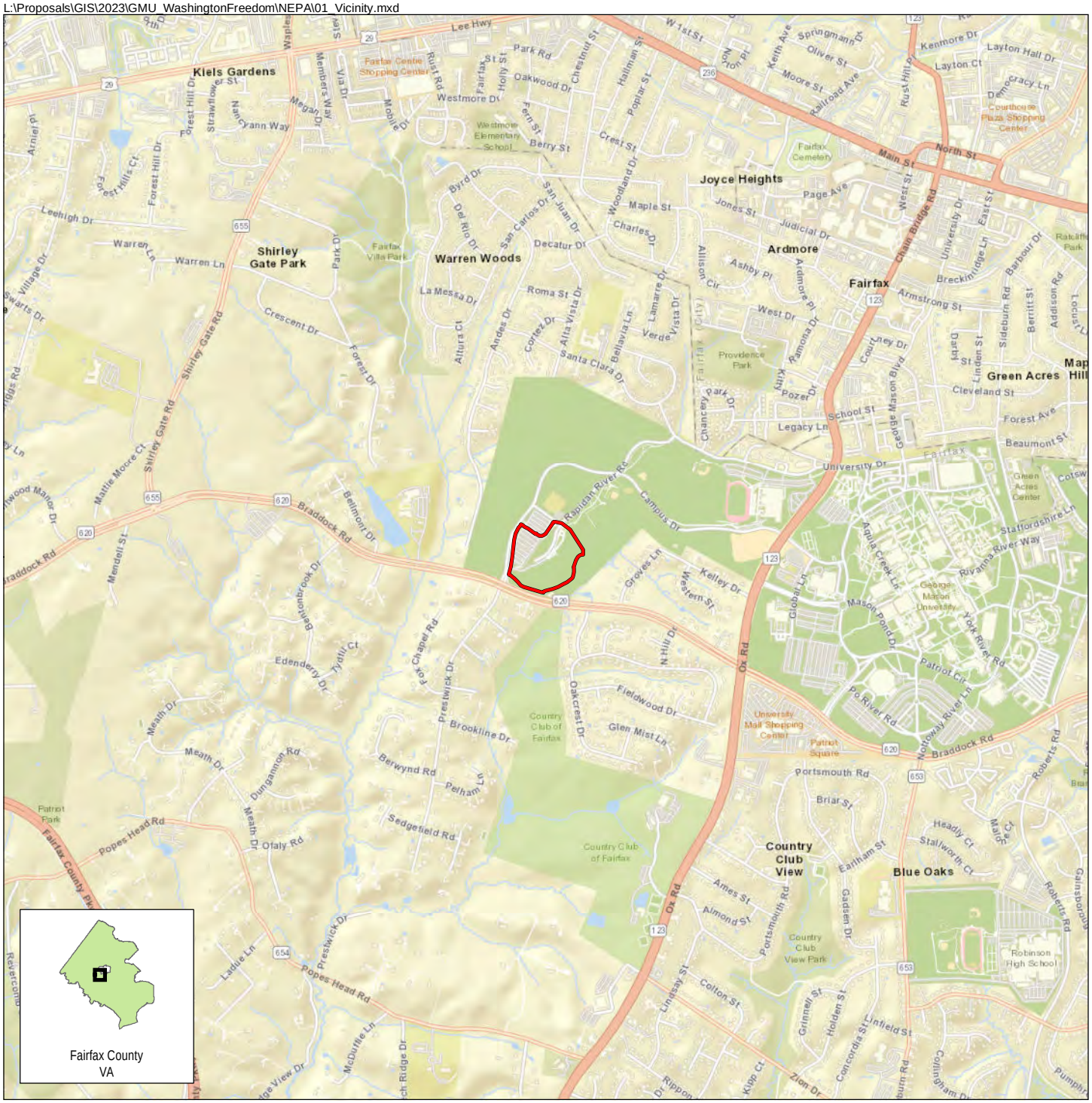
The project vicinity is shown on **Figure 1**, a topographic map is shown on **Figure 2**, and aerial photographs showing the project site and the GMU campus are provided as **Figures 3 and 4**.

Section 1.0 of the EIR provides background information and context for the Proposed Action. Alternatives to the Proposed Action are described in **Section 2.0**. The existing resource conditions in the project area (affected environment) and potential impacts of the Proposed Action are described in **Sections 3.0** and **4.0**, respectively. Additional supporting information is presented in the appendices.

1.2 State Environmental Review Requirement

The Commonwealth of Virginia requires an EIR for "major State projects," which are defined by the Code of Virginia §10.1-1188 as "the acquisition of an interest in land for any state facility

L:\Proposals\GIS\2023\GMU_WashingtonFreedom\NEPA\01_Vicinity.mxd



Project Site (±16.2 acres)

Project Vicinity
GMU Washington Freedom Field

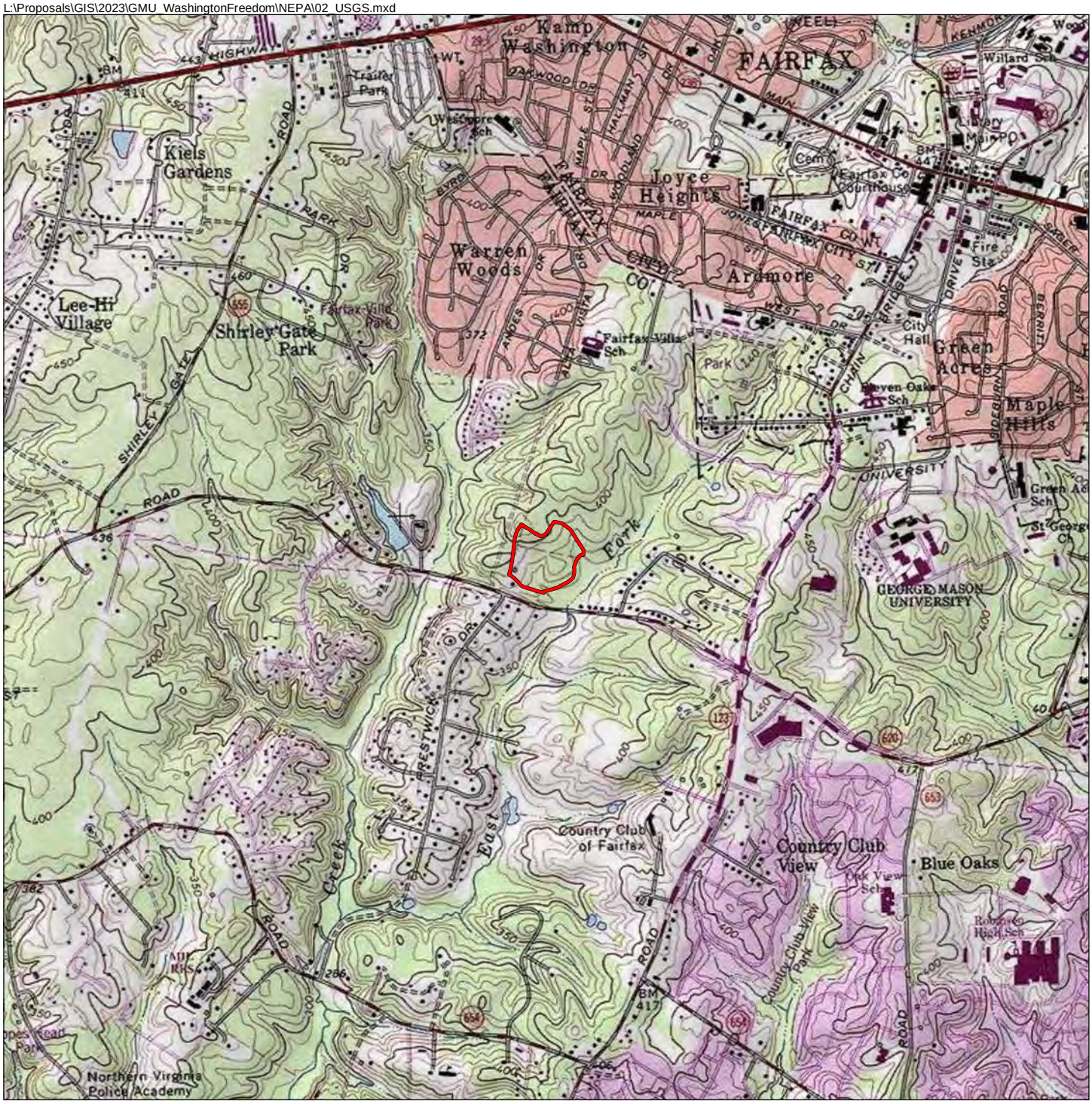
NORTH
0 2,000
Feet
Original Scale:
1 " = 2,000 '

Source: World Street Map - ESRI

Wetland Studies and Solutions, Inc.
a DAVEY company

Figure 1

L:\Proposals\GIS\2023\GMU_WashingtonFreedom\NEPA\02_USGS.mxd



Project Site

USGS 7.5' Quadrangle
GMU Washington Freedom Field

NORTH
0 2,000
Feet
Original Scale:
1 " = 2,000 '

Fairfax, VA 1998
Latitude: 38°49'54"N
Longitude: 77°19'34"W
Hydrologic Unit Code (HUC): 020700100705
HUC12 Name: Lower Bull Run
COE Region: Eastern Mountains and Piedmont

Wetland Studies and Solutions, Inc.
a DAVEY company

Figure 2

L:\Proposals\GIS\2023\GMU_WashingtonFreedom\NEPA\03_Nearmap.mxd

Project Site

Project Site
GMU Washington Freedom Field

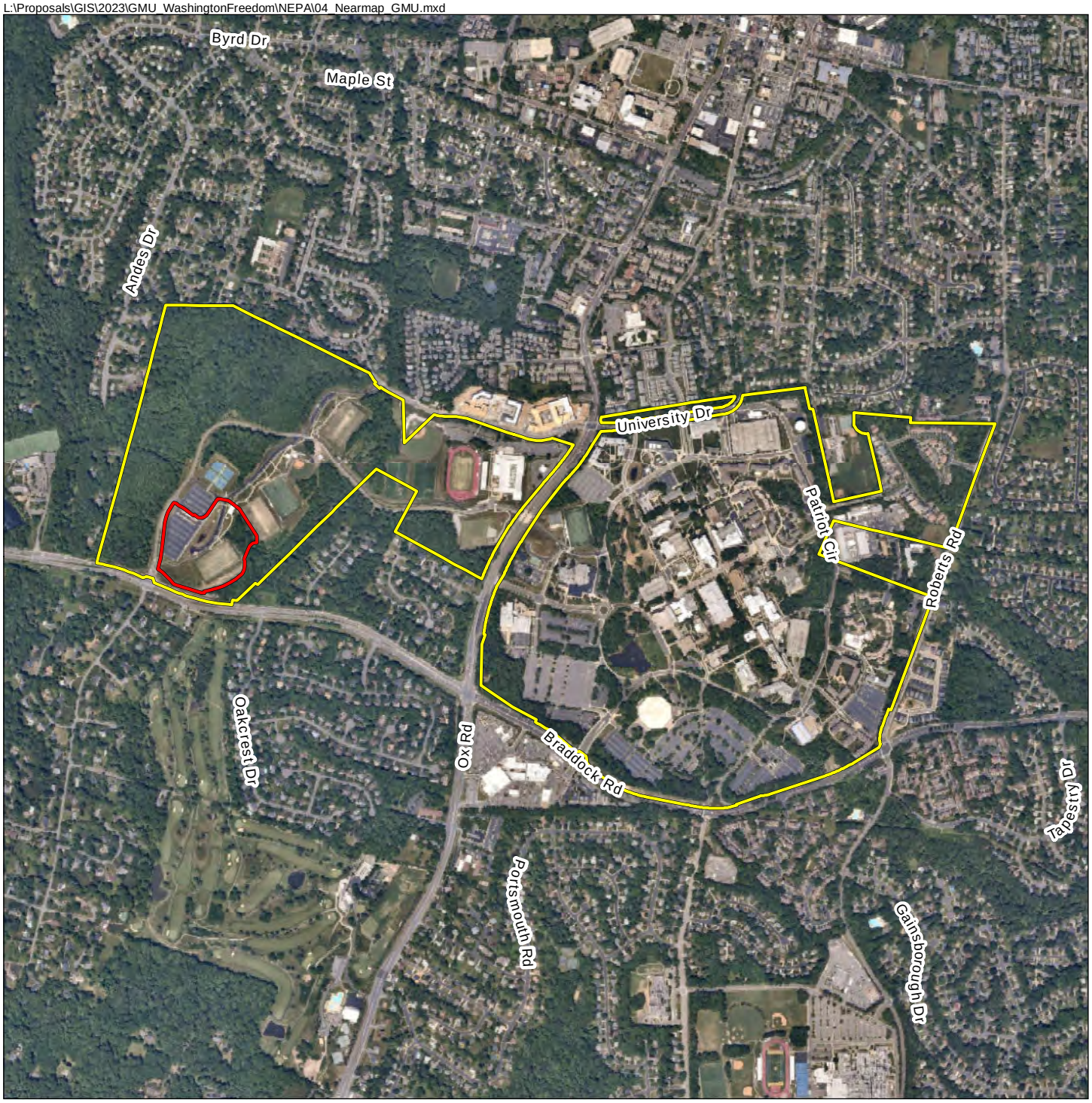
NORTH
0 200
Feet
Original Scale:
1 " = 200 '

Imagery: May 2023 Natural Color Imagery
Source: Nearmap®

Wetland Studies and Solutions, Inc.
a DAVEY company

Figure 3

L:\Proposals\GIS\2023\GMU_WashingtonFreedom\NEPA\04_Nearmap_GMU.mxd



Project Site

George Mason University Campus

George Mason University Campus
GMU Washington Freedom Field

NORTH

0 1,500

Feet

Original Scale:
1 " = 1,500 '

Imagery: May 2023 Natural Color Imagery
Source: Nearmap®

Wetland Studies and Solutions, Inc.
a DAVEY company

Figure 4

construction, or the construction of any facility or expansion of an existing facility which is hereafter undertaken by any state agency, board, commission, authority or any branch of state government, including state-supported institutions of higher learning, which costs $500,000 or more." An EIR is also required for projects undertaken on state-owned land.

DEQ has 60 days to review the EIR and provide comments to the Governor concerning the Proposed Action. DEQ typically circulates the EIR to interested agencies, local governments, and regional planning authorities to solicit comments.

1.3 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide a temporary facility to host World-Cup Warm-Up matches & Major League Cricket matches. The Proposed Action is needed because there is currently no facility available in the Fairfax County area that is capable of accommodating all of the teams planning to participate, as well as their fans. The facility must have the available space for the playing field and ancillary services, and it must be near hotels with sufficient capacity to host individuals attending the games. Fairfax County and GMU are ideally situated for this; the proximity of Dulles International Airport would help facilitate the arrival of incoming flights bringing teams and fans to the matches.

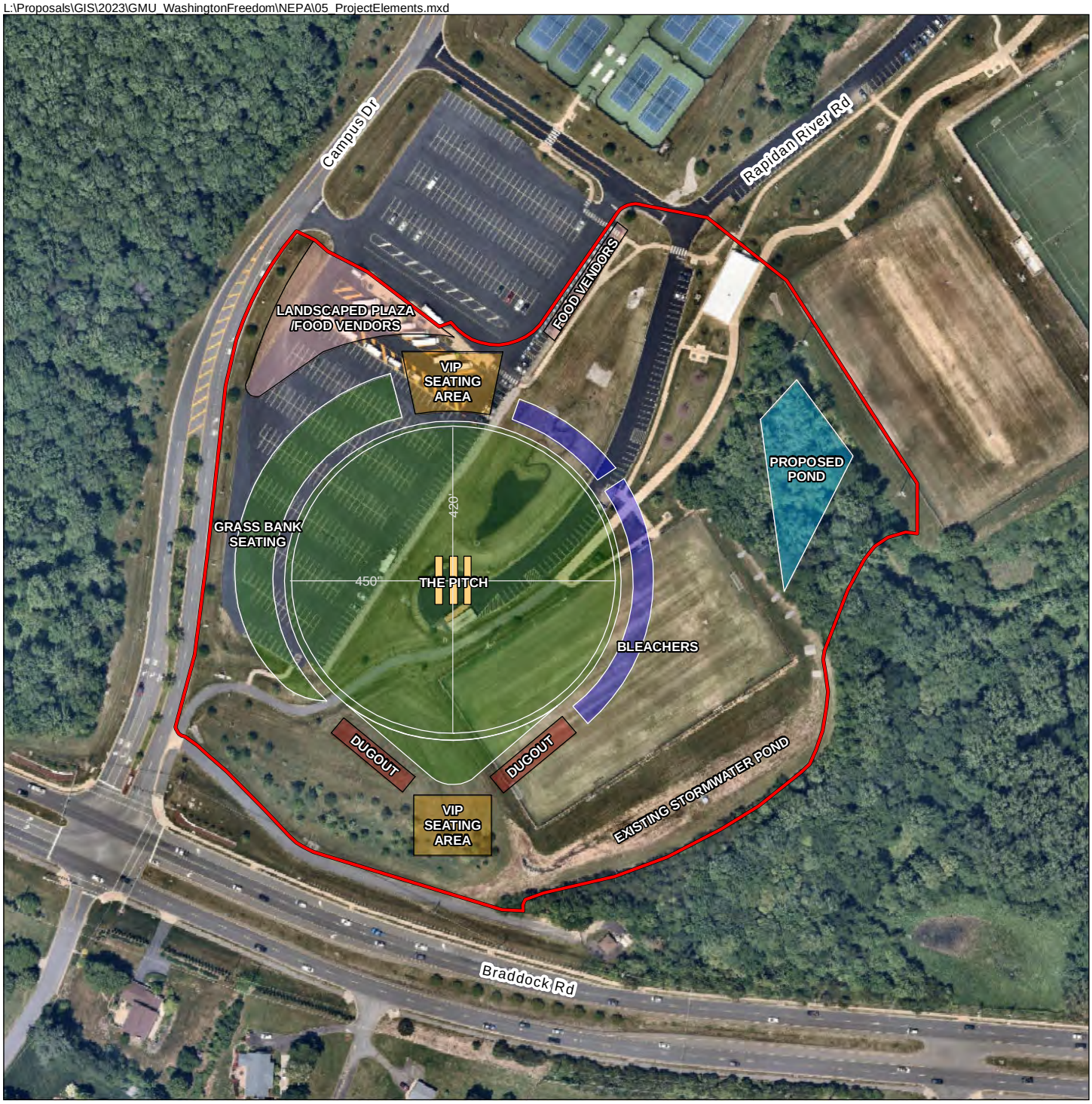
1.4 Site Location and Description

The proposed pop-up temporary stadium and ancillary facilities would be constructed on GMU's West Campus at the southern end of Rapidan River Road, near the intersection of Campus Drive and Braddock Road (VA Route 620) (**Figure 3**). The project site, which is the Proposed Action's limits of disturbance (LOD), is approximately 16 acres owned by GMU. The project site consists of forest, open grassy areas, roads, a parking lot, and athletic fields. Road access to the project site is via Campus Drive, which is off Braddock Road.

1.5 Description of the Proposed Action

A private entity (Washington Freedom) proposes the construction of a temporary cricket field and temporary ancillary facilities for cricket matches. The Proposed Action would include installation of turf for the field and short and manicured turfgrass for the pitch. Field markings would be painted prior to each match. Rented bleachers (to provide 3,000 seats) and two temporary two-story buildings to house VIP seating (referred to as player pavilions) would be installed onsite. An existing stormwater management pond adjacent to Rapidan River Road would be closed and stormwater would be routed to proposed pond in the northeastern portion of the project site. Space would be dedicated in one of the existing parking lots for food vendor set up. Portable restroom facilities would be brought to the site if needed. Demolition of approximately 380 spots from an existing parking lot and along Rapidan River Road would be required to in to install the field, bleachers, and VIP seating areas. A new stormwater pond would be installed in a wooded area to the northeast of the cricket field. Features of the Proposed Action are shown on **Figure 5**.

L:\Proposals\GIS\2023\GMU_WashingtonFreedom\NEPA\05_ProjectElements.mxd



Project Site

Project Elements
GMU Washington Freedom Field

NORTH
0 200
Feet
Original Scale:
1 " = 200 '

Source: Nearmap®

Wetland Studies and Solutions, Inc.
a DAVEY company

Figure 5

Construction is anticipated to begin in November 2023 and be complete in April 2024. The temporary cricket field and temporary ancillary facilities would be in place for approximately two months. During that time, six or more teams from two to four countries are expected to travel to the US to play in cricket matches. Throughout the duration of the cricket matches, the project area would likely receive an economic boost from increased use of local lodging and restaurants. Shopping venues and tourist attractions would likely see more visitors as well.

Following the World-Cup Warm-Up matches & Major League Cricket matches, the rented bleachers and player pavilions would be dismantled and removed from the site by the rental agency. The turfgrass would remain and be converted to a baseball diamond.

2.0 DEVELOPMENT OF PROJECT ALTERNATIVES

As an alternative to the Proposed Action, GMU considered construction of the cricket field at the track field next to the Field House on the West Campus, but the grading was not adequate. Cricket pitch and field requirements did not allow for use of any other sites on the GMU campus. Washington Freedom also searched throughout Fairfax County for alternative locations for implementing the Proposed Action, but was unable to find another site with sufficient parking and existing infrastructure to support the proposed cricket field and ancillary facilities.

Under the No-action Alternative, the cricket field and ancillary facilities would not be constructed, and the World-Cup Warm-Up matches & Major League Cricket matches would not be played on the GMU campus or elsewhere in Fairfax County. The No-action Alternative does not meet the purpose of and need for the Proposed Action; therefore, this alternative was not evaluated further.

In this report, GMU is evaluating only the Proposed Action–constructing the cricket field and support facilities. No off-site construction or land acquisition would occur.

3.0 AFFECTED ENVIRONMENT

Section 3 of the EIR describes existing conditions of the natural and human environment at and surrounding the project site. Potential impacts to the affected environment and actions to eliminate, minimize, or mitigate any potential impacts are discussed in **Section 4**.

3.1 Topography

Surface elevations at the site are relatively flat and range from approximately 355 to 410 feet above mean sea level. The majority of the project site has been previously graded, and the natural topography has been altered. Refer to **Figure 2**.

3.2 Geology

The project site is in the Piedmont Physiographic Province (ESRI 2023) and is underlain by the Old Mill Branch Metasiltstone Member of the Popes Head Formation. This Cambrian-Ordovician age formation consists of light greenish-gray to pale greenish-yellow, medium-grained to fine-grained micaceous metasiltstone. Typical mineralogy includes quartz, plagioclase, epidote, muscovite, biotite, chlorite, amphibole, and magnetite (USGS 2005). This geologic unit also includes lesser amounts of felsic metatuff and mafic metatuff in layers up to 71 inches thick. The maximum thickness of this formation is 2,300 feet. According to the Natural Resources Conservation Service's (NRCS) Web Soil Survey (NRCS 2023), depth to bedrock is likely to be greater than 80 inches below ground surface.

3.3 Soils

According to Fairfax County's Digital Soil Data, there are six mapped soils at the project site (Fairfax County 2023). **Table 1** shows each soil's characteristics.

Table 1: NRCS Mapped Soils in the Project Site

Soil Type	Slope	Drainage Class	Hydric Soil?	Prime Farmland Soil?	Depth to Water Table	Percent of Project Site
Wheaton loam (102)	2-25%	Well drained	No	No	> 80 inches	~58%
Codorus and Hatboro (30A)	0-2%	Somewhat poorly drained	Inclusions	No	15 inches	<1%
Fairfax loam (38C)	7-15%	Well drained	No	No*	> 80 inches	~4%
Glenelg silt loam(39B)	2-7%	Well drained	No	Yes	> 80 inches	~1%
Glenelg silt loam(39C)	7-15%	Well drained	No	No*	> 80 inches	~12%
Sumerduck loam (93B)	2-7%	Moderately well drained	Inclusions	Yes	30 inches	~25%

*Not Prime Farmland soil, but classified as Soil of Statewide Importance

As shown in **Table 1**, Glenelg silt loam (39B) and Sumerduck loam (93B) are classified as prime farmland, meaning they are ideally suited for agricultural production, and are either seasonally or permanently saturated with water. Almost the entire project site is well drained or moderately well drained with a water table greater than 30 inches below ground surface, while the remainder is poorly drained with a shallow water table (water table likely to occur within 18 inches below ground surface). The majority of the project site has been previously graded; therefore, natural soils have been disturbed and imported fill may cover much of the site.

3.4 Water Resources

According to the Department of Conservation and Recreation (DCR) (DCR 2023a), the project site is in the Lower Bull Run-Popes Head Creek sub-watershed of the Middle Potomac-Anacostia-Occoquan watershed (Hydrologic Unit Code 02070010). The natural hydrology at the project site has likely been modified during previous grading.

3.4.1 Groundwater

The project site is not in a Groundwater Management Area, as defined by the Virginia Groundwater Management Act of 1992 (Code of Virginia 2014). According to the U.S. Geological Survey (USGS) Water Data website (USGS 2023a), the nearest active groundwater monitoring well is in Burkeville, Virginia (Station 385638077220101), approximately 8.4 miles northeast of the project site. Exact depth to groundwater across the site is unknown, but based on topographic mapping and soil data mentioned in **Section 3.3**, it could occur at a variety of depths below the ground's surface (NRCS 2023).

3.4.2 Waters of the United States and Water Quality

According to the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) Mapper, there are no wetlands within the project site. The closest NWI-mapped wetland is the East Fork of Popes Head Creek, approximately 260 feet southeast of the project site (USFWS 2023a).

Based on the USGS' National Hydrography Dataset, there are no streams or surface water features in the project site (USGS 2023b). However, the East Fork of Popes Head Creek is approximately 260 feet southeast of the project site.

In compliance with Sections 303(d) and 305(b) of the Clean Water Act (CWA) and the Virginia Water Quality Monitoring, Information and Restoration Act, DEQ monitors water quality in the state's waters, identifying impairments and sources of impairments. DEQ monitors streams for a variety of water quality parameters, including temperature, dissolved oxygen, pH, fecal coliform, *Escherichia coli (E. coli)*, enterococci, total phosphorus, chlorophyll a, benthic invertebrates, metals and toxics in the water column, sediments, and fish tissues. When surface waters fail to meet water quality standards sufficient to support designated use categories, the waters are classified as "impaired waters". Freshwater rivers and surface waters in Virginia are evaluated biennially on the water's ability to support the following six designated use categories: recreation, aquatic life, fish consumption, shellfish harvest, public water supply, and wildlife.

DEQ released the *Final 2022 305(b)/303(d) Water Quality Assessment Integrated Report (Final 2022 Integrated Report)*, which is a summary of the water quality conditions in Virginia from January 1, 2015, to December 31, 2020, on October 21, 2022 (DEQ 2022). Based on the *Final 2022 Integrated Report*, there are no known impaired waters near the project site. Head Creek to the west of the project site and East Fork Head Creek to the east of the project site are both listed at Category 3A Indeterminate, as they have not been assessed. The closest downstream impaired water is Pope's Head Creek approximately 3 miles downstream which is listed as impaired for aquatic life use and recreation use due to *E. coli* contamination. Pollutant sources include grazing in riparian areas, land application of wastes, post-development erosion and sedimentation, streambank destabilization, and waste from pets, waterfowl, wildlife, and livestock.

3.4.3 Floodplains

The project site is shown on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map 51059C0255E. Mapping indicates that the entire project site is in Zone X (unshaded), which designates areas outside of the 100-year and 500-year floodplains (FEMA 2023). Therefore, the project site is not in a floodplain.

3.4.4 Wild and Scenic Rivers

Per the National Park Service's National Wild and Scenic River System (NPS 2023), there are no federally designated Wild and Scenic Rivers in Virginia. According to the DCR Scenic Rivers Program (DCR 2023b), the closest designated Scenic River is approximately 18 miles away. Therefore, no parts of the project site can be seen from a designated Scenic River, nor can any Scenic River be seen from the project site.

3.4.5 Chesapeake Bay Preservation

Virginia's Chesapeake Bay Preservation Act (CBPA) regulates development in the Chesapeake Bay watershed. It provides protections for riparian habitats that buffer wetlands and streams through the designation of Resource Protection Areas (RPA) and Resource Management Areas (RMA). Administration and enforcement of the CBPA is carried out by the localities subject to the Act. RPA components include tidal wetlands, water bodies with perennial flow, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, tidal shores and beaches, and coastal primary sand dunes, including beaches. A 100-foot buffer extending landward from the delineated boundaries of these components generally constitutes the extent of an RPA.

Fairfax County is subject to regulation under the CBPA. As defined by the CBPA, the project site is not in an RPA (Fairfax County 2023b). As defined by Fairfax County's Chesapeake Bay Preservation Ordinance, all areas outside of the RPA are an RMA, therefore, the project site is in an RMA.

3.4.6 Coastal Zone Management Program

The federal Coastal Zone Management Act (CZMA) directs state programs to provide for the protection of natural resources in the coastal zone, including wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and fish and wildlife and their habitat. Pursuant to the CZMA, Virginia Executive Order 35 (2014) instructs all state agencies to carry out their legally established duties consistent with the enforceable policies of Virginia's Coastal Zone Management Program (VCZMP) which include tidal and non-tidal wetlands, subaqueous lands, dunes and beaches, Chesapeake Bay Preservation Areas, marine fisheries, wildlife and inland fisheries, plant pests and noxious weeds, Commonwealth lands, point source air pollution, point source water pollution, nonpoint source water pollution, and shoreline sanitation. Since the Proposed Action is in Virginia's Coastal Management Area, it must be consistent with the enforceable regulatory programs that comprise the VCZMP (DEQ 2023a, DEQ 2023b).

3.5 Biological Resources

Wildlife species and habitats in Virginia are documented by the USFWS, the Virginia Department of Wildlife Resources (DWR), and DCR's Natural Heritage Program. A query of the USFWS' Information for Planning and Consultation database generated an Official Species List of federally listed and candidate species with the potential to occur in the project area. DWR's Virginia Fish and Wildlife Information Service (VaFWIS) website maintains an inventory of animals that are protected by the federal and/or state government. The DCR Natural Heritage Inventory maintains an inventory of rare and threatened plants, geologic features, and biological communities in Virginia in the Natural Heritage Data Explorer (NHDE). These databases were searched in October 2023.

Table 2 provides a summary of the USFWS, DWR, and DCR database search results for the project site. According to the USFWS' Official Species List, two federally listed species and one candidate species may occur near the project site (USFWS 2023b). The VaFWIS identified 12 federally or state listed species that may occur within a 2-mile radius of the project site (DWR 2023a), but none had confirmed observations. According to the NHDE, one state-protected species may occur in the sub-watershed in which the project site is located (DCR 2023a). **Appendix B** provides the database search results.

Table 2: Protected Species with the Potential to Occur near the Project Site Based on Database Results

Common Name	Scientific Name	Federal Status	State Status	Agency
Mammals				
Northern long-eared bat	*Myotis septentrionalis*	Endangered	Threatened	USFWS
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered	Endangered	USFWS
Insects				
Monarch butterfly	*Danaus plexippus*	Candidate	None	USFWS
Rusty-patched bumblebee	*Bombus affinis*	Endangered*	None	DCR

Sources: USFWS 2023b, DWR 2023a, and DCR 2023a.

*NHDE database lists rusty-patched bumblebee as state endangered but it is not listed on DWR's list of state protected species

3.6 Cultural Resources

A search of the Virginia Department of Historic Resources' (DHR) Virginia Cultural Resource Information System (V-CRIS) database was conducted in October 2023 (DHR 2023). The Proposed Action's Area of Potential Effect (APE) for archaeological resources is the limits of the project site. The architectural APE is a 0.1-mile radius around the project site.

No architectural resources were identified within the architectural APE. Four archeological resources intersect the archeological APE (**Table 3**). A Phase I Archeological Investigation was conducted on the approximately 90-acre GMU West Campus in 2006, including a portion of the project site (Sperling and Paynter 2006), prior to the existing development. DHR determined that none of the archeological resources that intersect the project site are eligible for listing on the National Register of Historic Places (NRHP). See **Table 3** and **Appendix C** for DHR information about these sites.

Table 3: Archeological Resources

DHR ID	Site Type	Evaluation Status
44FX3169	Lithic scatter, trash scatter	Not Eligible
44FX2699	Road (historic trace road)	Not Eligible
44FX2767	Military camp	Not Eligible
44FX0184	Single dwelling	Not Eligible

3.7 Hazardous Substances and Solid Wastes

According to the Environmental Protection Agency's (EPA) Envirofacts and DEQ's Environmental Data Mapper online databases, the following hazardous substance facilities/ occurrences are within 0.5 miles of the project site (EPA 2023a; DEQ 2023c):

- Nineteen (19) petroleum releases have occurred within 0.5 miles of the project site. None of these releases occurred on the GMU campus or adjoining properties. In addition, all petroleum release cases have been closed by the DEQ, indicating that residual petroleum contamination is not anticipated to significantly impact human health or the environment.
- Two registered petroleum tank facilities (e.g., George Mason University Pump Station at 11000 Braddock Road and Fairfax Villa Elementary School at 10900 Santa Clara Drive) were identified. Both sites are listed as "closed," indicating that they have no aboveground or underground storage tanks in use for petroleum storage. In addition, neither of these sites is associated with a documented petroleum release. Therefore, neither of these is anticipated to affect the Proposed Action.
- The Fairfax County Department of Housing Shop (EPA ID: VA0000104703) at 4530 University Drive, is listed as a Very Small Quantity Generator (VSQG) of hazardous waste. Waste generated at this facility includes ignitable waste and nonhalogenated solvents. VSQG facilities generate less than 100 kilograms (220 pounds) of hazardous waste per month. The EPA has reported no compliance violations for this site.

This facility is not anticipated to impact the Proposed Action due to physical distance from the project site and lack of reported violations.

No contamination of the project site has been reported or recorded.

3.8 Land Use and Zoning

According to Fairfax County GIS (Fairfax County 2023a), the project site is zoned as R-1 (Residential One Dwelling/Acre), which is inconsistent with its current use. However, according to Fairfax County's current Comprehensive Plan, (Fairfax County 2017), land use at the project site is classification Public Facilities, Governmental, and Institutional. Current land use includes athletic fields, parking lots, roads, and undeveloped open space.

