September 9, 2021

Electronic Submittal

Kimberly S. Butler, P.E.
Virginia DEQ Clean Water Financing and Assistance Program
Regional Project Manager
5636 Southern Blvd.
Virginia Beach, VA 23462

Re: Notice of Agency Review Period for Hampton Roads Sanitation District's James River SWIFT Projects – James River SWIFT, JRTP Advanced Nutrient Reduction Improvements, Land Acquisition, and Recharge Wells Projects

Dear Ms. Butler:

In compliance with Section 7 of the Virginia Clean Water Revolving Loan Fund's *Procedural Guidelines,* Hampton Roads Sanitation District (HRSD) is providing the Commonwealth of Virginia with the enclosed streamlined Environmental Assessment documents (i.e. Environmental Questionnaires), prepared by HRSD on behalf of the U.S. Environmental Protection Agency (EPA) as part of their obligations under the National Environmental Policy Act of 1969 for the issuance of financing under the Water Infrastructure Finance and Innovation Act (WIFIA) to HRSD for the James River Sustainable Water Initiative for Tomorrow (SWIFT) Facility (GN016360), James River Treatment Plant Advanced Nutrient Reduction Improvements (JR013400), James River Land Acquisition (GN016343), James River Recharge Wells (three onsite) (GN016361) and James River Recharge Wells (six offsite, one onsite, monitoring well clusters) (GN016362) projects. EPA developed a Programmatic Environmental Assessment (PEA) to analyze potential environmental impacts of projects under the WIFIA program, for which a Finding of No Significant Impact (FONSI) was finalized on April 27, 2018. The PEA and supplemental Environmental Questionnaires provides a streamlined NEPA compliance path for WIFIA applicants. Notice is hereby given to the recipients of this letter of a 30-day agency review and comment period of the enclosed documents.

WIFIA was signed into law in 2014 and authorized the WIFIA program to be managed by EPA Headquarters. WIFIA was amended by section 1445 of the Fixing America's Surface Transportation Act of 2015 and section 5008 of the Water Infrastructure Improvements for the Nation Act of 2016. WIFIA is a federal credit program for eligible water and wastewater infrastructure projects. EPA selected HRSD to submit an application for credit assistance for the SWIFT Program, which includes these projects.

HRSD has also applied and been approved for state funding via the Virginia Clean Water Revolving Loan Fund (Fund), which was established as a renewing source of low-interest loan funding for improvements to publicly owned wastewater systems. The Fund is separate, permanent, and perpetual with all principal and interest repaid into the Fund used to finance other projects. The State Water Control Board (SWCB) is responsible for developing the policies and procedures for the Fund, determining who will receive funds, at

what interest rates and terms, and for ensuring that administration of the Fund complies with applicable federal and state policies, statutes, and regulations. The SWCB has delegated responsibility for management of the day-to-day operations of the Fund to the Clean Water Financing and Assistance Program (CWFAP) of the Virginia Department of Environmental Quality (DEQ).

HRSD proposes to design, construct, and commission new facilities to improve water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP), in the City of Newport News, Virginia, and improving the quality of effluent from the treatment facility. The projects associated with implementing SWIFT at the JRTP have been divided into two funding tranches; therefore, two Environmental Questionnaire documents have been prepared. Both tranches have already been reviewed and approved by EPA. The first tranche included the James River SWIFT Facility (GN016360) project, a significant portion of the JRTP Advanced Nutrient Reduction Improvements (JR013400) project, and a significant portion of the James River Recharge Wells (three onsite) (GN016361) project. The second tranche includes the remainder of the JRTP Advanced Nutrient Reduction Improvements (JR013400) project, James River Recharge Wells (six offsite and one onsite) (GN016362) project, and acquisition of a 10-acre parcel of land adjacent to the existing James River Treatment Plant from the City of Newport News (GN016343). Enclosed is a graphical overview of the proposed set of projects. As depicted on the graphic, the majority of the proposed projects lie within the existing footprint of the James River Treatment Plant and adjacent previously disturbed areas. The Environmental Questionnaires for Tranche 1 and Tranche 2, providing project details and an evaluation of potential impacts, are included in the enclosed documents.

Pursuant to Section 7 of the Virginia Clean Water Revolving Loan Fund's *Procedural Guidelines*, the agencies to which this letter is addressed and copied have 30 days from the receipt of this letter in which to comment on the proposed set of projects. Agency concurrence will be presumed if its response is not received 30th day from receipt of this determination. Responses should be sent electronically to our Program Permitting Specialist Molly Notestine, at molly.notestine@aecom.com. Thank you for your coordination on this project.

Sincerely,

Ted Henifin

Ted Henifin, P.E.
General Manager

Enclosures:
- James River Project Summary Graphical Overview Figure
- Environmental Questionnaire – James River SWIFT, JRTP ANRI, and Recharge Wells Project (Tranche 1), Attachments, and Agency Correspondence
- Environmental Questionnaire – James River Land Acquisition, JRTP ANRI, and Recharge Wells Project (Tranche 2), Attachments, and Agency Correspondence

CC:
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Keith.Tignor@vdacs.virginia.gov
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Richmond, VA 23219

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Tony.Watkinson@mrc.virginia.gov
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Newport News, VA 23607

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pat.geer@mrc.virginia.gov
Deputy Chief Adam Kenyon
adam.kenyon@mrc.virginia.gov

Virginia Department of Transportation
Ms. Heather Williams
Heather.Williams@VDOT.virginia.gov
Send projects/comments to:
eir.coordination@vdot.virginia.gov
Environmental Division
1401 East Broad Street
Richmond, VA 23219

HRSD James River Project Summary

September 8, 2021

SWIFT FACILITY PIPELINES*
(GN016360)
Conveys water to 6 offsite wells and 2 monitoring well locations

RECHARGE WELLS
(GN016362)
Includes **1 onsite well** on the newly purchased 10-acre site, **6 offsite wells,** and **2 monitoring well locations**

SWIFT FACILITY*
(GN016360)

ADVANCED NUTRIENT REDUCTION IMPROVEMENTS*
(JR013400)

RECHARGE WELLS
(GN016361)
Includes **3 onsite wells** within HRSD existing property

Agency Consultations

- USEPA NEPA Review and Approval, Federal Cross-Cutting Authorities Review Memorandum, 9/22/2020 and 8/31/2021
- VDHR NHPA Section 106 Consultation Concurrence Letters, 8/28/2020, 12/30/2020, and 6/8/2021
- Cultural Resources Tribal Consultation Meeting, 6/3/2021
- CZMA Consistency Letter and Intergovernmental Review, 8/11/2020
- USFWS Self-Certification and Consistency Letters for NLEB, 7/8/2020 and 8/12/2020
- Wetlands Delineation conducted by AECOM, Hazen & Sawyer, and HDR
- The pipelines associated with the SWIFT Facility project (GN016360) were not included in the initial (July 2020) WIFIA Environmental Questionnaire and agency consultations, but were included in the subsequent WIFIA Environmental Questionnaire (July 2021)

Legend

- Well onsite
- Well outside original property
- Monitoring well location
- Property boundary
- New property boundary

* The color coding reflects predominant project locations. Please note there are shared infrastructure elements between the ANRI and SWIFT projects.

N

Feet
0 250 500 1,000

Appendix A

APPENDIX A: ENVIRONMENTAL QUESTIONNAIRE FOR WIFIA CREDIT ASSISTANCE PROJECTS

This questionnaire will be used for most projects receiving WIFIA credit assistance and supports the Programmatic Environmental Assessment (PEA) "tiering" framework, the PEA's associated preliminary Finding of No Significant Impact (FONSI), and project-specific NEPA documentation for the WIFIA program. WIFIA credit assistance to SRF programs should use the questionnaire in Appendix B.

1. **Project title:**

   James River SWIFT Facility (GN016360) and James River Treatment Plant Advanced Nutrient Reduction Improvements (JR013400)

2. **Prospective Borrower:**

   Hampton Roads Sanitation District (HRSD) SWIFT Program

3. **Project description:**

   The purpose of HRSD's SWIFT Program is to improve the quality of the Chesapeake Bay by reducing surface water discharge of treated effluent; to provide a sustainable source of groundwater to the Potomac Aquifer; to increase the hydrostatic pressure within the aquifer to prevent saltwater contamination; to slow, stop or reverse land subsidence related to aquifer withdrawals in coastal Virginia; and to reduce future capital investment needs in wastewater treatment plant upgrades.

   The James River SWIFT Project is a three-part project; the first component, referred to as the SWIFT component, includes design and construction of new facilities that will apply advanced water treatment to already highly treated wastewater effluent from the existing James River Treatment Plant (Figures 1A and 1B). The resulting water will meet drinking water quality standards and be compatible with the Potomac Aquifer. The proposed facility is expected to have a capacity of 16 million gallons per day (MGD) of advanced treatment.

   The second component of the Project, the Advanced Nutrient Reduction Improvements, includes the design and construction of improvements to the secondary treatment process at the existing James River Treatment Plant. This will include equalization of primary clarifier effluent, modifications to the Integrated Fixed Film Activated Sludge (IFAS) system, increased IFAS media fill, demolition of existing secondary clarifiers, replacement with new rectangular secondary clarifiers, construction of a post-denitrification moving bed bio-reactor (MBBR), chemical storage and feed systems, and all pumping, piping, instrumentation, and associated site work required for the improvements. The current proposal includes significant upgrades to the treatment plant power distribution and electrical system.

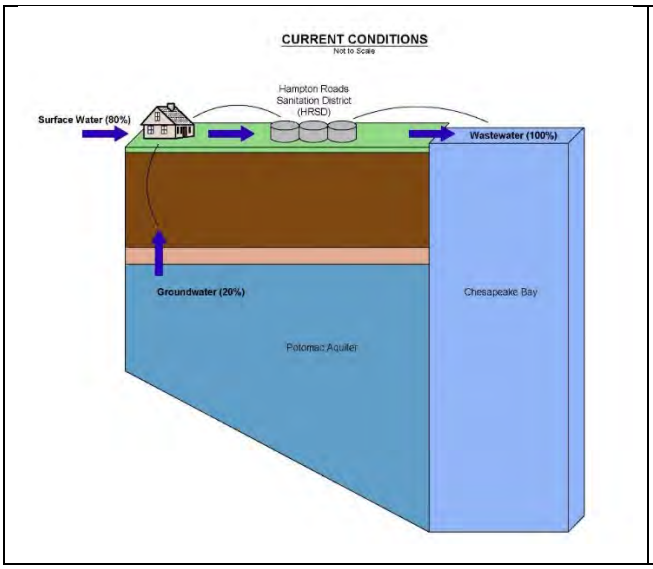


Figure 1A. Current Water Treatment Conditions

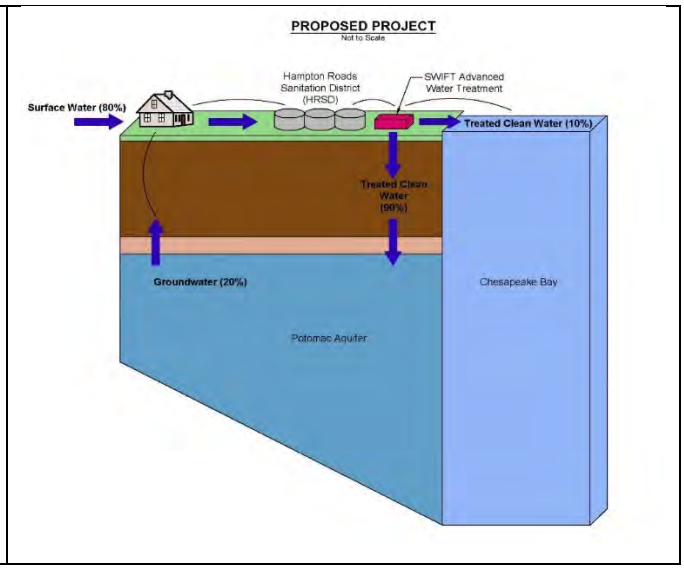


Figure 1B. Proposed Project Water Treatment Conditions

The third and final project component, the Recharge Wells portion of the project, will provide for the construction of three recharge wells and associated monitoring wells, as well as the development, testing, and conditioning of the wells associated with SWIFT at the James River Treatment Plant. Each of the recharge wells would be housed inside a well house facility similar in scale to a small residential home and the facilities would be designed to complement existing architecture in the vicinity. The recharge wells would be sited at a minimum of approximately 1,000 feet apart from one another to recharge the Potomac Aquifer most efficiently. This WIFIA project scope does not include site development or installation of mechanical equipment and/or piping associated with the conveyance of SWIFT water to an additional seven recharge wells which will be located on adjacent or nearby parcels.

4. **Project location (briefly describe the surroundings and environment around the project location and attach map, as necessary):**

The proposed treatment improvements and four recharge wells associated with this project would be located within HRSD's existing James River Treatment Plant facility site, located at 111 City Farm Road, Newport News, VA, 23602. The Project vicinity and study area are depicted in Figure 2. The James River Treatment Plant facility and proposed recharge well locations are depicted in Figure 3.

N
Burkdale
Boxley Hills
NEWPORT NEWS
Yoder Pond
Holloway
MENCHVILLE RD
Deep
Prison Farm
Menchville
RIVER
Tidal
Flat
Jordan
Light
Curtis Point
Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed
Legend
Site Boundary
0 1,250 2,500 Feet
AECOM
10 Patewood Drive, Building 6, Suite 500 Greenville, SC 29615
James River
Site Topography Map
Project No. 6063587
Prepared by K. Clark
Date 7/9/2020
Figure 2

N
Legend
0
250
500
Feet
Proposed Recharge Wells
Site Boundary
Proposed SWIFT Facilities/Advanced Nutrient Reduction Improvements
AECOM
10 Patewood Drive, Building 6, Suite 500 Greenville, SC 29615
James River Treatment Plant
SWIFT Facilities Layout
Project No.
6063587
Prepared by
K. Clark
Date
7/9/2020
Figure 3

To minimize operational costs as well as energy requirements, SWIFT facilities have been sited to minimize movement of large volumes of water. To that end, HRSD would maximize the installation of groundwater recharge wells within existing property lines (See Figure 3).

5. **Project type: (Check all that apply):**

☒	Wastewater Projects
☐	Drinking Water Projects
☐	Energy Efficiency Enhancement Projects
☒	Repair, Rehabilitation, and Replacement Projects
☐	Brackish or Seawater Desalination Projects
☐	Drought Prevention, Reduction, or Mitigation Projects
☐	Acquisition of Real Property Projects
☐	A combination of Wastewater or Drinking Water Projects
☒	Other [Please explain] Salt water intrusion and subsidence

6. **Describe any environmental permits needed for the project (e.g., federal, state, local) and the status of any permit:**

- Underground Injection Control permit - EPA - *Pending submission*
- Section 404 of CWA and Section 10 RHA permit - USACE - *Pending design development*
- Section 408 permit - USACE - *Pending design development*
- Consultation under Section 7 of ESA - USFWS and National Marine Fisheries Service - *Pending design development*
- Water Quality Certificate under Section 401 of CWA - Virginia Department of Environmental Quality (VDEQ) water division - *Pending design development*
- VPDES Industrial Discharge permit - VDEQ water division - *Pending design development*
- VA Pollution Abatement Permit for land application of wastewater - VDEQ water division - *Pending design development*
- VA Water Protection Permit for water withdrawal - VDEQ water division - *Pending design development*
- General Permit for Discharge of Stormwater from Construction Activities (VAR10) - VDEQ water division - *Pending design development*
- Certificate to Construct - VDEQ water division - *Pending design development*
- Certificate to Operate - VDEQ water division - *Pending design development*
- Air permits (PSD, NSR, Title V) - VDEQ Air division - *Pending design development*
- Consistency under Coastal Zone Management Act (CZMA) - VDEQ CZMA - *Pending design*

development

- Natural Heritage/protected species consultation - VA Department of Game and Inland Fisheries - *Pending design development*
- Consultation under Section 106 of National Historic Preservation Act (NHPA) - VA Department of Historic Resources - *Pending design development*
- Tidal Waters/Subaqueous Lands authorization letter - VA Marine Resources Commission - *Pending design development*
- VA Scenic Rivers Clearance - VA Department of Cultural Resources - *Pending design development*
- Conditional Use Permits - City of Newport News, York County - *Pending design development*
- Building Permits - City of Newport News, York County - *Pending design development*
- Land Disturbance / Erosion and Sediment Control - City of Newport News, York County - *Pending design development*
- Wetland Permit - Wetlands Boards of City of Newport News, York County - *Pending design development*
- Chesapeake Bay Preservation Act Compliance - Chesapeake Bay Board - *Pending design development*

A. LAND USE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Conversions of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), to non-agricultural use as defined under the Farmland Protection Act 7 U.S.C. 4201 et seq.	□	☒	□
2. Conflicts with any applicable land use plan, policy, act, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, habitat conservation plan, specific plan, local plan, or zoning ordinance).	☒	□	□

7. **Please provide mitigation measures related to land use, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

   Review of recent aerial photography and onsite visual assessments was conducted to evaluate the existing land use within and surrounding the project area. The 28-acre Project site consists of relatively flat terrain with small hills and depressions, ranging in elevation from approximately 20 to 27 feet above mean sea level (msl) (US Geological Survey [USGS] 2018).