There is prime farmland soil, soils of statewide importance, and forest land of average to moderate conservation value at the project site. However, there is no prime range land or any other formally classified lands at the project site (NRCS 2023, DCR 2023b).

3.9 Aesthetic Considerations

The project site is on a college campus and surrounded by recreational facilities. The visual environment includes athletic fields, roadways, traffic/parked vehicles, utility infrastructure such power lines, a restroom building, and undeveloped open space comprised of trees, shrubs, and maintained grassy areas.

3.10 Environmental Justice, Relocation Considerations, and Property Acquisition

The Virginia Environmental Justice (EJ) Act identifies an EJ community as a low-income community or a community of color. According to the Act, a low-income community is "any census block group in which 30 percent or more of the population is composed of people with low income." A low-income household is identified when "the annual household income is equal to or less than the greater of (i) an amount equal to 80 percent of the median income of the area in which the household is located, as reported by the Department of Housing and Urban Development, and (ii) 200 percent of the Federal Poverty Level." A community of color is defined as "any geographically distinct area where the population of color, expressed as a percentage of the total population of such area, is higher than the population of color in the State expressed as a percentage of the total population of the State." Virginia is comprised of 38% people of color.

The project site falls on the intersection of three census block groups. Per EPA's EJScreen data (EPA 2023b), the blockgroup the project site falls in (510594406001) as well as the block group that borders the site to the east (510594405031) are considered EJ communities. The census block group immediately to the south is not an EJ community (**Table 4**). Cumulatively, the surrounding block groups are comprised of 14% low-income population*[1] and 50% people of color population.

[1] Less than 200 % of the Federal Poverty Level (EPA 2023); Virginia EJScreen+ (DEQ 2023d) data was deemed insufficient to determine if annual household income is equal to or less than 80 percent of the median income of the area in which the household is located, as reported by the Department of Housing and Urban Development.

Table 4: EJScreen Results

Blockgroup	% Population of Color	% Low Income Community[1]	Environmental Justice Community
510594406001	54%	15%	Yes
510594405031	57%	35%	Yes
510594920001	28%	3%	No

Source: EPA 2023b

Additionally, EJScreen identifies EJ indexes at the block group level. The EJ Index highlights block groups with the highest intersection of low-income populations, people of color, and a given environmental indicator. To calculate an EJ index, EJScreen multiplies the environmental indicator by socioeconomic information (EPA 2023d). For the three block groups surrounding or adjacent to the project site, the Particulate Matter, Ozone, and Wastewater Discharge EJ Indices are above the 80th percentile (commonly used as the threshold for concern) in either the state or the US. Therefore, this community experiences a disproportionate environmental burden. EJScreen data are available in **Appendix D**.

The Proposed Action would be completed entirely on land owned by GMU. There are no existing residential, commercial, or non-profit facilities that would require relocation or property acquisition.

3.11 Community Facilities

The project site is in an area comprised of athletic fields, parking lots, roads, and undeveloped space. The GMU West Campus recreational fields are a community facility, available for public use, however, no other community facilities are in or adjacent to the project site. The adjacent city of Fairfax and Fairfax County both have numerous places of worship, schools, parks, libraries, and other community facilities (EPA 2023b).

3.12 Transportation and Access

The project site is accessed by vehicle via Campus Road, which is off Braddock Road. According to the Virginia Department of Transportation (VDOT) data (VDOT 2023a), approximately 35,000 vehicles travel along Braddock Road in the project vicinity each day. The majority (98%) consist of passenger vehicles.

3.13 Air Quality

Air quality is defined by ambient air concentrations of pollutants determined to be of concern to the health and welfare of the public. Specific geographic areas are classified as either “attainment” or “non-attainment” areas for each criteria pollutant, based on a comparison of measured data with both the National Ambient Air Quality Standards and State standards. Fairfax County is in a non-attainment for 8-hour ozone (EPA 2023c). It is in an attainment area for all other criteria pollutants.

To control excess air pollution, the Virginia Department of Motor Vehicles requires emissions inspections on all motor vehicles younger than 25 years old every two years. These emission controls would not directly affect the Proposed Action.

3.14 Climate Change

Climate change considerations focus on 1) the effect of a Proposed Action on climate change through greenhouse gas (GHG) emissions, and 2) the effect of climate change on a proposed project. Measurable climate change indicators such as point-source air emissions, flooding, habitat suitability for target species, or sea-level rise are not adversely affecting the project site and are not expected to be a factor at the site in the foreseeable future.

3.15 Noise

The most commonly occurring noise at the project site is from vehicular traffic on Braddock Road, Rapidan River Road, Campus Drive, and the other roads near the site. Other common noise sources include heating, ventilation, and air conditioning systems, recreational activities, and landscape maintenance (such as lawnmowers). None of these sources produces excessive noise levels.

4.0 ENVIRONMENTAL CONSEQUENCES: IMPACTS & MITIGATION

Code of Virginia Section 10.1-1188, *et seq*. requires agencies to discuss environmental effects that may result from a proposed action, and possible measures to mitigate potentially adverse impacts. Potential impacts and mitigation actions related to the Proposed Action are discussed below.

Under the No-action Alternative, GMU would not construct the cricket field or related facilities and the World-Cup Warm-Up matches & Major League Cricket matches would not be held at GMU (or elsewhere in Fairfax County). Unless specified below, the No-action Alternative would not result in impacts to any of the resources studied.

4.1 Topography

Because the site has been graded for previous construction and is relatively flat, minimal grading would be required and there would only be negligible changes to existing topography. Although excavation would be required for the stormwater pond, GMU would maintain existing elevations across the site to the extent practicable.

4.2 Geology

The Proposed Action is unlikely to create hazardous conditions related to earthwork. Shallow excavation of bedrock may occur, depending on depth to geologic strata at the project site. Excess rocky material would be disposed of in accordance with state and local regulations. No impacts to geology are anticipated.

4.3 Soils

Minor long-term impacts to soils would occur due to removal of topsoil for site leveling and grading. However, fill occurs across the majority of the project site due to previous site preparation for development of the existing athletic fields, parking lots and roads at the project site. As such, most soils at the project site have been previously disturbed; impacts to native soils would be minimal.

To minimize short-term soil impacts, GMU would adhere to strict erosion and sediment control (E&SC) measures. GMU would also implement best management practices (BMPs) such as installing and maintaining silt fence, inlet protection, and temporary sediment traps, to prevent sedimentation of stormwater runoff. Additional BMPs, such as mulching bare soils and temporary seeding, would be used as appropriate for soil stabilization.

Excavated soil would be managed in accordance with local, state, and federal regulations. If contaminated soils are discovered during construction/demolition activities, work would cease until the appropriate procedures and permits can be implemented and obtained. Accidental contaminant releases, such as pollutants from vehicles or equipment, could occur. The impacts of an accidental release on soils could be adverse, although the likelihood of an accidental release would be low due to proper vehicle and equipment maintenance.

4.4 Water Resources

GMU does not anticipate significant adverse impacts to water resources from the Proposed Action. Removal of parking spaces would result in a permanent decrease in impervious surfaces at the project site, leading to reduced surface water runoff and fewer road chemicals and vehicular fluids reaching nearby receiving bodies, creating a net long-term beneficial impact.

The contractor would develop a site-specific Stormwater Pollution Prevention Plan. GMU would obtain a Virginia Pollutant Discharge Elimination System permit before any land disturbance occurs, in accordance with local, state, and federal regulations, including the Virginia E&SC Law, Virginia State Water Law, and the Virginia Stormwater Management Act.

4.4.1 Groundwater

Shallow excavation activities could encounter groundwater in some locations across the project site; the construction contractor would implement BMPs such as avoidance and dewatering as needed to minimize impacts to groundwater. Ground disturbing activities (excavation) associated with construction would not reach the aquifers used for drinking water; therefore, there would be no impacts to drinking water quality or groundwater supply.

4.4.2 Waters of the United States and Water Quality

There are no mapped surface waters or wetlands identified by the NWI at the project site; therefore, there would be no direct impacts to mapped Waters of the US. It is unlikely that permits would be required from the U.S. Army Corps of Engineers and/or DEQ under CWA Sections 404/401. If it is determined that permits are required, GMU would obtain them prior to construction.

Pavement demolition and construction activities would expose soils at the ground surface to erosion from stormwater runoff. During implementation of the Proposed Action, stormwater runoff would be localized and impacts to nearby surface waters (East Fork of Pope's Head Creek) would be negligible considering the distance from the project site and the implementation of E&SC BMPs for soil stabilization. Post-construction, mulching and seeding of disturbed soils would decrease sediment load to surface waters.

4.4.3 Floodplains

Because the project site is not within a 100-year or 500-year floodplain, there would be no impacts to floodplains.

4.4.4 Wild and Scenic Rivers

Because there are no Wild and Scenic Rivers in the project area, there would be no impacts to this resource.

4.4.5 Chesapeake Bay Preservation

Fairfax County is in the Chesapeake Bay watershed and its zoning ordinance contains measures to protect Chesapeake Bay Preservation Areas. Adherence to the zoning ordinance and

implementation of E&SC measures and BMPs would ensure that any impacts to the Chesapeake Bay would be negligible.

4.4.6 Coastal Zone Management Program

Compliance with the enforceable policies of the VCZMP is summarized below.

I. Tidal and Non-Tidal Wetlands – As discussed in **Section 3.4.2 and 4.4.2**, there are no mapped NWI wetlands (either tidal or non-tidal) at the project site. While no wetland delineation was performed and there may be wetlands onsite, GMU would avoid work in wetlands to the extent practicable. If required, GMU would obtain all necessary permits prior to construction. Therefore, the Proposed Action would comply with this enforceable policy.

II. Subaqueous Lands – The Proposed Action would have no impact to subaqueous resources. Although the construction of the new cricket stadium and ancillary facilities would result in soil disturbances, which have the potential to affect downstream subaqueous lands, the Proposed Action includes appropriate E&SC measures to protect these resources. Therefore, the Proposed Action would comply with this enforceable policy.

III. Dunes and Beaches – There are no coastal primary sand dunes or beaches within the project area. Therefore, this enforceable policy is not applicable to the Proposed Action.

IV. Chesapeake Bay Preservation Areas – Per **Sections 3.4.5 and 4.4.5**, there would be no impacts to RPAs; however, there would be negligible impacts to RMAs under the Proposed Action. GMU would implement E&SC BMPs. Therefore, the Proposed Action would comply with this enforceable policy.

V. Marine Fisheries – No marine finfish or shellfish, are at or near the project site. Consequently, this enforceable policy is not applicable to the Proposed Action.

VI. Wildlife and Inland Fisheries – As discussed in **Section 4.5**, the Proposed Action would not be likely to adversely affect any federal- or state-protected species, nor would it significantly impact other wildlife. It would not introduce nuisance, predatory, or undesirable species. The Proposed Action would comply with this enforceable policy.

VII. Plant Pests and Noxious Weeds – The Proposed Action would not sell, barter, offer for sale, move, transport, deliver, ship, or offer to ship into the Commonwealth any plant pests or noxious weeds, nor import infested or quarantined regulated articles designated by the Department of Agriculture and Consumer Services. Seed mixes used for E&SC measures would be certified weed-free. The Proposed Action would comply with this enforceable policy.

VIII. Commonwealth Lands – The project site does not include Commonwealth lands under the jurisdiction of the DWR or DCR (DWR 2023a, DCR 2023b). Therefore, this enforceable policy is not applicable to the Proposed Action.

IX. Point Source Air Pollution – No long-term adverse impacts to air quality are anticipated with implementation of the Proposed Action. The Proposed Action would comply with this enforceable policy.

X. Point Source Water Pollution – No point source pollution is anticipated under the Proposed Action. Therefore, this enforceable policy is not applicable.

XI. Nonpoint Source Water Pollution – Non-point source pollution would be managed in adherence with local, state, and federal regulations and ordinances. GMU would develop an E&SC plan consistent with the requirements of Fairfax County, the Virginia E&SC Law, and other regulations to minimize potential non-point source pollution impacts from the Proposed Action. Therefore, the Proposed Action would comply with this enforceable policy.

XII. Shoreline Sanitation – No septic tanks would be installed or used at the site. Therefore, this enforceable policy is not applicable to the Proposed Action.

4.5 Biological Resources

The bat species listed in **Table 2** use a mixture of caves and trees (> 3 inches diameter at breast height) for winter and summer habitat (DWR 2023a). No known hibernacula (caves) are in the project vicinity (DWR 2023b). While suitable summer (forested) habitat exists on the project site and would be impacted by the Proposed Action, in accordance with USFWS Virginia Field Office guidelines, a determination of 'Not Likely to Adversely Affect' was made for the northern long-eared bat. Additionally, according to VaFWIS, there have been no confirmed observations of any bat species within 2 miles of the project site. The monarch butterfly is a long-distance migratory species that occupies a variety of habitats but is primarily dependent on milkweed species (*Asclepais sp.*) and other flowering plants often found in open herbaceous meadows. Rusty-patched bumblebees may inhabit grasslands, woodlands, and pastures and are known only in five counties in Virginia, including neighboring Fauquier County. They have not been documented in Fairfax County (Ruthenberg 2023). As vegetated areas of the project site are routinely mowed and maintained, there is no suitable habitat for the monarch butterfly or rusty-patched bumblebee, and no impacts are anticipated. Therefore, the Proposed Action would have no effect on federally or state-listed threatened, endangered, or candidate species.

Temporary impacts to wildlife would include disturbance from noise and increased human presence during construction and demolition activities. However, these impacts would be minor given the previously disturbed nature of the project site.

4.6 Cultural Resources

The V-CRIS database did not identify any architectural resources within the Proposed Action's architectural APE. Therefore, no impacts to architectural resources are anticipated. All archeological resources that intersect the project site have been determined not eligible for listing

on the NRHP. No impacts to these resources are anticipated due to the developed condition of the project site and limited scope of the Proposed Action.

If any unidentified archaeological or historic architectural resources or human remains are discovered during implementation of the Proposed Action, GMU would immediately stop work and contact DHR for guidance. If suggested by DHR, interested Native American tribes would be contacted. GMU is sensitive to the significance of historic resources and would coordinate and cooperate with DHR during all phases of implementation of the Proposed Action, as needed.

4.7 Hazardous Substances and Solid Waste

Construction activities would result in the use of hazardous materials and/or the potential generation of hazardous wastes. The quantities of hazardous waste used and generated would be minimal and any impacts area anticipated to be negligible. Hazardous materials used for construction and demolition activities would include maintenance fluids for vehicles (e.g., windshield washer fluids and coolants). Quantities of construction-related hazardous materials generated would be small, and these would be disposed of in accordance with federal, state, and local regulations. Solid waste generated by the Proposed Action would be disposed of in approved landfills, in accordance with local and state regulations. Petroleum products (e.g., motor oil, hydraulic fluid, and diesel fuel) would be used in work equipment, but these are not considered hazardous materials. Any spills or leaks would be minor and would be promptly contained with appropriate countermeasures (e.g., spill kits). As described in **Section 3.7**, hazardous substance facilities/ occurrences in the project vicinity are not anticipated to impact the Proposed Action

4.8 Land Use and Zoning

Land use on the micro-scale would change in the areas where new construction would occur. The Proposed Action is consistent with GMU's planned use of this site and with surrounding land use. Existing parking spots impacted by this project will be replaced on site along Campus Drive and in other nearby locations. In the interim condition, overall parking impacts would be minimized through the use and promotion of micro-transit with specific drop-off and pick-up locations within the GMU campus for ride share apps such as Lyft and Uber and through the use of GMU's existing shuttle services (free of charge) which is accessible to the general public via GMU's app. These parking alternatives are already in place for the university. There would be no other adverse impacts to land use. Impacts to overall land use would be minor.

4.9 Aesthetic Considerations

Short-term views of the project site would include work equipment and construction and pavement removal activities. Mid-term, there would be a cricket field and ancillary facilities visible. Long-term, there would be a new baseball field and stormwater management pond in the viewshed. The views of the project site from surrounding areas would remain consistent with the existing character of the area as a site for athletic fields. The Proposed Action would result in negligible impacts to the aesthetics of the site.

4.10 Environmental Justice, Relocation Considerations, and Property Acquisition

There would be no residential, commercial, or non-profit facility displacements as result of the Proposed Action. Further, no communities would be divided. Therefore, there would be no disproportionate and adverse impacts to any community, including the EJ communities surrounding the project site, under the Proposed Action.

4.11 Community Facilities

Except for the West Campus of GMU, there are no community facilities near the project site. Impacts to GMU are discussed throughout **Section 4**. No other community facilities would be impacted by the Proposed Action.

4.12 Transportation and Access

During construction and pavement demolition, there could be temporary disruptions to local traffic when large vehicles and equipment are brought to/from the project site. However, disruptions would be negligible (on the order of minutes) and only on roads immediately surrounding the West Campus of GMU.

There would be no short-term or long-term increases in traffic levels due to the Proposed Action. However, there would be mid-term increases, throughout the duration of the World-Cup Warm-Up matches & Major League Cricket matches. The matches would be broadcast live, and to accommodate overseas viewing audiences, most matches would be played in the late morning and early afternoon (i.e., starting approximately 10:00 a.m.). Therefore, while traffic would increase in the mid-term, traffic peaks related to the cricket matches would occur in off-hours related to normal traffic peaks. All traffic impacts would be minor.

4.13 Air Quality

Demolition of existing asphalt surfaces would generate particulate matter (i.e., dust). However, this airborne material would not migrate far from the project site and adverse impacts would be short-term, localized, and minor. During all phases of the Proposed Action, the use of large vehicles and equipment at the project site would temporarily increase emissions of air pollutants; however, these impacts would be short-term, localized, and negligible.

Traffic congestion and vehicular idling would be minimized to the extent practicable. During implementation of the Proposed Action, fugitive dust would be kept to a minimum by using control methods outlined in 9 Virginia Administrative Code 5-50-60 *et seq*. of the Regulations for the Control and Abatement of Air Pollution. This may include use of water or chemicals for dust control, covering of open equipment for conveying and transporting materials, prompt removal of spilled or tracked dirt or other materials from paved streets, and removal of dried sediments resulting from soil erosion. Any adverse impacts to air quality due to the Proposed Action are anticipated to be negligible to minor.

Short-term impacts from the Proposed Action would include exhaust emissions from construction vehicles, and the probable generation of minor particulate matter from the removal of existing

asphalt surfaces. These pollution sources are not anticipated to significantly impact air quality. Localized increases in air emissions from motor vehicles would also occur after completion of the Proposed Action. Air pollution from numerous motor vehicles driving to and from the temporary stadium is not anticipated to have detrimental affects on regional air quality, due to the existing population in Fairfax County and surrounding areas.

4.14 Climate Change

While heavy machinery would generate less-than-significant quantities of GHGs during construction and demolition, the Proposed Action's impact on climate change would be negligible, short-term, and localized. The Proposed Action would not be directly affected by climate change.

4.15 Noise

Due to operation of construction equipment and heavy machinery, short-term minor increases in noise levels would occur during project-related construction and pavement demolition.

To minimize noise impacts, equipment and machinery would meet all local, state, and federal noise regulations, and demolition and construction would occur during daylight hours. Demolition and construction personnel exposed to noise levels exceeding Occupational Safety and Health Administration (OSHA) limits from heavy equipment would be required to wear appropriate hearing protection and adhere to safety BMPs in accordance with OSHA regulations. In other circumstances, hearing protection would be recommended for on-site personnel.

Mid-term, the Proposed Action would result in increases in noise levels due to fan participation in cricket matches and baseball games. These impacts would range from negligible to minor, depending on crowd size.

4.16 Irreversible Environmental Changes

Construction materials would be irretrievably committed for the execution of the Proposed Action. In addition, the proposed work would generate a small quantity of solid waste that would be transported to regional disposal facilities. The disposal capacity required is not significant in terms of regional waste disposal capacity and regional demand for waste disposal. Tree removal for construction of the stormwater management pond would be irreversible.

4.17 Summary of Unavoidable Impacts and Minimization/Mitigation Measures

The Proposed Action would not cause significant impacts to the natural, scenic, or historic resources of Virginia. The Proposed Action would also not result in significant adverse impacts to the human environment. **Table 5** provides a summary of potential impacts from the Proposed Action and minimization/mitigation measures.

Table 5: Potential Impacts of Proposed Action and Proposed Minimization/Mitigation Measures

Resource	Potential Impact(s)	Proposed Minimization/ Mitigation Measures
Topography	Negligible	None
Geology	None	None
Soils	Minor	E&SC measures
Water Resources	None to Negligible	E&SC measures
Biological Resources	Minor	None
Cultural Resources	None	None
Hazardous Materials and Solid Waste	Negligible	Control, abatement, and safety protocols outlined by EPA
Land Use and Zoning	Minor	None
Aesthetic Considerations	Negligible	None
EJ/Relocation/Acquisition	None	None
Community Facilities	to	None
Transportation and Access	Minor	None
Air Quality	Negligible to Minor	Fugitive dust would be kept to a minimum by using control methods outlined in 9 Virginia Administrative Code 5-50-60 *et seq*. of the Regulations for the Control and Abatement of Air Pollution
Climate Change	Negligible	None
Noise	Minor	OSHA safety protocols

4.18 Secondary and Cumulative Impacts

Secondary and cumulative impacts include those from past, present, and reasonably foreseeable actions in the project area, regardless of the project sponsor.

According to VDOT's 2024-2029 Six-Year Improvement Program (VDOT 2023), there are no planned roadway projects near the project site; the nearest project in the six-year plan is on Braddock Road approximately 3.8 miles east of the project site.

Fairfax County is divided into Planning Districts, which are further divided into Planning Sectors. The project area is in the Fairfax Planning District and the George Mason Community Planning Sector. The *Fairfax County Comprehensive Plan, 2017 Edition* states that there are few, if any, opportunities to increase roadway capacity along Braddock Road between West Ox Road and Guinea Road, near the project area. No proposed transportation projects are currently listed in the project area, but park-and-ride lots could be constructed (Fairfax County 2017). The Comprehensive Plan also states that public facilities have been identified as future needs in the Fairfax Planning District, but that review public hearings before the Planning Commission would be required before these could be undertaken. According to the Comprehensive Plan, the George Mason Community Planning Sector is not suited for commercial or industrial uses since the sector

is already served by such facilities in the City of Fairfax and the surrounding area. The Comprehensive Plan does not identify any other planned developments near the project area.

According to the *City of Fairfax 2035 Comprehensive Plan* (City of Fairfax 2022), a part of the proposed Green Ribbon Trail System is planned for approximately 0.5 miles north of the project site, north of University Drive. The comprehensive plan does not include any other transportation or development projects within one mile of the project site. Ongoing maintenance tasks and interior renovations may occur elsewhere on GMU's West Campus, but the nature of these potential projects is such that environmental impacts would be minimal. No major projects are planned for the GMU West Campus, although a long-term Master Plan is being considered.

Secondary and cumulative impacts have been considered in terms of social impacts, traffic generation, and environmental resources. The secondary and cumulative impacts of the Proposed Action together with those other past and future projects in the project area or at GMU's west campus would not result in significant impacts to any resources evaluated in this EIR.

4.19 Relationship between Short-Term Use of the Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term, adverse effects to the environment include impacts from construction and pavement demolition, such as vehicle noise, exhaust emissions from vehicles and equipment, generation of dust from site preparation activities, and slight traffic disruptions due to machinery and workers traveling to/from the project site. Mid-term adverse impacts would be limited to increased traffic and noise during cricket matches. Long-term adverse effects are limited to minor impacts to biological resources due to habitat loss.

There would be temporary minor beneficial impacts to the local economy due to spending by fans and teams attending the matches. There would also likely be a minor long-term beneficial impact to localized water quality due to the removal of pavement in the parking lots and along Rapidan River Road.

5.0 REFERENCES

City of Fairfax. 2019, amended 2022. City of Fairfax 2035 Comprehensive Plan. https://www.fairfaxva.gov/government/community-development-planning/planning/comprehensive-plan.

Code of Virginia. 2014. *Designated Virginia Groundwater Management Areas*. Vol. 30 Iss. 18 (Final Regulation) 9VAC25-600, Designated Groundwater Management Areas May 05, 2014 (virginia.gov). Accessed October 12, 2023.

Department of Conservation and Recreation. 2023a. Natural Heritage Data Explorer. https://vanhde.org/. Accessed October 9, 2023.

Department of Conservation and Recreation. 2023b. Virginia Outdoor Plan Mapper. https://vdcr.maps.arcgis.com/apps/webappviewer/index.html?id=77fee256c76740ec93fc5a1a07f99c90. Accessed October 11, 2023.

Department of Environmental Quality. 2023a. Virginia's "Coastal Zone". Coastal Zone Management Boundaries in Virginia | Virginia DEQ Accessed October 12, 2023.

Department of Environmental Quality. 2023b. Coastal Zone Management. https://www.deq.virginia.gov/our-programs/coastal-zone-management. Accessed October 11, 2023.

Department of Environmental Quality. 2023c. *Environmental Data Mapper*. https://apps.deq.virginia.gov/EDM/. Accessed October 11, 2023.

Department of Environmental Quality. 2023d. Virginia EJScreen+. https://vadeq.maps.arcgis.com/apps/webappviewer/index.html?id=bad3e23c0d6545a1b6b36c1a45e8ed43. Accessed October 13, 2023.

Department of Environmental Quality. 2022. *Final 2022 305(b)/303(d) Water Quality Assessment Integrated Report*. Released October 21, 2022. https://www.deq.virginia.gov/our-programs/water/water-quality/assessments/integrated-report. Accessed October 10, 2023.

Department of Environmental Quality. 2021. *Procedure Manual Environmental Impact Review of Major State Facilities*. https://www.deq.virginia.gov/our-programs/environmental-impact-review/state-projects.

Department of Historic Resources. 2023. Virginia Cultural Resource Information System. V-CRIS - Log in (virginia.gov). Accessed October 9, 2023.

Department of Wildlife Resources. 2023a. Virginia Fish and Wildlife Information Service. https://services.dwr.virginia.gov/fwis/?antiCache=1684395612265. Accessed October 9, 2023.

Department of Wildlife Resources. 2023b. Northern long-eared bat mapper. https://dgif-virginia.maps.arcgis.com/apps/webappviewer/index.html?id=32ea4ee4935942c092e41ddcd19e5ec5. Accessed October 11, 2023.

Environmental Protection Agency. 2023a. Envirofacts. https://enviro.epa.gov/. Accessed October 12, 2023.

Environmental Protection Agency. 2023b. EJScreen. https://ejscreen.epa.gov/mapper/. Assessed October 13, 2023.

Environmental Protection Agency. 2023e. *The Green Book Nonattainment Areas for Criteria Pollutants*. https://www3.epa.gov/airquality/greenbook/anayo_va.html. Accessed October 11, 2023.

ESRI. 2023. Virginia Provinces. Virginia Provinces (arcgis.com). Accessed October 12, 2023.

Fairfax County. 2023a. Fairfax County GIS. https://www.fairfaxcounty.gov/maps/interactive-map-gallery. Accessed October 12, 2023.

Fairfax County. 2017. *Fairfax County Comprehensive Plan, 2017 Edition*. Current & Historic Comprehensive Plan Documents - 2017 Edition | Planning Development (fairfaxcounty.gov)

Federal Emergency Management Agency. 2023. *FEMA Flood Map Service Center*. https://msc.fema.gov/. Accessed October 12, 2023.

National Park Service. 2023. Wild and Scenic Rivers. https://nps.maps.arcgis.com/apps/View/index.html?appid=ff42a57d0aae43c49a88daee0e353142. Accessed October 12, 2023.

Natural Resource Conservation Service. 2023. *Web Soil Survey.* https://websoilsurvey.sc.egov.usda.gov/. Accessed October 12, 2023.

Ruthenberg, J., C Vuocolo, T. Rouston, and E. Orcutt. 2023. Rusty Patched Bumblebee at https://dwr.virginia.gov/wildlife/information/rusty-patched-bumble-bee/. Accessed October 11, 2023.

Sperling, S.T, and E.S. Paynter. 2006. Phase I Archeological Investigations of the 93.46 Acre GMU West Campus Property, Fairfax County, Virginia.

US Fish and Wildlife Service. 2023a. National Wetland Inventory – Wetlands Mapper. https://www.fws.gov/wetlands/data/mapper.html. Accessed October 10, 2023.

US Fish and Wildlife Service. 2023b. *Information for Planning and Consultation.* https://ecos.fws.gov/ipac/. Accessed October 9, 2023.

US Geological Survey. 2023a. *Water Data Website.* https://waterdata.usgs.gov/nwis/current/?type=gw. Accessed October 12, 2023.

US Geological Survey. 2023b. National Hydrography Dataset. https://apps.nationalmap.gov/downloader/#productSearch. Accessed October 12, 2023.

US Geological Survey. 2005. *Digital Representation of the 1993 Geologic Map of Virginia.* https://mrdata.usgs.gov/geology/state/state.php?state=VA. Accessed October 12, 2023.

Virginia Department of Transportation. 2023a. 2021 Traffic Data. https://www.virginiadot.org/info/2021_traffic_data.asp. Accessed October 11, 2023.

Virginia Department of Transportation. 2023. Six-Year Improvement Program. http://syip.virginiadot.org/Pages/allProjects.aspx. Accessed October 11, 2023.

Appendix A:
Threatened and Endangered Species

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

In Reply Refer To:
Project Code: 2024-0002790
Project Name: GMU Washington Freedom Field

October 09, 2023

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

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

OFFICIAL SPECIES LIST

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

This species list is provided by:

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

PROJECT SUMMARY

Project Code: 2024-0002790
Project Name: GMU Washington Freedom Field
Project Type: Recreation Events
Project Description: George Mason University proposes to support the construction by a third party of a temporary sports facility including cricket pitch, bleachers, grass bank seating and player pavilions to facilitate an international cricket tournament
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.831783200000004,-77.32594176417611,14z

Counties: Fairfax County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 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	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

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

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

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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

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

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

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

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

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

PROBABILITY OF PRESENCE SUMMARY

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

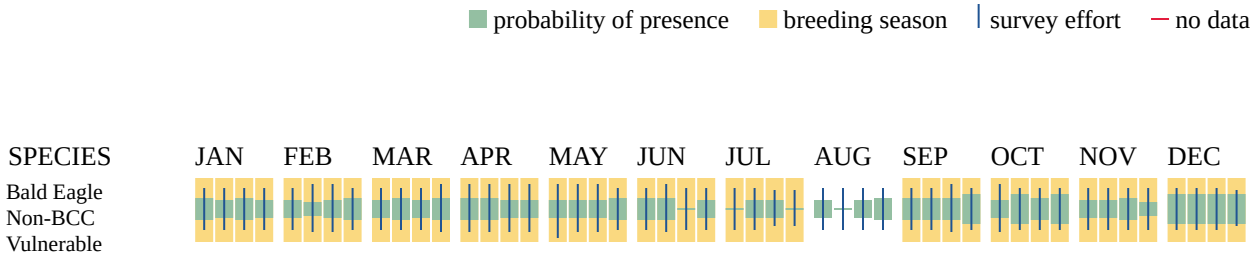
Probability of Presence (■)

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

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

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

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 28 to Jul 20
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9443	Breeds Apr 20 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10

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

PROBABILITY OF PRESENCE SUMMARY

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

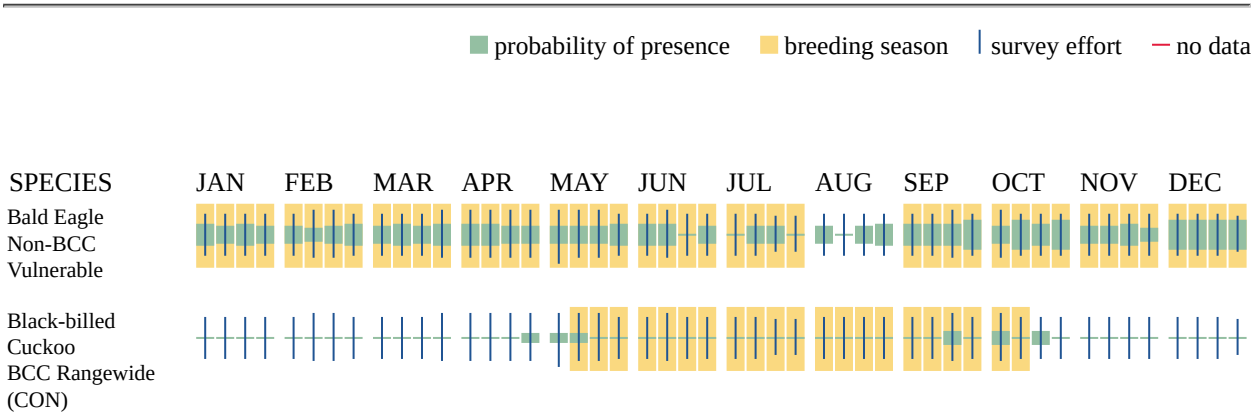
Probability of Presence (■)

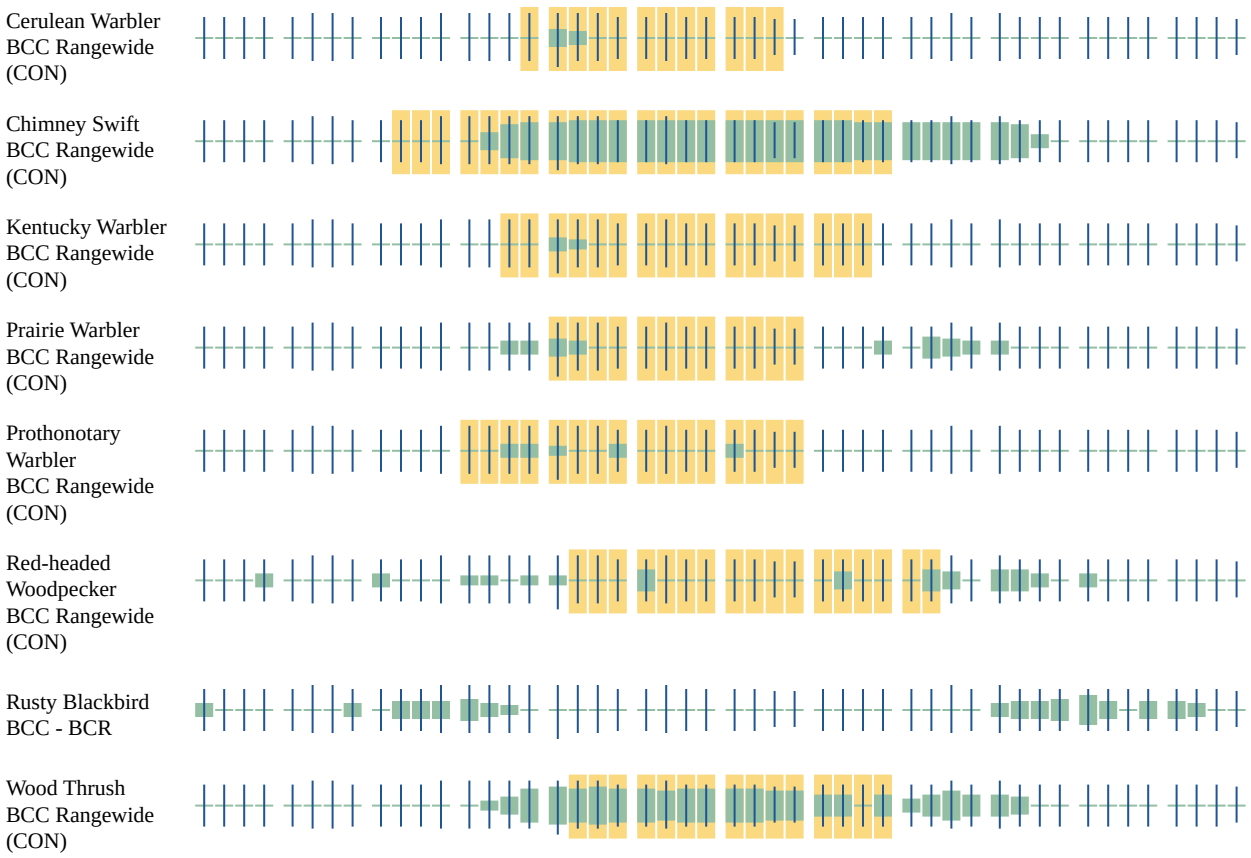
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

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

IPAC USER CONTACT INFORMATION

Agency: Wetland Studies and Solutions
Name: Zaneta Hough
Address: 1008 Old Virginia Beach Rd
City: Virginia Beach
State: VA
Zip: 23451
Email zhough@wetlands.com
Phone: 7579632008

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

In Reply Refer To:
Project code: 2024-0002790
Project Name: GMU Washington Freedom Field

October 13, 2023

Federal Nexus: no
Federal Action Agency (if applicable):

Subject: Technical assistance for 'GMU Washington Freedom Field'

Dear Zaneta Hough:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on October 13, 2023, for 'GMU Washington Freedom Field' (here forward, Project). This project has been assigned Project Code 2024-0002790 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species and/or critical habitat listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Coordination with the Service is complete. This letter serves as technical assistance. All conservation measures should be implemented as proposed. Thank you for considering federally listed species during your project planning.

We are uncertain where the northern long-eared bat occurs on the landscape outside of known locations. Because of the steep declines in the species and vast amount of available and suitable forest habitat, the presence of suitable forest habitat alone is a far less reliable predictor of their presence. Based on the best available information, most suitable habitat is now expected to be unoccupied. During the interim period, while we are working on potential methods to address this uncertainty, we conclude take is not reasonably certain to occur in areas of suitable habitat where presence has not been documented.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the Virginia Ecological Services Field Office and reference Project Code 2024-0002790 associated with this Project.

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

1. Name

GMU Washington Freedom Field

2. Description

The following description was provided for the project 'GMU Washington Freedom Field':

> George Mason University proposes to support the construction by a third party of a temporary sports facility including cricket pitch, bleachers, grass bank seating and player pavilions to facilitate an international cricket tournament

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.831783200000004,-77.32594176417611,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. The action area does not overlap with an area for which U.S. Fish and Wildlife Service currently has data to support the presumption that the northern long-eared bat is present. Are you aware of other data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed NLEB acoustic detections. Data on captures, roost tree use, and acoustic detections should post-date the year when white-nose syndrome was detected in the relevant state. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: Wetland Studies and Solutions
Name: Zaneta Hough
Address: 1008 Old Virginia Beach Rd
City: Virginia Beach
State: VA
Zip: 23451
Email zhough@wetlands.com
Phone: 7579632008

VaFWIS Initial Project Assessment Report Compiled on 10/9/2023, 3:52:23 PM

Help

Known or likely to occur within a **2 mile radius around point 38.8320000 -77.3259998** in **059 Fairfax County, 600 Fairfax City, VA**

View Map of Site Location

698 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)
050022	FEST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
030062	ST	Ia	Turtle, wood	Glyptemys insculpta		BOVA,Habitat
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii		BOVA
100155	ST	Ia	Skipper, Appalachian grizzled	Pyrgus wyandot		BOVA
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA
100248		Ia	Fritillary, regal	Speyeria idalia idalia		BOVA
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		BOVA
040052		IIa	Duck, American black	Anas rubripes		BOVA
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
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA
040140		IIa	Woodcock, American	Scolopax minor		BOVA
060071		IIa	Lampmussel, yellow	Lampsilis cariosa		BOVA
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius		BOVA

To view **All 698 species** View 698

*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.

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species (2 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					
Popes Head Creek (20700102)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700102)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700102)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

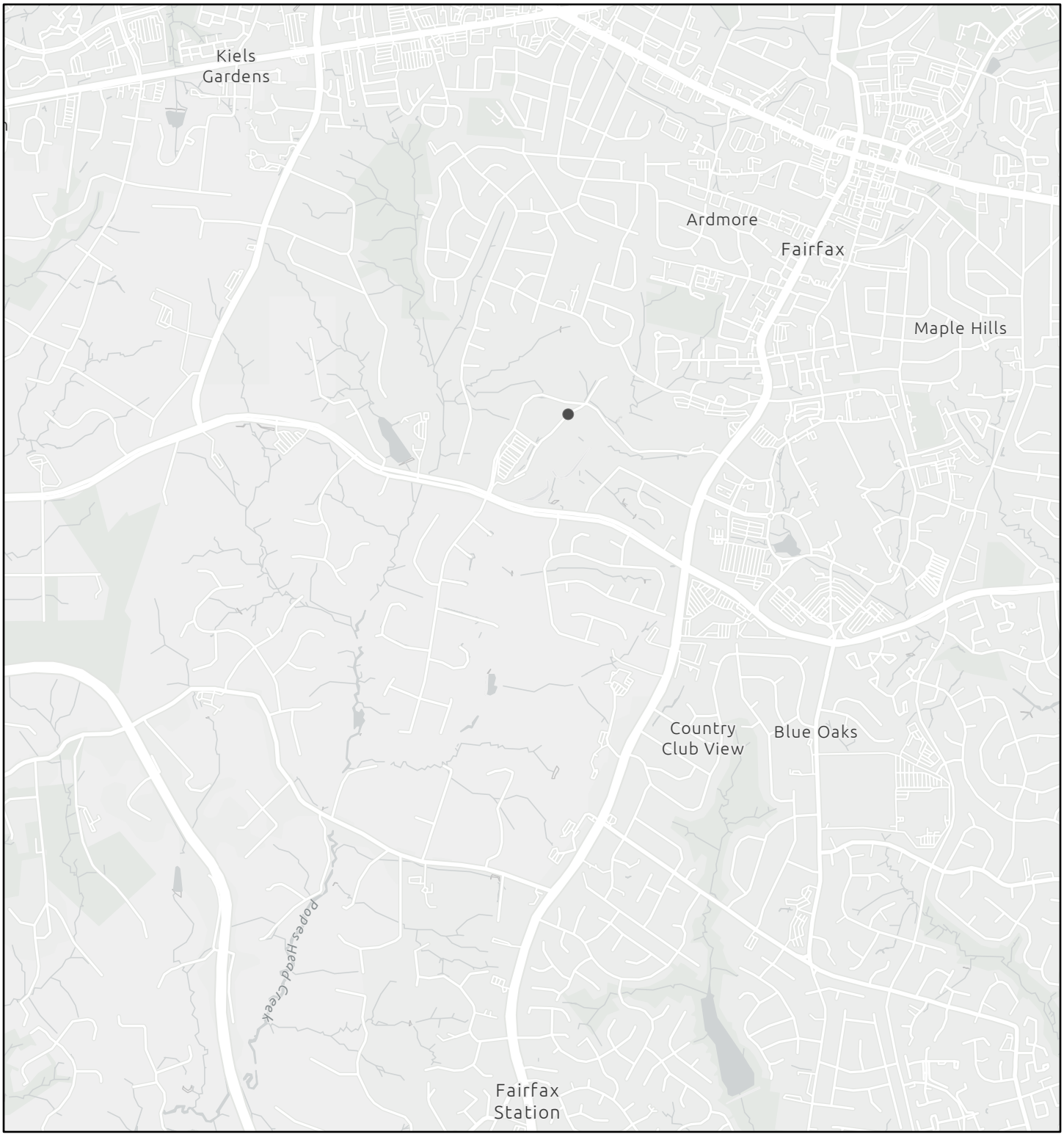
Public Holdings:

N/A

Compiled on 10/9/2023, 3:52:23 PM I1531128.0 report=IPA searchType= R dist= 3218 poi= 38.8320000 -77.3259998

PixelSize=64; Anadromous=0.019148; BECAR=0.017071; Bats=0.017315; Buffer=0.075643; County=0.058215; Impediments=0.020139; Init=0.106441; PublicLands=0.025057; SppObs=0.261066; TEWaters=0.021164; TierReaches=0.04681; TierTerrestrial=0.033064; Total=0.866736; Tracking_BOVA=0.216875; Trout=0.019891

NLEB Locations and Roost Trees



10/11/2023, 9:43:20 AM

1:36,112

0 0.25 0.5 1 mi

0 0.38 0.75 1.5 km

County of Prince William, Fairfax County, VA, VGIN, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

VA Dept. Game & Inland Fisheries

County of Prince William, Fairfax County, VA, VGIN, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | Virginia Geographic

Natural Heritage Resources

Your Criteria

Watershed (8 digit HUC): 02070010 - Middle Potomac-Anacostia-Occoquan

Subwatershed (12 digit HUC): PL46 - (Lower) Bull Run-Popes Head Creek

Search Run: 10/9/2023 15:49:45 PM

Result Summary

Total Species returned: 5

Total Communities returned: 5

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	Scientific Name Linked	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Virginia Coastal Zone
Middle Potomac-Anacostia-Occoquan								
(Lower) Bull Run-Popes Head Creek								
AQUATIC NATURAL COMMUNITY								
NP-Middle Potomac-Anacostia-Occoquan First Order Stream	NP-Middle Potomac-Anacostia-Occoquan First Order Stream	*NP-Middle Potomac-Anacostia-Occoquan First Order Stream*	G3G4	S3S4	None	None	13	Y
NP-Middle Potomac-Anacostia-Occoquan Second Order Stream	NP-Middle Potomac-Anacostia-Occoquan Second Order Stream	*NP-Middle Potomac-Anacostia-Occoquan Second Order Stream*	G2G3	S2S3	None	None	16	Y
INVERTEBRATE								
Rusty-patched Bumblebee	Bombus affinis	Bombus affinis	G2	S1	LE	LE	55	Y
TERRESTRIAL NATURAL COMMUNITY								
Piedmont / Inner Coastal Plain Floodplain Levee Forest	Platanus occidentalis - Celtis occidentalis - Ulmus americana - Fraxinus pennsylvanica / Acer negundo / Chasmanthium latifolium Forest	Platanus occidentalis - Celtis occidentalis - Ulmus americana - Fraxinus pennsylvanica / Acer negundo / Chasmanthium latifolium Forest	G3G4	S3	None	None	2	Y

Common Name/Natural Community	Scientific Name	Scientific Name Linked	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Virginia Coastal Zone
Northern Hardpan Basic Oak - Hickory Forest	Quercus alba - Carya glabra - Fraxinus americana / Cercis canadensis / Muhlenbergia sobolifera - Elymus hystrix Forest	Quercus alba - Carya glabra - Fraxinus americana / Cercis canadensis / Muhlenbergia sobolifera - Elymus hystrix Forest	G2	S2	None	None	10	Y
Piedmont / Coastal Plain Hemlock - Hardwood Forest	Tsuga canadensis - Fagus grandifolia - Quercus (montana, alba) Forest	Tsuga canadensis - Fagus grandifolia - Quercus (montana, alba) Forest	G2G3	S1	None	None	19	Y
VASCULAR PLANTS								
False Hop Sedge	Carex lupuliformis	Carex lupuliformis	G4	S1S2	None	None	15	Y
Midwestern Arrowhead	Sagittaria brevirostra	Sagittaria brevirostra	G5	SH	None	None	3	Y
Hairy nutrush	Scleria ciliata var. ciliata	Scleria ciliata var. ciliata	G5TNR	S1	None	None	12	Y
Bog chickweed	Stellaria alsine	Stellaria alsine	G5	S1	None	None	3	Y

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an information request.

To Contribute information on locations of natural heritage resources, please fill out and submit a rare species sighting form.

Appendix B:
Cultural Resources

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
- County Boundaries

N

Feet

0 200 400 600 800

1:9,028 / 1"=752 Feet

Title: GMU Washington Freedom Field **Date: 10/9/2023**

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.

Snapshot

Date Generated: October 11, 2023

Site Name: Road Trace
Site Classification: Terrestrial, open air
Year(s): 1850 - 1874
Site Type(s): Road
Other DHR ID: No Data
Temporary Designation: FSCWSI687

Site Evaluation Status

DHR Staff: Not Eligible

Locational Information

USGS Quad: FAIRFAX
County/Independent City: Fairfax (County)
Physiographic Province: Piedmont
Elevation: 390
Aspect: Facing North
Drainage: Potomac/Shenandoah River
Slope: 0 - 2
Acreage: 17.450
Landform: Sideslope
Ownership Status: Public - Local
Government Entity Name: No Data

Site Components

Component 1

Category: Transportation/Communication
Site Type: Road
Cultural Affiliation: Euro-American
Cultural Affiliation Details: No Data
DHR Time Period: Antebellum Period, Civil War, Reconstruction and Growth
Start Year: 1850
End Year: 1874
Comments: This location is a historic road trace. The road connected Fairfax Courthouse to Braddock Road.

Bibliographic Information

Bibliography:

No Data

Informant Data:

Name: Unknown
Company 1: John Milner Associates
City: Alexandria
State: Virginia
Phone 1: 703-354-9737
Ext: 0000

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID: 44FX2699
Staff Name: Kirchen, Roger
Event Date: 9/7/2006
Staff Comment No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:
No Data
Project Review File Number: WSSI # 2061.01
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: Wetland Studies and Solutions, Inc.
Survey Date: 8/1/2006
Survey Description:
Reconnaissance survey.

Current Land Use	Date of Use	Comments
Forest	1/1/2001 12:00:00 AM	*No Data*

Threats to Resource: No Data
Site Conditions: Surface Features
Survey Strategies: Historic Map Projection, Informant, Surface Testing
Specimens Collected: No
Specimens Observed, Not Collected: Yes
Artifacts Summary and Diagnostics:
No Data
Summary of Specimens Observed, Not Collected:
Relic hunters have found Civil War artifacts along the road trace, but it is not clear if these are from camps or were discarded by troops moving along the road.
Current Curation Repository: No Data
Permanent Curation Repository: No Data
Field Notes: Yes
Field Notes Repository: Fairfax County Park Authority, Wetland Studies and Solutions, Inc.
Photographic Media: No Data
Survey Reports: Yes
Survey Report Information:
PHASE I ARCHEOLOGICAL INVESTIGATIONS OF THE
93.46 ACRE GMU WEST CAMPUS PROPERTY,
FAIRFAX COUNTY, VIRGINIA
WSSI # 2061.01
August 2006 (revised)

Fairfax County Civil War Sites Inventory (Balicki et al. 2002)
Survey Report Repository: Fairfax County Park Authority, Wetland Studies and Solutions, Inc.
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:
No Data

Project Review File Number:	2002-0013
Sponsoring Organization:	No Data
Organization/Company:	Unknown (DSS)
Investigator:	John Milner Associates
Survey Date:	1/1/2001

Survey Description:
No Data

Threats to Resource:	No Data
Site Conditions:	No Data
Survey Strategies:	No Data
Specimens Collected:	No Data
Specimens Observed, Not Collected:	No Data

Artifacts Summary and Diagnostics:
No Data

Summary of Specimens Observed, Not Collected:
No Data

Current Curation Repository:	No Data
Permanent Curation Repository:	No Data
Field Notes:	No Data
Field Notes Repository:	No Data
Photographic Media:	No Data
Survey Reports:	No Data

Survey Report Information:
No Data

Survey Report Repository:	No Data
DHR Library Reference Number:	No Data
Significance Statement:	No Data
Surveyor's Eligibility Recommendations:	No Data
Surveyor's NR Criteria Recommendations, :	No Data
Surveyor's NR Criteria Considerations:	No Data

Snapshot

Date Generated: October 11, 2023

Site Name: Federal Camp
Site Classification: Terrestrial, open air
Year(s): 1850 - 1874
Site Type(s): Military camp
Other DHR ID: No Data
Temporary Designation: FXCWSI629

Site Evaluation Status

DHR Staff: Not Eligible

Locational Information

USGS Quad: FAIRFAX
County/Independent City: Fairfax (County)
Physiographic Province: Piedmont
Elevation: 396
Aspect: Facing Southeast
Drainage: Potomac/Shenandoah River
Slope: 6 - 10
Acreage: 11.010
Landform: Knoll
Ownership Status: Private
Government Entity Name: No Data

Site Components

Component 1

Category: Military/Defense
Site Type: Military camp
Cultural Affiliation: Euro-American
Cultural Affiliation Details: No Data
DHR Time Period: Antebellum Period, Civil War, Reconstruction and Growth
Start Year: 1850
End Year: 1874
Comments: This location is a Federal cavalry camp,specifically associated with New York troops. The location is a camp and was also probably a picket.

Bibliographic Information

Bibliography:

No Data

Informant Data:

Name: Unknown
Company 1: John Milner Associates
City: Alexandria
State: Virginia
Phone 1: 703-354-9737
Ext: 0000

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID: 44FX2767
Staff Name: Kirchen, Roger
Event Date: 9/7/2006
Staff Comment No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:
Systematic metal detector survey.
Project Review File Number: WSSI # 2061.01
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: Wetland Studies and Solutions, Inc.
Survey Date: 8/1/2006
Survey Description:
Reconnaissance survey.

Current Land Use	Date of Use	Comments
Forest	1/1/2006 12:00:00 AM	As of 2006 the location was wooded and undeveloped.

Threats to Resource: No Data
Site Conditions: Site Condition Unknown
Survey Strategies: Informant, Observation, Subsurface Testing
Specimens Collected: Yes
Specimens Observed, Not Collected: Yes
Artifacts Summary and Diagnostics:
One wire nail, one machine cut nail, one cast iron bolt, one cast iron rod, two flat cast iron fragments, and one cast iron cap
Summary of Specimens Observed, Not Collected:
Relic hunters have collected at this location for decades.
Current Curation Repository: Wetland Studies and Solutions, Inc.
Permanent Curation Repository: No Data
Field Notes: Yes
Field Notes Repository: Fairfax County Park Authority, Wetland Studies and Solutions, Inc.
Photographic Media: No Data
Survey Reports: Yes
Survey Report Information:
PHASE I ARCHEOLOGICAL INVESTIGATIONS OF THE
93.46 ACRE GMU WEST CAMPUS PROPERTY,
FAIRFAX COUNTY, VIRGINIA
WSSI # 2061.01
August 2006 (revised)

Fairfax County Civil War Sites Inventory (Balicki et al. 2002)
Survey Report Repository: Fairfax County Park Authority, Wetland Studies and Solutions, Inc.
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:
No Data

Project Review File Number:	2002-0013
Sponsoring Organization:	No Data
Organization/Company:	Unknown (DSS)
Investigator:	John Milner Associatess
Survey Date:	1/1/2001

Survey Description:
No Data

Threats to Resource:	No Data
Site Conditions:	No Data
Survey Strategies:	No Data
Specimens Collected:	No Data
Specimens Observed, Not Collected:	No Data

Artifacts Summary and Diagnostics:
No Data

Summary of Specimens Observed, Not Collected:
No Data

Current Curation Repository:	No Data
Permanent Curation Repository:	No Data
Field Notes:	No Data
Field Notes Repository:	No Data
Photographic Media:	No Data
Survey Reports:	No Data

Survey Report Information:
No Data

Survey Report Repository:	No Data
DHR Library Reference Number:	No Data
Significance Statement:	No Data
Surveyor's Eligibility Recommendations:	No Data
Surveyor's NR Criteria Recommendations, :	No Data
Surveyor's NR Criteria Considerations:	No Data

Snapshot

Date Generated: October 11, 2023

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 15000 B.C.E - 1606 C.E
Site Type(s): Lithic scatter, Trash scatter
Other DHR ID: No Data
Temporary Designation: 44FXGMU3

Site Evaluation Status

DHR Staff: Not Eligible

Locational Information

USGS Quad: FAIRFAX
County/Independent City: Fairfax (County)
Physiographic Province: Piedmont
Elevation: 380
Aspect: Facing East
Drainage: Potomac/Shenandoah River
Slope: 2 - 6
Acreage: 0.920
Landform: Ridge
Ownership Status: Private
Government Entity Name: No Data

Site Components

Component 1

Category: No Data
Site Type: No Data
Cultural Affiliation: Native American
Cultural Affiliation Details: No Data
DHR Time Period: Pre-Contact
Start Year: -15000
End Year: 1606
Comments: No Data

Component 2

Category: No Data
Site Type: No Data
Cultural Affiliation: Indeterminate
Cultural Affiliation Details: No Data
DHR Time Period: Historic/Unknown
Start Year: No Data
End Year: No Data
Comments: No Data

Component 3

Category: Industry/Processing/Extraction
Site Type: Lithic scatter
Cultural Affiliation: No Data
Cultural Affiliation Details: No Data
DHR Time Period: No Data
Start Year: No Data

End Year: No Data
Comments: No Data

Component 4

Category: Transportation/Communication
Site Type: Trash scatter
Cultural Affiliation: No Data
Cultural Affiliation Details: 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:

Name: Unknown
Company 1: George Mason University
City: Fairfax
State: Virginia
Owner Relationship: Owner of property

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID: 44FX3169
Staff Name: Kirchen, Roger
Event Date: 9/7/2006
Staff Comment No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:

A Phase I was conducted of the circa 93 acre GMU West Campus, located in a forest to the west of the GMU Intramural fields. Site 44FX2699, a Civil War-era road trace is located approximately 200 feet west of this site. Site 44FX0184, a mid-19th century domestic site, is located approximately 300 feet south of this site.

Project Review File Number: 2006-0930
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: Sperling, Stephanie
Survey Date: 1/1/2006
Survey Description:

Shovel test pits excavated in a grid, every 50 ft. Raidals excavated on positives at 25 foot intervals in a cruciform pattern.

Current Land Use	Date of Use	Comments
Forest	2/1/2006 12:00:00 AM	Site is located in a forest to the west of the GMU Intramural Fields and north of Braddock Road.

Threats to Resource: No Data
Site Conditions: Site Condition Unknown
Survey Strategies: Subsurface Testing
Specimens Collected: Yes
Specimens Observed, Not Collected: No
Artifacts Summary and Diagnostics:

5 quartz flakes, 1 quartz mid-stage biface fragment.
One clear manganese cylindrical bottle sherd (1880-1915), one unidentified flat glass sherd, possibly lime soda windowpane, one unidentified flat glass sherd

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: Thunderbird Archaeology/Wetland Studies and Solutions Inc., Gainesville, VA
Permanent Curation Repository: No Data
Field Notes: Yes
Field Notes Repository: Thunderbird Archaeology/Wetland Studies and Solutions Inc., Gainesville, VA
Photographic Media: No Data
Survey Reports: Yes
Survey Report Information:

A Phase I Archaeological Investigation of the Circa 93 Acre GMU West Campus, Fairfax, Virginia; February 2006, by Stephanie Taleff Sperling

Survey Report Repository: Wetland Studies and Solutions Inc., Gainesville, VA
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Snapshot

Date Generated: October 11, 2023

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 1850 - 1899
Site Type(s): Dwelling, single
Other DHR ID: No Data
Temporary Designation: No Data

Site Evaluation Status

DHR Staff: Not Eligible

Locational Information

USGS Quad: FAIRFAX
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: Other
Ownership Status: State Govt
Government Entity Name: State University and College System

Site Components

Component 1

Category: Domestic
Site Type: Dwelling, single
Cultural Affiliation: Indeterminate
Cultural Affiliation Details: No Data
DHR Time Period: Antebellum Period, Civil War, Reconstruction and Growth
Start Year: 1850
End Year: 1899
Comments: No Data

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID: 44FX0184
Staff Name: Kirchen, Roger
Event Date: 9/7/2006
Staff Comment No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:
No Data
Project Review File Number: 68-1 #H1
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: Fairfax County RPO, Mike Johnson
Survey Date: 10/12/1979
Survey Description:
Site was not examined in detail as surface manifestations could be observed from adjacent trails; and site is eviennt from USGS, Fairfax County topographic, and the 1878 Hopkins Atlas.

Threats to Resource: No Data
Site Conditions: Site Condition Unknown
Survey Strategies: Observation
Specimens Collected: No
Specimens Observed, Not Collected: No
Artifacts Summary and Diagnostics:
No Data
Summary of Specimens Observed, Not Collected:
No Data
Current Curation Repository: No Data
Permanent Curation Repository: No Data
Field Notes: No
Field Notes Repository: No Data
Photographic Media: No Data
Survey Reports: No Data
Survey Report Information:
Title
Phase I Archaeological Investigations of the 93.46 Acre GMU West Campus Property, Fairfax County, Virginia
Author
Stephanie Taleff Sperling, Elizabeth Paynter
Survey Report Repository: VDHR
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Thunderbird
Archeology

PHASE I ARCHEOLOGICAL INVESTIGATIONS OF THE 93.46 ACRE GMU WEST CAMPUS PROPERTY, FAIRFAX COUNTY, VIRGINIA

By
Stephanie Taleff Sperling and Elizabeth S. Paynter

February 2006

WSSI Project #2061.01

Prepared under the supervision of
Christine Jirikowic, Principal Investigator

Prepared for:
christopher consultants, ltd.
9900 Main Street, Fourth Floor
Fairfax, Virginia 22031-3907

Prepared by:
Thunderbird Archeology
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive
Suite 100
Gainesville, Virginia 20155

ABSTRACT

A Phase I archeological survey was conducted on the 93.46 acre George Mason University (GMU) West property located on the campus of George Mason University, north of Braddock Road, east of Andes Drive, south of Santa Clara Drive, and west of Rapidan River Road in Fairfax County, Virginia. The work was carried out in January and February of 2006 by Thunderbird Archeology, a division of Wetland Studies and Solutions, Inc., of Gainesville, Virginia, for christopher consultants ltd. of Fairfax, Virginia. Six archeological sites were previously recorded on this property, and three archeological sites were identified during the course of this investigation.

Sites 44FX0180 and 44FX0181 were recorded in 1979 as quartz quarry sites. However, shovel testing in the vicinity of these sites did not yield any additional cultural materials. These sites are not considered to be potentially eligible for nomination to the National Register of Historic Places, and no additional archeological work is recommended.

Site 44FX0184 represents the remains of a mid-19th century domestic site. Due to massive disturbance in the vicinity of this site, no shovel testing was conducted in this portion of the project area. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no further archaeological work is recommended.

Site 44FX2018 represents a light scatter of quartz debitage. This site was recorded as unplowed in 1993 but shovel tests excavated in the vicinity during this investigation did not yield additional cultural materials and no unplowed contexts were encountered. Because of its limited research potential, this site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no further archaeological work is recommended.

Site 44FX2699 represents the trace of a mid-to-late 19th century road that connected Fairfax Courthouse to Braddock Road. No artifacts were recovered in or along this road during the course of the current investigation. The road was not associated with an important person or event, nor does it have research potential. This site is not considered to be potentially eligible for nomination to the National Register of Historic Places, and no additional work is recommended.

Site 44FX2767 represents a Civil War-era Federal cavalry camp and picket associated with New York troops. During the current investigation, four shovel tests yielded additional artifacts within the previously recorded site boundaries. However, none of these artifacts could be definitively dated to the Civil War time period and all additional materials were recovered from the plow zone. The site has very limited research potential and therefore is not considered to be potentially eligible for nomination to the National Register of Historic Places. No additional archaeological work is recommended for site 44FX2767.

The three archaeological sites recorded during this investigation were assigned the VDHR site numbers 44FX3167, 44FX3168, and 44FX3169.

Site 44FX3167 represents transient use of the area by prehistoric populations during an unknown time period. The site yielded only four flakes from a single shovel test. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

Site 44FX3168 is a multi-component site with artifacts recovered from both prehistoric and historic time periods. The prehistoric component represents ephemeral use of the area by prehistoric populations during an unknown time period. The historic component is represented by one bottle glass sherd with a possible mid-19th century manufacture date. All artifacts were recovered from plowed contexts and artifact density was low. No intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended for site 44FX3168.

Site 44FX3169 is a multi-component site with artifacts recovered from both prehistoric and historic time periods. The prehistoric component represents ephemeral use of the area by prehistoric populations during an unknown time period. The historic component is represented by three glass sherds. All artifacts were recovered from plowed contexts and artifact density was low. No intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

TABLE OF CONTENTS

ABSTRACT i
TABLE OF CONTENTS iii
LIST OF EXHIBITS iv
LIST OF PLATES v
INTRODUCTION 1
ENVIRONMENTAL SETTING 3
PALEOENVIRONMENTAL BACKGROUND 6
CULTURAL HISTORICAL BACKGROUND 7
Prehistoric Overview 7
Historic Overview 12
PREVIOUS ARCHEOLOGICAL RESEARCH 29
RESEARCH EXPECTATIONS 36
FIELD AND LABORATORY METHODS 37
RESULTS OF FIELD INVESTIGATIONS 38
Area A 38
Site 44FX3167 41
Area B 43
Site 44FX3168 45
Site 44FX3169 46
SUMMARY AND RECOMMENDATIONS 48
REFERENCES CITED 53
PLATES 61
APPENDIX 83

LIST OF EXHIBITS

Exhibit 1 : Portion of the ADC Map Showing the Location of the Project Area 2
Exhibit 2 : Portion of the USGS 1994 Fairfax, VA 7.5' Quadrangle Showing the Location of the Project Area 4
Exhibit 3 : Spring 2004 Color Infrared Imagery Photograph Showing the Project Area 5
Exhibit 4 : Portion of Mitchell's Map of Fairfax County in 1760 Showing the Approximate Location of the Project Area 17
Exhibit 5 : Portion of McDowell's 1862 *Map of Northeastern Virginia and the Vicinity of Washington, D.C.*, Showing the Approximate Location of the Project Area 21
Exhibit 6 : Portion of Hoffman's 1864 Map of Fairfax, Prince William and Loudoun Counties Showing the Approximate Location of the Project Area 23
Exhibit 7 : Portion of Hopkins' 1879 *Atlas of Fifteen Miles Around Washington, Providence District, Fairfax Co.* Showing the Approximate Location of the Project Area 24
Exhibit 8 : Portion of the 1912 Post Office Rural Delivery Route Map for Fairfax County, Virginia, Showing the Approximate Location of the Project Area 26
Exhibit 9 : Portion of the USGS 1912 Fairfax, VA 15' Quadrangle Showing the Location of the Project Area 27
Exhibit 10 : Portion of the USGS 1951 Fairfax, VA 7.5' Quadrangle Showing the Location of the Project Area 28
Exhibit 11 : Portion of the USGS 1966 (Revised 1984) Fairfax, VA 7.5' Quadrangle Showing the Location of the Project Area 30
Exhibit 12 : Project Map Showing Survey Areas and Previously Recorded Sites 39
Exhibit 13 : Portion of Project Map Showing Area A 40
Exhibit 14 : Representative Soil Profiles from Site 44FX3167 42
Exhibit 15 : Portion of Project Map Showing Area B 44
Exhibit 16 : Representative Soil Profiles from Sites 44FX3168 and 44FX3169 47
Exhibit 17 : Portion of the USGS 1994 Fairfax, VA 7.5' Quadrangle Showing Archeological Sites within the Project Area 49

LIST OF PLATES

Plate 1 : Unnamed Tributary to Popes Head Creek, Facing Northwest 63
Plate 2 : Overview of Vegetation in Area A, Facing East 63
Plate 3 : Overview of Vegetation in Northwestern Portion of Area A 65
Plate 4 : Vegetation Piles in Northeast Portion of Area A 65
Plate 5 : Dirt Walking Trail in Western Portion of Project Area 67
Plate 6 : Sunken Road Trace (44FX2699) in Southern Portion of Area A 67
Plate 7 : View of Site 44FX3167 69
Plate 8 : Overview of Vegetation in Area B 69
Plate 9 : Building 1, West Elevation 71
Plate 10 : Building 1, South Elevation 71
Plate 11 : Spoil Piles in Southeastern Property Corner 73
Plate 12 : Spoil Piles in Southeastern Property Corner 73
Plate 13 : Older Spoil Piles in Southeastern Property Corner 75
Plate 14 : Push Piles in Relation to Spoil Piles in Southeastern Property Corner 75
Plate 15 : Push Piles in Relation to Spoil Piles in Southeastern Property Corner 77
Plate 16 : Civil War-Era Road (44FX2767) in Area B 77
Plate 17 : Southern Terminus of 44FX2767 in Area B 79
Plate 18 : View of Site 44FX3168 in Area B 79
Plate 19 : View of Site 44FX3169 in Area B 81

INTRODUCTION

This report presents the results of a Phase I archeological investigation of the 93.46 acre George Mason University (GMU) West property located on the campus of George Mason University, north of Braddock Road, east of Andes Drive, south of Santa Clara Drive, and west of Rapidan River Road in Fairfax County, Virginia (Exhibit 1). Thunderbird Archeology, a division of Wetland Studies and Solutions, Inc., of Gainesville, Virginia, conducted the study described in this report for christopher consultants, ltd. of Fairfax, Virginia. The fieldwork was carried out in January and February of 2006.