Table 1. Land Use / Land Cover Types on the Project Site

Soil Type	Area (acres)
Developed Open Space	9.1
Developed Low Intensity	6.6
Developed Medium Intensity	9.4
Developed High Intensity	0.2
Mixed Forest	0.5
Woody Wetlands	2.0
Total	27.8

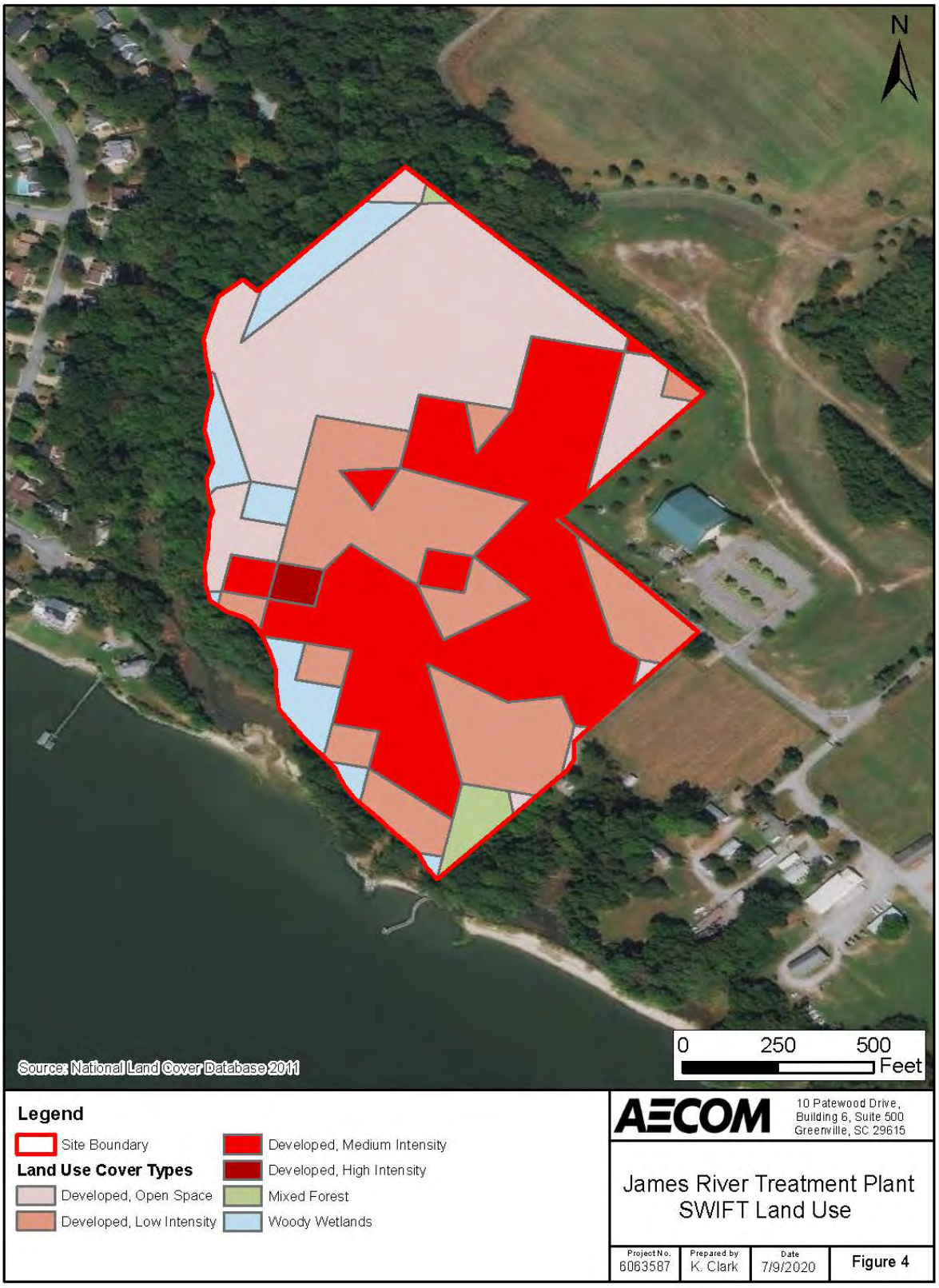
The northwest portion of the SWIFT facility property is forested. The northwest, west, and southwest portions of the property are abutted by a narrow strip of woods and public recreation areas, and the James and Warwick Rivers lie to the south beyond the public recreation trails.

The location of the proposed SWIFT project facility is currently in use as a materials storage area and includes a supervisory control and data acquisition (SCADA) tower associated with the James River Treatment Plant. A mowed grassy field and forested area bound the southeast portion of the property along a city park, which abuts residential neighborhoods further to the east and northeast. As detailed in Table 1, the National Land Cover Database classifies the Project Site as developed land, primarily developed open space (9.1 acres) and forested land (2.5 acres), (Figure 4). Photos 1 and 2 are representative of the proposed SWIFT facilities site.

The lands surrounding the project area are currently developed as the James River Treatment Plant, residential neighborhoods, public schools, and recreational areas, including indoor and outdoor athletic facilities, a playground, and a large public park.

Photo 1. View facing northwest of the project area.

Photo 2. View facing west of the project area.


N
0
250
500
Feet
Source: National Land Cover Database 2011
Legend
Site Boundary
Land Use Cover Types
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity
Mixed Forest
Woody Wetlands
AECOM
10 Patewood Drive,
Building 6, Suite 500
Greenville, SC 29615
James River Treatment Plant
SWIFT Land Use
Project No.
6063587
Prepared by
K. Clark
Date
7/9/2020
Figure 4

As detailed in Table 2, none of the mapped soils in the project area have been identified by the Natural Resources Conservation Service (NRCS) as Prime or Unique Farmland; however, very small pockets of a Farmland of Statewide Importance (Nevarc-Uchee complex, 6 to 15 percent slopes) occur along the southern boundary of the project area (NRCS 2020) (Figure 5). The treatment plant site is currently in use as a wastewater treatment plant with maintained lawn between the structures, and paved areas and wooded areas along the northwestern, western, and southeastern sides. The western property boundary approximately follows a stream channel to its confluence with the Warwick River. There are constructed berms adjacent to the western property boundary that provide screening and reduction of noise, odor, and visual intrusion of the treatment plant for the residents to the west.

Table 2. Soil Type Occurrence on the Project Site

Map Unit Symbol	Soil Type	Acreage on Project Site	Prime Farmland?	Farmland of Statewide Importance?
16C	Nevarc-Uchee complex, 6 to 15 percent slopes	1.84	No	Yes
9A	Craven-Urban land complex, 0 to 2 percent slopes	2.42	No	No
26	Udorthents-Dumps complex	0.34	No	No
6	Bohicket muck, 0 to 1 percent slopes, very frequently flooded	0.04	No	No
16D	Nevarc-Uchee complex, 15 to 50 percent slopes	3.48	No	No
21A	Slagle-Urban land complex, 0 to 2 percent slopes	19.52	No	No
12	Johnston silt loam, 0 to 2 percent slopes, frequently flooded	0.09	No	No
Total		27.8		

The City of Newport News most recently updated their Framework for the Future 2030 and Transportation Plan on October 6, 2016. The Plan identifies the planned uses of the land within Newport News for the 2030 planning year. The proposed SWIFT facility area is denoted for “utilities,” and many of the surrounding areas to the north are denoted as “under study” or “parks and recreation.” The abutting residential area is denoted as “low density residential.” The stream corridor along the northwest side of the proposed SWIFT facility site is identified as “natural area/open space.”

N
16D
12
9A
21A
12
26
26
16C
6
0
250
500
Feet
Source: USDA Natural Resources Conservation Service
Legend
Site Boundary
12 Johnston silt loam, 0 to 2 percent slopes, frequently flooded
16C - Nevarc-Uchee complex, 6 to 15 percent slopes
16D - Nevarc-Uchee complex, 15 to 50 percent slopes
21A - Slagle-Urban land complex, 0 to 2 percent slopes
26 - Udorthents-Dumps complex
6 - Bohicket muck, 0 to 1 percent slopes, very frequently flooded
9A - Craven-Urban land complex, 0 to 2 percent slopes
AECOM
10 Patewood Drive,
Building 6, Suite 500
Greenville, SC 29615
James River
Site Soils
Project No.
6063587
Prepared by
K. Clark
Date
7/9/2020
Figure 5

While not included in this SWIFT project, HRSD plans to build a transitional buffer area between the treatment plant industrial uses and the future planned park/recreational uses of the land to the east of the treatment plant. The transitional buffer area would include an administrative building, access to recreation trails along the waterfront, as well as parking and restrooms to support recreational use of the existing river access. Approximately half of that land would be placed in a conservation easement protecting the waterfront from any future development.

Given the limited footprint of this SWIFT project, no significant impact on land use is anticipated. There would be no effect on land use from rehabilitation, renovation, modification, and retrofitting of existing facilities because the existing land use would not change. Effects from site upgrades and development could include minor changes in land use cover and designations, alterations to land use patterns, and preclusion of other land uses within or adjacent to project footprints; however, the proposed project area is within existing or previously disturbed areas. Practicable mitigation measures such as stakeholder coordination/consultation and/or consolidation of infrastructure during the scoping and design phase would aid in the avoidance or minimization of land use conflicts. The project would be in compliance with state, tribal, and local land use plans, programs and policies.

B. AIR QUALITY:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Conflicts with or delays in implementation of any applicable federal, state, or local air quality plan.	☒	□	□
2. Violations of any air quality standards or contributions to an existing or projected air quality violation (including protected areas designated as mandatory Federal “Class I”).	☒	□	□
3. Increases in any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	□	☒	□
4. Releases of objectionable odors, such as hydrogen sulfide.	□	☒	□

8. **Please provide mitigation measures related to air quality, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

During the construction phase of the Project, it is unlikely that construction emissions would be greater than de minimis levels and are therefore likely to be of only minimal impact to air quality. Overall, air quality impacts during construction would be localized and generally short-term, but less than significant, with the implementation of practicable mitigation measures, including high efficiency engines and anti-idling best management practices (BMPs).

During the operation phase of the project additional emissions associated with the proposed action would be negligible and are therefore likely to contribute only negligibly to regional emissions of criteria air pollutants, greenhouse gases (GHGs), and ozone precursors (U.S. Environmental Protection Agency [EPA 2018]). Based on studies done at multiple facilities, the emissions of criteria air pollutants and ozone precursors would result in long-term regional emissions that are below applicable regional thresholds and would not result in considerable increases or substantially contribute to emissions concentrations (ESA 2014; Orange County Water District 2011; San Francisco Planning Department 2017; EPA 2014).

Some facility improvements would result in reduced emissions and would lead to positive benefits to air quality, including reduced GHG emissions through the use of more modern and efficient equipment and technologies (EPA 2018). Significant upgrades to the James River Treatment Plant would be aimed at promoting overall quality of life for the communities HRSD serves, including safe operation, environmental stewardship, transparency, community engagement, education, resiliency, resource management, and affordability.

No significant impacts to air quality during construction or operation are anticipated. Effects could include generation of construction dust and emissions, and generation of operational emissions (including criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic); however, practicable mitigation measures that would be employed include odor-minimizing facility design, use of energy-efficient designs and technologies, and use of dust suppression techniques.

C. NOISE AND VIBRATION:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	☒	□	□
2. Permanent increases in ambient noise levels in the project vicinity above levels existing without the project.	☒	□	□
3. Temporary or periodic increases in ambient noise levels in the project vicinity above levels existing without the project.	□	☒	□
4. Generation of vibration that could increase the risk of structural damage.	☒	□	□

9. **Please provide mitigation measures related to noise and vibration, including those that reduce a significant impact to less than significant. Please provide references and supporting documents:**

Noise would be primarily associated with the construction phase of the project; however, this noise would be relatively temporary in duration - ceasing at the end of each work day and upon completion of construction of the proposed SWIFT project. The construction phase of the project is anticipated to begin in 2021 and last through 2025; the construction schedule would be limited

to weekdays; however, if necessary, the contractor may choose to work weekend shifts with approval of a variance from the City of Newport News. The operation of water and wastewater facilities would produce relatively minor levels of noise localized to the project site. The environmental effects are likely to be minor and short term in duration but could potentially adversely impact nearby sensitive receptors.

The nearest noise sensitive receptors would be Menchville High School (located 0.6 mile from the project area) and a few single-family residences near the project area to the north, west, and east (located 0.2 mile from the project area). Students, teachers, and administrators at the school and residents of homes adjacent to the property boundary could experience elevated noise levels; however, HRSD has established and would continue to demonstrate its strong commitment to its neighbors and the communities it serves. Significant upgrades to the James River Treatment Plant would incorporate elements such as noise abatement measures aimed at promoting quality of life, environmental stewardship, transparency, and community engagement.

Construction-related noise would be expected to occur as a result of the use of construction equipment onsite and the movement of construction-related vehicles (i.e., worker trips and material and equipment trips) on surrounding roadways. The level of noise from heavy equipment and construction-related traffic would vary depending on the phase of construction. Construction equipment produces a range of sounds while operational. Construction noise would cause temporary and short-term adverse impacts to the ambient sound environment. Typical noise levels from construction equipment are expected to be 85 dBA or less at a distance of 50 feet from the construction site. These types of noise levels would diminish with distance from the construction site at a rate of approximately 6 dBA per each doubling of distance.

The EPA guidance for sound levels affecting residential land use stipulates noise should be less than 55 dBA for exterior levels and less than 45 dBA for interior levels (EPA 1974). The U.S. Department of Housing and Urban Development (HUD) also recommends that exterior areas of frequent human use follow the EPA guideline of 55 dBA (HUD 2009). The City of Newport News places general restrictions on excessively loud noise but does not provide specific guidance on construction noise (Newport News 2019). Hence, in the absence of a quantified sound level threshold from local regulations, 55 dBA would be considered a guidance-based threshold for determining potential sound level impacts at sound-sensitive receptors like residences and schools.

Noise would be expected to attenuate to 65 dBA at approximately 500 feet; at approximately 1,600 feet construction noise would attenuate to the recommended EPA noise guideline of 55 dBA, and at approximately 3,200 feet noise would attenuate to 50dBA. These distances could be shorter in the field as objects and topography would cause further noise attenuation.

During the operational phase of the project, noise generated shall comply with local ordinances and shall be in accordance with the land use designations. If required, general mitigation measures would be implemented, such as placing intakes and exhausts facing away from sensitive receivers, housing equipment in buildings, attenuation of fan noise and pump and motor noise. Noise from vehicular traffic created by operations and maintenance of the project, in most cases, would be incidental in relation to the existing traffic use of surrounding roadways.

The project includes improvements to outdated water and wastewater facilities which could result in some minor noise reduction benefits associated with the use of more modern or efficient equipment. With the implementation of proper mitigation measures in compliance with local ordinances the potential operational noise impacts would be less than significant.

No significant impacts from noise and/or vibration would be anticipated. Effects could include generation of construction and operational noise and vibration, but levels of noise and vibrations would not exceed established standards or pose a risk of structural damage. Practicable mitigation measures are compliance with local ordinances and designations and use of general noise reduction measures.

D. GEOLOGY AND SOILS:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Exposure of people or structures to hazards from unstable soils, landslide, lateral spreading, subsidence, liquefaction or collapse.	□	☒	□
2. Increase in soil erosion or loss of topsoil.	□	☒	□
3. Loss of economic viable mineral deposits, scientifically significant paleontological resources, or unique geological features.	□	☒	□

10. **Please provide mitigation measures related to geology and soils, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

Short-term and long-term impacts to geologic and soil resources are anticipated to be to less than significant given the limited footprint of the project, compliance requirements, consideration of resources during site selection, and implementation of BMPs. Minor effects may include vegetation removal, grubbing, grading, and trenching. Soil erosion would be controlled using appropriate erosion and sediment control measures and BMPs. Erosion control BMPs include the use or installation of sandbags, silt fences, earthen berms, fiber rolls, sediment traps, erosion control blankets, check dams in medium-sized channels, or straw bale dikes in smaller drainage channels. Other BMPs may be specified in the project Stormwater Pollution Prevention Plan (SWPPP) and fugitive dust control plan.

The SWIFT project would be expected to have an overall significant beneficial impact on geology, as pumping large volumes of water into the aquifer would increase hydrostatic pressure within the aquifer, prevent saltwater intrusion into the aquifer, and slow land subsidence related to aquifer withdrawals.

E. WATER RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Violations of any water quality standards or waste discharge requirements, including degradation of water quality.	☒	□	□
2. Depletion or contamination of groundwater supplies (including sole-source aquifers) or negatively interfere with groundwater recharge.	☒	□	□

E. WATER RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
3. Alteration of the drainage pattern of a water resource that would result in an increase in erosion or flooding on- or off-site.	□	☒	□
4. Soil erosion or stormwater runoff that increases sediment, pollutants, or contaminates into streams, rivers, or other water resources.	□	☒	□
5. Floodplain modification, development within, or redirection, as defined by executive order 11988.	☒	□	□
6. Increase in flood risk affecting loss on human safety, health, and welfare.	□	☒	□
7. Loss, degradation, or destruction of wetlands and waterbodies through direct removal, filling, hydrological interruption, or other means.	□	☒	□
8. Alteration of wild and scenic rivers as defined by the Wild and Scenic River Act 16 U.S.C. 1271 et seq.	☒	□	□
9. Conflicts with the Rivers and Harbors Act, 33 U.S.C. 403.	☒	□	□
10. Conflicts with the Coastal Barrier Resources Act, 16 U.S.C. 3501 et seq.	☒	□	□
11. Conflicts with the Coastal Zone Management Act, 16 U.S.C. 1451 et seq.	□	☒	□

11. **Please provide mitigation measures related to water resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    The project would have an overall long-term benefit on flood risk, aquifers, and the groundwater supply by reducing aquifer-related land subsidence in coastal Virginia and allowing additional time to adapt to sea level rise and protect valuable coastal wetlands for decades longer than currently projected.

    A wetlands delineation was conducted in January 2020 to determine the extent of jurisdictional waters of the U.S. (WOUS) within and adjacent to the project area. In May 2020, AECOM conducted further wetlands investigations to confirm and expand upon the January 2020 findings (AECOM 2020a). A copy of the May 2020 Wetlands Delineation Report is included as Appendix A.