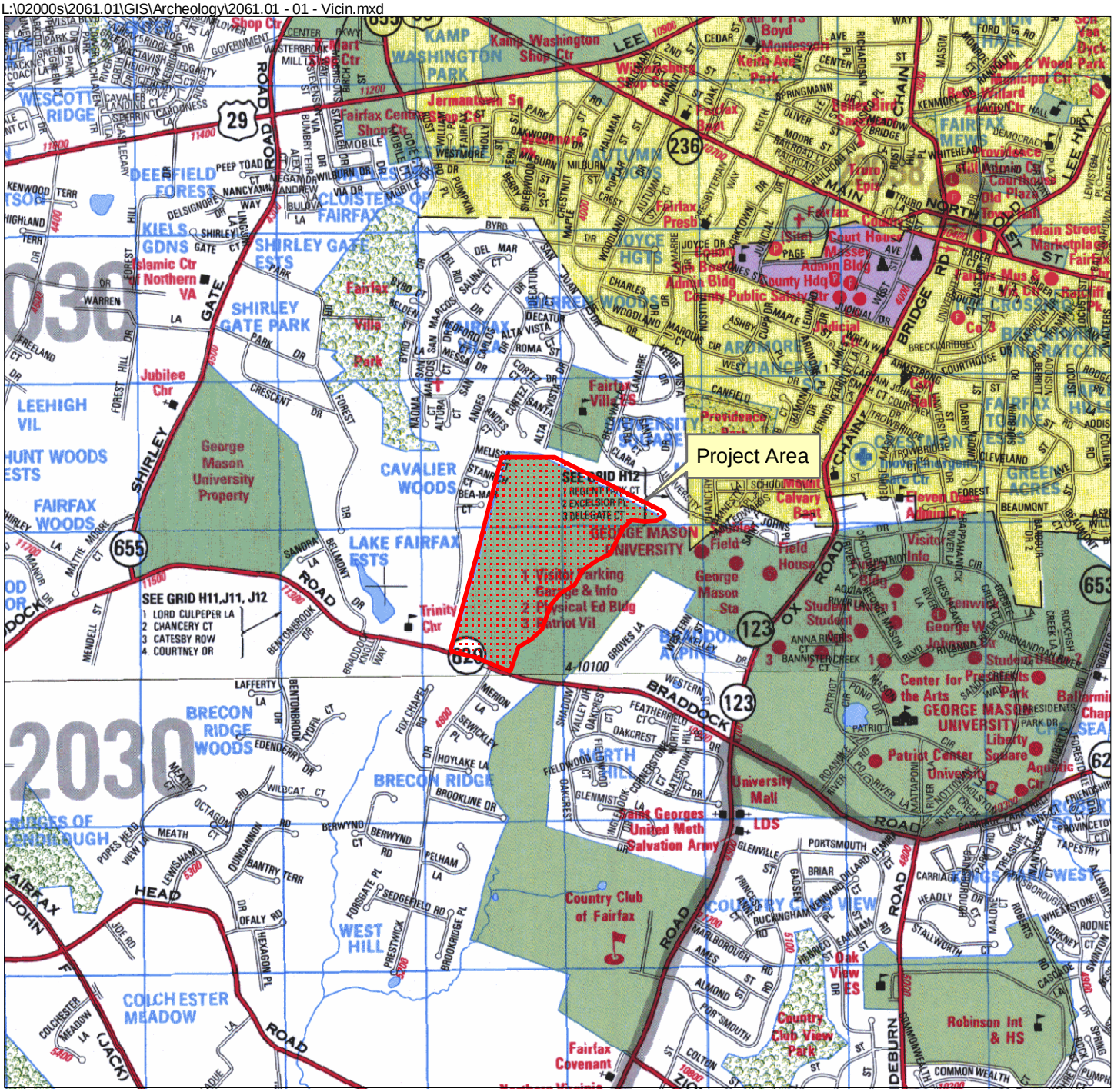
Christine Jirikowic, Ph.D., served as Principal Investigator on this project, and Stephanie Taleff Sperling served as the Field Supervisor. Christopher Shephard, Matthew Humbrecht, and David Vesser served as crew chiefs. Paw Jorgensen, Brian Buchanan, Kirk Norman, Elizabeth Paynter, Jennifer Rakos-Simonson, Stephanie Sharpes, Elizabeth Waters, Annie McQuillan, Anne Zahradnik, and Jeremy Smith served as Field Technicians. Tammy Bryant, M.A., served as Laboratory Supervisor, and Kelsey Woodman, M.A., conducted the artifact analysis. The background material was prepared by Joan Walker, Ph.D.

Fieldwork and report contents conformed to the guidelines set forth by the Virginia Department of Historic Resources (VDHR) for a Phase I reconnaissance level survey as outlined in their 2001 *Guidelines for Conducting Cultural Resource Survey in Virginia, Additional Guidance for the Implementation of the Federal Standards Entitled Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (VDHR 2001) as well as the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (Dickenson 1983).

The purpose of the survey was to locate any cultural resources within the impact area and to provide a preliminary assessment of their potential significance in terms f eligibility for inclusion on the National Register of Historic Places. If a particular resource was felt to possess the potential to contribute to the knowledge of local, regional or national prehistory or history, Phase II work would be recommended.

All artifacts, research data and field data resulting from this project are currently on repository at the Thunderbird offices in Gainesville, Virginia.

L:\02000s\2061.01\GIS\Archeology\2061.01 - 01 - Vicin.mxd



Copyright ADC The Map People
Permitted Use Number 30411160

Vicinity Map
GMU - West Campus
WSSI #2061.01
Scale: 1" = 2000'

N
W E
S

Thunderbird Archeology
A Division of Wetland Studies and Solutions, Inc.

Exhibit 1

ENVIRONMENTAL SETTING

Fairfax County encompasses portions of the Coastal Plain and the Outer Piedmont Plateau and the Piedmont Triassic Lowlands sub-provinces (Fenneman 1938; Bailey 1999. The Piedmont Physiographic Province is underlain by igneous and metamorphic rocks of various origins that were folded during the Paleozoic as the North American and African plates converged. Later, in the Mesozoic, rifting occurred as Pangea broke apart and the Atlantic Ocean formed. The Piedmont ranges from 200 feet above sea level (a.s.l.) at the Fall Line to circa 1000 feet a.s.l. in the western portion at the Blue Ridge. Because of the intensive weathering of the underlying rocks in the Piedmont's humid climate, bedrock is generally buried under a thick, 6 to 60 foot blanket of saprolite.

The Piedmont Province has been sub-divided into three sub-provinces: the Outer Piedmont Plateau, the Triassic Lowlands, and the Inner Piedmont Plateau. The project area lies in the Outer Piedmont, which is characterized by gently rolling topography, deeply weathered bedrock, and few outcroppings of rock; these latter tend to occur in stream valleys where the saprolite has been removed by erosion. Elevations range from 200 to 300 feet a.s.l. in the east to 600 to 1000 feet in the west.

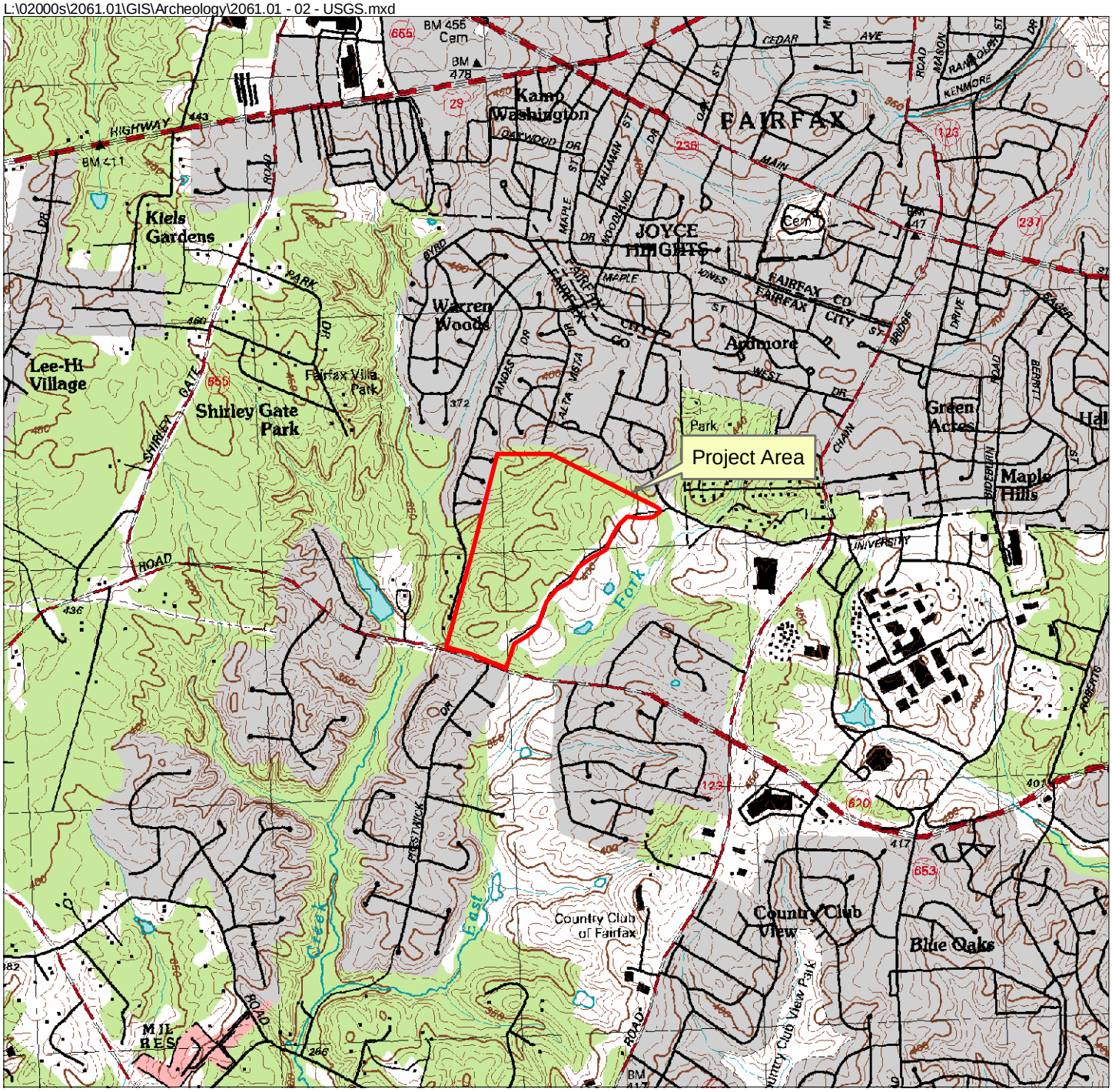
The GMU West project area bisects a large upland flat landform that runs generally north-south (Exhibit 2). The portion of the landform within the project boundaries is gently to moderately sloping west towards unnamed tributaries of Popes Head Creek with a number of west-trending finger ridges. Popes Head Creek flows into Bull Run in Bull Run Regional Park in Prince William County, Virginia. Bull Run is a major tributary of the Occoquan River, and the Occoquan joins the Potomac River near Mason Neck, on the Fairfax/Prince William County line.

Upland soils within the project include three primary series: Glenelg, Meadowville, and Manor. The Glenelg series, which covers most of the project area, consists of very deep, well drained, moderately permeable soils. Glenelg soils are formed in residuum weathered from micaceous schist. Meadowville series soils are very deep and are considered part of the well-drained drainage class. They formed in alluvium and residuum weathered from basic and acidic rocks, and they are found around the heads of drainage ways. The Manor series soils consist of very deep, well drained, moderately permeable soils. They are formed in materials weathered from micaceous schist. The Manor series is found in the southwest portion of the GMU West project area.

Nearly the entire project area is forested (Exhibit 3). The forests range in age, but consist primarily of a mixed deciduous and coniferous forest with varying undergrowth. Large spoil piles occupy the southeastern corner of the project area and few trees are growing here.

The survey took place in mid-winter and as such, heavy leaf litter covered the ground surface. No snow fell during this investigation.

L:\02000s\2061.01\GIS\Archeology\2061.01 - 02 - USGS.mxd



USGS Quad Map
Fairfax, VA 1994
GMU - West Campus
WSSI #2061.01
Scale: 1" = 2000'

N
W E
S

Latitude: 38°50'04" N
Longitude: 77°19'29" W
Hydrologic Unit Code (HUC): 02070010
Stream Class: III
Name of Watershed: Head Creek and East Fork of Head Creek

Thunderbird Archeology
A Division of Wetland Studies and Solutions, Inc.

Exhibit 2

L:\02000s\2061.01\GIS\Archeology\2061.01 - 03 - CIR_WSSI.mxd

Spring 2004 Color Infrared Imagery
GMU - West Campus
WSSI #2061.01
Scale: 1" = 500'

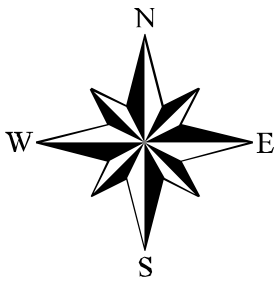


Photo Source: Wetland Studies and Solutions, Inc.

PALEOENVIRONMENTAL BACKGROUND

The basic environmental history of the area has been provided by Carbone (1976; see also Gardner 1985, 1987, and Johnson 1986). The following will present highlights from this history, focusing on those aspects pertinent to the project area.

At the time of the arrival of humans into the region, about 11,000 years ago, the area was beginning to recover rapidly from the effects of the last Wisconsin glacial maximum of circa 18,000 years ago. Vegetation was in transition from northern dominated species and included a mixture of conifers and hardwoods. The primary trend was toward a reduction in the openness so characteristic of the parkland of 14-12,000 years ago. Animals were undergoing a rapid increase in numbers as deer, elk and, probably, moose expanded into the niches and habitats made available as the result of wholesale extinctions of the various kinds of fauna that had occupied the area during the previous millennia. The current cycle of ponding and stream drowning began between 18-16,000 years ago at the beginning of the final retreat of the last Wisconsin glaciation (Gardner 1985); sea level rise has been steady since then.

These trends continued to accelerate over the subsequent millennia of the Holocene. One important highlight was the appearance of marked seasonality circa 7000 B.C. This was accompanied by the spread of deciduous forests dominated by oaks and hickories. The modern forest characteristic of the area, the mixed oak-hickory-pine climax forest, prevailed after 3000-2500 B.C. Continued forest closure led to the reduction and greater territorial dispersal of the larger mammalian forms such as deer. Sea level continued to rise, resulting in the inundation of interior streams. This was quite rapid until circa 3000-2500 B.C., at which time the rise slowed, continuing at a rate estimated to be 10 inches a century (Darmody and Foss 1978). This rate of rise continues to the present. Based on the archeology (c.f. Gardner and Rappleye 1979), it would appear that the mid-Atlantic migratory bird flyway was established circa 6500 B.C.; oysters had migrated to at least the Northern Neck by 1200 B.C. (Potter 1982) and to their maximum upriver limits along the Potomac near Popes Creek, Maryland, by circa 750 B.C. (Gardner and McNett 1971), with anadromous fish arriving in the Inner Coastal Plain in considerable numbers circa 1800 B.C. (Gardner 1982).

During the historic period, at circa A.D. 1700, cultural landscape alteration becomes a new environmental factor (Walker and Gardner 1989). Around this time, Euro-American settlement extended into the Piedmont/Coastal Plain interface. With these settlers came land clearing and deforestation for cultivation, as well as the harvesting of wood for use in a number of different products. At this time the streams tributary to the Potomac were broad expanses of open waters from their mouths well up their valleys to, at, or near their "falls" where they leave the Piedmont and enter the Coastal Plain. These streams were conducive to the establishment of ports and harbors, elements necessary to commerce and contact with the outside world and the seats of colonial power. Most of these early ports were eventually abandoned or reduced in importance, for the erosional cycle set up by the land clearing resulted in tons of silt being washed into the streams, ultimately impeding navigation.

The historic vegetation would have consisted of a mixed oak-hickory-pine forest. Associated with this forest were deer and smaller mammals and turkey. The nearby open water environments would have provided habitats for waterfowl year round as well as seasonally for migratory species.

CULTURAL HISTORICAL BACKGROUND

Prehistoric Overview

A number of summaries of the archeology of the general area have been written (c.f. Gardner 1987; Johnson 1986; Walker 1981); a brief overview will be presented here. Gardner, Walker and Johnson present essentially the same picture; the major differences lie in the terminology utilized for the prehistoric time periods.

Paleoindian Period (9500-8000 B.C.)

The Late Pleistocene/Early Holocene of the Late Glacial period was characterized by cooler and drier conditions with less marked seasonal variation than is evident today. The cooler conditions resulted in decreased evaporation and, in areas where drainage was topographically or edaphically poor, could have resulted in the development of wetlands in the neighboring Triassic Lowlands (Walker 1981; Johnson 1986:P1-8). The overall cast of the vegetation was one of open forests with mixed coniferous and deciduous elements. The character of local floral communities would have depended on drainage, soils, and elevation, among other factors. The structure of the open environment would have been favorable for deer and, to a lesser degree, elk, which would have expanded rapidly into the environmental niches left available by the extinction and extirpation of the herd animals and megafauna characteristic of the Late Pleistocene. As the evidence suggests now, the last of these creatures, e.g. mastodons, would have been gone from the area circa 11,000-11,500 years B.P., or just before humans first entered what is now Virginia.

Diagnostic artifacts of the earliest groups include Clovis spear points (Early Paleoindian), Mid-Paleo points, and Dalton points (Late Paleoindian). Although hard evidence is lacking, the subsistence settlement base of these groups appears to have focused on general foraging with an emphasis on hunting (Gardner 1989 and various). A strong component of the settlement and exploitative system was the preference for a restricted range of microcrystalline lithics, e.g. jasper and chert, a formal tool kit, and the curation of this tool kit. Sporadic Paleoindian finds are reported on the Potomac, but, overall, these spearpoints are uncommon in the local area (c.f. Gardner 1985; Brown 1979). Fluted points have been found as isolated finds in the county, though the others have not (Johnson 1986).

Early Archaic Period (8500-6500 B.C.)

The warming trend, which began during the terminal Late Pleistocene, continued during the Early Archaic. Precipitation increased and seasonality became more marked, at least by 7000 B.C. The open woodlands of the previous era gave way to increased closure, thereby reducing the edge habitats and decreasing the range and numbers of edge adapted species such as deer. The arboreal vegetation was initially dominated by conifers, but soon gave way to a deciduous domination.

Archeologically, temporally diagnostic artifacts shift from the lanceolate spear points of the Paleoindians to notched forms (Johnson 1986:P2-4). Diagnostic projectile points include Palmer Corner Notched, Amos Corner Notched, Kirk Corner Notched, Kirk Side Notched, Warren Side Notched and Kirk Stemmed. Although the populations still exhibited a preference for the cryptocrystalline raw materials, they began to utilize more locally available materials such as quartz (Walker 1981:32; Johnson 1986:P2-1). The tool kit remained essentially the same as the Paleoindian, but with the addition of such implements as axes.

At the beginning of the Early Archaic the settlement pattern was similar to that of the Paleoindians. Changes in settlement become evident from 7500 B.C. on, accelerating after 7200 B.C. Among the major shifts were a movement away from a reliance on a restricted range of lithics and a shift toward expedience, as opposed to curation, in tool manufacture. Johnson feels that this shift is particularly marked during the change from Palmer/Kirk Corner Notched to Kirk Side Notched/Stemmed (Johnson 1983; 1986:P2-6). The changes are believed to be the result of an increase in deciduous trees and the subsequent closure of the forested areas. These changes are reflected in the fact that sites show up in a number of areas not previously exploited. A population increase also seems to be a factor in this increased number of sites.

Middle Archaic (6500-3000/2500 B.C.)

The Middle Archaic period, which corresponds to the Atlantic environmental episode, exhibited an acceleration of the warming trend (Walker 1981). Two major sub-episodes were present: an earlier, moister period that lasted until approximately 4500 B.C., and a later, warmer and drier period, the mid-Holocene Xerothermic, which ended at approximately 3000 B.C. A gradual reduction in rainfall and increased evaporation characterized the period, which was marked by an increase in deciduous vegetation, a more marked seasonality of plant resources, a decrease in the deer population (because of the disappearance of edge habitats), and an increase in the numbers of other game animals such as turkey. Importantly for the local area, more of a mosaic of forests and grasslands might have been present because of edaphic factors. The dominance of deciduous species offered a high seasonal mast (acorns, nuts) that provided a nutritious and storable food base (Walker 1981).

Diagnostic projectile points include Lecroy, Stanly, Morrow Mountain, Guilford, Halifax and other bifurcate/notched base, contracting stem and side notched variants. The tool kit is definitively more expedient (Walker 1981) and includes grinding and milling stones, chipped and ground stone axes, drills and other wood working tools.

With the increasing diversity in natural resources came a subsistence pattern of seasonal harvests. Base camps were located in high biomass habitats or areas with the greatest variety of food resources nearby (Walker 1981). These base camp locations varied according to the season; however, they were generally located on rivers, fluvial swamps, or interior upland swamps. The size and duration of the base camps appear to have depended on the size, abundance, and diversity of the immediately local and nearby resource zones. In contrast to the earlier preference for cryptocrystalline materials, Middle Archaic populations used a wide variety of lithic raw materials, and propinquity became the most important factor in lithic raw material utilization (Walker 1981 and Johnson 1986). Settlement, however, continued to be controlled, in part, by the distribution of usable lithics.

Early Archaic components show a slight increase in numbers, but it is during the Middle Archaic (Morrow Mountain and later) that prehistoric human presence becomes relatively widespread (Gardner various; Johnson 1986; Weiss-Bromberg 1987). Whereas the earlier groups appear to be more oriented toward hunting and restricted to a limited range of landscapes, Middle Archaic populations move in and out and across the various habitats on a seasonal basis. Diagnostic artifacts from upland surveys along and near the Potomac show a significant jump during the terminal Middle Archaic (e.g. Halifax) and beginning Late Archaic (Savannah River). Johnson notes a major increase in the number of sites during the bifurcate phase (Johnson 1986:P2-14) and the later phases such as Halifax.

Late Archaic (2500-1000 B.C.)

During this time period, the climatic changes associated with the Sub-Boreal episode continued, although the climate began to ameliorate. At this time, a major adaptive element was found in the resources offered by the rivers and estuaries.

Diagnostic artifacts include broadspear variants such as Savannah River and descendant forms such as the notched broadspears, Perkiomen and Susquehanna, Dry Brook and Orient, and more narrow bladed, stemmed forms such as Holmes. Gardner (1987) separates the Late Archaic into two phases: Late Archaic I (2500-1800 B.C.) and Late Archaic II (1800-1000 B.C.). The Late Archaic I corresponds to the spread and proliferation of Savannah River populations, while the Late Archaic II is defined by Holmes and Susquehanna points. The distribution of these two, Gardner (1982; 1987) suggests, shows the development of stylistic or territorial zones. The Susquehanna style was restricted to the Potomac above the Fall Line and through the Shenandoah Valley, while the Holmes and kindred points were restricted to the Tidewater and south of the

Potomac through the Piedmont. Another aspect of the differences between the two groups is in their raw material preferences: Susquehanna and descendant forms such as Dry Brook and, less so, Orient Fishtail, tended to be made from rhyolite, while Holmes spear points were generally made of quartzite.

A new item in the inventory was the stone bowl manufactured of steatite, or soapstone. These were carved from material occurring in a narrow belt extending from Pennsylvania south to Alabama and situated, for the most part, along the edge of the Piedmont and Inner Coastal Plain provinces.

An increasingly sedentary lifestyle evolved, with a reduction in seasonal settlement shifts (Walker 1981; Johnson 1986:P5-1). Food processing and food storage technologies were becoming more efficient, and trade networks began to be established.

The most intense utilization of the region begins circa 1800 B.C. with the advent of the Transitional Period and the Savannah River Broadspear derivatives, which include the Holmes and other related points. This appears to correlate with an increase in the numbers of anadromous fish, with the bulk of the harvesting taking place in the spring and early summer. These sites tend to be concentrated along the shorelines near accessible fishing areas. The adjacent interior and upland zones become rather extensively utilized as adjuncts to these fishing base camps. The pattern of using seasonal camps continues. Although hunting camps and other more specialized sites may occur in the inter-riverine areas, the larger base camps are expected to be found along rivers or in estuarine settings (Walker 1981). Use of the interfluvial Piedmont diminished during the Late Archaic. Sites from this period are less frequent and more widely scattered. It was at this point that the stylistic differentiation becomes apparent between the areas above the Fall Zone and those below, as discussed earlier: rhyolite usage and Susquehanna Broadspear forms occur above the Fall Zone while Holmes and its derivatives, including Fishtail variations, occur below the Fall Zone.

Early Woodland (1000-500 B.C.)

At this time during the Sub-Atlantic episode, more stable, milder and moister conditions prevailed, although short term climatic perturbations were present. This was the point at which the climate evolved to its present conditions (Walker 1981).

The major artifact hallmark of the Early Woodland is the appearance of pottery (Dent 1995; Gardner and McNett 1971). The Early Woodland period may be separated into three phases: Early Woodland I, II, and III. The earliest dates for pottery are 1200 B.C. in the Northern Neck (Waselkov 1982) and 950 B.C. at the Monocacy site in the Potomac Piedmont (Gardner and McNett 1971). This pottery is tempered with steatite, and the vessel shape copied that of the soapstone bowl, suggesting a local source for this innovation. This steatite tempered pottery is characteristic of the Early Woodland I period and is widely distributed throughout the Middle Atlantic (Dent 1995; Gardner and Walker 1993). Diagnostic points included smaller side notched and stemmed variants such as Vernon and Calvert. Early Woodland II pottery is characterized by steatite or

other heavily tempered ceramics with conoidal bases that were made by the annular ring technique. This ware is referred to as Selden Island Cordmarked. The wide-spread adoption of this pottery type by groups throughout the Middle Atlantic was perhaps due to the fact that sand and grit was such a versatile temper, for groups once far removed from the steatite sources quickly adopted this new medium (Goode 2002:3, 26). Again, small stemmed or notched points are diagnostic artifacts. Sand tempered pottery (Accokeek) is the Early Woodland III descendant of these steatite tempered wares. Rossville/Piscataway points are the diagnostic spear points.

It is important to note that pottery underscores the sedentary nature of these local resident populations. This is not to imply that they did not utilize the inner-riverine or inner-estuarine areas, but rather that this seems to have been done on a seasonal basis by people moving out from established bases. The settlement pattern is essentially a continuation of Late Archaic lifeways with an increasing orientation toward seed harvesting in floodplain locations (Walker 1981). Small group base camps would have been located along Fall Line streams during the spring and early summer in order to take advantage of the anadromous fish runs. Satellite sites such as hunting camps or exploitive foray camps would then have operated out of these base camps.

Middle Woodland (500 B.C.-1000 A.D.)

Diagnostic artifacts from this time period include various grit/crushed rock tempered pottery types including Albemarle and Popes Creek (common in the Coastal Plain) that appeared around 500 B.C. A local variant of the net marked pottery is Culpeper ware. Net marking is characteristic of the Middle Woodland I period; however, it is supplanted by fabric impression and cord marking during the Middle Woodland II (Gardner and Walker 1993:4). Cord marked surfaces also occur on Culpeper ware, a sandstone tempered ceramic occasionally found in the Piedmont (Larry Moore, personal communication 1993). The associated projectile points are unclear, but do include small notched and/or stemmed forms. In general, the period from A.D. 200 to about A.D. 900 sees little population in the Potomac Piedmont.

Late Woodland (1000 A.D. to Contact/depopulation)

In the early part of the Late Woodland, the diagnostic ceramics in the Northern Virginia Piedmont region are crushed rock tempered ceramics for which a variety of names, such as Albemarle, Shepherd, etc., are used. The surfaces of the ceramics are primarily cord marked. Later in the Late Woodland, decoration appears around the mouths of the vessels and collars are added to the rims. In the Potomac Piedmont, circa A.D. 1350-1400, the crushed rock wares are replaced by a limestone tempered and shell tempered ware that spread out of the Shenandoah Valley to at least the mouth of the Monocacy. Below the Fall Line, a crushed rock tempered derivative of the earlier types, known as Potomac Creek ware, is found. Triangular projectile points indicating the use of the bow and arrow are diagnostic as well.

Horticulture was the primary factor affecting Late Woodland settlement choice and the focus was on easily tilled floodplain zones where the larger hamlets and villages were found. This was characteristic of the Piedmont as well as the Coastal Plain to the east and the Shenandoah Valley to the west (Gardner 1982; Kavanaugh 1983). The uplands and other areas were also utilized, for it was here that wild resources would have been gathered. Smaller, non-ceramic sites are found away from the major rivers (Hantman and Klein 1992; Stevens 1988).

Most of the functional categories of sites away from major drainages are small base camps, transient, limited purpose camps, and quarries. Site frequency and size vary according to a number of factors, e.g. proximity to major river or streams, distribution of readily available surface water, and the presence of lithic raw material (Gardner 1987). Villages, hamlets, or any of the other more permanent categories of sites are rare to absent in the Piedmont inter-riverine uplands. The pattern of seasonally shifting use of the landscape begins circa 7000 B.C., when seasonal variation in resources first becomes marked. By 1800 B.C., runs of anadromous fish occur and the Indians spent longer periods of time along the Potomac, although not necessarily further west in the Piedmont where the fish runs could not get above Great Falls (Gardner 1982, 1987). It is possible some horticulture or intensive use of local resources appears sometime after 1000 B.C., for at this time the seasonal movement pattern is reduced somewhat (Gardner 1982). However, even at this time and during the post-A.D. 900 agriculture era, extension of the exploitative arm into the upland and inter-riverine area through hunting, fishing and gathering remained a necessity.

Perhaps after 1400 A.D., with the effects of the Little Ice Age, the resulting increased emphasis on hunting and gathering and either a decreased emphasis on horticulture or the need for additional arable land required a larger territory per group, and population pressures resulted in a greater occupation of the Outer Piedmont and Fall Line regions (Gardner 1991; Fiedel 1999; Miller and Walker n.d.). The 15th and 16th centuries were a time of population movement and disruption from the Ridge and Valley to the Piedmont and Coastal Plain. There appear to have been shifting socio-economic alliances over competition for resources and places in the exchange networks. A severe drought may have occurred in the 16th century. More centralized forms of social organization may have developed at this time, and small chiefdoms appeared along major rivers at the Fall Line and in the Inner Coastal Plain at about this time. A Fall Line location was especially advantageous for controlling access to critical seasonal resources as well as being points of topographic constriction that facilitated controlling trade arteries (Potter 1993; Jirikowic 1999; Miller and Walker n.d.).

Historic Overview

Early English explorations to the American continent began in 1584 when Sir Walter Raleigh obtained a license from Queen Elizabeth of England to search for "remote heathen lands" in the New World, but all of his efforts to establish a colony failed. In

1606, King James I of England granted to Sir Thomas Gates and others of “The Virginia Company of London” the right to establish two colonies or plantations in the Chesapeake Bay region of North America in order to search “…. For all manner of mines of gold, silver, and copper” (Hening 1823, Vol. I:57-75).

It was in the spring of 1607 that three English ships--the *Susan Constant,* the *Godspeed,* and the *Discovery*, under the command of Captains Newport, Gosnole, and John Smith--anchored at Cape Henry in the lower Chesapeake Bay. After receiving a hostile reception from native inhabitants, exploring parties were sent out to sail north of Cape Henry. Following explorations in the lower Chesapeake, an island 60 miles up the James River was selected for settlement (Kelso 1995:6, 7) and the colonists began building a palisaded fort which came to be called Jamestown. In 1608, Captain Smith surveyed and mapped the Potomac River, locating the various native villages on both sides of the Potomac River. Captain Smith's "Map of Virginia" supplies the first recorded names of the numerous native villages along both sides of the Potomac River. The extensive village network along the Potomac was described as the "trading place of the natives (Gutheim 1986:22, 23, 28). After 1620, Indian trade with the lower Coastal Plain English became increasingly intense. Either in response to the increased trade, or to earlier Indian-Indian hostilities, confederations of former disparate aboriginal groups took place.

Reaffirmed by an "Ancient Charter" dated May 23, 1609, King James outlined the boundaries of the charter of “The Virginia Company”:

> "...in that part of America called Virginia, from the point of land, called Cape or Point Comfort, all along the sea coast, to the northward two hundred miles, and from the said point of Cape Comfort, all along the sea coast to the southward two hundred miles, and all that space and circuit of land, lying from the sea coast of the precinct aforesaid, up into the land, throughout from sea to sea, west and northwest; and also all the islands, lying within one hundred miles, along the coast of both seas..." (Hening 1823, Vol II:88)

In 1611, John Rolfe (who later married Pocahontas in 1614) began experimenting with the planting of "sweet scented" tobacco at his Bermuda Hundred plantation, located at the confluence of the James and Appomattox Rivers. Rolfe's experiments with tobacco altered the economic future of the Virginia colony by establishing tobacco as the primary crop of the colony; this situation lasted until the Revolutionary War (O'Dell 1983:1; Lutz 1954:27). Tobacco was used as a stable medium of exchange; promissory notes, used as money, were issued for the quantity and quality of tobacco received (Bradshaw 1955:80, 81). Landed Virginia estates, bound to the tobacco economy, became independent, self-sufficient plantations, and few towns of any size were established in Virginia prior to the industrialization in the south following the Civil War.

A number of early English entrepreneurs were trading along the Potomac River in the early 1600s for provisions and furs. By 1621, the numbers of fur trappers had increased to the point that their fur trade activities became regulated. Henry Fleet, among the better

known of the early Potomac River traders, was trading in 1625 along the Potomac River as far north as the Falls, with English colonies in New England, settlements in the West Indies; and across the Atlantic to London (Gutheim 1986:28, 29, 35, 39).

The first Virginia Assembly, convened by Sir (Governor) George Yeardley at James City in June of 1619, increased the number of "corporations" or boroughs in the colony from seven to eleven. In 1623, the first laws were made by the Virginia Assembly establishing the Church of England in the colony. These regulated the colonial settlements in relationship to Church rule, established land rights, provided some directions on tobacco and corn planting, and included other miscellaneous items such as the provision "…That every dwelling house shall be pallizaded in for defence against the Indians" (Hening 1823, Vol I:119-129).