    The wetland field investigations identified five non-tidal wetlands and one non-tidal stream within the project area, identified as wetlands WA, WB, WD, WE, and WF, and stream SA. Wetlands WA and WF consist of both tidal and non-tidal wetlands, but only the non-tidal portions of these

wetlands occur within the project boundary. The extent of wetland WD was expanded during the May 2020 field investigation by approximately 0.02 acres. The non-tidal portion of wetland WA, wetlands WB, WC, WD, WE, WF, and WG were field-verified by AECOM as palustrine forested (PFO) wetlands. The tidal portion of wetland WA, portions of wetlands WB, WD, WE, WF, and wetland WC and WG are located outside the project boundary.

Two of the wetlands (wetlands WB and WD) are located in previously disturbed areas within the fenced portion of the James River Treatment Plant property. Wetland WA is located in the forested area at the southern edge of the project area. The remaining wetland (WF) and stream SA are located in forested areas along the west and southwest project boundary adjacent to an unnamed tidal tributary to the Warwick River. The approximate location and extent of the jurisdictional features identified in the field are depicted on Figure 6 and WOUS located within the project area are summarized in Table 3. Appropriate federal, state, and local wetland permits would be secured prior to commencement of the project.

Table 3. Summary of WOUS within Project Area

Wetland/Stream	Tidal	Cowardin Classification*	Area (Acres)
WA	Non-tidal	PFO	0.14
WB	Non-tidal	PFO	0.04
WD	Non-tidal	PFO	0.17
WE	Non-tidal	PFO	0.36
WF	Non-tidal	PFO	1.75
SA	Non-tidal	N/A	125 Linear Feet
Total			2.46
* Cowardin classification based on information from USFWS-NWI mapper (USFWS NWI 2020)			

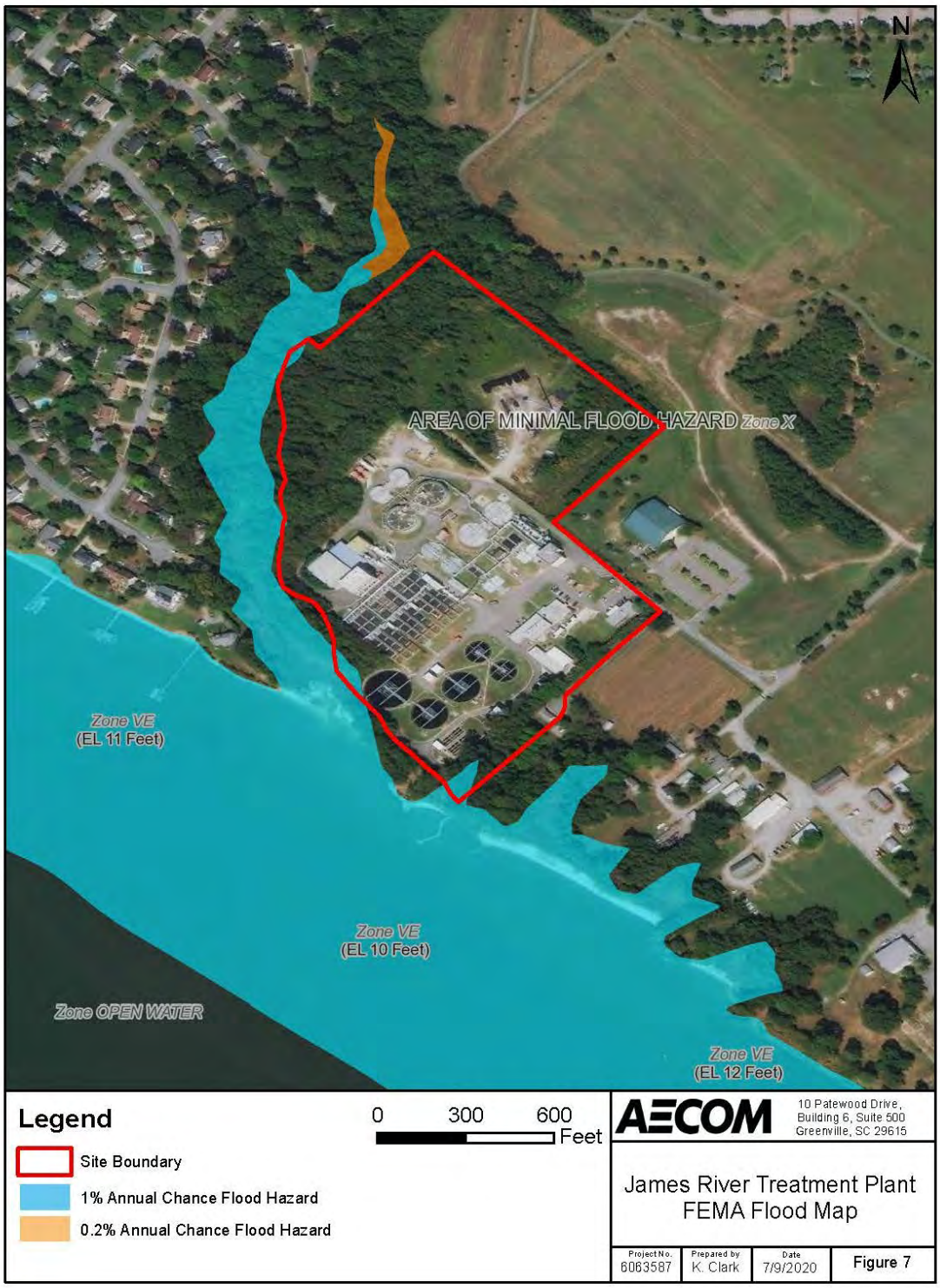
The City of Newport News administers and enforces the Chesapeake Bay Preservation Act (CBPA) within the city limits via the City's Chesapeake Bay Preservation Act Ordinance (CBPO). Under the CBPO, Resource Protection Areas (RPAs) incorporate tidal wetlands, tidal shores, nontidal wetlands connected by surface flow and contiguous to tidal wetlands or waterbodies with perennial flow, and a 100-foot wide buffer surrounding the aforementioned features, as well as along waterbodies with perennial flow. Consistent with the CBPA and CBPO, a potential 100-foot RPA has been mapped along wetlands and streams that continue off-site where it is assumed that they are connected by surface water flow and contiguous to tidal wetlands or water bodies with perennial flow. The RPA includes portions of the parcel associated with the existing HRSD treatment plant; however, the proposed project and site layout largely avoids disturbance of the RPA. Should the selected contractor determine encroachment into the RPA may be necessary, a detailed field delineation of the RPA would be conducted, and proper approvals would be obtained from the City of Newport News and VDEQ, as appropriate.

According to the most recent Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the proposed project improvements are located outside the 100-year and 500-year floodplains, as depicted on Figure 7. Floodplains to the south and southwest do occur within the project boundary; however, the proposed site layout avoids encroachment into or disturbance of the floodplain. The nearby floodplains are associated with James River, Warwick River, and the unnamed tributary to the Warwick River located along the western parcel boundary of the treatment plant.

Effects could include ground and soil-disturbing activities, direct impacts to surface water or wetlands, new or expanded outfalls and discharges of effluent to water resources. Practicable

mitigation measures include use of erosion and sediment control measures and BMPs, compliance with permit requirements, effective site selection and design, consistency with Executive Order 11990 and the Clean Water Act Section 404(b)(1) guidelines, water efficiency, coordination with Regional utilities, and planning for extreme weather. Minimization and avoidance of impacts to jurisdictional waters of the U.S. would occur during site design. Erosion and sediment control measures would be implemented during construction to protect surface waters from sediment and nutrient transport and deposition. Treatment processes would be identified to ensure protection of groundwater resources and water quality. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the U.S. result from the project.

N
WG-WET
WG-UPL
WG
(delineated 05/28/20)
WE
SA
WC
WB
WD
(delineated 05/28/20)
DE
(delineated 5/28/20)
DC
(delineated 5/28/20)
DD
(delineated 5/28/20)
SE
WF
SD
DA
(delineated 5/28/20)
DB
(delineated 5/28/20)
WA
SD
Warwick River
James River
0 250 500
Feet
Legend
Determination Points
Previously Delineated Streams
Offsite Stream
Offsite Drainage Ditch
Site Boundary
Potential 100-foot RPA Buffer
PFO Delineated 05/28/2020
PFO Delineated 01/2020
Offsite Wetlands
Note: This map is for reference only; NAD83 State Plane Virginia South; Aerial Image Source: ESRI, 2019; January 2020 wetland delineation by: Hazen and Sawyer; updated 05/28/2020 by AECOM; Approximate Waters of the U.S. field flagged and GPS-recorded but have not been confirmed by USACE; Wetlands WE, WF, and WG extend beyond the extent shown
AECOM
10 Patewood Drive, Building 6, Suite 500 Greenville, SC 29615
James River Treatment Plant
Site Wetlands Map
Project No. 6063587
Prepared by K. Clark
Date 7/15/2020
Figure 6


N
AREA OF MINIMAL FLOOD HAZARD Zone X
Zone VE
(EL 11 Feet)
Zone VE
(EL 10 Feet)
Zone OPEN WATER
Zone VE
(EL 12 Feet)
Legend
0 300 600
Feet
Site Boundary
1% Annual Chance Flood Hazard
0.2% Annual Chance Flood Hazard
AECOM
10 Patewood Drive,
Building 6, Suite 500
Greenville, SC 29615
James River Treatment Plant
FEMA Flood Map
Project No.
6063587
Prepared by
K. Clark
Date
7/9/2020
Figure 7

The most significant change to water resources proposed by the project would be the pumping of large volumes of water into the deepwater Potomac Aquifer. However, the project's net impact would be beneficial, as the recharge water would be treated to drinking water standards prior to being returned to the aquifer.

It is anticipated that higher quality discharge waters would result in improvements in downstream waters and aquatic habitats. The project would utilize advanced water treatment (AWT) processes to treat secondary wastewater treatment plant effluent to drinking water standards. The SWIFT water would subsequently be used to recharge the Potomac Aquifer system to counter depleting aquifer levels and provide additional environment benefits (HRSD 2019). Analytical groundwater flow and geochemical modeling using various treatment and recharge techniques has been conducted to determine the optimal treatment and recharge methods (HRSD 2019). The modeling represented the VDEQ preferred metric for determining the beneficial impacts of proposed pumping/recharge on the Potomac Aquifer. The AWT is expected to improve drinking water sources, i.e., the Potomac Aquifer, by treating and reducing contamination and removing disease-causing agents (HRSD 2019). The project would provide a sustainable source of groundwater to the Potomac Aquifer, increase the hydrostatic pressure within the aquifer, prevent saltwater intrusion into the aquifer, and slow land subsidence related to aquifer withdrawals. The project is intended to have an overall beneficial effect on water resources; therefore, no significant adverse impact anticipated.

F. BIOLOGICAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Jeopardizing the continued existence of any threatened or endangered species identified in local or regional plans, policies, or regulations, or by the U.S. Fish and Wildlife Service or National Marines Fisheries Service.	□	☒	□
2. Modification, fragmentation, or degradation of critical habitat identified in local or regional plans, policies, or regulations, or by the U.S. Fish and Wildlife Service or National Marines Fisheries Service.	□	☒	□
3. Harm to fauna, including mammals, birds, reptiles, amphibians, fish, and invertebrates.	□	☒	□
4. Changes in vegetation type (native to the region), particularly if the vegetation type in the region is already highly fragmented because of human activity.	□	☒	□
5. Modification, fragmentation, or degradation of biological sensitive areas other than those mentioned above.	□	☒	□

F. BIOLOGICAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
6. Disturbances to marine mammals protected by the Marine Mammal Protection Act as defined under 16 U.S.C 1361-1407.	☒	□	□
7. Disturbances to Bald or Golden Eagles as defined under 16 U.S.C. 68 et seq.	☒	□	□
8. Disturbances to migratory birds as defined under 16 U.S.C. 703-712 as amended.	□	☒	□
9. Conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan.	☒	□	□
10. Introduction or spread of invasive species as identified under Executive Order 13112.	□	☒	□

12. **Please provide mitigation measures related to biological resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    During construction, it would be expected that some vegetation cover would be lost due to direct impacts from clearing, trenching, excavation, soil compaction, and general activity on the site. Given the relatively small footprint of water and wastewater projects, this impact would be minimal and not likely cause disturbance to vegetation beyond site boundaries.

    Likewise, minor, short-term effects on wildlife could occur as they would likely be deterred by construction activities, vehicles, and equipment. Minor, long-term effects on some wildlife are anticipated due to displacement. Less mobile wildlife species may not be able to relocate outside of the construction area. One federally-listed rare, threatened, or endangered species was identified by U.S. Fish and Wildlife Service (USFWS) during a review of the project vicinity via the Information for Planning and Consultation (IPaC) tool: the northern long-eared bat (NLEB) (*Myotis septentrionalis*) (threatened) (USFWS 2019a). Potentially suitable summer roosting habitat has been observed in the project area for the NLEB. According to the Virginia Department of Wildlife Resources (VDWR) NLEB Winter Habitat and Roost Tree Application, the nearest known maternity roost for the NLEB is approximately 35 miles southeast of the proposed project area (VDWR 2020). There are no documented maternity roosts or hibernacula within 150 feet and 0.25 miles of the project area, respectively; therefore, incidental take from tree removal is not prohibited. Voluntary conservation measures such as a time of year restriction (June 1 – July 31) and minimizing light pollution through adjusting light angles downward will be implemented where practical. Results of the IPaC database search and the NLEB Habitat and Roost Tree Map are included in Appendix B, as well as a USFWS Self-Certification Letter, noting a “may affect, not likely to adversely affect” determination for the NLEB. Prior to commencement of the project, coordination with USFWS would be conducted regarding the limits and timing of vegetation removal, in order to ensure compliance with the Endangered Species Act.

The Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act confer protection to the bald eagle (*Haliaeetus leucocephalus*) (USFWS 2019b). The southern portion of the peninsula separating the James and Warwick rivers near the mouth of the Warwick River has been documented as containing bald eagle nests that are historic, and nests that may currently be in use. The project area is located beyond the restricted radius of the documented bald eagle nests. No nests in use by a bald eagle has been observed within the project vicinity, and no bald eagles were observed flying over or in the vicinity of the project area during the onsite investigations. The Center for Conservation Biology (CCB) Mapping Portal identified the nearest documented bald eagle nest approximately 1,950 feet southeast of the project area boundary (CCB 2020). The USFWS Virginia Field Office's Bald Eagle Map Tool identified one bald eagle concentration area intersecting the project area along the southwestern edge of the project boundary (USFWS 2020a). The CCB Map and the USFWS Virginia Field Office's Bald Eagle Concentration Map are included in Appendix B. Due to the distance from the project construction activities (greater than 660 feet from the documented nest and inland from the shoreline), no impacts to the bald eagle concentration or nests are anticipated.

The Virginia Department of Game and Inland Fisheries maintains records of species known or likely to occur throughout the Commonwealth of Virginia in the Fish and Wildlife Information Service (FWIS) database. Review of the FWIS database identified eight federally endangered or threatened species with the potential to occur within a two-mile radius of the project area (FWIS 2020). The FWIS Project Report is included in Appendix B. Of the eight species identified, there is one documented occurrence - the loggerhead sea turtle (*Caretta caretta*, federal listed threatened), which only occurs in open waters. Since there are no in-water activities associated with the project, no impacts to the loggerhead sea turtle are anticipated.

The FWIS habitat prediction model also identifies four species with the potential to occur within a two-mile radius of the project area: the federal proposed/state listed endangered eastern black rail (*Laterallus jamaicensis jamaicensis*); the state listed endangered canebrake rattlesnake (*Crotalus horridus*, southestern population); the state listed threatened Henslow's sparrow (*Centronyx henslowii*); and the state listed threatened Mabee's salamander (*Ambystoma mabeii*).

USFWS indicates that eastern black rail habitat consists of impounded and unimpounded salt and brackish marshes (USFWS 2020b). Wetlands within the project area are categorized as PFO and no positive observations have occurred within a two-mile radius of the project area; therefore, no effect is anticipated to the eastern black rail. Canebrake rattlesnake habitat consists of mature hardwood, mixed hardwood-pine forests, forested cane thickets, and ridges adjacent to swampy areas (VDWR 2011). A 100-foot RPA buffer is being placed on most wetlands within the project area which will not be disturbed by project activities. Swampy areas in the project area outside of the RPA appear to be heavily disturbed by past and current land use and no positive observations have been made within a two-mile radius of the project area. Therefore, no effect is anticipated to the canebrake rattlesnake. Henslow's sparrow habitat is described as hayfields, pastures, wet meadows, undisturbed protected grasslands, upland portions of salt marshes, and old fields (USFWS 2012). While some areas within the project area are upland grass fields, these areas are mowed turf grasses and are not allowed to grow as a hay field or meadow. Therefore, no effect is anticipated to the Henslow's sparrow. Habitat for Mabee's salamander is described as savannas on the edges of bogs or ponds, low wet woods and swamps, and adjacent to ditches and pools (VHS 2020). A 100-foot RPA buffer has been placed on all wetlands within the project area including low wet woods. The majority of uplands within 200 feet of wetlands in the project area, not covered by the RPA buffer, are heavily industrialized or managed turf grass. Therefore, no effect is anticipated to the Mabee's salamander.

Based on the land cover of the project area, mitigation measures, and proposed activities, the project is expected to have "no effect" on the federally listed threatened and/or endangered species.