In 1617, four parishes--James City, Charles City, Henrico and Kikotan--were established in the Virginia colony. By 1630, the colony had expanded, now comprised of a population of about 5,000 persons; this necessitated the creation of new shires, or counties, to compensate for the courts which had become inadequate (Hiden 1980:3, 6). In 1634, that part of Virginia located south of the Rappahannock River was divided into eight shires called James City, Henrico, Charles City, Elizabeth Citty [sic], Warwick River, Warrosquyoake, Charles River, and Accawmack, all to be "…governed as the shires in England" (Hening 1823, Vol I:224). Ten years later, in 1645, Northumberland County, located on the north side of the Rappahannock River, was established "…for the reduceing of the inhabitants of Chickcouan [district] and other parts of the neck of land between Rappahanock River and Potomack River," thus enabling European settlement north of the Rappahannock River and Northern Virginia (Hening 1823, Vol I:352-353).

In 1634, when the Virginia colony was divided by the Virginia House of Burgess into eight shires, there were approximately 4,914 men, women, and children in the colony (Greene 1932:136). Fairfax County was in the shire, or Indian District, of Chicacoan in northern Virginia. With further population growth and expansion of settlement, these shires were later divided and subdivided into counties. The parent counties of Fairfax were Northumberland, created in 1643, Westmoreland (1653-1664), Stafford (1664-1730) and lastly, Prince William, created in 1730 (Hiden 1980:11-15; Sweig 1995:2). Fairfax County, named for the 6th Lord Fairfax, grandson of Lord Culpeper, was created from the northern part of Prince William County by an Act of the Virginia Assembly in 1742 (Hening 1819, Vol V:207-208).

Prior to 1692, most lands in the Virginia Colony were granted by the Governor of the colony under the "head right" system and were issued as Virginia Land Grants. In 1618, a provision of 100 acres of land had been made for "Ancient Planters," or those adventurers and planters who had established themselves as permanent settlers prior to 1618. Thereafter, Virginia Land Grants were issued by the "headright" system by which "any person who paid his own way to Virginia should be assigned 50 acres of land...and if he transported at his owne cost one or more persons he should...be awarded 50 acres of land" for each (Nugent 1983:XXIV).

King Charles I was beheaded in January 1648/9 during the mid-17th century Civil Wars in England. His son, Prince Charles II, was crowned King of England by seven loyal supporters, including two Culpeper brothers, during his exile near France in September 1649. For their support, King Charles granted his loyal followers "The Northern Neck," or all that land lying between the Rappahannock and Potomac Rivers in the Virginia colony; the grant was to expire in 1690. King Charles II was subsequently restored to the English throne in 1660.

In 1677, Thomas, Second Lord Culpeper became successor to Governor Berkley in Virginia, and by 1681, he had purchased the six Northern Neck interests of the other proprietors. The Northern Neck grant (due to expire in 1690) was reaffirmed by England in perpetuity to Lord Culpeper in 1688. Lord Culpeper died in 1689, and four-fifths of the Northern Neck interest passed in 1690 to his daughter, Katherine Culpeper, who married Thomas, the fifth Lord Fairfax. The Northern Neck became vested and was affirmed to Thomas, Lord Fairfax, in 1692 (Kilmer and Sweig 1975:5-9). In 1702, Lord Fairfax appointed an agent, Robert Carter of Lancaster County, Virginia, to rent the Northern Neck lands for nominal quit rents, usually two shillings sterling per acre (Hening 1820, Vol IV:514-523; Kilmer and Sweig 1975:1-2, 7, 9).

The extent and boundaries of the Northern Neck were not established until two separate surveys of the Northern Neck were conducted. These were begun in 1736, and a final agreement was reached between 1745 and 1747 (Kilmer and Sweig 1975:13-14).

In 1742 the Virginia Assembly ordered that the first Fairfax County Court House be established at Spring Field, a tract of 1,429 acres of land that included the sources of Accotink, Wolf Trap, Pimmet's and Scott's Runs and which extended between the eastern and middle ridges of Fairfax County. Fairfax County's first court house was located at Freedom Hill, near the current town of Vienna, and was moved to Alexandria in 1754. Alexandria was ceded from Fairfax County in 1791 to become part of the newly established federal city of Washington, D.C. The Fairfax County Court house, however, remained in Alexandria until 1799 when a new site for the court house was selected in its current location, now within the City of Fairfax.

Fairfax County collected tithes for 1,586 persons in 1749. The 1749 tithe list (or taxes) was for white males over the age of 16 and all slaves. The 1755 tithe list for Fairfax County taxed 1,312 white males over the age of 16 and 921 slaves. In 1782 Fairfax County's population increase reached a total of 8,763 persons. Of this number, 5,154 were whites and the remainder of the 3,609 persons included slaves and free African Americans (Greene 1932:150). The first "census" specifically giving a total population of the county is the "Census of 1790," which enumerated 2,136 males over the age of 16 and 1,872 males under the age of 16, a total of 3,601 white females, a count of 4,574 slaves, and 135 "other free persons" for a total population of 12,320 (Greene 1932:150, 152, 154).

The 1760 Mitchell Map shows Fairfax County landowners and tenants and indicates how many slaves were owned (Exhibit 4). According to the map, the GMU West project area is located on land owned by Lewis Ellzey and on land owned by the Moore family. Lewis Ellzey apparently owned a8 slaves, while Moore owned one. The name Marcellus Littlejohn appears close to the boundaries of this investigation, indicating this tenant may have occupied a portion of this property. However, no evidence of an 18th century occupation was found during this survey. Mountain Road (present day Braddock Road) lies just to the south of the project area. Old Ox Road is indicated on the map to the east of the project. Both Popes Head Creek to the west of the project area and the East Fork of Popes Head Creek are depicted on this map.

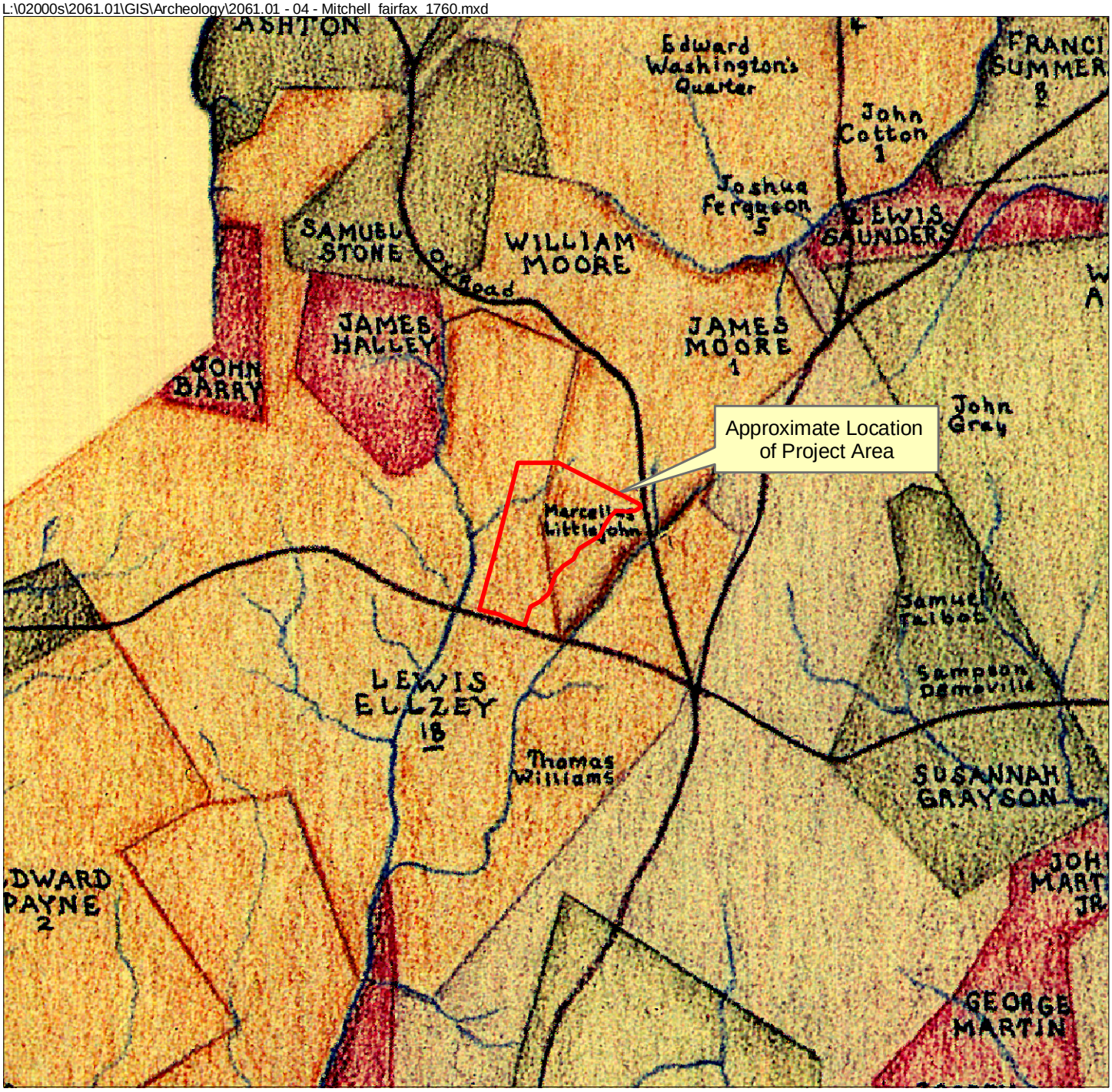
By the 1770s, the agricultural base of Fairfax County had begun to shift away from tobacco growing toward the more profitable cultivation of wheat and the development of flour mills. Factors contributing to this were the exhaustion of tobacco fields and the increased English duties on tobacco at a time of drought and crop failures in Virginia. Coincidentally, there was an increasing demand for American wheat in England as Britain entered the industrial age. By the third quarter of the 18th century, "… caravans of flour wagons...were already the life of tidewater trade" (Harrison 1987:401-405).

During the Revolutionary War, the Virginia General Assembly passed Acts to draft men from each county in Virginia for military service. British subjects who held land and property in the Virginia colony were deemed to be enemy aliens and their lands and personal property in Virginia, including slaves, were ordered by the Virginia Legislature to be seized as Commonwealth property in 1777 (Hening 1822, Vol X:66-71). Heirs to the Fairfax family holding the Northern Neck were considered enemy aliens and subject to losing their land. "American citizens" in possession of leased Northern Neck lands at the time the Fairfax lands escheated obtained fee simple titles to the property by obtaining a certificate from the Governor of the Commonwealth, completing a Northern Neck Survey of the leased lands and paying a small fee.

In 1788, Fairfax County commissioners had been appointed by the Virginia Assembly to select a courthouse site in the vicinity of Ravensworth, a large land grant of 21,996 acres obtained by William Fitzhugh in 1690. After surveying and viewing properties for two acres of land on the east side of the Ravensworth tract, no suitable acreage was found. The Fairfax County Court House was then moved to temporary quarters in the Alexandria market place where the court remained until 1799, when two acres were purchased from Richard Ratcliffe at the junction of Ox Road and a new road known today as the Little River Turnpike (Harrison 1987:321-326; Sweig 1995:4).

An Act of the General Assembly passed on January 14, 1805, established a town on the land of Richard Ratcliffe. This town, covering 14 acres, was laid out in 20 lots to the east and north of the Fairfax Court House and was to be known as the town of Providence. The town excluded one acre of land "with an ordinary, stables and other buildings thereon" in the occupancy of Richard Ratcliffe and four acres donated to the county by Richard Ratcliffe "… on which the courthouse and other public buildings now stand." The act provided that the lots were to be sold at public auction subject to certain

L:\02000s\2061.01\GIS\Archeology\2061.01 - 04 - Mitchell_fairfax_1760.mxd



1760 Mitchell Map
GMU - West Campus
WSSI #2061.01
Scale: 1" = ½ mile

N
W E
S

Map Source: "An interpretive historical map of Fairfax County, Virginia in 1760 showing landowners, tenants, slave owners, churches, roads, ordinances, ferries, mills, and tobacco inspection warehouse". By Beth Mitchell, 1987. Original Scale: 1" = 1 mile.

conditions. These conditions specified that a dwelling house at least 16 feet square with a brick or stone chimney was to be finished and fit for inhabitation within seven years from the day of sale (Commonwealth of Virginia 1804:81; Shepherd 1838:177).

During the early 1800s, Fairfax County planters, along with those from their neighboring counties along the Potomac River, were experiencing an economic depression arising from the depletion of the soils combined with outmoded agricultural methods. By the 1840s, "Yankee" farmers from the north began immigrating into northeastern Virginia, buying up abandoned farms and bringing with them new methods of farming which included resting the soil, rotating crops, and deep plowing (Sweig 1995:54-55).

Martin's *Gazetteer of Virginia* for the year of 1836 describes Fairfax Court House (sic; Providence) as a village of 50 dwelling houses with a population of 200. In addition to the ordinary county buildings, the village included three stores, four taverns, one school, tradesmen dealing in leather goods, blacksmiths, and tailors. Other towns or post offices described in the 1836 *Gazetteer* were Centreville, Dronesville (sic; Dranesville), Pleasant Valley, and Prospect Hill. Two-thirds of the *Gazetteer* description of Fairfax County is devoted to Mount Vernon (Martin 1836:168-171).

The major economic and land impact to the area surrounding Fairfax Court House during the mid-1800s was the establishment of the Orange and Alexandria Railroad, proposed to be routed from the town of Alexandria to Tudor Hall in Prince William County. The railroad was incorporated by an Act of the Virginia Assembly on March 27, 1848 (Commonwealth of Virginia 1848:191-192). The railroad line was completed in October of 1851, running from Alexandria to south of Fairfax Court House and terminating at Tudor Hall (Wilkinson 1969:48).

The Orange and Alexandria Railroad station at Tudor Hall was later renamed Manassas, and became the junction where the Orange and Alexandria Railroad met the Manassas Gap Railroad. The Manassas Gap Railroad Company, incorporated by an Act of the Virginia Assembly in 1850 (Commonwealth of Virginia 1850:73-75), began construction of a new line running from Alexandria to Manassas Junction that was completed in October of 1851 (Harrison 1987:585). The railroad was to run from Manassas west through Manassas Gap and south through the Shenandoah Valley to Strasburg in Shenandoah County, and from there to Harrisonburg in Rockingham County, Virginia. Construction of the railroad was begun at Manassas and was completed to Strasburg in 1854. A continuation of the railroad from Manassas, paralleling the Orange and Alexandria Railroad through Fairfax Court House to Alexandria, was under construction when the Civil War broke out. These sections of the Manassas Gap Railroad were never completed (Kean 1952:541). Sections of the uncompleted Manassas Gap Railroad currently remain, located south of Main Street and west of Chain Bridge Road in the town of Fairfax.

On the night of December 26, 1860, Major Robert Anderson moved his troops from Fort Moultrie to Fort Sumter in the harbor of Charleston, South Carolina. Subsequently, on April 15, 1861, President Lincoln sent a reinforcement fleet of war vessels from New

York to Fort Sumter to suppress the rebellion in the southern states. Two days later, the Commonwealth of Virginia seceded from the Union, adopting the Virginia Ordinance of Secession on April 17, 1861, and forming a provisional Confederate government (Gallagher 1989:29; Boatner 1991:729; Church and Reese 1965:134). The State formally seceded from the Union on May 23, 1861, by a vote of 97,000 to 32,000 (Bowman 1985:51, 55).

Throughout the Civil War, the Fairfax Court House and the Fairfax Railroad Station (on the Orange and Alexandria Railroad line, which had been completed to the area by 1851) were occupied by either Confederate or Union Armies. In June of 1861 there was:

> "..... a charge through the streets of Fairfax C.H. before day one morning by a squadron of Federal cavalry...A Confed. co of infy. quartered there [Warrenton Rifles] were completely surprised...their commander, a Capt. Marr, being killed as he came out of a hotel where he had slept" (Alexander 1989:43).

Other troops occupying Fairfax Court House and the town of Providence were those of General Beauregard, commander of the Confederate Army during the First Battle of Bull Run/Manassas (July 21, 1861), who moved his headquarters from Manassas to Fairfax Court house and "… remained there until about 1 November when we moved back to Centreville" (Alexander 1989:65).

The First Battle of Manassas, or Bull Run, was waged southwest of Centreville on the south side of Bull Run in Prince William County on the 18th and 21st of July 1861. This battle was fought between the forces of Confederate Generals Beauregard and Joseph Johnston and General Irvin McDowell, commander of the United States forces.

In mid-July, 1861, General McDowell's Union army was encamped at Centreville, on the north side of Bull Run in Fairfax County. A small detail of Union soldiers was sent on July 18, 1861, to reconnoiter the area around Blackburn's Ford on Bull Run, southeast of the Old Centreville Road. The Union detail met the Confederate army under the command of James Longstreet at Blackburn's Ford and at Mitchell's Ford, a short distance above Blackburn's Ford; during the ensuing skirmish, the Confederates succeeded in turning the Union troops back (Bowman 1985:59).

On the morning of July 21, 1861, McDowell's Union troops were positioned around Sudley Ford on the north side of Bull Run, facing the Confederate army encamped around Manassas Gap Junction. The Union army advanced at the Stone Bridge across Bull Run, intending to strike the left flank of the Confederate army. Confederate Captain Nathan Evans' small brigade of cavalry, posted on the extreme left of the Stone Bridge, engaged the Union army and held the southern position until about noon before falling back to Henry House Hill on the Carter Pittsylvania plantation in Prince William County.

Reinforced by Generals Beauregard and Johnston's troops, the Confederates succeeded in driving the Union Army back. The withdrawing Union troops panicked when the main road of retreat towards Washington, D.C., was blocked by an overturned wagon, scattering the troops (Bowman 1985:60).

The defeated Union troops hastily retreated through Centreville, where the wounded were brought for several days after the battle before they were sent to Washington. Captain Robert C. Hill, a Confederate from the Army of the Potomac's 1st Corps, followed the enemy's retreat to Centreville and reported in the evening that "…the Yankees had gone & had left the streets blocked & jammed with abandoned artillery" (Alexander 1989:58).

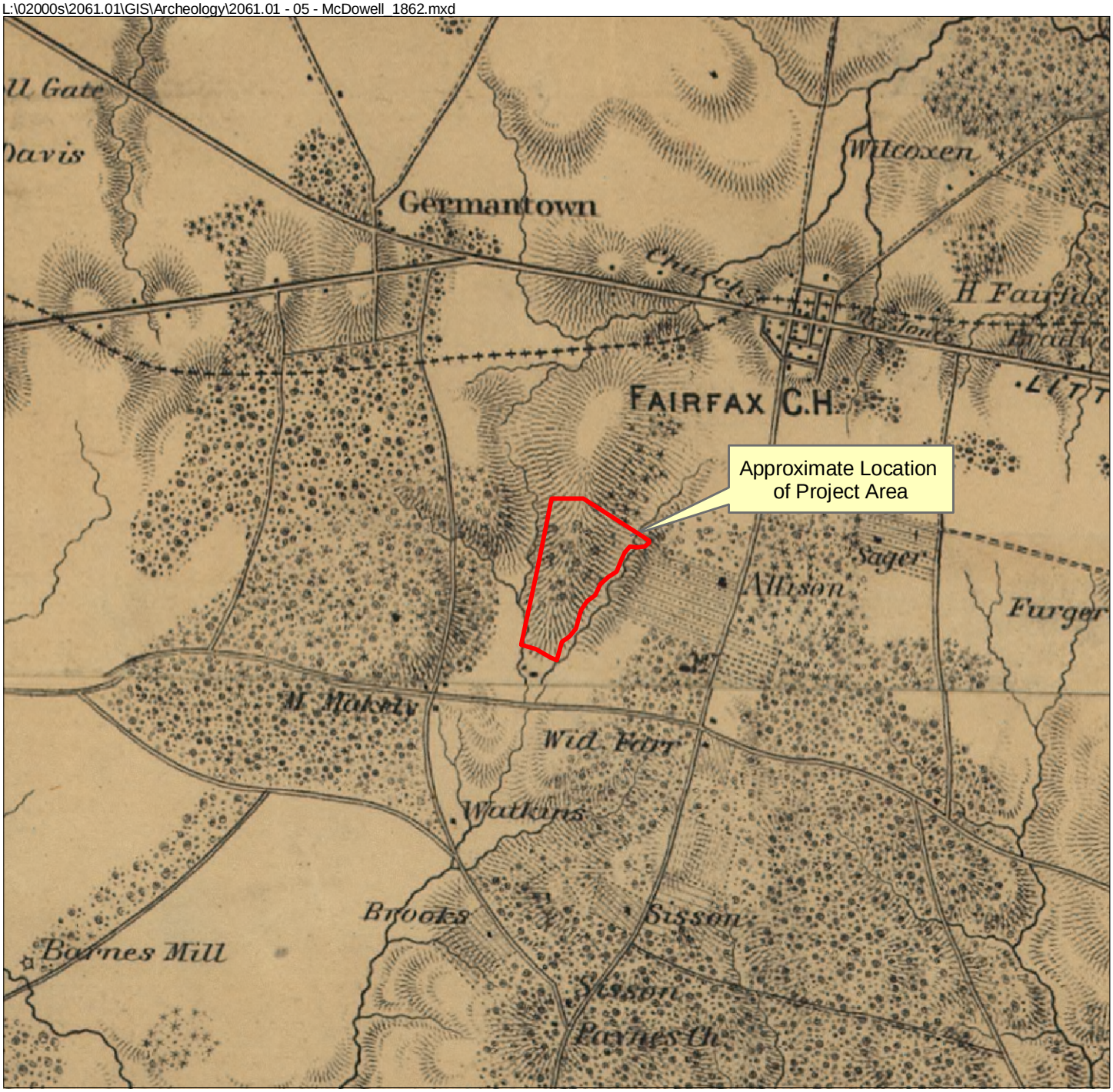
McDowell's 1862 *Map of Northeastern Virginia and the Vicinity of Washington* depicts the project area in a wooded area between Popes Head Creek and the East Fork of Popes Head Creek (Exhibit 5). As in Mitchell's 1760 map (see Exhibit 4), a road corresponding to present day Braddock Road runs east-west just to the south of the project. To the east of the project, Ox Road runs north and south through the town of Fairfax. Two structures are illustrated just outside the southern boundary of the approximate location of the GMU West project area. These structures are possibly associated with site 44FX0184, which was recorded as a mid-19th century dwelling.

In November 1862, the Orange and Alexandria Railroad Station, south of the court house, was under the provost guard of Brigadier-General Carr; this guard was comprised of the 1st Massachusetts, the 2nd New Hampshire, and the 26th Pennsylvania (Scott 1887:166). As Provost-Marshall, Lieutenant-Colonel Charles Cummings of the 16th Vermont Volunteers took possession of the Fairfax Court House on December 14, 1862, replacing his predecessor, General Sigel. In Lieutenant Cummings' letters, he writes, "Nearly all the secesh [residents] have left and their houses are used for hospital purposes...," conveying the message that Fairfax was already, by this time, a picture of desolation after occupation of the court house by the enemy, and now, by the Union troops (The Historical Society of Fairfax County, Virginia, 1989-1990:45, 64-65).

During the year of 1863, a minor skirmish occurred, brought about by Mosby's capture of Union General E.H. Stoughton and his men at their temporary headquarters at Fairfax Court House on the 8th of March (Bowman 1985:156). On May 24, 1863, the Confederates captured two trains of cars "... somewhere about the courthouse, that frightened them [the Union army] so terribly that they went to work and tore up about seven miles of the O.A. railroad..." (Frobel 1992:186).

The Union Army at Fairfax Court House was again attacked on June 27, 1863, by Confederate General J.E.B. Stuart's cavalry, who captured all but 18 of the Union Cavalry troops posted there (Bowman 1985:156).

L:\02000s\2061.01\GIS\Archeology\2061.01 - 05 - McDowell_1862.mxd



1862 McDowell Map
Northeast Virginia and Vicinity of Washington D.C.
GMU - West Campus
WSSI #2061.01
Scale: 1" = ½ mile

N
W E
S

Map Source: Map of N. Eastern Virginia and Vicinity of Washington. Compiled by General Irvin Mc Dowell, January 1862. United States. Corps of Topographical Engineers". Original Scale: 1" = 1 mile.

The 1864 J. Paul Hoffman *Map of Fairfax, Prince William, and Loudoun Counties, Virginia* does not show any structures or dwellings within the boundaries of the current project area (Exhibit 6). However, a structure ascribed to "Farr" is shown to the southeast of the area under investigation. This was likely the location of the Civil War-era fort at Farr's Crossroads, which today is located at the intersection of Ox Road and Braddock Road. Civil War defenses are depicted to the north of Fairfax City on this map.

Fairfax County's depressed economic and agricultural conditions in the 1870s, combined with an influx of northern farmers, promoted the organization of farmers clubs to improve dairy and farming methods in grazing, cropping and plowing, and also to implement fruit orchard improvements. The participants at the *Central Farmers Club* meetings at the Fairfax Court House discussed agricultural issues and other topics, including effective dog laws and better railroad service to the Washington, D.C., markets (Netherton et al. 1978:415).

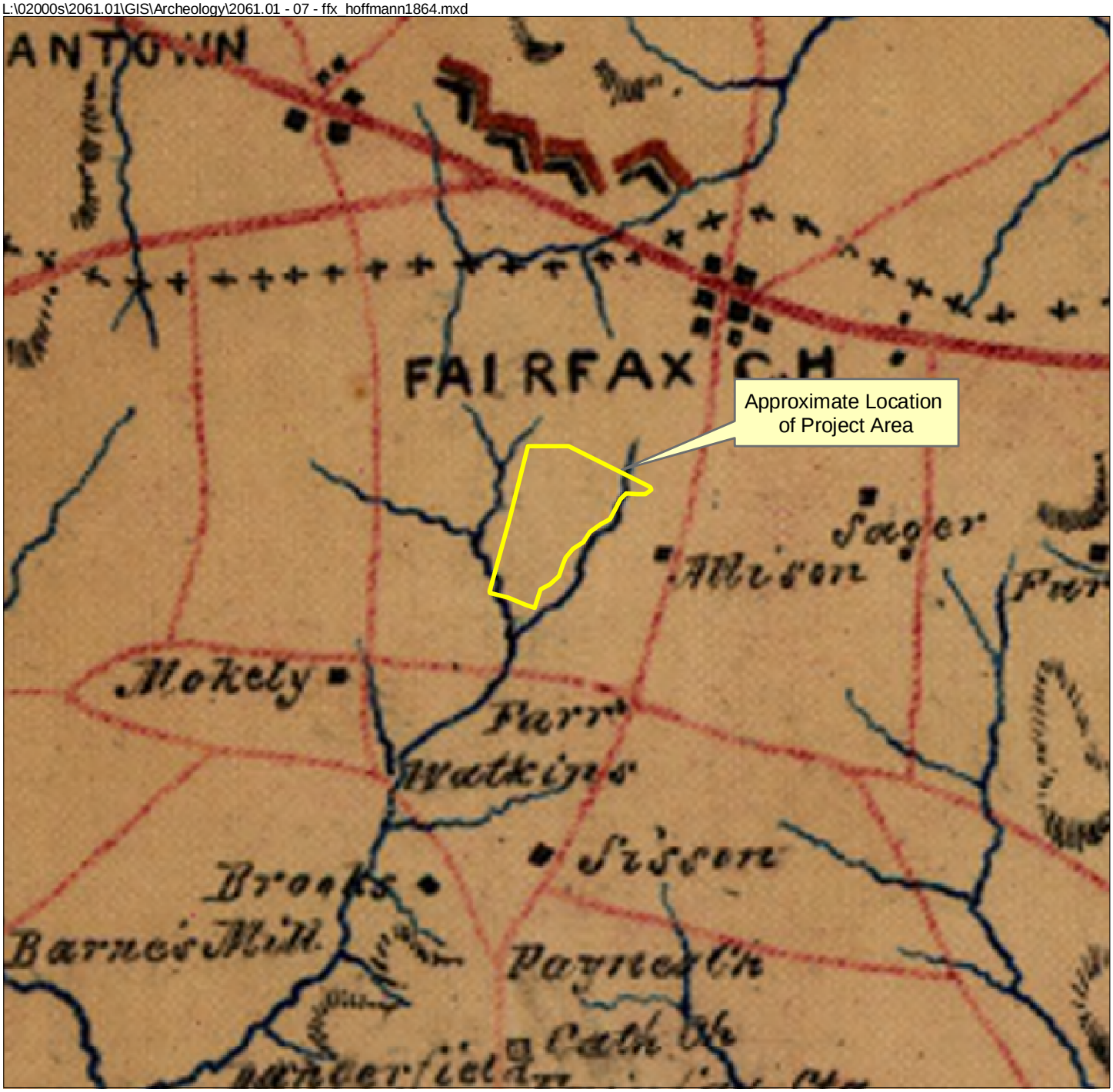
Following the Civil War and the period of Reconstruction and recuperation, Fairfax County was divided into "townships," or "districts," by an Act of the Virginia Assembly in 1871, to take effect by the 16th of January in 1872 (Commonwealth of Virginia 1873:20-21). By an additional Act of the Virginia Assembly in 1875, Fairfax Court House and the town of Providence were incorporated as the Town of Fairfax (Harrison 1987:343). "A Historical Sketch of Fairfax County, Va." prefacing G.M. Hopkins' *Atlas Of Fifteen Miles Around Washington,* gives the population of Fairfax County in 1879 as 12,952. Fairfax Court House, located near the center of the county, is claimed to have about 200 inhabitants at that time**.**

The 1879 Hopkins Map of the *Providence District, Fairfax Co.* depicts "Braddocks Road" the south of the project area (Exhibit 7). A structure ascribed to an Annie Walkins is located between Popes Head Creek and the East Branch of Popes Head Creek along Braddocks Road. This could correspond to the structures shown on the McDowell map (see Exhibit 5), as well as the 19th century dwelling site now represented by archeological site 44FX0184.

The construction of the railroads in the 1850s, coupled with an increase in productivity due to modern farming methods, facilitated the transport of farm products from Fairfax County to Washington, D.C. and other more urban areas (Smith and Causey 2005:21). Later in the 19th century, the construction of the trolleys made increased commuter travel possible, although the county maintained its rural character into the 20th century (ibid.).

A rapid increase in urban area settlement, including Washington D.C., in the 1870s and 1880s gave rise to a popular middle class sentiment that cities were unhealthy, dirty, noisy and rife with immoral activity (Smith and Causey 2005:21). In order to escape these many ills in the hot humid summers, the middle class residents of Washington, D.C. sought refuge in the surrounding, more rural suburbs. This escape was made possible by the improved transportation networks, including the railroads, trolleys and roads, as well as by paid vacation time (ibid.). The escapes varied from short stays in rural hotels or resorts to summer residency in rural villages near the railroads. In the early 1900s,

L:\02000s\2061.01\GIS\Archeology\2061.01 - 07 - ffx_hoffmann1864.mxd

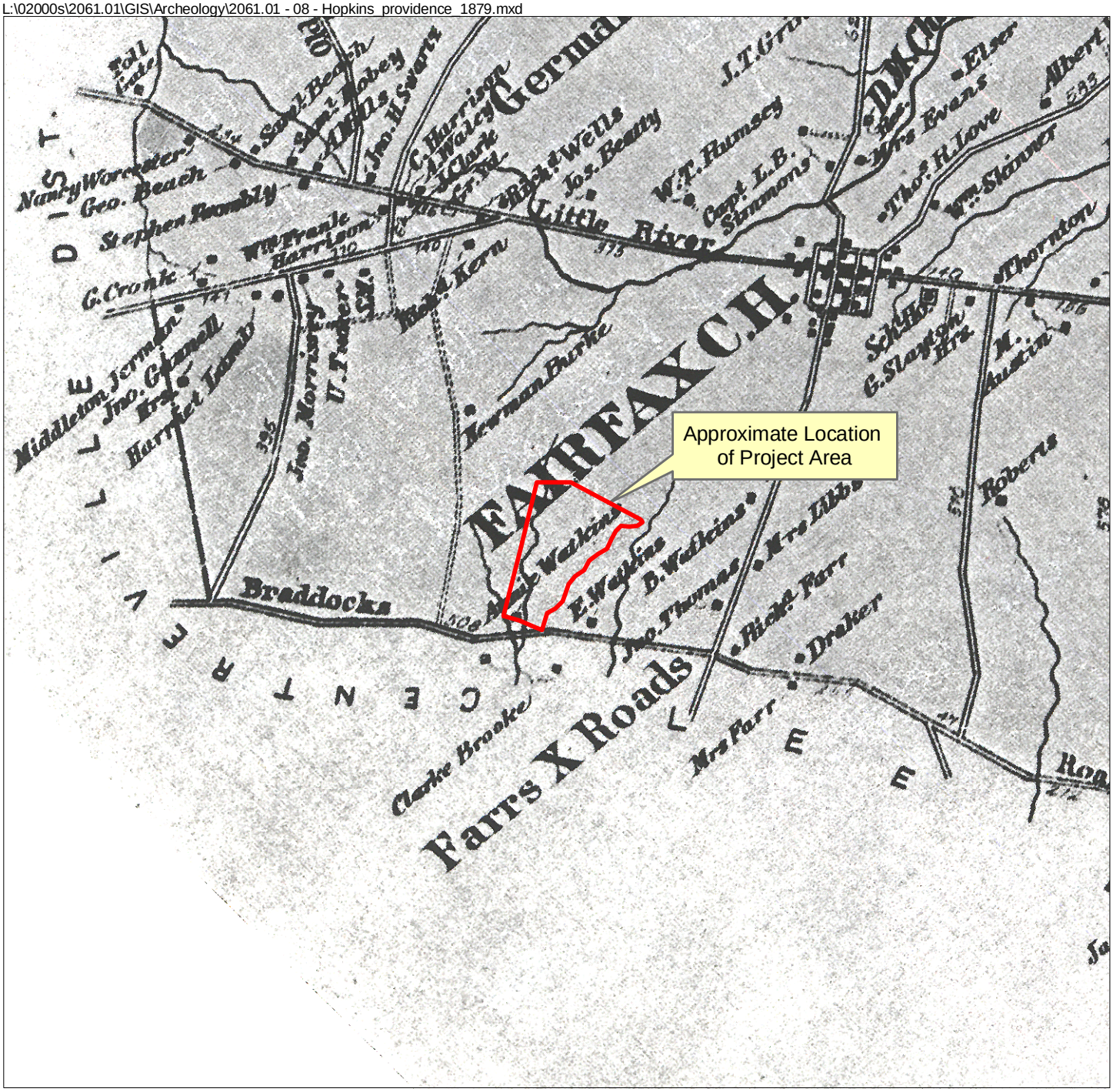


1864 J. Paul Hoffman Map
Fairfax, Prince William and Loudoun Counties, VA
GMU - West Campus
WSSI #2061.01
Scale: 1" = ½ mile

N
W E
S

Map Source: "Map of Fairfax, Prince William and Loudoun Counties, Virginia. Copied by J. Paul Hoffman. Topographical Office. 1864". Library of Congress Geography and Map Division Washington D.C. Original scale: ½" = 1 mile.