No significant impacts to biological resources would be expected to result from the proposed SWIFT project. Potential effects could include reduced vegetative cover, soil compaction, erosion or sedimentation, habitat fragmentation, introduction of invasive species, changes in water availability, and disturbance from construction noise and dust. Practicable mitigation measures include implementation of avoidance and minimization measures and BMPs, implementation of recommendations from relevant governmental wildlife agencies, prevention of spills and leaks from vehicles and equipment, and implementation of measures to minimize soil compaction and the transportation of noxious, invasive and pest species. Protective measures would be identified in coordination with the U.S. Fish and Wildlife Service and state wildlife agencies, as applicable, to protect federally threatened or endangered species that may inhabit or otherwise utilize the project area. Protective measures may include time-of-year restrictions, lighting alterations, and/or design modifications, among others.

G. CULTURAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to historical resources, including archaeological and cultural resources as defined in 36 CFR part 800.	□	☒	□
2. Modification of unique paleontological resources or site or unique geologic features.	□	☒	□
3. Disturbance of human remains, including those interred outside of formal cemeteries.	☒	□	□

13. **Please provide mitigation measures related to cultural resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

A review of the Virginia Cultural Resources Information System (VCRIS) maintained by the Virginia Department of Historic Resources (VDHR), the Virginia Archaeological Site Survey Records, the Virginia Historic Inventory Property Forms, and the National Register of Historic Places (NRHP) was conducted as part of a cultural resources desktop survey of the project area. Immediately to the southeast of the James River Water Treatment Plant, along the bank of the Warwick River, is the location of the Colonial settlement of Warwicktowne, which served as the county seat of Warwick County (now the City of Newport News) (Gray and Pape 2020). The project area, therefore, is located in an area of high archaeological potential.

VCRIS shows three previously conducted cultural resource surveys in the project area, dating from 1976 to 1992, of both aboveground and belowground resources. There are three previously identified aboveground properties close to the Limit of Disturbance (LOD) – the Battle of Yorktown (VDHR ID #099-5283), Farmstead (VDHR ID #121-0103), and Newport News City

Prison Farm (VDHR ID #121-0104). There are nine previously identified archaeological sites close to the LOD, and two that fall within the LOD (Gray and Pape 2020).

AECOM conducted a Phase I archaeological survey in April 2020 of areas of proposed ground disturbance (i.e, area of potential effect, APE) in support of the proposed project and pursuant to Section 106 of the NHPA of 1966, as amended, the Advisory Council on Historic Preservation's (ACHP) "Protection of Historic and Cultural Properties" and the DHR Guidelines for Conducting Historic Resources Survey in Virginia (AECOM 2020b). A copy of the Phase I Archeology Survey Report is included as Appendix C.

The Phase I archaeological survey of the JRTP APE resulted in the documentation of two new archaeological sites within the APE, Site 1 and Site 2, as well as the relocation within the APE of a portion of a subsurface scatter of late nineteenth and twentieth century artifacts found within the topsoil that appear to be associated with the Newport News City Prison Farm, identified as 44NN0281.

The archaeological deposits associated with 44NN0281 within the APE do not have the potential to yield significant information about the twentieth century occupation of the APE and do not contribute to the potential NRHP eligibility of 44NN0281 as a whole. The archaeological deposits of two previously recorded deposits, identified as 44NN0359 and 44NN0360, which were not encountered during the 2020 Phase I survey, likewise do not have the potential to yield significant information about the historic occupation of the APE, and the sites are recommended not eligible for the NRHP. Therefore, the recommendation of the Phase I Archaeological Survey Report is that the proposed project be allowed to proceed without concern for impacts to significant archaeological sites. Adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

Effects to cultural resources could include encroachment, displacement or destroying or diminishing the historic integrity of NRHP listed or eligible properties; however, as described in the Phase I Archeology Survey Report, no significant impacts on cultural resources are anticipated. Practicable mitigation measures include consultation with the State Historic Preservation Office (SHPO) and/ or Tribal Historic Preservation Office (THPO),minimization of adverse effects and development of an unanticipated discoveries plan. The location and extent of cultural resources in the project vicinity would be considered during project design. If impacts to resources cannot be fully avoided, HRSD would work with Virginia Department of Historic Resources to determine appropriate measures to protect and reduce impacts to architectural and archaeological resources.

H. SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to the demographics around project location, such as population growth.	□	☒	□
2. Modifications to economic factors such as per capita income, unemployment rate, or poverty.	□	☒	□

H. SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
3. Alterations to social assets, such as housing or public services.	□	☒	□
4. Disproportionate high and adverse human health environmental effects on minority population and low-income populations as defined under Executive Order 12898.	□	☒	□

14. **Please provide mitigation measures related to socioeconomic resources and environmental justice, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

The project would not be expected to have a significant adverse impact on per capita income, unemployment rate, poverty rate, local population size, or projected population growth. The project is intended to have an overall beneficial effect on the environment and local population by providing improved water quality and mitigate potential water scarcity, which may induce some localized population growth or indirectly induce growth by establishing new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises); however, any growth would likely be less than significant.

Most of the potentially adverse effects associated with the project would occur during construction and would be temporary, such as construction noise, air emissions from construction vehicles, erosion from disturbed surfaces and construction vehicle traffic or traffic detours. Impacts to communities from construction would not be expected to be disproportionate to any identified environmental justice populations with the implementation of identified BMPs and as required by Executive Order 12898.

Overall, adverse impacts to socioeconomics and environmental justice communities as a result of the project construction and O&M are anticipated to be less than significant. Minor effects could include local economic benefits from construction and operation and temporary disruption to communities from construction. Practicable mitigation measures include implementation of construction BMPs including noise, traffic, and air emissions minimization measures, and measures implemented as a result of conducting meaningful public engagement to environmental justice communities.

I. TRANSPORTATION AND TRAFFIC:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to traffic patterns around the project area including, but not limited to, the arrival and departure of construction workers, vehicles hauling equipment and materials to the site, road closures or detours, and slower movement and larger turning radii of truck going to project site.	□	☒	□

15. **Please provide mitigation measures related to transportation and traffic, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    The primary impacts on transportation and traffic would be short-term and intermittent from the movement of construction trucks potentially reducing roadway capacity. Traffic-generating construction activities would include arrival and departure of constructions workers, trucks hauling equipment and materials to the construction site, the hauling of excavated soils, and potential importing of new fill. Construction equipment used for the project may include concrete trucks, back-hoes, front-end loaders, trenchers, paving equipment, and periodic delivery of pipes and materials. Measures to minimize congestion and delays would be implemented during construction, including warning signage, limitation of public rights-of-way for staging, use of flag persons, lane closures, and detours. Appropriate coordination with local entities and the implementation of mitigation measures would reduce the potential impacts of the project's construction activities on traffic to less than significant.

    Once construction has been completed and the project is operational, traffic levels and flow would return to original levels. As the project aims to improve and upgrade water networks, it would ultimately result in less maintenance and fewer unscheduled repairs requiring road closures or detours, and thus providing a long-term minor benefit.

    No significant impacts to transportation and/or traffic are anticipated. Effects could include temporary street closures, lane closures, detours, traffic and parking restrictions, and reduced traffic speeds. Practicable mitigation measures include coordination with local agencies, use of warning signage, flag persons, and use of lane closures and detours as necessary.

J. UTILITIES AND COMMUNITY SERVICES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to electric, cable, gas, sewer, water, stormwater, and other existing utility services.	□	☒	□
2. Changes to community services, such as open space, recreational and cultural facilities.	□	☒	□

16. **Please provide mitigation measures related to utilities and communication, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    Prior to commencement of construction, existing utilities would be identified and marked in the field to avoid to the extent possible impacts to utilities. Project construction will result in the upsizing of utility power to the James River Treatment Plant to reflect the increased load demand from the installation of new unit processes. Contractors may require some utility relocations requiring close coordination with service providers to minimize interruptions in service during construction. Notification procedures of the applicable entity would be followed for known service

interruptions to the extent practicable. There may be temporary effects on utilities and services during the construction phase, although no significant long-term impacts would occur.

Recreational resources, including waterfront hiking trails, are located in the vicinity of project area. However, the project would not directly impact the recreation areas. Recreation and park users may be temporarily affected by noise or closures or detours. The quality of user experience may temporarily decrease during construction. Close coordination with park and recreational resource managers/agencies would occur to minimize interruptions, display appropriate signage, and other measures. Operation of projects is not anticipated to impact recreational and park resources.

While not part of the SWIFT project, in conjunction with the project, HRSD plans to include a transitional buffer area between the treatment plant and the former City Farm site to provide access to the recreation trails along the waterfront, as well as parking and restrooms to support recreational use of the existing river access. Approximately half of that land would be placed in a conservation easement protecting the waterfront from any future development.

No significant impact on utilities and community services is anticipated. Effects could include utility relocations and service interruptions. Practicable mitigation measures include identification and avoidance of utilities, coordination with service providers and minimization of service interruption, and coordination with park and recreational resource managers/agencies.

K. HAZARDOUS AND TOXIC MATERIALS AND WASTE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Accidental releases, spills, or improper storage and disposal of hazardous materials.	□	☒	□
2. Conflicts with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Solid Waste Disposal Act, Toxic Substances Control Act, and Emergency Planning and Community Right-to-Know Act.	☒	□	□
3. Generation or increase in the amount of sewage sludge that is not in compliance with EPA standards for the use or disposal of sewage sludge.	☒	□	□

17. **Please provide mitigation measures related to hazardous and toxic materials and waste including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

Construction of the project would require equipment that utilizes hazardous materials such as petroleum fuels and oil. During construction activities, such hazardous materials could accidentally be spilled or otherwise released into the environment exposing construction workers, the public and/or the environment to potentially hazardous conditions. The selected contractor

would be responsible for properly maintaining construction vehicles and equipment, along with any hazardous and toxic materials used in their operation, in compliance with applicable laws and regulations. The contractor is also responsible for the appropriate disposal of all hazardous waste generated during construction in compliance with applicable laws and regulations. Implementation of environmental protection measures, including BMPs (e.g., spill kits), for preventing and responding to potential contamination would result in less than significant impacts.

As part of the property evaluation process, AECOM/Hazen conducted an Environmental Screening in 2019 and a Phase I Environmental Site Assessment in 2020 of the project area to establish the presence, former use, or spillage of hazardous substances or petroleum products onsite. This Phase I assessment revealed several Recognized Environmental Conditions (REC) associated with the proposed project area, including existing, leaking, or removed underground storage tanks (USTs) at the James River Treatment Plant, Menchville High School, City of Newport News City Farm, and a nearby private property (AECOM Hazen 2019, AECOM Hazen 2020). A 2,000-gallon gasoline UST was installed at the James River Treatment Plant in 1968, and a 6,000-gallon diesel UST was installed in 1991. These USTs are reported as having been removed from the ground, although the dates of the removals were not available (EDR 2019). The James River Treatment Plant is reported as having an active 2,500-gallon gasoline UST that was installed in 1991 and an active 20,000-gallon diesel UST that was installed in 2013 (EDR 2019). The selected contractor shall follow state and local procedures for removing any underground tanks found within the project area.

The Menchville Landfill, located northeast of the project area, operated for approximately 20 years and was closed in 1984 (EPA 2019). The landfill has been capped and vegetated with maintained herbaceous species. The landfill is listed in the Superfund Enterprise Management System archive database as not qualifying for the National Priority List with No Further Remedial Action Planned (AECOM Hazen 2019).

No significant impact to hazardous and toxic materials is anticipated. Effects could include accidental spills or releases of materials, but risks would be minimized using standard construction BMPs. Practicable mitigation measures would include compliance with applicable hazardous and toxic materials laws and regulations, implementation of environmental protection measures, BMPs, and SOPs, and development of Emergency Plan/Emergency Response Plan (or similar).

L. HUMAN HEALTH AND SAFETY:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Creating occupational health hazards for workers during construction or operation.	□	☒	□
2. Creating or contributing to environmental health risks and safety risks that may disproportionately affect children.	□	☒	□
3. Creating or contributing to public health risk of immediate injury or long-term health hazards.	□	☒	□

18. **Please provide mitigation measures related to human health and safety, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    Project construction could have an effect on occupational human health and safety to personnel involved in the construction activities. Construction-related risks include falls and risks associated with accidental spills and leaks from construction equipment, and extreme hot or cold weather-related risks such as heat stroke or frostbite. Risks would be minimized by limiting site access to personnel involved in the construction activity (e.g., authorized personnel), as well as through implementation of a comprehensive construction health and safety plan addressing site-specific health and safety issues (e.g., working with contaminated sediment, soil, and water, and the demolition/removal of hazardous materials), including specific emergency response services and procedures and evacuation measures.

    Overall, adverse impacts to human health and safety as a result of the project construction and O&M are anticipated to be less than significant. Effects could include generation of fugitive dust, and construction-related risks, such as falls and other injuries and accidental spills and leaks from construction equipment. Practicable mitigation measures include implementation of a health and safety plan, limiting site access to authorized personnel only, and implementation of fugitive dust minimization measures.

M. CUMULATIVE IMPACTS	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Land Use.	□	☒	□
2. Air Quality.	□	☒	□
3. Noise and Vibration.	□	☒	□
4. Geology and Soils.	□	☒	□
5. Water Resources.	□	☒	□
6. Cultural Resources.	□	☒	□
7. Socioeconomic and Environmental Justice.	□	☒	□
8. Transportation and Traffic.	□	☒	□
9. Utilities and Community Services.	□	☒	□
10. Hazardous and Toxic Materials and Waste.	□	☒	□
11. Human Health and Safety.	□	☒	□

19. **Please provide all mitigation measures not identified previously in the document that will be included in the project. Identify any mitigation measures that reduce a significant impact to less than significant. Identify all past, present, and reasonably foreseeable actions within the project area. Please provide references and supporting documents:**

    It is unlikely that the proposed project would have significant contribution to cumulative effects on human health or the environment. The project may incrementally contribute to cumulative impacts depending on the other past present or reasonably foreseeable actions, but overall the cumulative effect is expected to be less than significant.

The project would avoid, minimize and mitigate for impacts to each resource. Minimization measures would include agency consultation to reduce an individual project's contribution to cumulative impacts to less than significant levels.

No significant impacts are anticipated as a result of the project. Potentially adverse impacts would largely be minimized through avoidance and implementation of BMPs and SOPs. The project would comply with all applicable federal laws and regulations and shall be guided by relevant statutes, regulations, and EOs that establish standards and provide guidance on environmental compliance, including natural and cultural resources management and planning. Efforts to avoid and minimize impacts would be made during the design and construction of the project. Unavoidable impacts would be minimized and mitigated by utilizing applicable BMPs, complying with regulations and local ordinances, coordinating with regulators and other stakeholders, and developing plans to address unanticipated and incidental adverse effects of the project.

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Appendix A
Wetlands Delineation
Report

Wetlands and Waters Delineation Report

Prepared for the

James River HRSD SWIFT Project

City of Newport News, Virginia

Prepared for

Hampton Roads Sanitation District
SWIFT
1434 Air Rail Avenue
Virginia Beach, VA 23455

Prepared by

4840 Cox Road
Glen Allen, VA 23060

July 16, 2020

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1.0 SITE DESCRIPTION

1.1 Introduction

The James River Treatment Plant (TP) and Hampton Roads Sanitation District (HRSD) Sustainable Water Initiative For Tomorrow (SWIFT) program is a three part project that includes: the design and construction of new facilities; improvements to the secondary treatment process at the existing TP; and the construction of three recharge wells and associated monitoring wells. The first part consists of the construction of new facilities that will be used to apply advanced water treatment to wastewater effluent from the existing TP to bring the wastewater up to drinking standard. These new facilities will have a capacity of 16 million gallons per day (MGD) of advanced treatment. The second part consists of improving the existing primary clarifier effluent, Integrated Fixed Film Activated Sludge (IFAS) system; the demolition of existing secondary clarifiers; and other treatment mechanisms. The third part consists of the construction of three recharge wells and associated housing facility designed similar in scaled to a small residential home. These wells will be constructed at a minimum of 1,000 feet apart from each other to recharge the Potomac Aquifer to increase hydrostatic pressure within the aquifer and to slow land subsidence related to aquifer withdrawal.

The Project Area encompasses work associated with the three aforementioned SWIFT program parts located in the City of Newport News, VA. The Project Area is generally situated west of Warwick Boulevard (Route 60), east of the Warwick River, and south of Menchville Road and can be accessed from Riverview Parkway. The approximately 30-acre Project Area and location are depicted in **Appendix A, Figures 1 and 2**.

1.2 Topography and Geology

The United States Geological Survey (USGS) topographic quadrangle map (quad) for Mulberry Island, VA (2019) depicts the Project Area with gently sloping land generally consisting of maintained roads, cleared lands, developed industrial areas, and vegetated lands to the south and east as shown in **Figure 1**. Elevations range from 5 feet above mean sea level (amsl) along the southwest Project Area boundary to 50 feet amsl near the northeast portion of the Project Area. Aerial imagery shows land use consistent with the quad (**Figure 2**)

The Project Area occurs in the Atlantic and Gulf Coastal Plain (USACE, 2010); more specifically, the United States Department of Agriculture (USDA) National Resources Conservation Services (NRCS) Major Land Resource Area (MLRA) Tidewater Area (153B) subregion of Land Resource Region (LRR) T. The topography of the Atlantic and Gulf Coastal Plain region ranges from level to hilly terrain and is composed mainly of sedimentary rocks and alluvial sediments (USACE, 2010).

1.3 Soils

USDA NRCS Web Soil Survey (WSS) indicates the Project Area is predominately underlain by non-hydric soils. Hydric soils present to a lesser extent include: Bohicket muck in the southern corner of the Project Area and Johnston silt loam in a small section of the central-western portion of the Project Area (USDA NRCS, 2020). The USDA NRCS WSS indicates that the following non-hydric soils occur within the study area: Craven-Urban land complex in the northwest corner of the Project Area; Nevarc-Uchee complex along the western and southern boundary of the Project Area; Slagle-Urban land complex in the center of the Project Area; and Udorthents-Dumps complex along the western and southern boundaries of the Project Area (USDA NRCS, 2020). Soil units are shown in **Figure 3** and summarized in **Table 1**.

Table 1: USDA NRCS Web Soil Survey Map Units

SOIL SYMBOL	DESCRIPTION	HYDRIC RATING *	PERCENT OF AOI
6	Bohicket muck, 0 to 1 percent slopes, very frequently flooded	100	0.1
9A	Craven-Urban land complex, 0 to 2 percent slopes	0	8.7
12	Johnston silt loam, 0 to 2 percent slopes, frequently flooded	100	0.3
16C	Nevarc-Uchee complex, 6 to 15 percent slopes	0	6.7
16D	Nevarc-Uchee complex, 15 to 50 percent slopes	0	12.5
21A	Slagle-Urban land complex, 0 to 2 percent slopes	5	70.5
26	Udorthents-Dumps complex	8	1.2

* The hydric rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

1.4 NWI Wetlands

The United States Fish and Wildlife Service (USFWS) is the principal US Federal agency tasked with providing information to the public on the status and trends of our Nation's wetlands. The National Wetland Inventory (NWI) is a publicly available resource that provides detailed information on the abundance, characteristics, and distribution of US wetlands. The USFWS-NWI mapper was used to assess the possibility of wetlands occurring within the Project Area (USFWS, 2020). NWI mapping identifies one freshwater palustrine forested/shrub wetland (PFO1A) within the Project Area. PFO1A is mapped along the northwest portion of the Project Area, as shown in **Figure 3**.

1.5 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) were reviewed for floodplains within the Project Area. The FEMA FIRM (panels 5101030109D and 5101030108D) for the city of Newport News, as shown in **Figure 3,** indicates four small sections along the northwest and southwest boundary of the Project Area are within the 100-year floodplain.

2.0 FIELD INVESTIGATION – METHODOLOGY

2.1 Wetlands Investigation and Delineation

On May 28, 2020, a wetland and waters field investigation was conducted by AECOM Technical Services, Inc. (AECOM) in conjunction with an environmental due diligence review of the property. AECOM was retained to review and update, based on current field conditions, a Waters of the United States (WOUS) delineation by Hazen and Sawyer from January 2020 (Prior delineation).

Based on AECOM's field investigation, delineated features were observed from the previous delineation which comprise WOUS features that were demarcated with pink flagging. The delineation was consistent with the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE, 1987), and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0, USACE, 2010). Any WOUS that were extended and/or newly identified were flagged in the field with consecutively numbered Wetland Delineation flags and were

located using a hand-held Global Positioning System (GPS). The collected data were differentially corrected and depicted on **Figure 4**.

Consistent with the Chesapeake Bay Preservation Act (CBPA, § 62.1-44.15:67 et seq. of the Code of Virginia), a potential 100-foot Resource Protection Area buffer (RPA) was placed along wetlands and streams that appeared to continue off-site where it is assumed that tidal and nontidal wetlands are connected by surface water flow and contiguous to tidal wetlands or water bodies with perennial flow. A detailed RPA delineation may clarify or remove the potential RPA buffer based on field findings.

A WOUS and RPA map indicating delineated features and potential RPA buffer is provided in **Appendix A**. USACE Wetland Determination Data Forms are provided in **Appendix B**.

2.2 Surface Water Feature Investigation

Potentially regulated surface water features within the Project Area were delineated in accordance with the USACE Jurisdictional Determination Instructional Guidebook (USACE and EPA, 2007), and the guidelines in the USACE Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification Regulatory Guidance Letter (USACE, 2005).

3.0 FIELD INVESTIGATION – RESULTS

3.1 General Site Conditions

The Project Area is predominantly uplands and heavily developed areas including roads, parking lots, and structures. Site conditions were consistent with aerial imagery (**Figure 2**), which displayed the TP, maintained roadways, cleared uplands, and some wetland signatures. During the on-site investigation AECOM incorporated the Prior delineation (including wetlands WA through WF and streams SA through SD) and flagged the minor extension of wetland WD and five additional off-site drainage ditches near the Project Area. These features are depicted on **Figure 4**.

3.2 Wetland Investigation and Delineation Results

AECOM environmental scientists expanded the extent of wetland WD by approximately 970 square feet (0.02 acres). The Prior delineation indicated that wetlands WA and WF consisted of both tidal and non-tidal wetlands. Classifications were assigned according to the USFWS-NWI mapper which indicated that the tidal portion of wetland WA and WF is likely an estuarine intertidal emergent persistent irregularly flooded wetland (E2EM1P). The non-tidal portion of wetland WA, wetlands WB, WC, WD, WE, WF, and WG were field verified by AECOM as palustrine forested wetland (PFO). The tidal portion of wetland WA, portions of wetlands WB, WD, WE, WF, and wetland WC and WG are located off-site. Wetlands located within the Project Area are described in **Table 1**.

Table 1: Summary of Wetland Features in the Project Area

Wetland	Tidal	Cowardin Classification*	Area (Square Feet)	Area (Acres)
WA	Non-tidal	PFO	5886	0.14
WB	Non-tidal	PFO	1546	0.04
WD	Non-tidal	PFO	7506	0.17
WE	Non-tidal	PFO	15855	0.36
WF	Non-tidal	PFO	76370	1.75
Total			**107,163**	**2.46**

Wetland	Tidal	Cowardin Classification*	Area (Square Feet)	Area (Acres)
* Cowardin classification based on information from USFWS-NWI mapper, GIS data from Hazen and Sawyer's January 2020 wetland delineation, and AECOM's May 2020 wetland delineation				

3.2.1 Forested Wetlands

PFO wetlands within the Project Area include species frequently found in disturbed areas such as Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*). Additionally, American sycamore (*Platanus occidentalis*) was the dominant canopy species in wetlands within and near the Project Area. Forested uplands within and near the Project Area were typified by eastern redcedar (*Juniperus virginiana*), black cherry (*Prunus serotina*), northern red oak (*Quercus rubra*), northern white oak (*Quercus alba*), Chinese privet, and Japanese honeysuckle.

3.3 Surface Water Feature Investigation Results

The Prior delineation identified four streams (stream SA through SD). AECOM confirmed the extent of the only previously delineated stream (SA) within the Project Area. Stream SA is non-tidal, located along the northwest edge of the Project Area, and the segment that is within the Project Area is approximately 125 linear feet. No new potentially regulated features were identified within the Project Area upon review by AECOM. Three streams were verified outside of the Project Area by AECOM (stream SB through SD). Stream SB is tidal, located west and southwest of the Project Area, and is approximately 639 linear feet. Stream SC is non-tidal, located southwest of the Project Area, and is approximately 76 linear feet. Stream SD is tidal, located southwest of the Project Area, and based on the quad for Mulberry Island, VA (2019) this feature appears to be the Warwick River. The Prior delineation mapped approximately 670 linear feet of this feature.

AECOM identified five drainage ditches (DA, DB, DC, DD, and DE) outside but near the Project Area. Ditch DA is located southeast of the Project Area and is approximately 40 linear feet, ditch DB is located southeast of the Project Area and is approximately 75 linear feet, ditch DC is located southwest of the Project Area and is approximately 30 linear feet, ditch DD is located southwest of the Project Area and is approximately 85 linear feet, and ditch DE is located west of the Project Area and is approximately 40 linear feet. The drainage ditches located southwest and southeast of the HRSD TP drain to unnamed tributaries to Warwick River.

Feature locations and types are shown in **Figure 4**. Associated photos are included in **Appendix C**.

Table 2: Summary of Water Features On-site and Off-site Depicted in Figure 4

Feature	Description	Length (Linear Feet)
***SA (stream)**	On-site	125
*SA (stream)	Off-site	69
*SB (stream)	Off-site	639
*SC (stream)	Off-site	76
*SD (stream)	Off-site	670
**DA (ditch)	Off-site	40
**DB (ditch)	Off-site	75
**DC (ditch)	Off-site	30
**DD (ditch)	Off-site	85
**DE (ditch)	Off-site	40
Total On-site streams		**125**
Total Off-site streams		1,724
* Indicates a feature from Hazen and Sawyer wetland delineation: January 2020 ** Indicates a feature from the AECOM delineation: May 2020		

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Appendix A: Figures

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Note: This map is for reference only;
NAD83 State Plane Virginia South;
Aerial Image Source: ESRI, 2019

AECOM

HRSD-SWIFT Project 2020

James River Treatment Plant
City of Newport News, VA

Last Date Edited: 7/14/2020
Project Number: 60617789

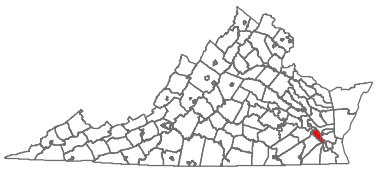
0 2,000 4,000 Feet

Legend

Project Area

N
W E
S

Figure 1
Vicinity Map



City of Newport News

AECOM

HRSD-SWIFT Project 2020

James River Treatment Plant
City of Newport News, VA

Last Date Edited: 7/14/2020
Project Number: 60617789

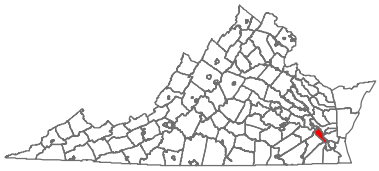
0 300 600 Feet

Legend

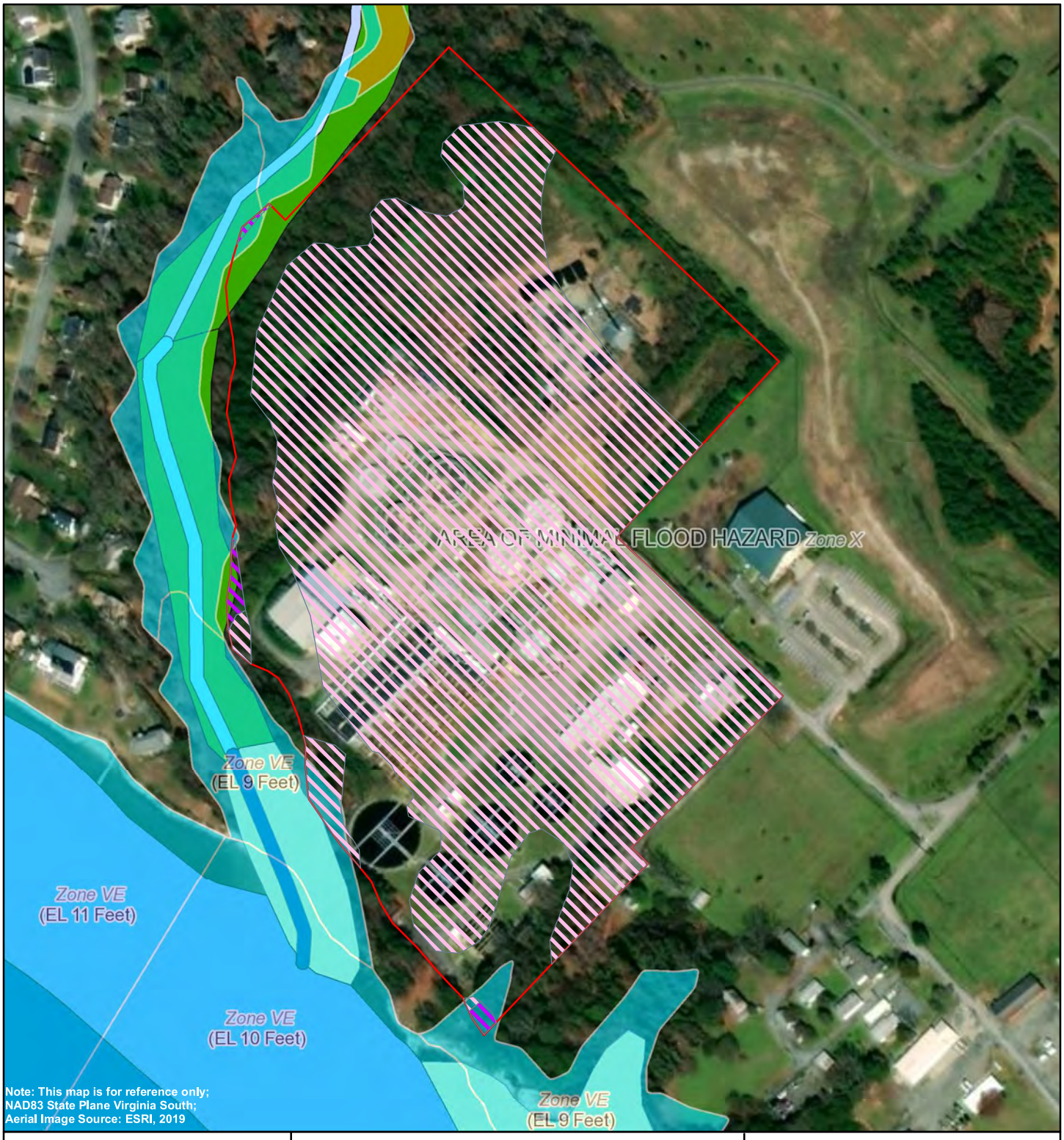
Project Area

N
W E
S

Figure 2
Location Map



City of Newport News



AECOM

HRSD-SWIFT Project 2020

James River Treatment Plant
City of Newport News, VA

Last Date Edited: 7/14/2020
Project Number: 60617789

Legend

0 275 550 Feet

Study Area

Hydric Soil Rating (NRCS, 2020)

- Hydric (1 to 32%)
- Hydric (100%)

Waters of the US (NWI, 2020)

- PFO
- EUS
- EEM
- RSB
- EUB
- RUB

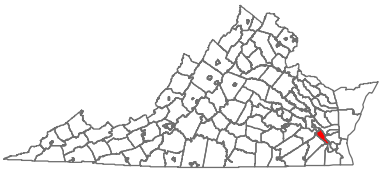
Flood Hazard Zones (FEMA, 2020)

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard

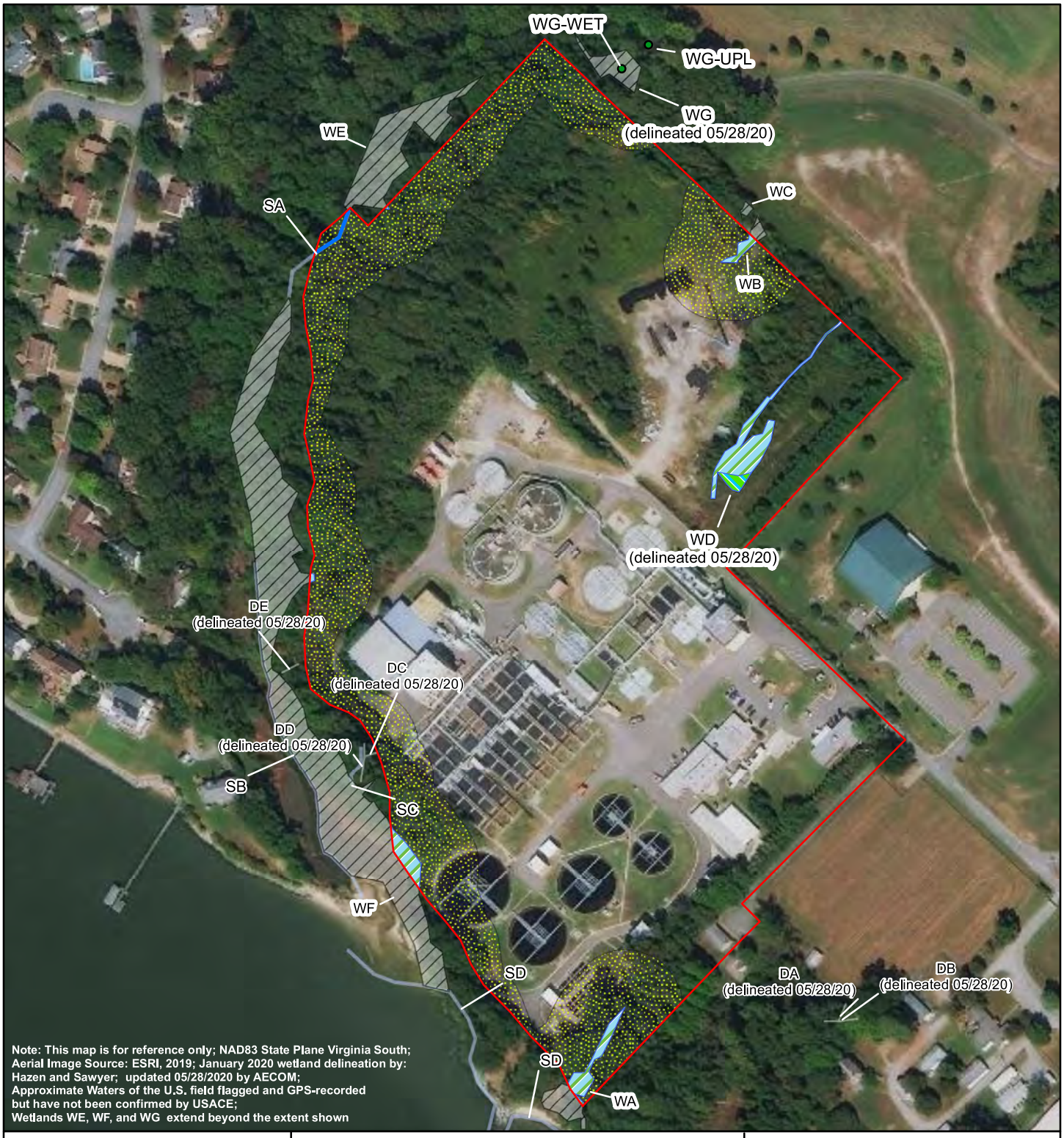
N
W E
S

Figure 3

Background Resources Map



City of Newport News



AECOM

HRSD-SWIFT Project 2020

James River Treatment Plant
City of Newport News, VA

Last Date Edited: 7/14/2020
Project Number: 60617789

N
W E
S

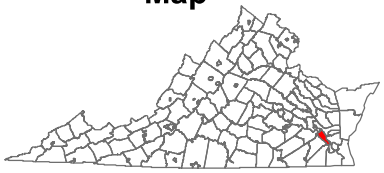
0 250 500 Feet

Legend

- Project Area
- Determination Points
- Previously Delineated Streams
- PFO Delineated 05/28/2020
- PFO Delineated 01/2020
- Potential 100-foot RPA Buffer
- Offsite Wetlands
- Offsite Drainage Ditch
- Offsite Streams