L:\02000s\2061.01\GIS\Archeology\2061.01 - 08 - Hopkins_providence_1879.mxd



1879 Hopkins Map
Providence District, Fairfax County, VA
GMU - West Campus
WSSI #2061.01
Scale: 1" = ½ mile

N
W E
S

Map Source: "Providence District, Fairfax Co. By G.M. Hopkins. 1879. Atlas of Fifeteen Miles Around Washington". Library of Congress, Geography and Mapping Department. Original Scale: 1 ½ inch = 1 mile.

Fairfax County became such an escape and many of the communities, however small, promoted themselves as such (Smith and Causey 2005:22). Because of the close proximity of the county to the District of Columbia, it was even possible for the wage earners to commute on a weekly basis and local land developers began establishing summer communities in the more rural areas (ibid.). In 1904, the Washington and Falls Church Electric Railway was extended to Vienna and Fairfax Court House (Sweig 1995:7).

The United States Post Office Map of rural delivery routes from 1912 shows Braddock Road, Fairfax City, and Popes Head Creek and its tributaries (Exhibit 8). A structure is depicted near the southern GMU West project area boundary, along Braddock Road, possibly the same structure shown in similar locations on earlier maps.

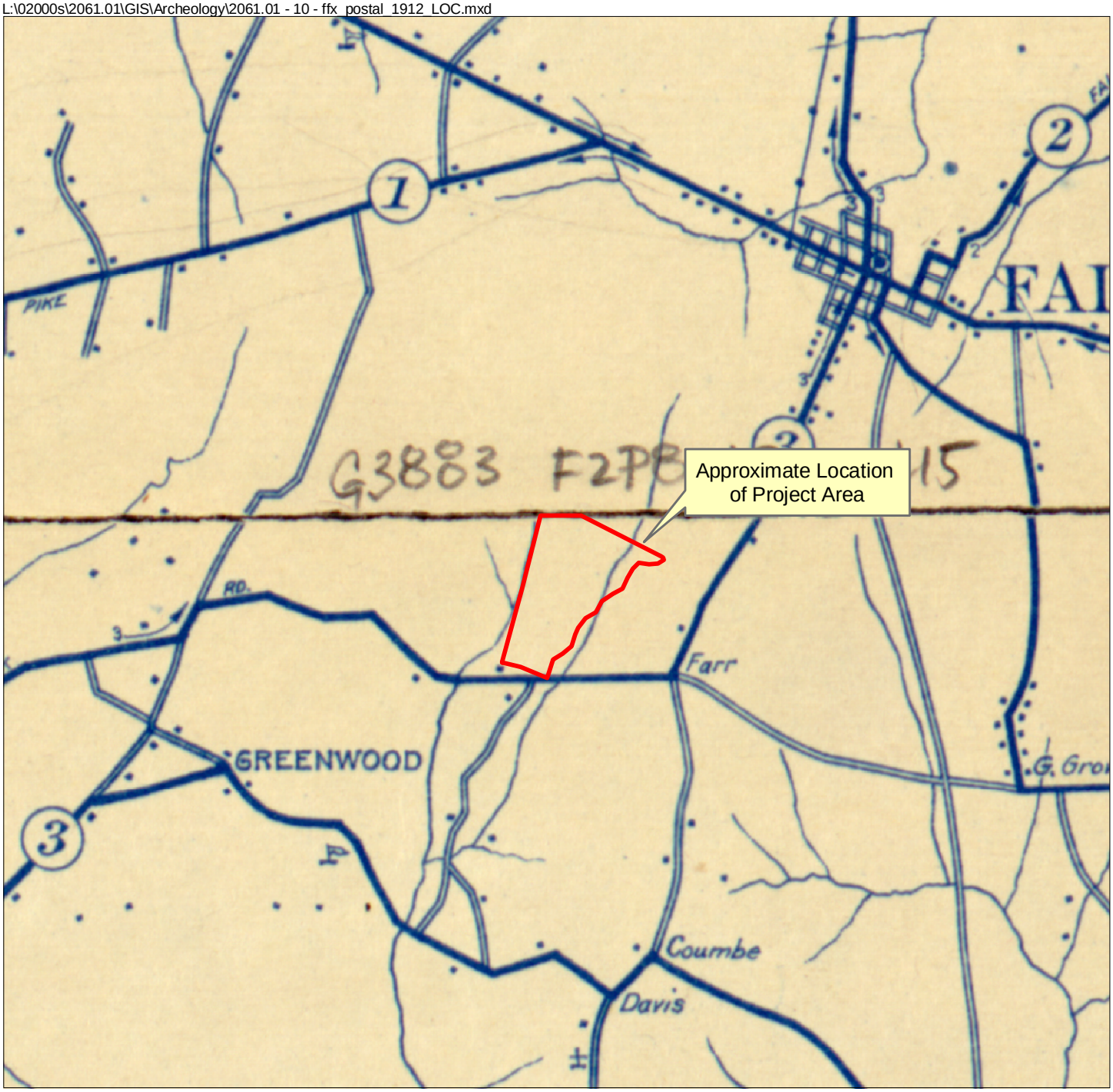
The United States Geologic Survey (USGS) 1912 Fairfax, VA topographic quadrangle portrays an unimproved road that runs north and south through the GMU West project area (Exhibit 9). It appears to lead from south of Braddock Road towards Fairfax City. This road trace is still visible running through the central portion of the project area and is represented by archeological site 44FX2699. A structure is shown on the map at the convergence of this unimproved road and Braddock Road. This may be the building shown on earlier maps and may be associated with archeological site 44FX0184.

By the first two decades of the 20th century, Fairfax County actively solicited growth, hoping to attract middle class Washington, D.C. residents (Smith and Causey 2005:23). Land developers began the process of suburbanization, capitalizing on the easy daily commute to the city via the various electric rails, bus lines and good roadways. However, although some smaller communities were established in the first few decades of the century, substantial suburban development did not become well established until after World War II (ibid.).

Fairfax County experienced rapid population growth after World War II and the population doubled from 40,929 in 1940 to 98,557 in 1950 (Smith and Causey 2005:24). However, suburban development had yet to become the norm and, in 1940 farmland made up 47% of the county land, with 42% of the land still in farmland in 1950 (ibid.). Suburban development and the population growth accelerated in the next decade, with the population rising from 98,557 to 275,002 in 1960 (Smith and Causey 2005:25).

Road extensions, highway improvements, and housing developments appear in the Washington, D.C., satellite areas by the 1950s. The USGS 1951 Fairfax, VA topographic quadrangle indicates two structures within the southern portion of the project area (Exhibit 10). One of these buildings is most likely the existing Building 1, discussed in the results section of this report. The unimproved road shown on the 1912 USGS quadrangle does not appear on this map, but development in this portion of Fairfax County is notable.

L:\02000s\2061.01\GIS\Archeology\2061.01 - 10 - ffx_postal_1912_LOC.mxd

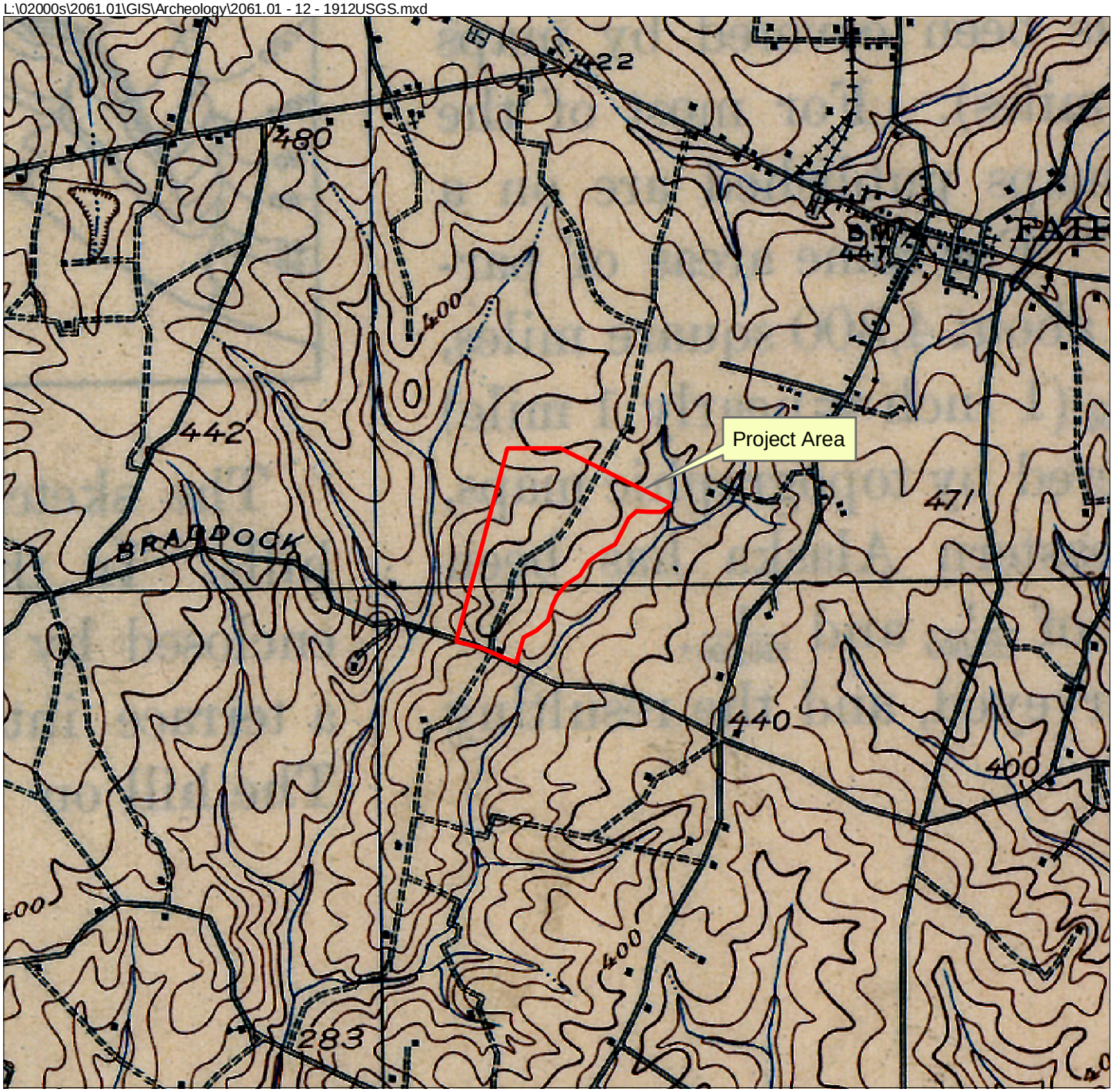


1912 United States Post Office Rural Delivery Route Map
Fairfax County, VA
GMU - West Campus
WSSI #2061.01
Scale: 1" = ½ mile

N
W E
S

Map Source: "Rural Delivery Routes, Fairfax County, Virginia. Post Office Department, Division of Topography 1912". Library of Congress Geography and Map Division Washington D.C. Original Scale: 1" = 1 mile

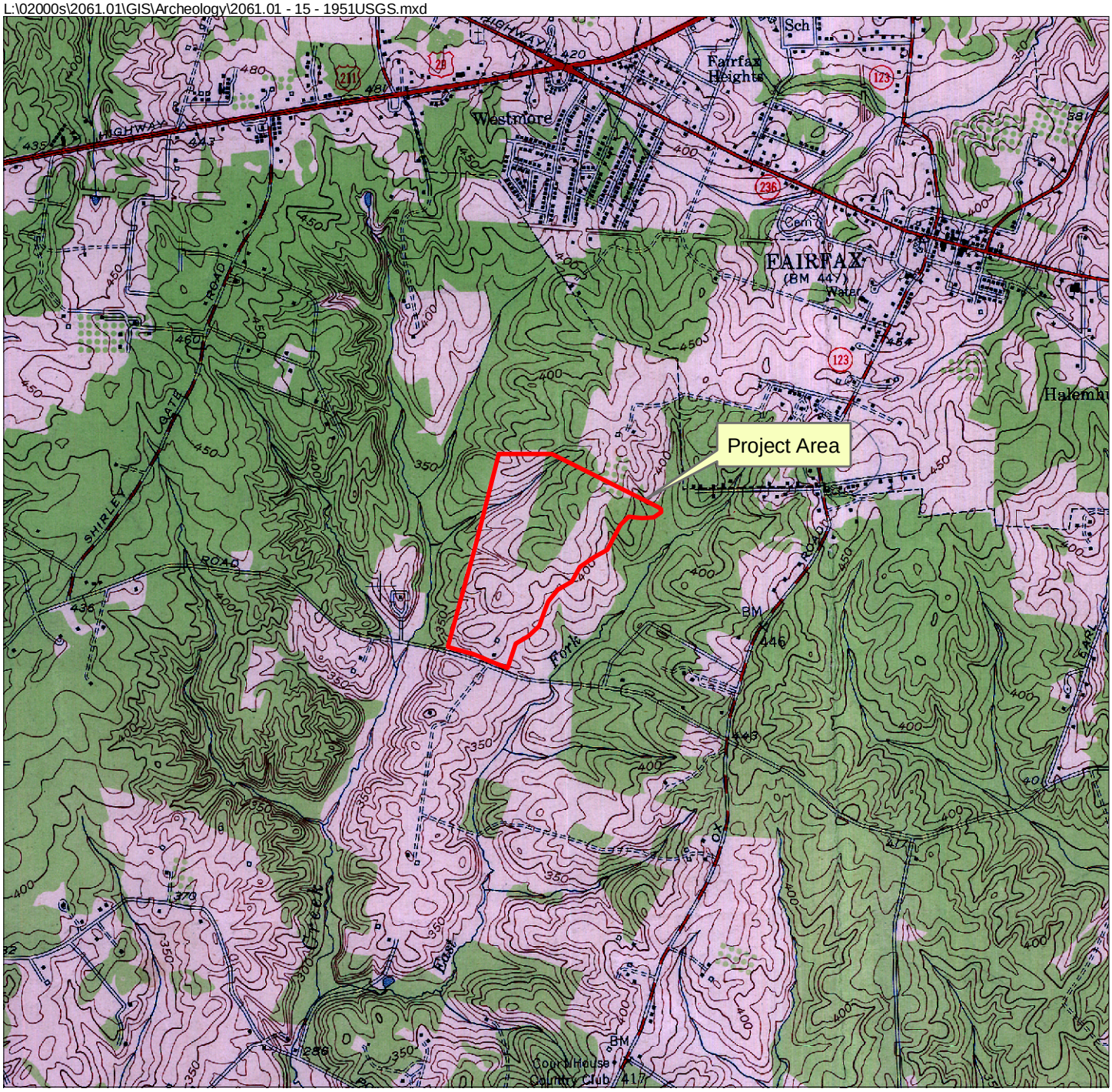
L:\02000s\2061.01\GIS\Archeology\2061.01 - 12 - 1912USGS.mxd



USGS Quad Map
Fairfax, VA 1912
GMU - West Campus
WSSI #2061.01
Scale: 1" = 2000'

N
W
E
S

L:\02000s\2061.01\GIS\Archeology\2061.01 - 15 - 1951USGS.mxd



USGS Quad Map
Fairfax, VA 1951
GMU - West Campus
WSSI #2061.01
Scale: 1" = 2000'

N
W E
S

Thunderbird Archeology
A Division of Wetland Studies and Solutions, Inc.

Exhibit 10

In 1961, when Fairfax became an independent city, Fairfax's population was approximately 19,500 (Hanson 1969:77). By 1975, development in Fairfax County was noted as "phenomenal growth" (Kilmer and Sweig 1975:1). With the opening of the Capital Beltway in 1964, Fairfax County was transformed, with the population growing from 248,000 in 1964 to 454,000 in 1970 (Sweig 1995:7).

The USGS 1966 (revised 1984) Fairfax, VA topographic quadrangle depicts the continual development of Fairfax City and Fairfax County (Exhibit 11). George Mason University is shown to the east of the project area across Ox Road, and Fairfax Village School is located to the north. An unimproved road or path runs north-south through the project area from Braddock Road to Alta Vista Drive north of the project area. The course of this path is slightly different than the one shown on the 1912 USGS quadrangle (see Exhibit 9). The two structures depicted on the 1951 map appear again on this map.

The 1990 Census shows Fairfax County having the largest population (818,584) of those counties of the Virginia/Maryland/West Virginia regions having satellite communities surrounding Washington, D.C. The total population of Fairfax City in 1990 was 19,622.

PREVIOUS ARCHEOLOGICAL RESEARCH

The following inventory of previously recorded historic sites within and near the project area was established with the use of the online Data Sharing System of the Virginia Department of Historic Resources (VDHR) as well as examination of cultural resource management reports at the Thunderbird Archeology offices in Gainesville, Virginia. The inventory includes sites within approximately a one-mile radius of the project area.

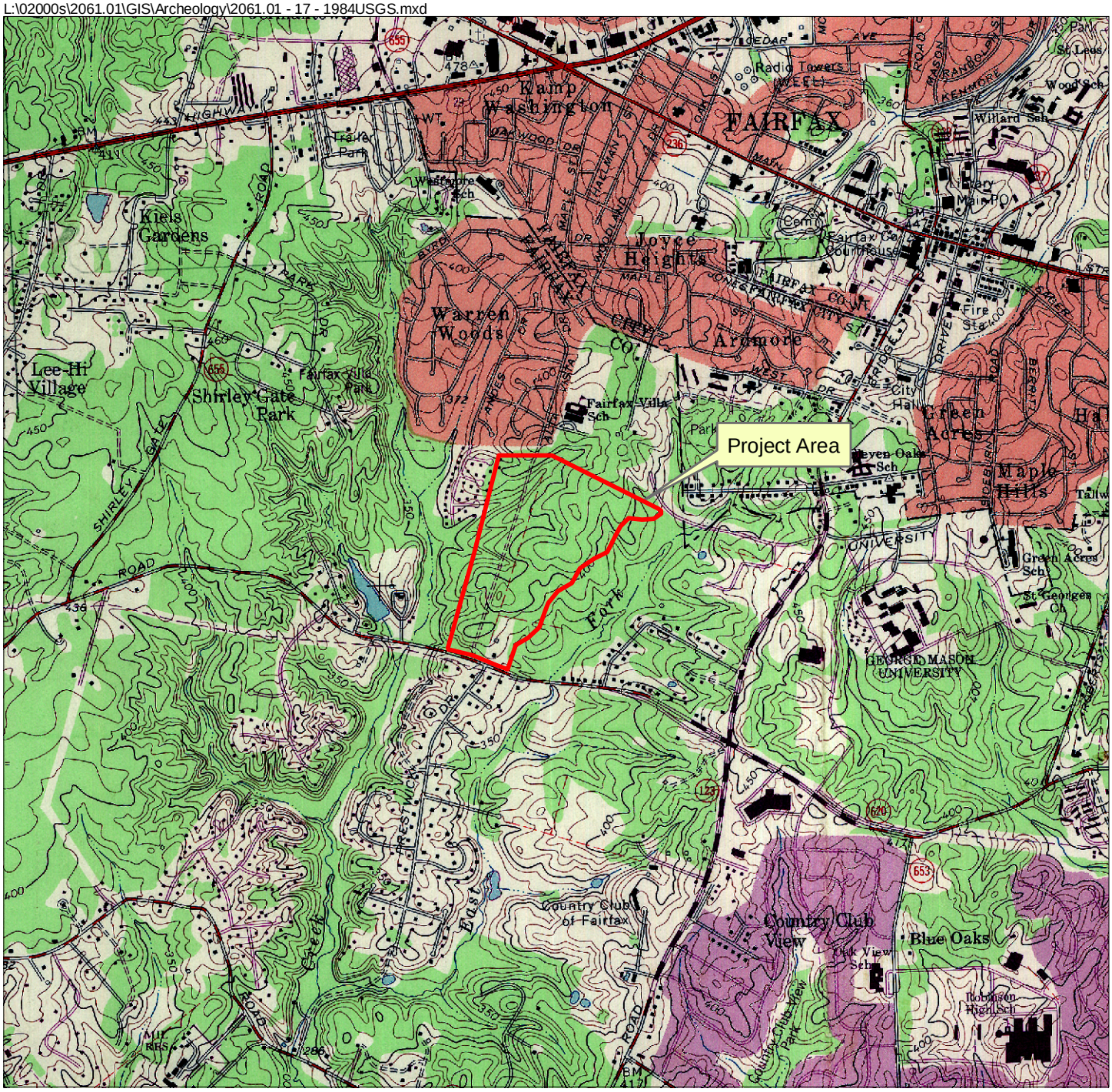
Within the approximate one-mile radius, there are 49 previously recorded archeological sites (Table 1) and 74 previously recorded architectural resources (Table 2).

Thirty-one prehistoric, 14 historic, and four multi-component sites were previously recorded within the one-mile radius of the project (see Table 1). Six of these sites fall within the boundaries of the GMU West project area. Three of these are prehistoric sites (44FX0180, 44FX0181, 44FX2018) and three are historic (44FX0184, 44FX2699, 44FX2767).

Sites 44FX0180, 44FX0181, and 44FX2018 represent prehistoric sites of indeterminate temporal association. Sites 44FX0180 and 44FX0181 are identified as small quartz quarry sites. They are both located in the northern portion of the project area. The sites consist of primary flakes near quartz boulders. Shovel test pits from site 44FX2018 yielded quartz debitage and one quartz early reduction stage biface. The VDHR site form noted that there are quartz outcroppings nearby the artifacts. It is possibly another quarry site.

Site 44FX2767 is located in the southwestern corner of the GMU West project area and it represents a Federal cavalry camp and probably also a picket associated with New York troops. Relic hunters have collected from this location for decades.

L:\02000s\2061.01\GIS\Archeology\2061.01 - 17 - 1984USGS.mxd



USGS Quad Map
Fairfax, VA 1966 (revised 1984)
GMU - West Campus
WSSI #2061.01
Scale: 1" = 2000'

A 19th century historic road (site 44FX2699) runs north-south through the west-central portion of the project area. The road originally connected Braddock Road to the Fairfax Courthouse. Braddock Road runs east-west along the southern border of the area currently under investigation and the Fairfax Courthouse is to the northeast of the project. Relic hunters have reported finding Civil War artifacts along the road.

Site 44FX2767 is located near the southeastern corner of the project area and represents a 19th century single dwelling. It was recorded in 1979 and not examined.

Outside the boundaries of the GMU West project area and within a one mile radius, there are 28 prehistoric sites, eleven historic sites, and four multi-component sites. Twenty three of the prehistoric sites represent sites of indeterminate temporal periods. Five of the prehistoric sites (sites 44FX0715, 44FX0946, 44FX0947, 44FX1757, and 44FX2792) are associated with specific prehistoric times. Four of the sites were identified based on surface collections, while 44FX1757 was located during a Phase I reconnaissance survey.

44FX0715 represents an Early Archaic site. A rhyolite bifurcated stem projectile point, which is possibly a MacCorkle point, and a quartz biface fragment were surface collected. Sites 44FX0946 and 44FX0947 are both dated to the Middle Archaic and consist of quartz Halifax-like points that were discovered during pedestrian survey. Site 44FX2792 is attributed to the Late Archaic time period and is considered to be a quarry site. During surface collection, a quartz uniface fragment with a pointed "soapstone" pick and quartz debitage were recovered. Site 44FX1757 is also recorded as a Late Archaic quarry. A soapstone vessel, a Piscataway point and quartz debitage were recovered during a Phase I investigation.

Site 44FX0135 is a circular embankment which represents the remains of Farr's Fort, and site 44FX0136 is a rectangular hole that might be a portion of the fort or a cellar. Farr's Fort was constructed in order to defend Farr's Crossroads from Union forces. Farr's Crossroads today are located at the intersection of Braddock Road and Chain Bridge Road.

Site 44FX2094 represents several remnant sections of the Manassas Gap Railroad, which dates to the 19th century.

Old Ox Road and Civil War trench, site 44FX0137, is an 18th and 19th century road and adjacent trench.

Four of the 19th century sites are associated with military and defense (sites 44FX0135, 44FX0185, 44FX2700, 44FX2765). Sites 44FX0135, 44FX0185, 44FX2765 are all recorded as earthworks while site 44FX2700 is recorded as a military camp.

Site 44FX2612 revealed 18th century domestic artifacts, and 19th century artifacts were recovered from site 44FX2094.

The Chandler Grove Stormwater Site, 44FX2910, is domestic trash scatter from the first half of the 20th century.

One of the eleven historic sites (site 44FX1366) is attributed to an unknown historic period. The VDHR site form states that a cemetery is located here that was not discovered on historic maps.

There are four multi-component sites with artifacts from both the prehistoric and historic time periods that were recorded outside of the GMU West project area and within a one mile radius.

Artifacts from both the third quarter of the 19th century and from unknown prehistoric times were discovered from sites 44FX1979 and 44FX2766. The historic components of these sites are both associated with military and defense.

A 20th century hearth with prehistoric quartz lithic scatter defined site 44FX1863.

Site 44FX1806 is attributed to an unknown historic period and an unknown prehistoric period. A historic foundation was discovered which cuts into a prehistoric soapstone and quartz quarry.

Table 1
Previously Recorded Archeological Sites
within a One-Mile Radius of the Project Area

Site No.	Thematic Context	Site Type	Temporal Period
44FX0094	Indeterminate	null	Prehistoric/Unknown
44FX0135	Military/Defense	Earthworks	19th Century: 3rd quarter
44FX0136	Domestic	Other	Null
44FX0137	Transportation/Communication	Road, civil war trench	18th Century, 19th Centrury: 3rd quarter
44FX0179	Indeterminate	null	Prehistoric/Unknown
44FX0180	Industry/Processing/Extraction	Quarry	Prehistoric/Unknown
44FX0181	Industry/Processing/Extraction	Quarry	Prehistoric/Unknown
44FX0184	Domestic	Dwelling, single	19th Century: 2nd half
44FX0185	Military/Defense	Earthworks	19th Century: 3rd quarter
44FX0434	Domestic, Industry/Processing/Extraction	Camp, Lithic workshop	Prehistoric/Unknown
44FX0435	Domestic, Industry/Processing/Extraction	Camp, Lithic workshop	Prehistoric/Unknown
44FX0516	Industry/Processing/Extraction	Quarry	Prehistoric/Unknown
44FX0592	Industry/Processing/Extraction	Lithic workshop	Prehistoric/Unknown
44FX0715	Indeterminate	null	Early Archaic
44FX0716	Domestic	Camp, temporary	Prehistoric/Unknown
44FX0946	Indeterminate	null	Middle Archaic
44FX0947	Indeterminate	null	Middle Archaic

44FX1074	Indeterminate	null	Prehistoric/Unknown
44FX1075	Indeterminate	null	Prehistoric/Unknown
44FX1175	Funerary	Cemetery	19th Century: 2nd half, 20th Century
44FX1366	Funerary	Cemetery	Historic/Unknown
44FX1757	Industry/Processing/Extraction	Quarry	Late Archaic
44FX1806	Indeterminate	null	Historic/Unknown, Prehistoric/Unknown
44FX1822	Domestic, Industry/Processing/Extraction	Lithic workshop, Village	Prehistoric/Unknown
44FX1862	Indeterminate	null	Prehistoric/Unknown
44FX1863	Indeterminate	null	20th Century, Prehistoric/Unknown
44FX1864	Indeterminate	null	Prehistoric/Unknown
44FX1979	Military/Defense	Other	19th Century: 3rd quarter, Prehistoric/Unknown
44FX2003	Indeterminate	null	Prehistoric/Unknown
44FX2018	Indeterminate	null	Prehistoric/Unknown
44FX2019	Indeterminate	null	Prehistoric/Unknown
44FX2094	Transportation/Communication	Railroad	19th Century
44FX2127	Settlement Patterns	Camp	Prehistoric/Unknown
44FX2128	Settlement Patterns	Camp	Prehistoric/Unknown
44FX2129	Settlement Patterns	Camp	Prehistoric/Unknown
44FX2431	Settlement Patterns	Quarry	Prehistoric/Unknown
44FX2432	null	null	Prehistoric/Unknown
44FX2510	Fortification, Domestic	Trash scatter	19th century
44FX2612	Domestic	Dwelling, single	18th Century: 3rd quarter
44FX2699	Transportation/Communication	Road Trace	19th Century: 3rd quarter
44FX2700	Military/Defense	Civil War camp	19th Century: 3rd quarter
44FX2765	Military/Defense	Earthworks, Trench	19th Century: 3rd quarter
44FX2766	Military/Defense, Settlement Patterns	Civil War Camp, Military camp	19th Century: 3rd quarter, Prehistoric/Unknown
44FX2767	Military/Defense	Military camp, Federal Camp	19th Century: 3rd quarter
44FX2790	Settlement Patterns	Camp	Prehistoric/Unknown
44FX2791	Industry/Processing/Extraction	Quarry	Prehistoric/Unknown
44FX2792	Industry/Processing/Extraction	Quarry, steatite	Late Archaic
44FX2855	Settlement Patterns	Camp	Prehistoric/Unknown
44FX2856	Settlement Patterns	Camp	Prehistoric/Unknown
44FX2910	Domestic	Trash scatter	20th Century: 1st half

There are 74 previously recorded architectural resources within a one-mile radius of the area under investigation (Table 2).

Six structures have been recorded on the George Mason University campus under architectural resource 029-0195. Structure 029-0195-2, the Tallwood House, is the oldest among them. It was build circa 1922 in the Colonial Revival style. The Earle House (029-0195-3) and the President's House (029-0195-4) were built circa 1925 and are also in the Colonial Revival style. A garage for the President's house (029-0195-5) and stables (029-195-6) were built circa 1935. The Tallwood House Storeroom (029-0195-1) was built circa 1936.

Architectural resource 151-0033 (also designated archeological site 44FX1175) is a cemetery that dates circa 1860. It is northeast of the GMU West project area, and possesses a monument to the confederate dead.

The other recorded resources in the vicinity of the project area date to the middle of the 20th century. Three of the architectural resources recorded near the project are dwellings dating to 1930. Six of the recorded structures are dwellings built in 1940. Structure 151-5437 is a house built in 1945. Structure 151-5001 is a school built in 1954. Sixty of the architectural resources are dwellings built in 1955.

Table 2
Previously Recorded Architectural Resources within a One-Mile Radius of the Project Area

Resource No.	Name	Temporal Period
029-0195	George Mason University	1922-1936
151-0033	Cemetery, 10561 Main Street, Fairfax City Cemetery	Ca 1860
151-5001	Eleven Oaks School	1954
151-5002	Newman House	1930
151-5279	House, 4119 Holly Street	1940
151-5280	House, 4121 Holly Street	1940
151-5281	House, 11005 Westmore Drive	1940
151-5282	House, 11007 Westmore Drive	1940
151-5283	House, 11008 Westmore Drive	1955
151-5294	House, 4115 Lamarre Drive	1955
151-5295	House, 4113 Lamarre Drive	1955
151-5296	House, 10721 Joyce Drive	1955
151-5298	House, 10725 Jones Street	1955
151-5299	House, 10723 Jones Street	1955
151-5300	House, 10721 Jones Street	1955
151-5301	House, 10719 Jones Street	1955
151-5302	House, 10717 Jones Street	1955
151-5303	House, 10715 Jones Street	1955
151-5304	House, 10716 Jones Street	1955
151-5305	House, 10715 Joyce Drive	1955

151-5306	House, 10713 Joyce Drive	1955
151-5307	House, 10711 Joyce Drive	1955
151-5308	House, 10710 Joyce Drive	1955
151-5309	House, 10712 Joyce Drive	1955
151-5310	House, 10714 Joyce Drive	1955
151-5311	House, 10716 Joyce Drive	1955
151-5312	House, 10718 Joyce Drive	1955
151-5313	House, 10720 Joyce Drive	1955
151-5314	House, 10722 Joyce Drive	1955
151-5315	Twin Dwelling, 10701 Ashby Place, Twin Dwelling, 4210 Allison Circle	1955
151-5316	Twin Dwelling, 4220-4226 Allison Circle	1955
151-5317	Twin Dwelling, 4228-4230 Allison Circle	1955
151-5318	Twin Dwelling, 4234-4236 Allison Circle	1955
151-5319	Twin Dwelling, 4238-4240 Allison Circle	1955
151-5320	Twin Dwelling, 4243-4245 Allison Circle	1955
151-5321	Twin Dwelling, 4248-4256 Allison Circle	1955
151-5322	Twin Dwelling, 4255-4257 Allison Circle	1955
151-5323	Twin Dwelling, 4251-5253 Allison Circle	1955
151-5324	Twin Dwelling, 4247-5249 Allison Circle	1955
151-5325	Twin Dwelling, 4243-5245 Allison Circle	1955
151-5326	Twin Dwelling, 4239-4241 Allison Circle	1955
151-5327	Twin Dwelling, 4235-4237 Allison Circle	1955
151-5328	Twin Dwelling, 4231-4233 Allison Circle	1955
151-5329	Twin Dwelling, 4227-4229 Allison Circle	1955
151-5330	Twin Dwelling, 4223-4225 Allison Circle	1955
151-5331	Twin Dwelling, 4219-4221 Allison Circle	1955
151-5332	Twin Dwelling, 4215-4217 Allison Circle	1955
151-5333	Twin Dwelling, 4211-4213 Allison Circle	1955
151-5334	Twin Dwelling, 4209 Allison Circle and 10645 Ashby Place	1955
151-5435	House, 4320 Chain Bridge Road	1935
151-5436	House, 4310 Chain Bridge Road	1940
151-5437	House, 4294 Chain Bridge Road	1945
151-5438	House, 4283 Chain Bridge Road	1930
151-5440	House, 4300 Chain Bridge Road	1930
151-5481	House, 10810 Maple Street	1955
151-5482	House, 10812 Maple Street	1955
151-5483	House, 10814 Maple Street	1955
151-5484	House, 10816 Maple Street	1955
151-5485	House, 10818 Maple Street	1955
151-5486	House, 10820 Maple Street	1955
151-5487	House, 10822 Maple Street	1955
151-5488	House, 10913 Byrd Drive	1955
151-5489	House, 10911 Byrd Drive	1955
151-5490	House, 10909 Byrd Drive	1955
151-5491	House, 10907 Byrd Drive	1955
151-5492	House, 10905 Byrd Drive	1955

151-5493	House, 10902 Byrd Drive	1955
151-5494	House, 10904 Byrd Drive	1955
151-5495	House, 10906 Byrd Drive	1955
151-5496	House, 10908 Byrd Drive	1955
151-5497	House, 10910 Byrd Drive	1955
151-5498	House, 10912 Byrd Drive	1955
151-5499	House, 10914 Byrd Drive	1955
151-5500	House, 10903 Byrd Drive	1955

RESEARCH EXPECTATIONS

The project area is considered to have a high probability of yielding prehistoric cultural resources. The presence of landforms having low relief (the ridge and knoll tops) and the proximity of water (Popes Head Creek and its tributaries) would have made the area an attractive location for prehistoric populations. The abundance of knappable lithic material also makes this location favorable for prehistoric activity. Three prehistoric period archaeological sites have been recorded within the boundaries of the GMU West project area and two of these are possible quarry sites. Additionally, previous surveys within a one-mile radius of the project area have identified a number of prehistoric sites. Most of these consist of small light density lithic scatters of indeterminate age. The documented presence of these sites and the favorable topography indicate that there is a high probability that additional prehistoric sites may be present within the study area.