Figure 4

WOUS and RPA Map



City of Newport News

Appendix B: USACE Wetland Determination Data Forms

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WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: James River City/County: Newport News Sampling Date: 5/28/2020

Applicant/Owner: HRSD - SWIFT State: VA Sampling Point: WG-WET

Investigator(s): J. Daugustine, C. Lamb Section, Township, Range:

Landform (hillslope, terrace, etc.): Toe of a slope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): MLRA 153A of LRR T Lat: 37.088298 Long: -76.533517 Datum: WGS84

Soil Map Unit Name: 16D - Nevarc-Uchee complex, 15 to 50 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No _____	**Is the Sampled Area within a Wetland?** Yes x No _____
Hydric Soil Present?	Yes x	No _____	
Wetland Hydrology Present?	Yes x	No _____	

Remarks:

Data ponint taken inside flag WA-002

Observed Classifications:

Cowardin: PFO

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- x Sparsely Vegetated Concave Surface (B8)
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No x	Depth (inches): _____
Water Table Present?	Yes _____	No x	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No x	Depth (inches): _____

Wetland Hydrology Present? Yes x No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

AECOM has prepared this form using "data-entered" copies of the wetland determination data form in Appendix C in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0, November 2010. The resulting data sheet uses the 2016 National Wetland Plant List (v3.3) Regional List and the 2019 Web Soil Survey.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WG-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Platanus occidentalis, American Sycamore	60	Yes	FACW
2.			
3.			
4.			
5.			
6.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Sapling Stratum (Plot size: 30 ft)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft)			
1. Ligustrum sinense, Chinese Privet	75	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15		
Herb Stratum (Plot size: 30 ft)			
1. Ligustrum sinense, Chinese Privet	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Woody Vine Stratum (Plot size: 30 ft)			
1. Lonicera japonica, Japanese Honeysuckle	15	Yes	FACU
2.			
3.			
4.			
5.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	80	x 3 =	240
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	155 (A)		420 (B)

Prevalence Index = B/A = 2.71

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

x 2 - Dominance Test is >50%

x 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes x No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WG-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100%					Silty loam	
5-19	2.5Y 4/2	80%	7.5YR 3/4	20%	C	M	SILTY Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: James River City/County: Newport News Sampling Date: 5/28/2020

Applicant/Owner: HRSD - SWIFT State: VA Sampling Point: WG-UPL

Investigator(s): J. Daugustine, C. Lamb Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): MLRA 153A of LRR T Lat: 37.088402 Long: -76.533419 Datum: WGS84

Soil Map Unit Name: 16D - Nevarc-Uchee complex, 15 to 50 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No x	**Is the Sampled Area within a Wetland?** Yes _____ No x
Hydric Soil Present?	Yes _____	No x	
Wetland Hydrology Present?	Yes _____	No x	

Remarks:

Data point taken in an upland adjacent to Wetland WG

Observed Classifications:

Cowardin: _____

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No x	Depth (inches): _____
Water Table Present?	Yes _____	No x	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No x	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

AECOM has prepared this form using "data-entered" copies of the wetland determination data form in Appendix C in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0, November 2010. The resulting data sheet uses the 2016 National Wetland Plant List (v3.3) Regional List and the 2019 Web Soil Survey.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WG-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana, Eastern Red-Cedar	20	Yes	FACU
2. Prunus serotina, Black Cherry	20	Yes	FACU
3.			
4.			
5.			
6.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Sapling Stratum (Plot size: 30 ft)			
1. Juniperus virginiana, Eastern Red-Cedar	15	Yes	FACU
2. Quercus rubra, Northern Red Oak	10	Yes	FACU
3. Quercus alba, Northern White Oak	10	Yes	FACU
4.			
5.			
6.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		
Shrub Stratum (Plot size: 30 ft)			
1. Juniperus virginiana, Eastern Red-Cedar	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 30 ft)			
1. Ligustrum sinense, Chinese Privet	15	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Woody Vine Stratum (Plot size: 30 ft)			
1. Lonicera japonica, Japanese Honeysuckle	15	Yes	FACU
2.			
3.			
4.			
5.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 12.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column Totals:	125 (A)		485 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No x

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WG-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100%					Loam	
4-12	2.5Y 5/4	100%					Silty clay	
12-20	10YR 5/6	100%					Silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** x

Remarks:

Appendix C: Representative Photographs

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Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **A**	Date: 07/28/2020
Lat: 37.088298	Long: -76.533517

Description:
View of hydric soil at wetland data point WG-WET.

Photo ID: **B**	Date: 07/28/2020
Lat: 37.088182	Long: -76.53356

Description:
View, facing west, of vegetation observed at data point WG-WET.

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **C**	Date: 07/28/2020
Lat: 37.088402	Long: -76.533419

Description:
View of non-hydric soil observed at upland data point WH-UPL.

Photo ID: **D**	Date: 07/28/2020
Lat: 37.088446	Long: -76.533354

Description:
View, facing southeast, of typical vegetation observed at data point WG-UPL.

AECOM

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **E**	Date: 07/28/2020
Lat: 37.086302	Long: -76.532908

Description:
View, facing west, of wetland WD previously delineated in January 2020.

Photo ID: **F**	Date: 07/28/2020
Lat: 37.083822	Long: -76.532174

Description:
View, facing southwest and downstream, of drainage ditch DA.

AECOM

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **G**	Date: 07/28/2020
Lat: 37.083745	Long: -76.532209

Description:
View, facing southwest and downstream, of drainage ditch DB.

Photo ID: **H**	Date: 06/19/2020
Lat: 37.084983	Long: -76.535142

Description:
View, facing southeast, of drainage ditch DC

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **I**	Date: 07/28/2020
Lat: 37.084988	Long: -76.535163
Description: View, facing south and downstream, of drainage ditch DD.	

Photo ID: **J**	Date: 07/28/2020
Lat: 37.085431	Long: -76.535421
Description: View, facing southwest, of drainage ditch DE.	

AECOM

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Appendix B
Threatened and Endangered Species Information

United States Department of the Interior

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

In Reply Refer To: July 08, 2020
Consultation Code: 05E2VA00-2020-SLI-4809
Event Code: 05E2VA00-2020-E-13361
Project Name: HRSD-SWIFT James River TP

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

Attachment(s):

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

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E2VA00-2020-SLI-4809

Event Code: 05E2VA00-2020-E-13361

Project Name: HRSD-SWIFT James River TP

Project Type: WASTEWATER FACILITY

Project Description: Design, Construction, and Modification of Facility Infrastructure

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.08586017251028N76.53418146773154W

Counties: Newport News, VA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

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

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

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

---

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

Mammals

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

Critical habitats

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

USFWS National Wildlife Refuge Lands And Fish Hatcheries

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

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

CCB Mapping Portal

Layers: VA Eagle Nest Locator, VA Eagle Nest Buffers, Eagle Roosts

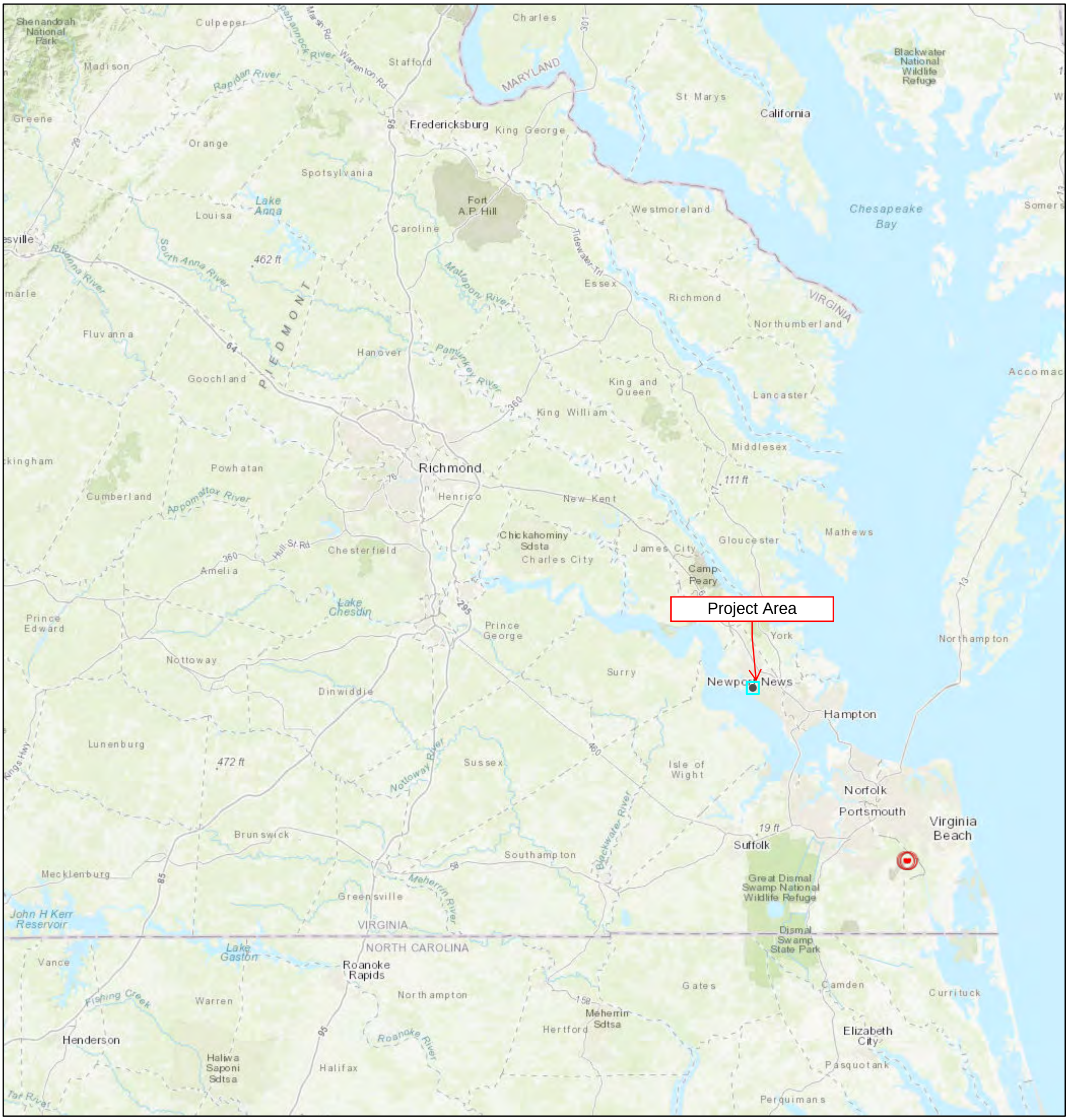
Map Center [longitude, latitude]: [-76.5387439727783, 37.087809221229406]

Map Link:
https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&layer=VA+Eagle+Nest+Buffers&layer=Eagle+Roosts&zoom=14&lat=37.087809221229406&lng=-76.5387439727783&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 05/21/2020

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the Data Use Agreement to ensure compliance with our data use policies. For additional data access questions, view our Data Distribution Policy, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

NLEB Locations and Roost Trees



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: 07/08/2020

Self-Certification Letter

Project Name: James River Treatment Plant and SWIFT Facility

Dear Applicant:

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

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

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

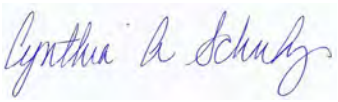
We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the determinations described above for proposed and listed species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

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

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

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

Sincerely,



Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

VA Bald Eagle Concentration Areas

July 13, 2020

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

VaFWIS Search Report Compiled on 7/15/2020, 8:27:42 AM

Help

Known or likely to occur within a **2 mile radius around point 37,05,09.0 -76,31,59.5** in **700 Newport News City, VA**

View Map of Site Location

471 Known or Likely Species ordered by Status Concern for Conservation (displaying first 34) (34 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
030074	FESE	Ia	Turtle, Kemp's ridley sea	Lepidochelys kempii		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA,HU6
030075	FESE	Ic	Turtle, leatherback sea	Dermochelys coriacea		BOVA
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta	Yes	BOVA,SppObs
040144	FTST	Ia	Knot, red	Calidris canutus rufa		BOVA,HU6
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
040120	FTST	IIa	Plover, piping	Charadrius melodus		BOVA
040110	FPSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis	Potential	BOVA,Habitat,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA,HU6
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		HU6
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA,HU6
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum		HU6
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Potential	BOVA,Habitat,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA,HU6
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii	Potential	Habitat,HU6
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Potential	BOVA,Habitat,HU6
020002	ST	IIa	Treefrog, barking	Hyla gratiosa		HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Potential	BOVA,Habitat,HU6
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
040040		Ia	Ibis, glossy	Plegadis falcinellus		HU6
020063		IIa	Toad, oak	Anaxyrus quercicus		HU6

040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040033		IIa	Egret, snowy	Egretta thula	Potential	BOVA,BBA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea	Yes	BOVA,BBA,SppObs
040192		IIa	Skimmer, black	Rynchops niger		BOVA
040181		IIa	Tern, common	Sterna hirundo	Potential	BOVA,BBA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA,HU6
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		HU6

To view **All 471 species** View 471

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

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

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams (2 records)

View Map of All Anadromous Fish Use Streams

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE*	Highest Tier**	
C92	James River 1	Confirmed	6		IV	Yes
P176	Warwick river	Potential	0			Yes

Impediments to Fish Passage (1 records)

View Map of All Fish Impediments

ID	Name	River	View Map
768	SLUICE DAM	DEEP CREEK	Yes

Colonial Water Bird Survey (4 records)

View Map of All Query Results
Colonial Water Bird Survey

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
Urban, Mulberry Island, Newport News	1	May 4 2013	2			Yes
Western Shore, Mulberry Island, Newport News	1	May 4 2013	1			Yes
Mulberry Island 4	1	May 4 2003	1			Yes
Mulberry Island 3	1	May 3 2003	1			Yes

Displayed 4 Colonial Water Bird Survey

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

are present. View Map of Bald Eagle Concentration Areas and Roosts

(3 records)

BECAR ID	Observation Year	Authority	Type	Comments	View Map
48	2006 - 2007	Center for Conservation Biology at the College of William and Mary/Virginia Commonwealth University	Summer Concentration Area	Eagle_use Low	Yes
51	2006 - 2007	Center for Conservation Biology at the College of William and Mary/Virginia Commonwealth University	Winter Concentration Area	Eagle_use Low	Yes
52	2006 - 2007	Center for Conservation Biology at the College of William and Mary/Virginia Commonwealth University	Winter Concentration Area	Eagle_use Moderate	Yes

Bald Eagle Nests (6 records)

View Map of All Query Results
Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map

NN0301	2	May 1 2003	Unknown	Yes
NN0401	9	Apr 28 2008	HISTORIC	Yes
NN0701	4	Apr 28 2008	HISTORIC	Yes
NN0801	2	Apr 26 2008	Unknown	Yes
NN0802	2	Apr 26 2008	Unknown	Yes
NN9801	7	Apr 24 2000	HISTORIC	Yes

Displayed 6 Bald Eagle Nests

Species Observations (50 records - displaying first 20 , 2 Observations with Threatened or Endangered species)

View Map of All Query Results
Species Observations

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
319048	SppObs	Jul 7 2007	John Musick	1	FTST	I	Yes
367006	SppObs	Jan 1 1900		1	FTST	I	Yes
771	SppObs	Jan 1 1900		1		II	Yes
312064	SppObs	Jul 19 2005	Frederick Kelley	4		III	Yes
774	SppObs	Jan 1 1900		1		III	Yes
623657	SppObs	Apr 24 2014	Jimmy ; Sollner| Yancey; Powell	1		IV	Yes
623384	SppObs	Apr 23 2014	Jimmy ; Sollner| Yancey; Powell	1		IV	Yes
623529	SppObs	Apr 21 2014	Jimmy ; Sollner| Yancey; Powell	1		IV	Yes
622282	SppObs	Apr 14 2014	Jimmy ; Sollner| Yancey; Powell	2		IV	Yes
622277	SppObs	Mar 19 2014	Jimmy ; Sollner| Yancey; Powell	1		IV	Yes
622123	SppObs	Mar 15 2014	Jimmy ; Sollner| Yancey; Powell	3		IV	Yes
623524	SppObs	Mar 14 2014	Jimmy ; Sollner| Yancey; Powell	2		IV	Yes
622122	SppObs	Mar 12 2014	Jimmy ; Sollner| Yancey; Powell	1		IV	Yes
623231	SppObs	Mar 1 2014	Jimmy ; Sollner| Yancey; Powell	3		IV	Yes
312006	SppObs	Mar 5 2004	Frederick Kelley	1		IV	Yes
622359	SppObs	Jul 30	Aaron; Cushing | Dave ; Beasley|	5			Yes