The project area also has a high probability of historic period resources. Historic maps of the vicinity of the project area show that by the middle of the 18th century this portion of Fairfax County was well settled and a number of roads were constructed. Modern-day Ox Road and Braddock Road are depicted on the 1760 Mitchell map (see Exhibit 4). Numerous residences are depicted on historic maps from the mid and late19th century within or near the project area, and site 44FX2699, a mid-19th century road, runs the length of the current project. Also, sites 44FX2767 and 44FX0184 both date to the middle of the 19th century and are located on the GMU West project area. The former represents a Civil War encampment and the latter represents a dwelling shown on period maps. The documentation of numerous historic sites and features on and near the project area as well as the proximity of water and the presence of level arable land all indicate that there is a high probability that additional historic period sites are located on the project area.

The high probability for historic and prehistoric sites is slightly mitigated by disturbances that have occurred along Braddock Road to the south and along Rapidan River Road to the east of the project area. Large areas of disturbance are located along the southern and eastern property boundaries and any sites that may have been in those areas have most likely been destroyed.

FIELD AND LABORATORY METHODS

Fieldwork

The Phase I field methodology included both the use of surface reconnaissance and shovel testing to locate and define boundaries of archeological sites. The surface reconnaissance consisted of walking over the area and examining all exposed areas for the presence of artifacts. Exposed areas included cut banks, tree falls, machinery cuts, soils exposed by erosion, etc. The surface reconnaissance was also used to examine the topography of specific areas in order to determine the probability that they contain archeological sites. All high probability areas--areas that were well drained and possessed low relief--were tested at 50 foot (15 meter) intervals. High probability areas also included historic structure areas identified through surface reconnaissance or through archival review of historic maps. Additional shovel tests were excavated at 25 foot (7.6 meter) intervals in a cruciform pattern around the positive shovel tests as necessary to define site boundaries and to delineate artifact concentrations. In general, the low probability areas were those that were sloping, poorly drained or that had been disturbed.

Shovel test pits measured at least 12 inches (30 cm) in diameter. Vertical excavation was by natural soil levels; excavation stopped when gleyed soils, gravel, water, or well developed B horizons too old for human occupation were reached. Soil horizons observed at the site were classified according to standard pedological designations. All soil was screened through 1/4-inch mesh hardware cloth screens. Soil profiles were made of representative units, with soil descriptions noted in standard soil terminology (A, Ap, B, C, etc.). Soil colors were described using the Munsell Soil Color Chart designations. Artifacts were bagged and labeled by unit number and by soil horizon.

Laboratory

All artifacts were cleaned, inventoried, and curated. Historic artifacts were separated into four basic categories: glass, metal, ceramics, and miscellaneous. The ceramics were identified as to ware type, method of decoration, and separated into established types, following South (1977), Miller (1992) and Magid (1990). All glass was examined for color, method of manufacture, function, etc., and dated primarily on the basis of method of manufacture when the method could be determined (Hurst 1990). Metal and miscellaneous artifacts were generally described; the determination of a beginning date is sometimes possible, as in the case of nails.

The prehistoric artifacts were classified by cultural historical and functional types and lithic material. In addition, the debitage was studied for the presence of striking platforms and cortex, wholeness, quantity of flaking scars, signs of thermal alteration, size, and presence or absence of use. Chunks are fragments of lithic debitage which, although they appear to be culturally modified, do not exhibit clear flake or core morphology.

RESULTS OF FIELD INVESTIGATIONS

A Phase I archeological investigation was conducted of the circa 93 acre GMU West property, located on the campus of George Mason University, north of Braddock Road, east of Andes Drive, south of Santa Clara Drive, and west of Rapidan River Road in Fairfax County, Virginia. To facilitate discussion, the project area was divided into two survey areas, Areas A and B. These survey areas are shown on Exhibit 12 and are discussed individually below.

Area A

Area A is situated in the northern portion of the GMU West project area. It is bordered to the north by Santa Clara Drive and Alta Vista Drive, to the east by Rapidan River Road and the GMU Intramural Fields, to the south by Area B, and to the west by Andes Drive, Melissa Court, Stanrich Court, and Bea-Mar Court (Exhibit 13).

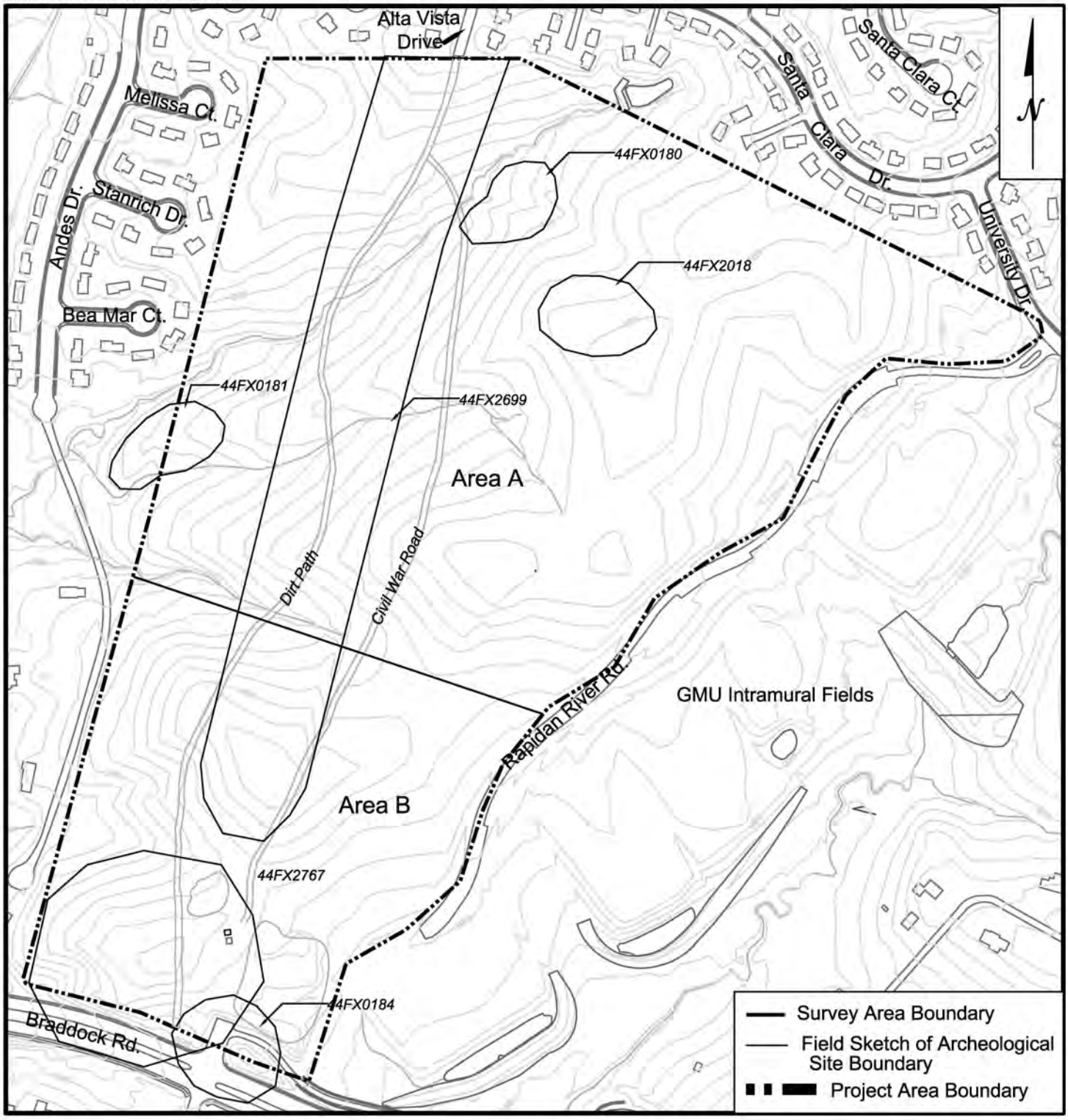
The topography within Area A consists of two south-trending upland flat ridges and two west-trending finger ridges. These finger ridges are dissected by drainages that flow into an unnamed tributary of Popes Head Creek to the west (Plate 1). The landforms are covered in a mixed coniferous and deciduous forest that consists primarily of Virginia pine, poplar, beech, hickory, and holly trees (Plates 2 and 3). The undergrowth in Area A varies depending on how recently it has been impacted; therefore, closer to the houses along the northern and western project borders the scrub and vine layer was denser.

A total of 354 shovel test pits were excavated in Area A at 50 and 25 foot intervals. Some disturbance was encountered in Area A, including areas covered with large mulch and trash piles along the northern project border (Plate 4), which precluded testing. Swales, low and wet areas, and steep slopes were also not shovel tested. Also, a dirt trail that runs the length of the western portion of the GMU West project area was avoided (Plate 5).

Four archeological sites have been previously recorded in Area A (see Exhibit 13). Sites 44FX0180 and 44FX0181 were recorded in 1979 as prehistoric quartz quarry sites with primary reduction flakes and shatter on the surface. Shovel testing in the vicinity of these sites, located in the northern and western portions of Area A, did not yield any additional cultural materials. No further work is recommended on these sites.

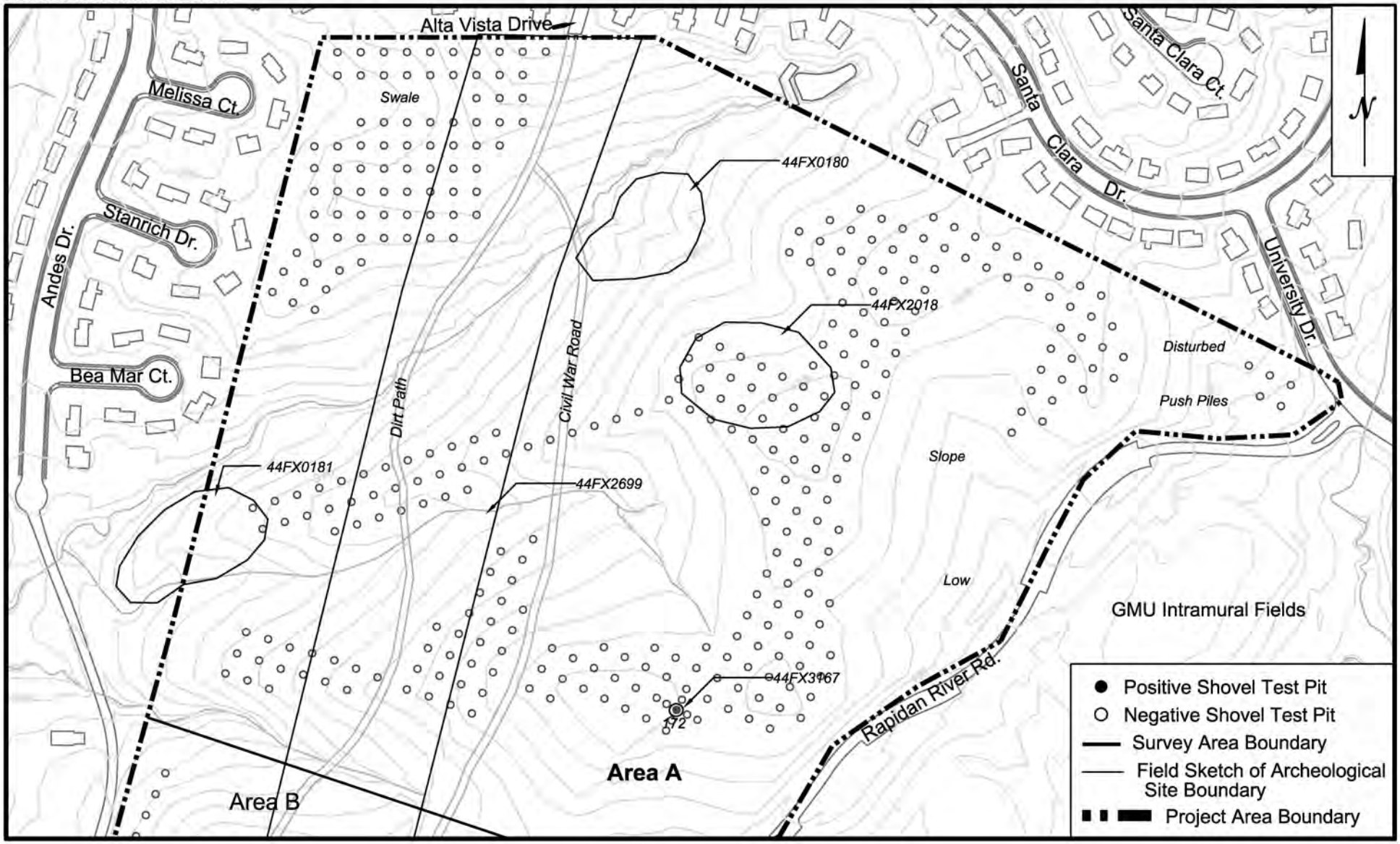
Located in the northern portion of the survey area, site 44FX2018 was recorded as a light scatter of quartz debitage. The artifact assemblage from this site included 15 quartz flakes, three fragments of quartz shatter, and one quartz early reduction stage biface. VCU recorded this site as unplowed in 1993 during their Phase I archeological survey of areas to be impacted by the proposed expansion of the west campus athletic fields. However, shovel tests excavated in the vicinity during this investigation did not yield additional cultural materials, and no unplowed contexts were encountered. Therefore, no additional work is recommended on this site.

L:\02000S\2061.01\CADD\ARCHSURVEYMAP.DWG



Project Map Showing Survey Areas and Previously Recorded Sites
GMU - West Campus WSSI #2061.01
Scale: 1" = 400'

L:\02000S\2061.01\CADD\ARCHSURVEYMAP.DWG



Portion of Project Map Showing Area A
GMU - West Campus WSSI #2061.01
Scale: 1" = 300'

Site 44FX2699 represents a mid-to-late 19th century road trace that connected Fairfax Courthouse to Braddock Road. This sunken road trace is visible in the western portion of Area A, and it extends into Area B to the south (Plate 6). According to the VDHR site form filed in 2001 by John Milner Associates, relic hunters had found Civil War related artifacts along the road, but it was unknown if these were discarded by the troops who utilized the road or were related to nearby camps in the area. A modern dirt walking trail currently runs in a parallel course to this sunken road, approximately 200 feet to the west. The sunken road joins with the dirt walking trail near the northwestern project area corner, and the northern terminus is found at Alta Vista Drive. No artifacts were recovered in or along this road during the course of the current investigation. No additional work is recommended on site 44FX2699.

Site 44FX3167

Site 44FX3167 was the only archeological site recorded during the course of this Phase I investigation in Area A. It is located in the southern portion of Area A on a landform overlooking a small drainage to the south (Plate 7; see Exhibit 13). Quartz outcroppings were noted in the vicinity. Site 44FX3167 was defined by artifacts from one positive shovel test, STP 172, and measures approximately 25 by 25 feet (7.6 by 7.6 meters).

The soils within STP 172 were typical of Area A in general and were comprised of a plow zone that overlay subsoil. The soil profile is shown below and in Exhibit 14.

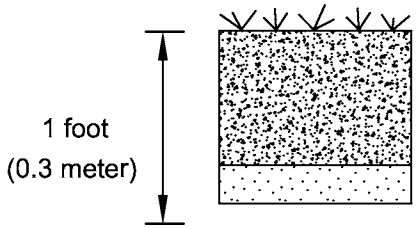
STP 172
- Ap horizon: 0-8.4 inches (0-21.3 cm) below surface – [2.5Y 4/4] olive brown silty loam
- B horizon: 8.4-10.8 inches (21.3-27.4 cm) below surface – [2.5Y 5/4] light olive brown silty clay loam

The artifacts recovered from site 44FX3167 included four partial quartz flakes. All artifacts were recovered from the plow zone.

Site 44FX3167 represents transient use of the area by prehistoric populations during an unknown time period. All artifacts were recovered from plowed contexts and artifact density was low. No intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

L:\02000S\2061.01\CADD\ARCHSTP.DWG

STP 172



Ap horizon: 2.5Y 4/4 olive brown silty loam

B horizon: 2.5Y 5/4 light olive brown silty clay loam

Representative Soil Profile from Site 44FX3167
GMU - West Campus WSSI #2061.01

Area B

Area B is located in the southern portion of the GMU West project area (Exhibit 15). It is bordered to the north by Area A, to the east by Rapidan River Road and the GMU Intramural Fields, to the south by Braddock Road, and to the west by Andes Drive.

The topography within Area B consists of one large south-trending landform dissected by drainages of the unnamed tributary of Popes Head Creek to the west. The vegetation in Area B varies, ranging from a primarily hardwood forest in the northwest to a primarily coniferous forest in the southeast (Plate 8).

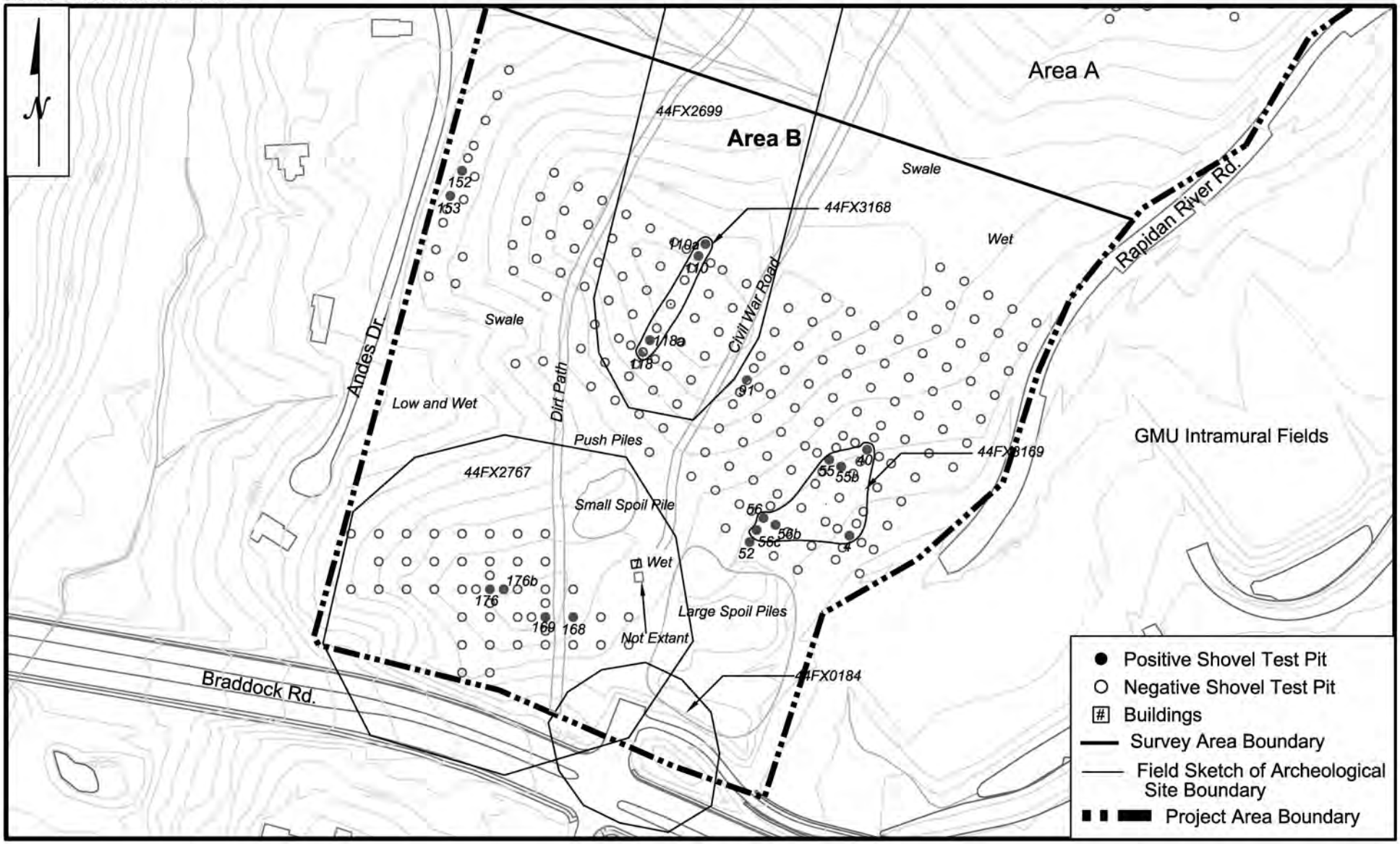
One standing building is located in the southern portion of Area B (Plates 9 and 10). This one-story cinder block building faces south toward Braddock Road and may have functioned as a garage or a small dwelling. The building measures approximately 50 feet by 20 feet (15.2 by 6.1 meters). The gabled roof is covered with standing seam metal and an uncovered parking area is attached to the southern side. Numerous rooms are present inside the building and it has been heavily vandalized. A second building is shown on recent maps just to the south of this one on the survey map, but it is not extant (see Exhibit 15).

A total of 238 shovel test pits were excavated in Area B at 50 and 25 foot intervals. Large areas of disturbance in the southeastern portion of the project area precluded shovel testing. This disturbance included very large spoil piles in the southeast corner of the project measuring nearly 50 feet in height (Plates 11 and 12). These were formed by recent dumping of back dirt excavated during construction on the George Mason University campus. A slightly smaller spoil pile was found to the northwest of this large one. This spoil pile measures nearly 30 feet in height, and pine trees are growing on top of it (Plates 13 and 14). Smaller push piles surround these large spoil piles and Building 1 (Plate 15).

Three shovel tests were excavated in Area B that produced artifacts but do not fall within previously recorded or newly recorded archeological site boundaries. STP 91, located in the northern portion of the area, produced three unidentified clear glass sherds from the plow zone. Shovel testing at reduced intervals failed to produce additional cultural materials; these artifacts are considered to result from casual discard and do not constitute a site. STPs 152 and 153, located along the western project border with Andes Drive, produced one whiteware sherd (1820-1900+), one ironstone sherd (1840-1900+), and one unidentified burned white earthenware sherd from the plow zone. Additional shovel tests excavated at 25 foot intervals in a cruciform pattern failed to produce additional cultural materials. These artifacts are also considered to represent casual discard and do not constitute a site. No additional work is recommended for any of these locations.

Three archeological sites have been previously recorded within the boundaries of Area B, including 44FX2699, the mid-19th century road also found in Area A (Plate 16). The large spoil pile disturbance truncates the southern terminus of this Civil War-era road, and water is pooling in the sunken road at this point (Plate 17).

L:\02000S\2061.01\CADD\ARCHSURVEYMAP.DWG



Portion of Project Map Showing Area B
GMU - West Campus WSSI #2061.01
Scale: 1" = 250'

Thunderbird Archeology
A division of Wetland Studies and Solutions, Inc.

Exhibit 15

Site 44FX2767 was recorded in 2001 by John Milner Associates and it is located in the southwestern corner of Area B. It represents a Federal cavalry camp and picket associated with New York troops. According to the VDHR site form, relic hunters have collected in this area for decades. Apparently, the site was recorded on the basis of their reports. During the current investigation, four shovel tests yielded additional artifacts within the previously recorded site boundaries. STP 168 produced one asphalt or tar sample that was discarded. This is most likely related to the modern disturbance that has occurred near and around the site, and no additional close-interval shovel tests were excavated around this shovel test. STP 169, located 50 feet west of STP 168 and along the dirt walking path, produced one unidentified clear glass sherd from the plow zone. Additional shovel tests excavated at 25 foot intervals failed to produce additional cultural materials. STP 176, located near the crest of the landform on which site 44FX2767 is situated, produced one grey-bodied stoneware sherd from the plow zone. STP 176b, excavated 25 feet to the east of STP 176 produced one unidentified olive green glass sherd. No artifacts that definitively date to the Civil War time period were recovered within the previously recorded site boundaries, and all additional materials were recovered in low densities from the plow zone. No additional work is recommended for the site.

Site 44FX0184, located along the southern property border, is the final previously recorded archeological site in Area B. Recorded in 1979, 44FX0184 represents the remains of a mid-19th century domestic site. The site was not examined in detail at the time it was recorded as "surface manifestations could be observed from adjacent trails," according to the VDHR site form. A dwelling appears on historic maps from the period (see Exhibits 5, 7 and 8), but no remnants of it can be seen today due to the massive disturbance resulting from the spoil piles. Therefore, no shovel testing was conducted in this portion of the project area and no further work is recommended.

Two new archeological sites were identified in Area B during the course of this investigation; they are discussed in detail below.

Site 44FX3168

Site 44FX3168 is located in the northern portion of Area B on the crest of the large landform that defines most of the survey area (see Exhibit 15; Plate 18). Site 44FX 2699, the Civil War-era road, is situated approximately 100 feet to the east of site 44FX3168. This site was identified on the basis of four positive shovel test pits excavated at 50 and 25 foot intervals. The site measures approximately 225 by 25 feet (68.6 by 7.6 meters).

The soils within the four shovel tests were typical of Area B in general and were comprised of a plow zone that overlay subsoil. A typical soil profile is shown below and in Exhibit 16.

STP 110
Ap horizon: 0-12 inches (0-30.5 cm) below surface – [10YR 5/4] yellowish brown silty loam with small to medium angular quartz inclusions
B horizon: 12-14.4 inches (30.5-36.6 cm) below surface – [7.5YR 5/6] strong brown silty clay loam with mica

The artifacts recovered from site 44FX3168 include five partial quartz flakes and one light olive amber cylindrical bottle glass sherd, possibly manufactured using a contact mold.

Site 44FX3168 is a multi-component site with artifacts recovered from both prehistoric and historic time periods. The prehistoric component represents ephemeral use of the area by prehistoric populations during an unknown time period. The historic component is comprised of one bottle glass sherd with a possible mid-19th century manufacture date. This could be related to use of site 44FX2699, the Civil War-era road trace. All artifacts were recovered from plowed contexts and artifact density was low. No intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

Site 44FX3169

Site 44FX3169 is situated on a gentle slope in the southeastern portion of Area B (see Exhibit 15; Plate 19) . The large spoil pile disturbance is located just to the south of this site. Site 44FX0184, the mid-19th century domestic site, is located approximately 400 feet (121.9 meters) to the south. Seven positive shovel test pits excavated at 25 and 50 foot intervals define site 44FX3169 and it measures approximately 250 by 150 feet (76.2 by 45.7 meters).

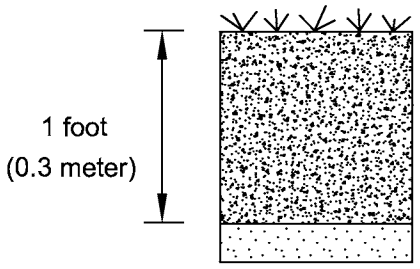
The soils within the shovel tests consisted of a plow zone that overlay subsoil. STP 55 presents a typical example below and in Exhibit 16:

STP 55
Ap horizon: 0-7.2 inches (0-18.3 cm) below surface – [10YR 4/4] dark yellowish brown silty loam
B horizon: 7.2-12 inches (18.3-30.5 cm) below surface – [7.5YR 5/8] strong brown clay loam

The artifacts recovered from site 44FX3169 include five partial quartz flakes, one quartz mid-stage biface fragment, one clear manganese bottle glass sherd (1880-1915), and two unidentified flat glass sherds. One of these sherds may be lime soda windowpane.

L:\02000S\2061.01\CADD\ARCHSTP.DWG

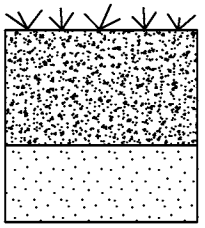
STP 110
44FX3168



Ap horizon: 10YR 5/4 yellowish brown silty loam with small to medium angular quartz inclusions

B horizon: 7.5YR 5/6 strong brown silty clay loam with mica

STP 55
44FX3169



Ap horizon: 10YR 4/4 dark yellowish brown silty loam

B horizon: 7.5YR 5/8 strong brown silty clay loam

Representative Soil Profiles from 44FX3168 and 44FX3169
GMU - West Campus WSSI #2061.01

Site 44FX3169 is a multi-component site with artifacts recovered from both prehistoric and historic time periods. The prehistoric component represents ephemeral use of the area by prehistoric populations during an unknown time period. The historic component is represented by three glass sherds. The one bottle glass sherd dates to the late-19th or early-20th century and the two flat glass sherds could not be definitively dated. These artifacts could be related to use of site 44FX0184, which is a mid-19th century dwelling located along Braddock Road.

All artifacts were recovered from plowed contexts and artifact density was low. No intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

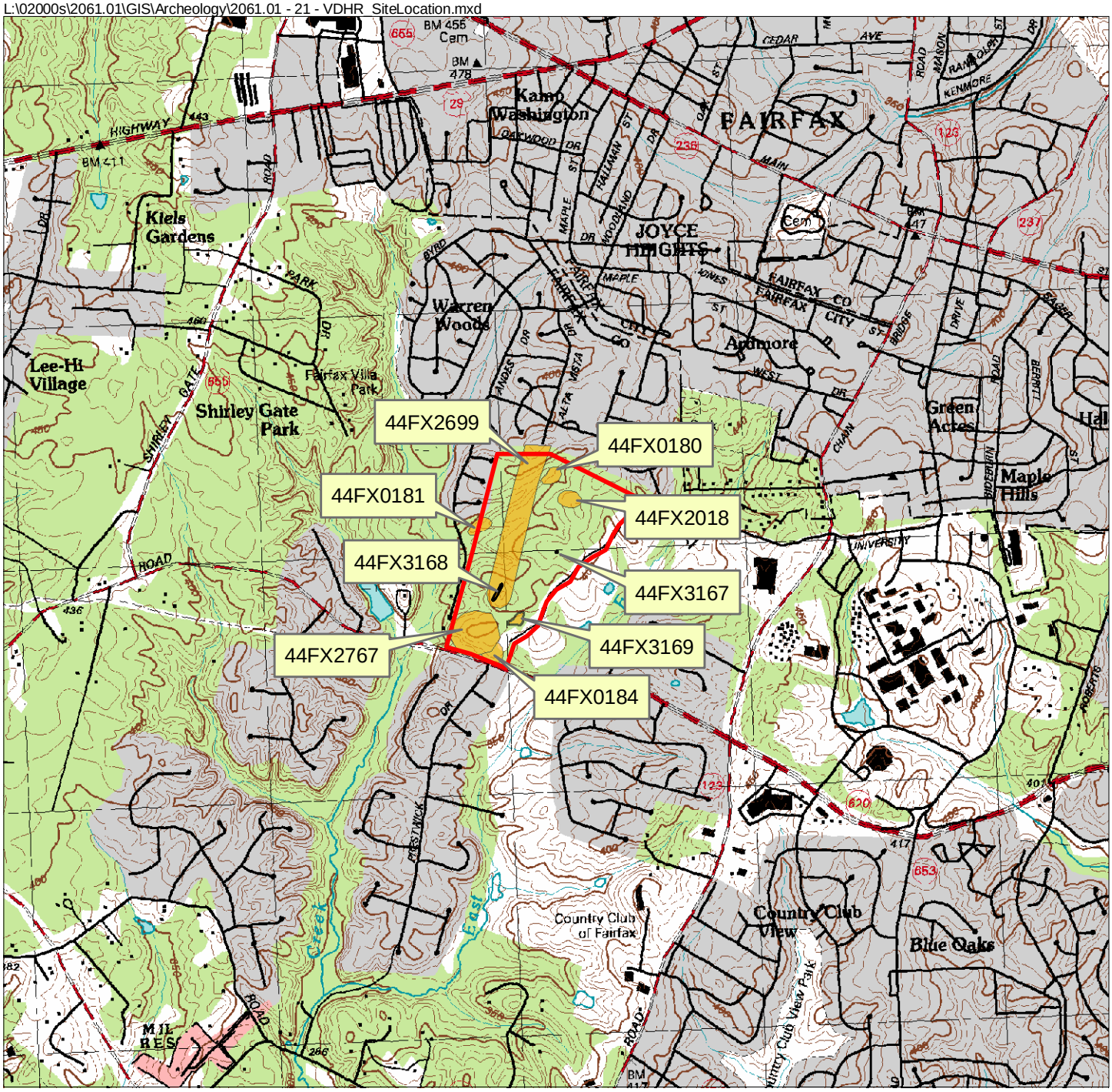
SUMMARY AND RECOMMENDATIONS

A Phase I archeological investigation was conducted of the circa 93.46 acre George Mason University (GMU) West property on the campus of George Mason University. The project area is located north of Braddock Road, east of Andes Drive, south of Santa Clara Drive, and west of Rapidan River Road in Fairfax County, Virginia. A total of 592 shovel test pits were excavated at 25 and 50 foot intervals. Six archeological sites were previously recorded on this property and three archeological sites were identified during the course of this investigation. The locations of all nine of these sites are shown on Exhibit 17.