		2014	Jeremy ; Haley				
609154	SppObs	Nov 3 2010	Yancey; Powell	3			Yes
609150	SppObs	Nov 2 2010	Yancey; Powell	2			Yes
609148	SppObs	Nov 1 2010	Yancey; Powell	3			Yes
609143	SppObs	Oct 29 2010	Yancey; Powell	4			Yes

Displayed 20 Species Observations

Selected 50 Observations View all 50 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

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

View Map of Combined Terrestrial Habitat Predicted for 6 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
040110	FPSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis	Yes
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Yes
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii	Yes
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes
040186		IIIa	Tern, least	Sternula antillarum	Yes

Virginia Breeding Bird Atlas Blocks (4 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
58054	Mulberry Island, CE	45		II	Yes
58052	Mulberry Island, NE	47		II	Yes
58051	Mulberry Island, NW	2			Yes
59053	Newport News North, CW	67		III	Yes

Public Holdings: (1 names)

Name	Agency	Level

Fort Eustis Military Reservation	U.S. Dept. of Army	Federal

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

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
700	Newport News City	416	FESE	I

USGS 7.5' Quadrangles:
Mulberry Island
Newport News North

USGS NRCS Watersheds in Virginia:

N/A

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

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JL37	James River-Morrisons Creek	95	FESE	I
JL38	Warwick River	86	FTSE	I
JL43	James River-Cooper Creek	100	FESE	I

Compiled on 7/15/2020, 8:27:42 AM I1043962.0 report=all searchType= R dist= 3218 poi= 37,05,09.0 -76,31,59.5

PixelSize=64; Anadromous=0.024902; BBA=0.061108; BECAR=0.034495; Bats=0.020707; Buffer=0.095671; County=0.090314; HU6=0.112649; Impediments=0.026249; Init=0.150621; PublicLands=0.040895; Quad=0.062023; SppObs=0.206408; TEWaters=0.034489; TierReaches=0.051175; TierTerrestrial=0.148576; Total=1.333343; Tracking_BOVA=0.156471; Trout=0.025736; huva=0.065344

Appendix C
Cultural Resources Report

PHASE I ARCHAEOLOGICAL SURVEY OF THE SUSTAINABLE WATER INITIATIVE FOR TOMORROW IMPROVEMENTS TO THE JAMES RIVER TREATMENT PLANT

NEWPORT NEWS, VIRGINIA

PREPARED FOR:
HAMPTON ROADS SANITATION DISTRICT
1434 AIR RALE AVENUE, SUITE 203
VIRGINIA BEACH, VIRGINIA 23455

PREPARED BY:
BENJAMIN STEWART
SCOTT SEIBEL, MSC, RPA

PRINCIPAL INVESTIGATOR
SCOTT SEIBEL, MSC, RPA

AECOM
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876

MAY 2020

AECOM

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ABSTRACT

Hampton Roads Sanitation District (HRSD) contracted AECOM Technical Services, Inc. (AECOM) to conduct a Phase I archaeological survey of areas of proposed ground disturbance for the James River Treatment Plant (JRTP) in Newport News, Virginia, in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program, funded in part by a loan financed through the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program. The Area of Potential Effects (APE) for the proposed improvements at the JRTP is approximately 31.92 acres in size.

Work was conducted pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Advisory Council on Historic Preservation's (ACHP's) "Protection of Historic and Cultural Properties" (36 CFR 800; U.S. Department of the Interior USDI 2004). The study also conformed to the Virginia Department of Historic Resources' (DHR) *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

Fieldwork consisting of pedestrian inspection and shovel testing was conducted in March 2020 and resulted in the relocation of a portion of 44NN0281 within the APE and the documentation of two new archaeological sites within the APE, Site 1 and Site 2. No evidence of previously recorded 44NN0282 and 44NN0283 was encountered.

The archaeological deposits associated with 44NN0281 within the APE do not have the potential to yield significant information about the twentieth century occupation of the APE and do not contribute to the potential National Register of Historic Places (NRHP) eligibility of 44NN0281 as a whole. The archaeological deposits at 44NN0359 and 44NN0360 do not have the potential to yield significant information about the historic occupation of the APE, and the sites are recommended not eligible for the NRHP.

It is recommended that the proposed development at the JRTP project be allowed to proceed without concern for impacts to significant archaeological sites. However, should project designs change to include un-surveyed portions of the property, additional archaeological investigations may be necessary. Additionally, adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

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1.0 INTRODUCTION

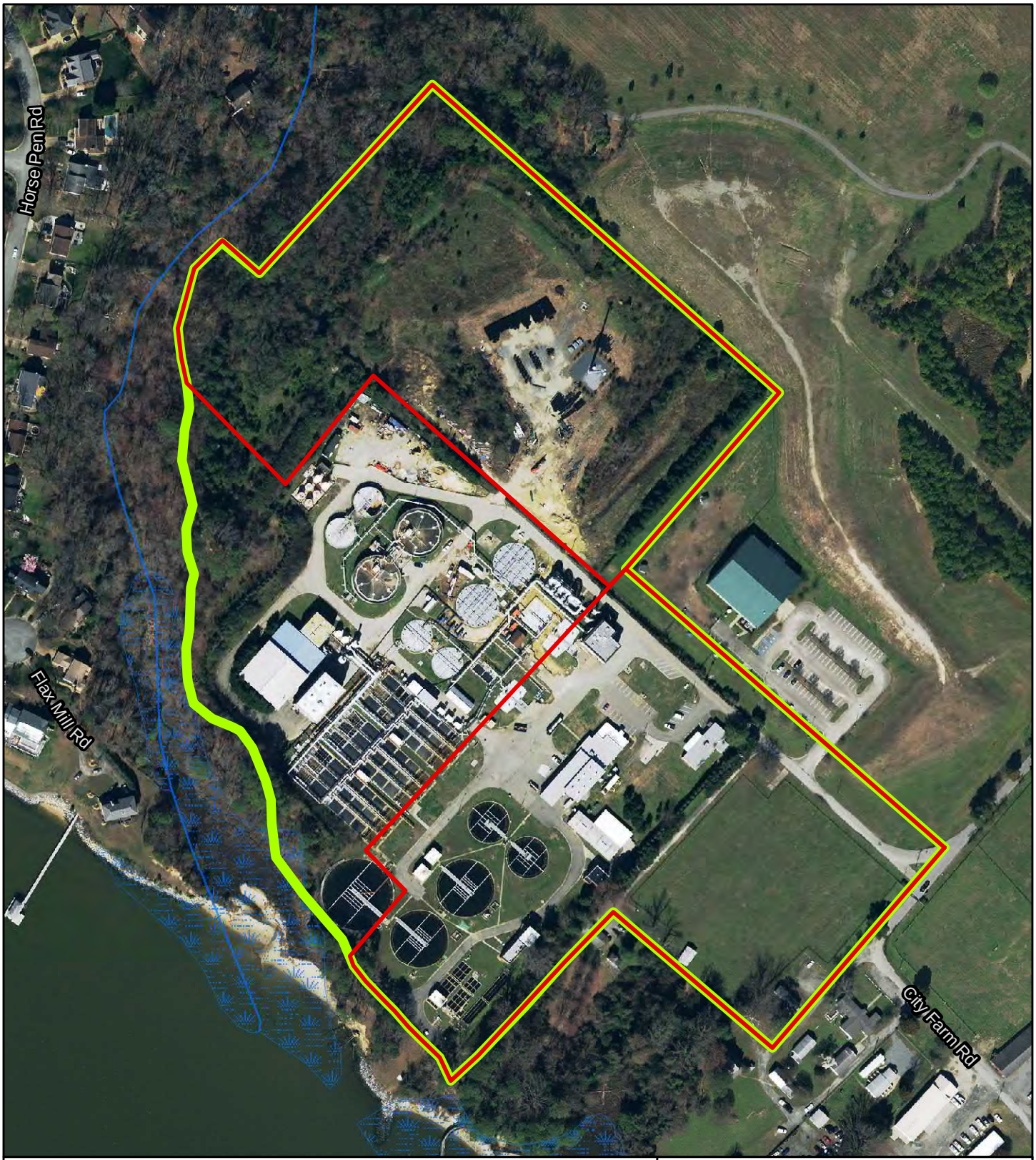
Hampton Roads Sanitation District (HRSD) contracted AECOM Technical Services, Inc. (AECOM) to conduct a Phase I archaeological survey of areas of proposed ground disturbance for the James River Treatment Plant (JRTP) in Newport News, Virginia, in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program, funded in part by a loan financed through the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program (Figure 1-1). The Area of Potential Effects (APE) for the proposed improvements at the JRTP is approximately 31.92 acres in size (Figure 1-2).

Work was conducted pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Advisory Council on Historic Preservation's (ACHP's) "Protection of Historic and Cultural Properties" (36 CFR 800; U.S. Department of the Interior USDI 2004). The study also conformed to the Virginia Department of Historic Resources' (DHR) *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

Fieldwork was conducted in March 2020. Scott Seibel, MSc, Registered Professional Archaeologist (RPA) served as the Principal Investigator, and Scott Morris, MA, served as the Field Director. Joseph Kwiatek served as the Crew Chief, and Joseph Normandy and Luka Eglesia served as field technicians. Kayla Marciniszyn served as laboratory technician and director. All supervisory personnel meet the Secretary of the Interior's *Professional Qualification Standards* for Archaeology (36 CFR 61).

Following this Introduction, the report includes six sections of text including: Environmental Setting, Cultural Context, Previous Investigations, Research Design, Survey Results, and Conclusions and Recommendations. The References Cited completes the body of the report. Appendix A, providing the catalog of recovered artifacts, and Appendix B, containing the qualifications of investigators, follow the body of the report.

Richmond
288
Project Location
Hampton
Norfolk
Virginia Beach
Boxley Hills
NEWPORT NEWS
BM
Yoder Pond
MENCHVILLE RD
Deep
Prison Farm
Menchville
RIVER
Young
Tidal
Flat
Jordan
Light
Curtis Point
Point
Legend
Project Area
N
0 1,000 2,000 Feet
0 200 400 600 Meters
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
Project Location
Source: Esri 2020
Project No. 60617789
Prepared by KAF
Date 05/14/20
1-1



Legend

- Project Area
- Direct APE

N

0 100 200 300 Feet

0 50 100 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

Area of Potential Effects

Source: VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 1-2

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2.0 ENVIRONMENTAL SETTING

2.1 GEOLOGY AND TOPOGRAPHY

The project area is in the Tidewater Region of the Lowland sub-province of the Coastal Plain province of Virginia. The Tidewater Region and more generally the Coastal Plain Province of Virginia consists of unconsolidated alternating layers of sediments including sand, sandstone, silt, clay, and gravels overlaying 1,200 meter (m) (4,000 feet [ft]) deep crystalline bedrock reaching 110 miles (mi) westward from the seaboard to the Virginia Fall Line (Virginia Department of Environmental Quality [VDEQ] 2015). The upland terraces are well drained loams and sandy loams underlain by coarse sands (United States Department of Agriculture Natural Resources Conservation Service [USDA NRCS] 2015).

The topography of the region consists of well-drained low relief estuarine terraces, broad rivers, and deeply cut streams. Marine terraces, tidal marshes, and slow meandering streams are common along the broad rivers. The topography of the project area is defined primarily by level terrain with steep slopes down to the James River and adjacent unnamed tributaries. Elevations in the project area range from approximately 5 ft (1.5 m) above mean sea level (amsl) to 30 ft (9.1 m) amsl.

2.2 HYDROLOGY

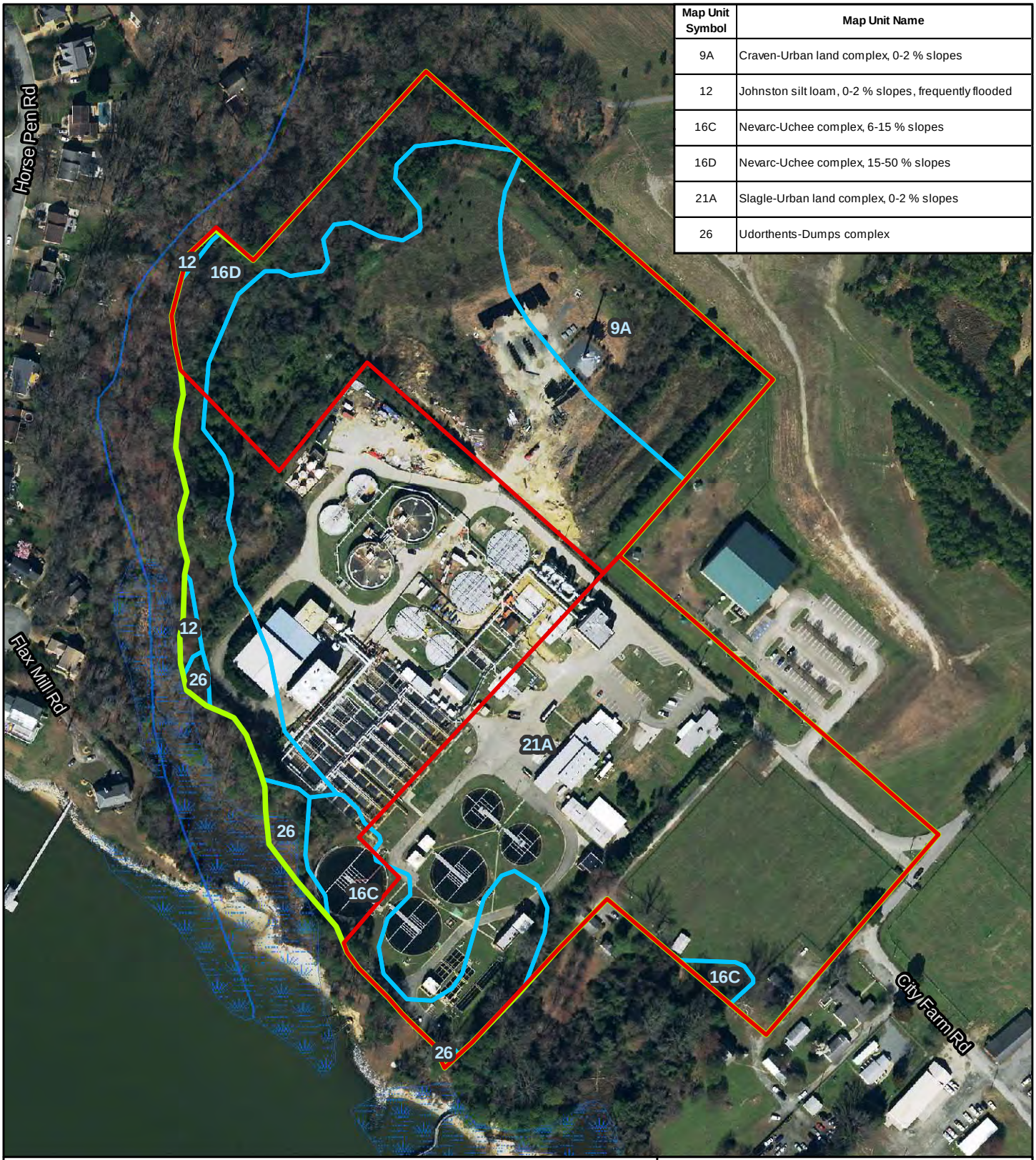
The project area is fronted by tidal flats of the James River between its confluence with the Warwick River to the northwest and Deep Creek to the southeast. An unnamed first order tributary of the James River forms the western boundary of the project area, and another very short first order tributary is located just outside the southeastern part of the project area.

2.3 SOILS

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service has mapped five soil units within the boundaries project area (NRCS Web Soil Survey 2020) (Table 2-1 and Figure 2-1). Johnston silt loam is a very poorly drained floodplain soil derived from alluvium. Urban lands are areas where the soils have been altered or obscured by development, and Udorthents-Dump complex soils are also similarly disturbed by construction. Nevarc and Uchee soils are typically found on marine terraces and are derived from loamy and sandy marine sediments. Slagle soils are typically found on marine terraces and are derived from loamy marine sediments. Nevarc soils have an approximately 3-inch (7.6-centimeter [cm]) thick A horizon over an approximately 11-inch (27.9-cm) thick E horizon overlaying B horizon soils. The associated Uchee soils have deeper profiles consisting of an approximately 6-inch (15.2-cm) thick A horizon over an approximately 20-inch (50.8-cm) thick E horizon overlaying B horizon soils. Slagle soils have a thicker A horizon, typically around 9 inches (22.9 cm), but lack an underlying E horizon. All three are moderately well drained.

Table 2-1. Project Area Soils

Symbol	Map Unit Name	Drainage
9A	Craven-Urban land complex, 0-2 percent slopes	Moderately Well
12	Johnston silt loam, 0-2 percent slopes, frequently flooded	Very Poorly
16C	Nevarc-Uchee complex, 6-15 percent slopes	Moderately Well
16D	Nevarc-Uchee complex, 15-50 percent slopes	Moderately Well
21A	Slagle-Urban land complex, 0-2 percent slopes	Moderately Well
26	Udorthents-Dump complex	



Map Unit Symbol	Map Unit Name
9A	Craven-Urban land complex, 0-2 % slopes
12	Johnston silt loam, 0-2 % slopes, frequently flooded
16C	Nevarc-Uchee complex, 6-15 % slopes
16D	Nevarc-Uchee complex, 15-50 % slopes
21A	Slagle-Urban land complex, 0-2 % slopes
26	Udorthents-Dumps complex

Legend

- Project Area
- Direct APE
- Soil Unit Boundary

N

0 100 200 300 Feet

0 50 100 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

Project Soils

Source: USDA NRCS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 2-1

2.4 FLORA AND FAUNA

The natural areas of the project area consist of mixed deciduous maritime forest and estuarine wetland grasses. Tree species include several varieties of hardwoods and pine including: several species of poplar (*Liriodendron* ssp.), oak (*Quercus* ssp.), mulberry (*Morus* ssp.), pine (*Pinus* ssp.), cedar (*Chamaecyperis* ssp.), ash (*Fraxinus* ssp.), and beech (*Fagus* ssp.). Various species of shrubs and other herbaceous plants are present in the understory. The wetland areas have a variety of grasses and several trees and shrubs including: several species of cordgrasses (*Spartina* ssp.*)*, phragmites (*Phragmites australis)*, cattails (*Typha latifolia)*, water chestnut (*Trapa natans)*, shadbush (*Amelanchier canadensis)*, and loblolly pine (*Pinus taeda*) (Chesapeake Bay Program 2012).