Sites 44FX0180 and 44FX0181 yielded primary reduction flakes and shatter on the surface and were recorded in 1979 as quartz quarry sites. Shovel testing in the vicinity of these sites, located in the northern and western portions of the project area, did not yield any additional cultural materials. Because of their limited research value, these sites are not considered to be potentially eligible for inclusion on the National Register of Historic Places and no further archeological work is recommended for these sites.

Site 44FX0184, located along the southern property border, was recorded in 1979 and represents the remains of a mid-19th century domestic site. The site was not examined in detail at the time the VDHR site form was submitted because, according to the site form, "surface manifestations could be observed from adjacent trails." A dwelling appears on historic maps from the period, but no remnants of it can be seen today due to the disturbance resulting from massive spoil piles that have been placed at the site location. No shovel testing was conducted in this portion of the project area, and because of the disturbance, this site is not considered to be potentially eligible for inclusion on the National Register of Historic Places. No further archeological work is recommended for site 44FX0184.

L:\02000s\2061.01\GIS\Archeology\2061.01 - 21 - VDHR_SiteLocation.mxd



Site Location Map
USGS Quad Map - Fairfax, VA 1994
GMU - West Campus
WSSI #2061.01
Scale: 1" = 2000'

Project Area Boundary

Archeological Site Location

N
W E
S

Thunderbird Archeology
A Division of Wetland Studies and Solutions, Inc.

Exhibit 17

Site 44FX2018, located in the northern portion of the GMU West Campus project area, was recorded as a light scatter of quartz debitage. VCU recorded this site as unplowed in 1993 during their Phase I archeological survey of areas to be impacted by the proposed expansion of the nearby athletic fields. However, shovel tests excavated in the vicinity during this investigation did not yield additional cultural materials and no unplowed contexts were encountered. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no further archeological work is recommended.

Site 44FX2699 represents the trace of a mid-to-late 19th century road that connected Fairfax Courthouse to Braddock Road. It also appears on USGS quad maps into the 20th century. This sunken road is visible in the west-central portion of the current project area. According to the VDHR site form filed in 2001 by John Milner Associates, relic hunters had found Civil War related artifacts along the road, but it was unknown if these were discarded by the troops who utilized the road or if they were related to nearby camps in the area. The northern terminus of this road is at Alta Vista Drive and the southern terminus is truncated by the large spoil pile disturbance in the southwestern portion of the project area. No artifacts were recovered in or along this road during the course of the current investigation. The road is not associated with important persons or events, nor does it have the potential research value. This site is not considered to be potentially eligible for nomination to the National Register of Historic Places, and no additional work is recommended.

Site 44FX2767 is located in the southwestern corner of the GMU West project area and was recorded in 2001 by John Milner Associates. It represents a Civil War-era Federal cavalry camp and picket associated with New York troops. According to the VDHR site form, relic hunters have collected in this area for decades, and the site was apparently recorded on the basis of their reports. During the current investigation, four shovel tests yielded additional artifacts within the previously recorded site boundaries. However, no artifacts that definitively date to the Civil War time period were recovered and all additional materials were recovered from the plow zone. The site has limited research potential and therefore is not considered to be potentially eligible for nomination to the National Register of Historic Places. No additional archeological work is recommended for site 44FX2767.

Three new archeological sites were recorded during the course of this Phase I investigation; these are described below.

Site 44FX3167 represents transient use of the area by prehistoric populations during an unknown time period. Four quartz flakes were recovered from the plow zone in one shovel test pit. Shovel tests excavated at reduced intervals failed to produce additional cultural materials and no intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

Site 44FX3168 is a multi-component site with artifacts recovered from both prehistoric and historic time periods. The prehistoric component represents ephemeral use of the area by prehistoric populations during an unknown time period. The historic component is represented by one bottle glass sherd with a possible mid-19th century manufacture date. This artifact could be related to use of site 44FX2699, the Civil War-era road trace, which is located just 100 feet to the east. All artifacts were recovered from plowed contexts; artifact density was low and no intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

Site 44FX3169 is a multi-component site with artifacts recovered from both prehistoric and historic time periods. The prehistoric component represents ephemeral use of the area by prehistoric populations during an unknown time period. The historic component is represented by three glass sherds that could be related to site 44FX0184, located approximately 400 feet to the south. All artifacts were recovered from plowed contexts and artifact density was low. No intact contexts are expected. This site is not considered to be potentially eligible for inclusion on the National Register of Historic Places, and no additional archeological work is recommended.

REFERENCES CITED

Alexander, General Edward P.
1989 *Fighting for the Confederacy. The Personal Recollections of General Edward Porter Alexander.* Edited by Gary W. Gallagher. The University of North Carolina Press, Chapel Hill, North Carolina and London, England.

Bailey, C.M.
1999 "Physiographic Map of Virginia," *The Geology of Virginia*. Chad Roberts and C.M. Bailey, College of William and Mary Department of Geology. <http://www.wm.edu/geology/virginia/phys_regions.html (29 October 2004)

Boatner, Mark M.
1991 *The Civil War Dictionary*. Vintage Books, New York, New York.

Bowman, John S. [editor]
1985 *The Civil War Almanac*. World Almanac Publications, New York, New York.

Bradshaw, Herbert Clarence
1955 *History of Prince Edward County, Virginia, From its Earliest Settlements through its Establishment in 1754 to its Bicentennial Year*. The Dietz Press, Richmond, Virginia.

Brown, Lois
1979 *Fluted Points in Maryland*. Unpublished, on file at the Maryland Geological Survey, Division of Archeology.

Carbone, Victor A.
1976 *Environment and Prehistory in the Shenandoah Valley*. Unpublished Ph.D. Dissertation, Department of Anthropology, Catholic University of America, Washington, D.C.

Church, Randolph W. and George H. Reese
1965 *A Hornbook of Virginia History*. The Virginia State Library. Richmond, Virginia.

Commonwealth of Virginia
1804 *Journal of the House of Delegates of the Commonwealth of Virginia, Begun and Held at the Capitol, in the City of Richmond, on Monday the Third Day of December, in the Year of Our Lord One Thousand Eight Hundred and Four.* Samuel Pleasants, Richmond, Virginia.
1848 *Acts Passed at a General Assembly of the Commonwealth of Virginia, Begun and Held at the Capitol, in the City of Richmond*. Samuel Shepherd, Richmond, Virginia.

1850 *Acts of the General Assembly of Virginia, Passed at the Extra and Regular Sessions in 1849 & 1850, and in the Seventy-Third and Seventy-Fourth Years of the Commonwealth.* William F. Ritchie, Richmond, Virginia.
1873 *Acts and Joint Resolutions Passed by the General Assembly of the State of Virginia, at Its Session of 1872-'73*. R. F. Walker, Richmond, Virginia.

Darmody, R.G. and J.E. Foss
1978 *Tidal Marsh Soils of Maryland*. Maryland Agricultural Experimental Station Publication 930:1-69.

Dent, Richard J.
1995 *Chesapeake Prehistory: Old Traditions, New Directions*. Plenum Press, New York.

Dickenson, Russell E.
1983 Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register* 48 (190): 44716-44742.

Fenneman, Nevin M.
1938 *Physiography of Eastern United States*. McGraw-Hill Book Company, Inc. New York and London.

Fiedel, Stuart J.
1999 *Connecting Late Prehistoric Ceramic Lineages with Early Historic Ethnic-Linguistic Groups: Prospects and Problem*s. Paper presented at the Middle Atlantic Archeological Conference, Harrisburg, Pennsylvania.

Frobel, Anne S.
1992 *The Civil War Diary of Anne S. Frobel of Wilton Hill in Virginia.* EPM Publications, McLean, Virginia.

Gallagher, Gary W. [editor]
1989 *Fighting for the Confederacy*. *The Personal Recollections of General Edward Porter Alexander*. The University Of North Carolina Press, Chapel Hill, North Carolina.

Gardner, William M.
1982 Early and Middle Woodland in the Middle Atlantic: An Overview. In *Practicing Environmental Archaeology: Methods and Interpretations*, pp. 53-86, Roger W. Moeller, editor. Occasional Paper Number 3, American Indian Archaeological Institute, Washington, Connecticut.
1985 *Prehistoric Site Distribution in the Greater Washington, D.C. Area*. Paper presented at the Annual Meeting of the American Anthropological Society, Washington, D.C.

1987 Comparison of Ridge and Valley, Blue Ridge, Piedmont, and Coastal Plain Archaic Period Site Distribution: An Idealized Transect. In *Journal of Middle Atlantic Archeology,* Vol. 3, pp. 49-80, Roger W. Moeller, editor. Archeological Services, Bethlehem, Connecticut.
1989 An Examination of Cultural Change in the Late Pleistocene and Early Holocene (circa 9200-6800 B.C.) In *Paleoindian Research in Virginia: A Synthesis*, pp. 5-51, J. Mark Wittkofski and T.R. Rhinehart, editors. Archeological Society of Virginia Special Publication No. 19. The Dietz Press, Richmond.
1991 *Notes for the Territory Presentation.* Presented at the 1991 Middle Atlantic Archeological Conference.

Gardner, William M. and Charles W. McNett, Jr.
1971 Early Pottery in the Potomac. *Proceedings of the Second Middle Atlantic Archaeological Conference*. Washington, D.C.

Gardner, William M. and Lauralee Rappleye
1979 A *Cultural Resources Reconnaissance and Impact Area Assessment of the Great Dismal Swamp Wildlife Refuge, Chesapeake and Nansemond Counties, Virginia*. Report prepared for the U.S. Department of the Interior, Interagency Archeological Services, Atlanta, Georgia, by the Thunderbird Research Corporation, Woodstock, Virginia..

Gardner, William M. and Joan M. Walker
1993 *A Phase I Cultural Resources Reconnaissance of the Proposed Mitchell Substation and Mitchell Transmission Line in Culpeper County, Virginia*. Report prepared for Rappahannock Electric Cooperative, Fredericksburg, by the Thunderbird Archeological Associates, Inc., Woodstock, Virginia.

Goode, Charles E.
2002 *The Rise of Ceramic Production in the Potomac Piedmont of Virginia: An Analysis of Steatite Vessel Fragments and Early Woodland Ceramics from Sites 44LD619, 44LD617, 44LD6, 44LD659 and 44LD672*. Unpublished M.A. thesis, Department of Anthropology, Catholic University of America, Washington, D.C.

Greene, Evarts B.
1932 *American Population Before the Federal Census of 1790*. Columbia University Press, New York, New York.

Gutheim, Frederick
1986 *The Potomac*. John Hopkins University Press, Baltimore, Maryland and London, England.

Hanson, Raus McDill
1969 *Virginia Place Names, Derivations, Historical Uses*. McClure Printing, Verona, Virginia.

Hantman, Jeffrey L. and Michael J. Klein
1992 Middle and Late Woodland Archaeology in Piedmont Virginia. In *Middle and Late Woodland Research in Virginia: A Synthesis*, pp.137-164, Theodore R. Reinhart and Mary Ellen N. Hodges, editors. Archeological Society of Virginia Special Publication No. 29. The Dietz Press, Richmond, Virginia.

Harrison, Fairfax
1987 *Landmarks of Old Prince William. A Study of Origins in Northern Virginia. Volumes I and II*. Gateway Press, Baltimore, Maryland.

Hening, William Waller
1819 *The Statutes at Large; Being a Collection of All the Laws of Virginia, From the First Session of the Legislature, In the Year 1619. Volume V*. Franklin Press, Richmond, Virginia.
1820 *The Statutes at Large; Being a Collection of All the Laws of Virginia, From the First Session of the Legislature, In the Year 1619. Volume IV*. Franklin Press, Richmond, Virginia.
1822 *The Statutes at Large; Being a Collection of All the Laws of Virginia, From the First Session of the Legislature, In the Year 1619. Volume X*. George Cochran, Richmond, Virginia.
1823 *The Statutes at Large; Being a Collection of All the Laws of Virginia, From the First Session of the Legislature, In the Year 1619. Volume I*. R. & W. & G. Bartow, New York, New York.
1823 *The Statutes at Large; Being a Collection of All the Laws of Virginia, From the First Session of the Legislature, In the Year 1619. Volume II*. R. & W. G. Bartow, New York, New York.

Hiden, Martha W.
1980 *How Justice Grew. Virginia Counties: An Abstract of Their Formation*. The University Press of Virginia, Charlottesville, Virginia.

Historical Society of Fairfax County, Virginia, The
1989-*1990 Letters of Charles Cummings, Provost-Marshal of Fairfax Courthouse, Winter 1862-1863*. V. 22: 45-69.

Hurst, Gwen J.
1990 *U.S. Bottle Chronology*. B.P. Bishop Museum, Honolulu, Hawaii.

Jirikowic, Christine
1999 *Keyser Ware Ceramics at the Hughes Site and in the Potomac Basin*. Paper presented at the Middle Atlantic Archeological Conference, Harrisburg, Pennsylvania.

Johnson, Michael
1983 The Evolution of the Bifurcate Hunting System in the Interior Piedmont of Fairfax County, Virginia. In *Piedmont Archaeology*, pp. 55-73, J. Mark Wittkofski and Lyle E. Browning, editors. Archeological Society of Virginia Special Publication No. 10. Richmond, Virginia.
1986 *Fairfax County Archeological Overview*. Heritage Resources Branch, Fairfax, Virginia.

Kavanaugh, Maureen
1983 Prehistoric Occupation of the Monocacy River Region, Maryland. In *Piedmont Archaeology*, pp. 40-54, J. Mark Wittkofski and Lyle E. Browning, editors. Archeological Society of Virginia Special Publication No. 10. Richmond, Virginia.

Kean, J. Randolph
1952 The Development of the 'Valley Line'. *Virginia Magazine of History and Biography* Vol. 60:535-550.

Kelso, William M.
1995 *Jamestown Rediscovery I: Search for 1607 James Fort*. Association for the Preservation of Virginia Antiquities, Jamestown, Virginia.

Kilmer, Kenton and Donald Sweig
1975 *The Fairfax Family in Fairfax County*. Fairfax County Office of Comprehensive Planning, Fairfax, Virginia.

Lutz, Francis Earle
1954 *Chesterfield: An Old Virginia County*. William Byrd Press, Richmond, Virginia.

Magid, Barbara H., editor
1990 *Alexandria Archaeology Artifact Code Books.* Alexandria Archaeology Publications Number 11. Alexandria Archaeology Office of Historic Alexandria, City of Alexandria, Virginia.

Martin, Joseph
1836 *A New and Comprehensive Gazetteer of Virginia, and the District of Columbia: Containing a Copious Collection of Biographical, Statistical, Political, Commercial, Religious, Moral, and Miscellaneous Information, Collected and Compiled from the Most Respectable, and Chiefly from Original Sources*. Moseley & Tompkins, Charlottesville, Virginia.

Miller, George
1992 *Refinement of South's Types and Median Dates*. Manuscript at University of Delaware Center for Archeological Research, Newark.

Miller, Glenda F. and Joan M. Walker
n.d. *Competing Agendas: The Fur Trade and Native Americans*.

Netherton, Nan, Donald Sweig, Janice Artemel, Patricia Hickin and Patric Reed
1978 *Fairfax County, Virginia. A History.* Fairfax County Board of Supervisors, Fairfax, Virginia.

Nugent, Nell Marion
1983 *Cavaliers And Pioneers: Abstracts of Virginia Land Patents and Grants 1623-1666*. Virginia Book Company, Berryville, Virginia.

O'Dell, Jeffrey M.
1983 *Chesterfield County: Early Architecture and Historic Sites*. Chesterfield County, Virginia.

Potter, Stephen R.
1982 *An Analysis of Chicacoan Settlement Patterns.* Dissertation on file, Department of Anthropology, University of North Carolina, Chapel Hill.
1993 *Commoners, Tribute and Chiefs: The Development of Algonquian Culture in the Potomac Valley*. University Press of Virginia, Charlottesville.

Scott, Lieutenant Colonel Robert N.
1887 *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies.* Government Printing Office, Washington, D.C.

Shepherd, Samuel
1838 *Statutes at Large of Virginia, From October Session 1792, To December Session 1806, Inclusive, In Three Volumes, (New Series,) Being a Continuation of Hening. Volume. III.* Samuel Shepherd, Richmond, Virginia.

Smith, Kathryn Gettings and Evelyn D. Causey
2005 *Phase II Architectural Evaluation of the Wedderburn Property, Fairfax County, Virginia.* Report prepared for Elm Street Development, McLean Virginia by History Matters, L.L.C., Washington, D.C.

South, Stanley
1977 *Method and Theory in Historical Archeology*. University of Illinois Press, Urbana.

Stevens, J. Sanderson
1989 *Environmental Site Predictors and Prehistoric Settlement Patterns in the Central Piedmont of Virginia*. Paper presented at the Middle Atlantic Archaeological Conference, Rehoboth Beach, Delaware.

Sweig, Donald M.
1995 *A Brief History Of Fairfax County*. Heritage Resources Branch, Office of Comprehensive Planning, Fairfax County, Virginia.

Virginia Department of Historic Resources (VDHR)
2001 *Guidelines for Conducting Cultural Resource Surveys in Virginia. Additional Guidance for the Implementation of the Federal Standards Entitled Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*. Virginia State Department of Historic Resources, Richmond, Virginia.

Walker, Joan M.
1981 *A Preliminary Report on the Prehistory of Prince William County, Virginia*. Report prepared for the County of Prince William by the Thunderbird Research Corporation, Woodstock, Virginia.

Walker, Joan M. and William M. Gardner
1989 *Phase I Archeological Survey , Telegraph Woods Sanitary Sewer Line, Fort Belvoir, Virginia.* Report prepared by Thunderbird Archeological Associates, Inc. for Paciulli, Simmons and Associates, Ltd., Fairfax, Virginia.

Waselkov, Gregory A.
1982 *Shellfish Gathering and Shell Midden Archaeology*. Ph.D. Dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

Weiss-Bromberg, Francine
1987 *Site Distribution in the Coastal Plain and Fall Zone of the Potomac Valley from ca. 6500 B.C. to A.D. 1400.* Master's thesis, Department of Anthropology, The Catholic University of America, Washington, D.C.

Wilkinson, Joyce E.
1969 The Early Orange and Alexandria Railroad 1849-1854. *Pioneer America: The Journal of The Pioneer America Society*, V1, No. 2:46-52.

Maps Referenced

Hoffman, J. Paul
1864 *Map of Fairfax, Prince William and Loudoun Counties, Virginia.* Library of Congress Geography and Map Division, Washington, DC.

Hopkins, C.M.
1879 *Atlas Of Fifteen Miles Around Washington Including Fairfax And Alexandria, Virginia*. C.M. Hopkins, Philadelphia.

McDowell, General Irvin
1862 *Sheet 1. Surveys For Military Defenses. Map Of Northeastern Virginia And Vicinity of Washington.* Topographical Engineers Office, Arlington, Virginia.

Mitchell, Beth
1987 *1760 Map of Fairfax County,* Virginia. An Interpretative Historical Map of Fairfax County, Virginia in 1760 Showing Landowners, Tenants, Slave Owners, Churches, Roads, Ordinances, Ferries, Mills, and Tobacco Inspection Warehouse.

U.S. Post Office
1912 *Rural Delivery Routes Fairfax County, Va.* Post Office Department, Division of Topography.

United States Geological Survey
1912 *Fairfax, VA Quadrangle* (Topographic Map).1:24,000. 15 Minute Series U.S. Geological Survey, Washington, D.C.
1951 *Fairfax, VA Quadrangle* (Topographic Map).1:24,000. 7.5 Minute Series U.S. Geological Survey, Washington, D.C.
1966 (revised 1984) *Fairfax, VA Quadrangle* (Topographic Map).1:24,000. 7.5 Minute Series U.S. Geological Survey, Washington, D.C.
1994 *Fairfax, VA Quadrangle* (Topographic Map).1:24,000. 7.5 Minute Series U.S. Geological Survey, Washington, D.C.

PLATES

PLATE 1
Unnamed Tributary to Popes Head Creek, Facing Northwest

PLATE 2
Overview of Vegetation in Area A, Facing East

PLATE 3
Overview of Vegetation in Northwestern Portion of Area A, Facing South

PLATE 4
Vegetation Piles in Northeast Portion of Area A, Facing North

PLATE 5
Dirt Walking Trail in Western Portion of Project Area, Facing South

PLATE 6
Sunken Road Trace (44FX2699) in Southern Portion of Area A, Facing South

PLATE 7
View of Site 44FX3167, Facing North

PLATE 8
Overview of Vegetation in Area B, Facing North

PLATE 9
Building 1, West Elevation, Facing Northeast

PLATE 10
Building 1, South Elevation, Facing North

PLATE 11
Spoil Piles in Southeastern Property Corner, Facing East

PLATE 12
Spoil Piles in Southeastern Property Corner, Facing North

PLATE 13
Older Spoil Pile in Southeastern Property Corner, Facing East

PLATE 14
Push Piles in Relation to Spoil Piles in Southeastern Property Corner, Facing East

PLATE 15
Push Piles in Relation to Spoil Piles in Southeastern Property Corner, Facing East

PLATE 16
Civil War-Era Road (44FX2767) in Area B, Facing North

PLATE 17
Southern Terminus of 44FX2767 in Area B, Facing South

PLATE 18
View of Site 44FX3168 in Area B, Facing North

PLATE 19
View of Site 44FX3169 in Area B, Facing North

APPENDIX
Artifact Inventory

GMU WEST PHASE I
ARTIFACT INVENTORY

Area A, 44FX3167

STP 172, Ao/Ap

Prehistoric

4 quartz flakes, partial

Area B, Isolated Finds

STP 091, Ao/Ap

Glass

3 unidentified clear sherds, curved, thin, two frosted

STP 152, Ao/Ap

Ceramics

1 whiteware sherd, undecorated (1820-1900+, South 1977; Miller 1992)

STP 153, Ao/Ap

Ceramics

1 ironstone sherd, undecorated, stained (1840-1900+, Miller 1992)
1 refined white earthenware sherd, burned

Area B, 44FX2767

STP 168, Ao/Ap

Miscellaneous

1 asphalt/tar material, sample (discarded)

STP 169, Ao/Ap

Glass

1 unidentified clear sherd, curved

STP 176, Ao/Ap

Ceramics

1 grey bodied coarse stoneware sherd, brown glazed exterior, unglazed interior

STP 176b, Ao/Ap

Glass

1 unidentified olive green sherd, worn

Area B, 44FX3168

STP 110, Ao/Ap

Prehistoric

1 quartz flake, partial

STP 110a, Ao/Ap

Prehistoric

2 quartz flakes, partial

STP 118, Ao/Ap

Prehistoric

1 quartz flake, partial

STP 118a, Ao/Ap

Glass

1 light olive amber cylindrical bottle sherd, possibly contact mold

Prehistoric

1 quartz flake, partial

Area B, 44FX3169

STP 004, Ao/Ap

Prehistoric

1 quartz flake, partial

STP 040, Ao/Ap

Prehistoric

1 quartz flake, partial

STP 052, Ao/Ap

Prehistoric

1 quartz flake, partial

STP 055, Ao/Ap

Glass

1 clear manganese cylindrical bottle sherd (1880-1915)

STP 055b, Ao/Ap

Glass

1 unidentified very pale aqua sherd, flat, possibly lime soda windowpane

STP 056, Ao/Ap

Glass

1 unidentified very pale aqua sherd, flat

STP 056b, Ao/Ap

Prehistoric

1 quartz flake, partial

STP 056c, Ao/Ap

Prehistoric

1 quartz flake, partial

1 quartz mid-stage biface fragment

Appendix C:
Environmental Justice

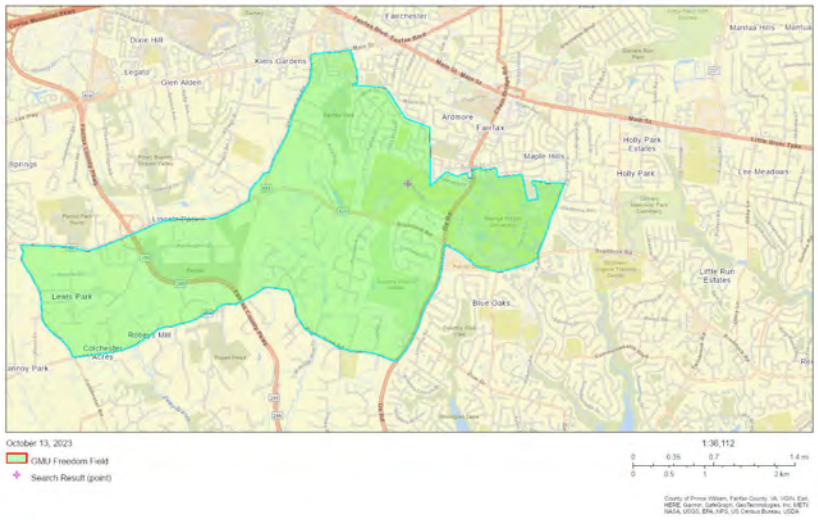
EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

George Mason, VA

Blockgroup: 510594406001,510594920001,510594405031
Population: 10,951
Area in square miles: 5.48

A3 Landscape



LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	77%
Spanish	6%
Russian, Polish, or Other Slavic	1%
Other Indo-European	5%
Korean	2%
Chinese (including Mandarin, Cantonese)	2%
Vietnamese	1%
Tagalog (including Filipino)	2%
Other Asian and Pacific Island	1%
Arabic	1%
Other and Unspecified	1%
Total Non-English	23%

COMMUNITY INFORMATION

- Low income: 14 percent
- People of color: 50 percent
- Less than high school education: 6 percent
- Limited English households: 9 percent
- Unemployment: 11 percent
- Persons with disabilities: 8 percent
- Male: 47 percent
- Female: 53 percent
- 28 years — Average life expectancy
- $49,483 — Per capita income
- Number of households: 2,144
- Owner occupied: 84 percent

BREAKDOWN BY RACE

- White: 50%
- Black: 20%
- American Indian: 0%
- Asian: 13%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 4%
- Hispanic: 12%

BREAKDOWN BY AGE

From Ages 1 to 4	3%
From Ages 1 to 18	15%
From Ages 18 and up	85%
From Ages 65 and up	7%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	21%
Speak Other Indo-European Languages	28%
Speak Asian-Pacific Island Languages	41%
Speak Other Languages	11%

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017-2021. Life expectancy data comes from the Centers for Disease Control.

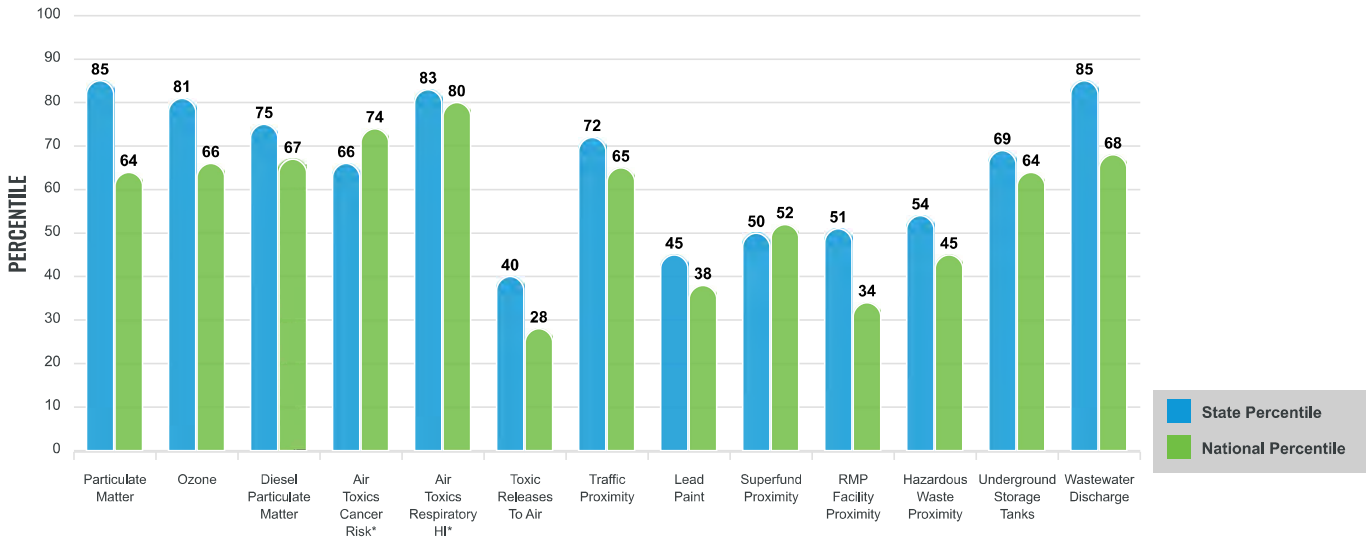
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

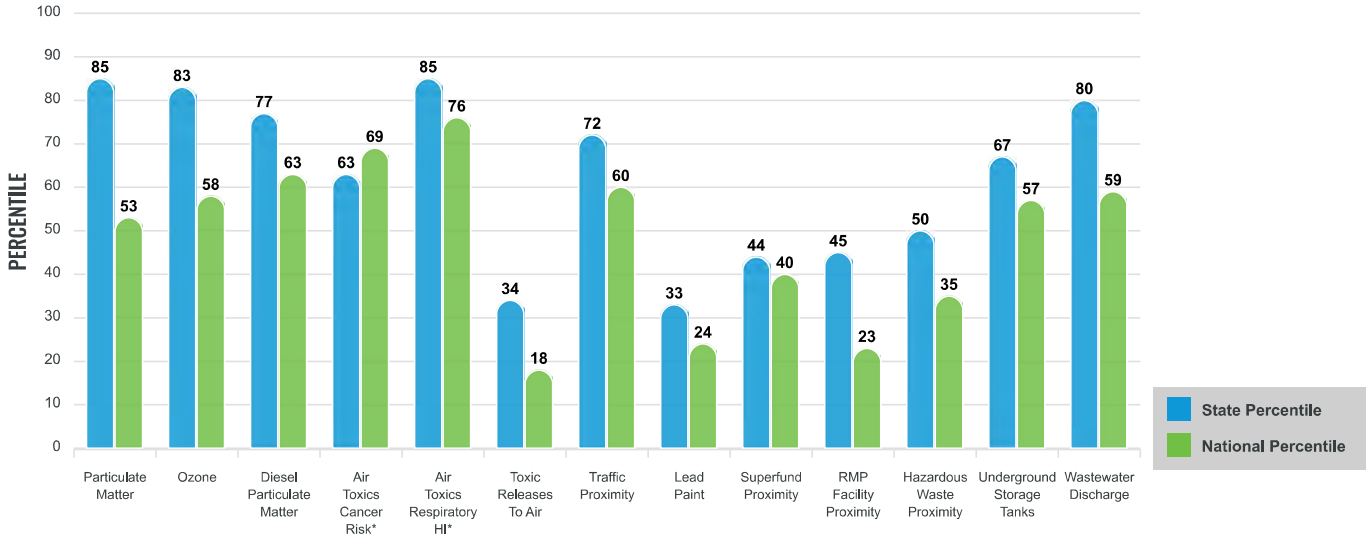
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for Blockgroup: 510594406001,510594920001,510594405031

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m^3)	8.28	7.53	86	8.08	52
Ozone (ppb)	61.6	59.1	83	61.6	54
Diesel Particulate Matter (µg/m^3)	0.265	0.209	71	0.261	61
Air Toxics Cancer Risk* (lifetime risk per million)	30	29	26	25	52
Air Toxics Respiratory HI*	0.4	0.33	62	0.31	70
Toxic Releases to Air	38	4,300	23	4,600	15
Traffic Proximity (daily traffic count/distance to road)	110	150	65	210	60
Lead Paint (% Pre-1960 Housing)	0.074	0.22	38	0.3	31
Superfund Proximity (site count/km distance)	0.038	0.11	31	0.13	34
RMP Facility Proximity (facility count/km distance)	0.072	0.21	33	0.43	19
Hazardous Waste Proximity (facility count/km distance)	0.15	0.61	37	1.9	28
Underground Storage Tanks (count/km^2)	1.5	1.9	58	3.9	53
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0035	7.2	82	22	59
SOCIOECONOMIC INDICATORS					
Demographic Index	36%	31%	66	35%	60
Supplemental Demographic Index	12%	12%	54	14%	44
People of Color	50%	38%	68	39%	66
Low Income	14%	25%	34	31%	25
Unemployment Rate	11%	5%	89	6%	85
Limited English Speaking Households	9%	2%	91	5%	83
Less Than High School Education	6%	10%	45	12%	41
Under Age 5	3%	6%	30	6%	30
Over Age 64	7%	17%	18	17%	16
Low Life Expectancy	4%	20%	0	20%	0

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund 0
Hazardous Waste, Treatment, Storage, and Disposal Facilities 0
Water Dischargers 9
Air Pollution 4
Brownfields 0
Toxic Release Inventory 0

Other community features within defined area:

Schools 1
Hospitals 0
Places of Worship 4

Other environmental data:

Air Non-attainment ..... Yes
Impaired Waters ..... Yes

Selected location contains American Indian Reservation Lands* ..... No
Selected location contains a "Justice40 (CEJST)" disadvantaged community ..... Yes
Selected location contains an EPA IRA disadvantaged community ..... Yes

Report for Blockgroup: 510594406001,510594920001,510594405031

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	4%	20%	0	20%	0
Heart Disease	3.2	5.5	10	6.1	4
Asthma	8.8	9.6	26	10	20
Cancer	4.2	6.1	15	6.1	12
Persons with Disabilities	7.9%	12.6%	25	13.4%	18

CLIMATE INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	5%	9%	49	12%	43
Wildfire Risk	0%	2%	0	14%	0

CRITICAL SERVICE GAPS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	2%	13%	22	14%	17
Lack of Health Insurance	9%	8%	66	9%	64
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

Report for Blockgroup: 510594406001,510594920001,510594405031