A diverse group of mammals are also present along the James River and tributaries including: white-tailed deer (*Odocoileos virginianus*), river otter (*Lontra canadensis*), beaver (*Castor Canadensis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), red foxes (*Vulpes vulpes*), rabbits (*Sylvilagus* ssp.), and squirrels (*Sciurus carolinensis*). There are also a large number of avian species in the area, with turkey (*Meleagris gallopavo*), blue heron (*Ardea herodias*), doves (*Columbidae* sp.) and waterfowl (*Anatidae* spp.) being particularly abundant. Reptiles are also present and include several species of snakes, turtles, and lizards. Over 350 fish species can be found in the Chesapeake Bay and its major tributaries, which include a wide variety of freshwater, anadromous, and migratory fish, as well as a wide range of invertebrate marine animals (Chesapeake Bay Program 2012).

2.5 CURRENT LAND USE

The project area is dominated by its use as a wastewater treatment facility, while a cellular tower occupies land to the north of the JRTP. The northwestern portion of the project area, however, is forested slopes along an unnamed tributary of the James River, while the southeastern portion is a maintained open field.

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3.0 CULTURAL CONTEXT

The DHR has developed cultural contexts which provide a framework for the description and analysis of known and anticipated cultural resources (DHR 2017:107-113). These contexts are the basis for evaluating the significance of resources within the project area. Recognized contexts are organized by geographic region, time/developmental period and theme. The project area is within the Southern Coastal Plain historic context.

3.1 PREHISTORIC CONTEXT

The prehistory of the region is traditionally divided into three major periods known as Paleoindian (10,000–8,000 B.C.), Archaic (8,000–1,000 B.C.), and Woodland (1,000 B.C.–A.D. 1600) periods. The Archaic and Woodland periods are further subdivided into Early, Middle, and Late periods. These periods are characterized by changes in material culture and/or subsistence strategies.

3.1.1 Paleoindian Period (10,000–8,000 B.C.)

The Paleoindian period traditionally begins in North America with the arrival of the first humans from Asia across Beringia, a 1,000-mi wide, ice-age land bridge connecting Siberia with British Columbia and Alaska. Microblade technology similar to that discovered at D'uktai Cave in Siberia (circa [ca.] 16,000 B.C.) has been found in the Yukon (e.g., Bluefish Caves), Alaska (e.g., Tanana Valley sites), and the eastern United States (e.g., Meadowcroft Rockshelter and Cactus Hill; Fagan 2000). The peopling of the "New World" is often debated. A number of additional migration routes into North America have been proposed; future discovery of additional Paleoindian sites and multidisciplinary collaboration (e.g., paleoclimate, genetics, linguistics) will likely aid in understanding of the peopling of North America.

While definitive evidence of human occupation in the Mid-Atlantic region is generally attributed to the Clovis culture with its signature fluted projectile point/knives (PPKs), beginning about 10,000 B.C., traces of earlier occupation are present at a number of regional sites. The Cactus Hill site in southern Virginia (McAvoy and McAvoy 1997), the Meadowcroft Rockshelter site in southwestern Pennsylvania (Adovasio et al. 1998), and the Barton site in western Maryland have all yielded carbon-dates pre-dating Clovis occupation, although no clear diagnostic artifacts have been identified in the earliest deposits at these sites (Wall 2008).

Paleoindian cultures in Virginia are represented largely by isolated surface finds of distinctive fluted projectile points. Brennan (1982:35-37) describes numerous finds in the Coastal Plain province, including at least three on Mulberry Island. However, the finds likely represent small transient groups of peoples moving through the landscape, as opposed to established populations (Gardener 1989; Turner 1989).

More recent models of Paleoindian societies (e.g., Waguespack and Surovell 2003) describe them as very mobile generalist hunter/gatherers dependent on a broad range of natural resources ranging from large prey to smaller fauna and plant resource. Diets almost certainly included some degree of extinct Pleistocene megafauna (e.g., mammoth and mastodon), though these were not likely the prime dietary sources once thought (e.g., Alroy 1998; Boyd 1989). Gardener (1974) describes a regional settlement pattern for these foragers based on access to outcroppings of high-quality stone used in tool making rather than on food resource availability. Jasper outcrops appear to have been favored for quarries and lithic reduction stations. Large multi-use basecamp sites were located in

floodplains near the quarries where there was access to numerous resources. Smaller transient camps were located around second and third order streams (Gardener 1977).

Gardener's (1977) model was based in large part on his excavations of the Flint Run complex sites in the Shenandoah River valley. A similar large sized quarry/basecamp complex was identified in eastern Virginia at the Williamson Site in Dinwiddie County, near the city of Petersburg. The 55 to 75-acre site is one of the largest Paleoindian sites in eastern North America (Barber and Barfield 1989). Surface finds included approximately 175 fluted PPKs and over 1,000 end and side scrapers. Paleoindian stone tools were also identified in buried contexts at the site (Barber and Barfield 1989). A large number of the isolated fluted PPKs found in eastern Virginia have been sourced to the Williamson quarry. Sites like the Williamson quarry may have served as a central nexus for small, far-ranging populations moving through the landscape, collecting resources at locations like Mulberry Island, but tethered to the quarries. These groups would periodically return after collecting resources at locations, like Mulberry Island, and coalesce at the larger basecamp sites (Gardener 1977).

It is worth noting that during the Pleistocene period the continental coastline would have been located further east than it is today. The Chesapeake Bay did not exist in its current configuration at this time, and the tidal tributaries such as the James River would likewise have been lower order streams. Rising sea levels during the Early Holocene period flooded former stream margins leaving only sites located in highland regions exposed (Lowery 2000; 2001).

3.1.2 Archaic Period (8,000–1,000 B.C.)

The Archaic period is conventionally sub-divided into the Early (ca. 8,000–6,000 B.C.), Middle (ca. 6,000–3,000/2500 B.C.), and Late/Transitional (ca. 2,500–1,000 B.C.) periods. The Archaic period generally refers to pre-ceramic sites associated with hunter-gatherers that occupied the emerging deciduous forests of the Eastern Woodlands. Human populations living in the region during the Archaic period were adapting to major changes in the environment.

Early Archaic Period (8,000–6,000 B.C.)

The Early Archaic period is marked by human adaptations to climate change. With temperature rise came the retreat of glaciers, sea-level rise, and changes in the floral and faunal communities (Cleland 1966). These changes manifest in the archaeological record by way of noticeable shift in settlement and subsistence patterns, along with changes in tool kits, reflecting a broader range of resource use.

In the Coastal Plain province, the Early Archaic stone tool tradition is represented by the Palmer and Kirk complexes. Both projectile PPK types are triangular with corner notches and featuring serrated edges (Egloff and McAvoy 1989). The Palmer complex has been dated to the period from approximately 8,000-7,300 B.C., while the Kirk complex has been dated between 7,300 and 6,800 B.C. (Egloff and McAvoy 1989). The Early Archaic toolkit also contained tools such as end and side scrapers, which were also part of the Paleoindian toolkit. Ground stone adzes and other woodworking tools reflect increased woodworking practices (Opperman and Polk 1989; Custer 1989). There was an apparent shift in lithic raw material preferences during the Early Archaic period. At the beginning of the Early Archaic period, there was still a focus on imported stone for tool manufacturing. Tools produced using locally available stone became more prevalent by the time the bifurcate tradition appeared.

Settlement patterns in this period were dictated by the distribution of floral and faunal resources, and are, therefore, scattered across a wider range of environmental zones (Barse and Harbison 2000). The number and distribution of Early Archaic sites across the region likely reflects an adaptation to the abundant and diverse game species that inhabited the rapidly spreading deciduous forests.

White-tailed deer was the most commonly exploited game animal during this period, but analysis of faunal assemblages from other Early Archaic sites indicate that a wide variety of species were exploited (Formica et al. 2009). The easy availability of animal proteins directly led to a population increase (Formica et al. 2009; Barse and Harbison 2000). Employed plants included squash, mash, amaranth, and chenopod, which were all indigenous to the East Coast region (Lowery and Custer 1990).

Custer (1990) interpreted available settlement data as indicating a cyclical settlement system model for the Early Archaic period. In this model, Early Archaic groups began a movement "cycle" at the quarries where they produced their lithic tool kit. This tool kit was then carried with the group as they moved among various camps to exploit available resources. While this interpretation demonstrates the continuity between the "tethered nomadic" system seen in the Paleoindian period, it allows for the incorporation of resource seasonality as a determining factor within Early Archaic settlement systems.

The settlement system in the Coastal Plain became characterized by semi-sedentary base camps located along the confluences of major and tributary streams, typically near wetlands (Opperman and Polk 1989). Smaller, extractive camps were located in upland ridges and near smaller tributary streams. The lands between the James and York Rivers appear to have been used primarily for smaller transient camps, and four such short-term occupations have been previously identified on Mulberry Island (Brown et al. 1986; Higgins et al. 1989; Hodges and Hodges 1994).

Middle Archaic Period (6,000–3,000 B.C.)

During the Middle Archaic period, the Atlantic climatic episode characterized by the continued spread of deciduous forests, an increase in deciduous species, and marked seasonality of plant resources significantly altered the Mid-Atlantic region (Barse and Harbison 2000). The start of the Middle Archaic period coincides with the Altithermal (also known as the Hypsithermal), a significant warming trend. During this time, the effects of sea-level rise following deglaciation were visible; extensive riverine swamps formed, and river and estuary systems took on their modern configurations.

Stemmed and side-notched projectile point forms are characteristic of the Middle Archaic period. Diagnostic PPKs include Stanly, Morrow Mountain, Guilford, Halifax, Otter Creek, and Brewerton series (Coe 2006; Dent 1995; Hranicky 1994; Klein and Klatka 1991). Mid-Atlantic Middle Archaic sites show considerable regional variability in styles. Monroe and Birkett (2012) argue that this variability results from cultural traditions becoming more geographically circumscribed as repeated use of formal group territories became established.

Increased reliance on collecting and harvesting of plant resources also required the developments of a more specialized toolkit to process diverse resources. This included the introduction of ground stone tools, which permitted the exploitation of floral resources in new ways (Chapman 1975; Barse and Harbison 2000).

A rise in the number of Middle Archaic sites is indicative of steady population growth. Settlement patterns of the period are defined by a foraging subsistence strategy that emphasized the use of seasonally available floral and faunal resources (Barse and Harbison 2000). Base camps were no longer located adjacent to lithic sources but were situated near seasonally available resources (Formica et al. 2009). Rising sea levels created numerous freshwater wetlands, swamps, and bogs along the Coastal Plain of Virginia and Maryland. Large Middle Archaic occupations have been identified around Zekeiah and Mattawoman Swamps in southern Maryland and the Dismal Swamp in Virginia as Middle Archaic populations expanded into these newly emerging, ecologically productive environments (Custer 1990).

Nevertheless, the Middle Archaic period is not well represented in the Mid-Atlantic region (Monroe and Birkett 2012). Most period sites have been identified based on surface finds of diagnostic projectile points. However, two key sites are located along the Nottoway River, which is about 40 miles to the southeast of Mulberry Island. McAvoy (1988) points to a notable increase in the use of hickory nuts at the Slade and Doershuk sites in southern Virginia and northern North Carolina (Coe 1964). Characteristic PPK styles from these sites include the stemmed Morrow Mountain and Stanley points (Egloff and McAvoy 1989).

Late Archaic Period (3,000–1,000 B.C.)

The Late Archaic period coincides with the Atlantic Sub-Boreal Transition (ca. 3,000–700 B.C.). This was a warm, dry period during in which open grasslands reappeared throughout parts of the Mid-Atlantic region (Barse et al. 2006). Mouer (1991) divides the Late Archaic into two stages. His Late Archaic stage encompasses the end of the Middle Archaic and continues to ca. 2,500 B.C., at which point there is a shift in settlement and subsistence systems referred to as the Transitional period.

The Late Archaic stage is characterized by continuity with earlier Archaic cultures. This period is characterized by the exploitation of sylvan resources. The Laurentian Tradition (ca. 4,000–2,000 B.C.) began at the end of the Middle Archaic period and continued into the early Late Archaic period. This tradition is represented by Otter Creek, Vosburg, and Brewerton corner-and side-notched PPK types (Ritchie 1980). Other diagnostic PPKs of the Late Archaic period include the Piscataway, Vernon, and Bare Island/Holmes types of the Piedmont Tradition (Steponaitis 1983). However, Mouer (1991) assigns Piscataway and Vernon points to the Early Woodland period.

In the Coastal Plain province, these cultures are exemplified by side-notched Halifax PPKs and a settlement system strongly adapted to upper river terrace woodlands, with extensions into stream bottomland environments (Mouer 1991). Halifax societies consisted of small forest-adapted groups who intensively exploited local resources and developed strong regional variations of their parent cultures. Interactions were limited between neighboring groups (Mouer 1991). In the Coastal Plain province, these cultures are best represented in the Inner Coastal Plain, particularly along reaches of the James and Chickahominy Rivers in Henrico County (Mouer 1991). There are no known sites from this period in the Mulberry Island area.

Mouer's (1991) Transitional period (ca. 2,500–1,000 B.C.) is marked by a shift to riverine settlements. This adaptation is viewed as a response to a rise in sea level between 4,000 and 5,000 years ago. Higher sea levels resulted in the saline cline moving upriver in tidal environments. The movement of the saline cline meant that fresh-water spawning fish had to travel further upstream to spawn resulting in seasonal fish runs in the rivers and streams along the coastal plain. Brackish water estuaries developed in the greater Chesapeake area which encouraged the spread of aquatic

food species, including oysters and blue crabs (Gardner and Curry 1977; Gardner 1982; Barse et al. 2006).

In the James River valley, this period is best represented by the Savannah River culture (ca. 2,200–1,000 B.C.). By this period, the diversity of natural resources being exploited was reflected in the toolkit and the increased number of site types and site locations. Typical of this stage of the Late Archaic period are artifacts that include the multi-purpose, broad-bladed PPKs known as broadspears. In addition to their probable use as a hunting tool, Witthoft (1953) has argued that the broadspear PPKs served as fish processing blades, while Catlin et al. (1982) argue for their use in shaping wooden and bone fishing implements. Other finds from period sites contain scrapers and drills (often fashioned from re-sharpened PPKs), adzes, celts, net sinkers, anvil stones, and steatite bowls (McLearen 1991). Large shallow stone mortars and grinding stones have been found at Piedmont and Coastal Plain province sites, indicating processing of seeds and mast (Mouer 1991).

The steatite bowls from Late Archaic sites represent the first archeologically visible, durable container technology in the Mid-Atlantic. It is believed that prior to the appearance of steatite bowls, the prehistoric inhabitants of the region had been using containers made from more perishable organic materials such as wood or woven baskets (Fagan 2000). The most common steatite vessel form is the shallow, round to oblong, thick-walled bowl with an unrestricted opening and opposing lug handles on the side (Dent 1995). Traditionally, these bowls have been interpreted as cooking vessels used in indirect heat cooking, whereby the contents of the bowl were boiled by the addition of heated stones (Dent 1995; Klein 1997).

Other characteristics of the period are increased population density and increased sedentism. This settlement system is characterized by seasonally occupied base camps and associated smaller resource procurement camps as well as relatively large, seasonally occupied macro-band base camps. Base camps are interpreted as representing seasonally shifting occupations consisting of bands comprised of multiple family groups. Macro-band base camps represent seasonal aggregations of multiple bands at sites that were re-occupied each year (Dent 1995; Mouer 1991).

The subsistence base associated with the Broad Blade Tradition riverine settlement system represents a departure from the earlier Narrow Blade Tradition. Broad Blade groups appear to have focused on riverine and inland wetlands with a particular focus on estuarine environments (Dent 1995; Mouer 1991). Estuarine environments seem to have been the preferred location of macro-band camp sites and were most likely associated with harvesting seasonally available resources such as anadromous fish runs and shellfish beds.

Population growth correlates with the intensification of fish harvests and mast and seed processing. These reliable resources would have supported larger populations in one area for a longer period of time. It is not possible to say at this point whether growing populations led to intensified exploitation of a wider resource base or if resource surplus allowed the population to grow. Most likely the two factors were coeval.

A notably higher frequency of Savannah River components, relative to Halifax components, was found at the Doershuk site (Mouer 1991). The same pattern holds true for much of the Coastal Plain and Piedmont provinces (Klein and Klatka 1991). The largest Late Archaic sites on the James River are the Deep Bottom and Bremo sites, located near Richmond, Virginia. These sites are approximately 5 acres in size and contain communal platform hearth features. Mouer (1991) argues that these reflect locations where populations coalesced during spring and summer fish

runs. Smaller base camps occupied by extended families or small bands, include sites such as Four Mile Creek in Henrico County. Large steatite bowls found at this site suggest resources gathered from extraction camps were processed at the site, since the large bowls would have been impractical to transport to more transient occupations (Gleach 1986).

3.1.3 Woodland Period (1,000 B.C.–A.D. 1600)

The Woodland period is divided into the Early (1,000–500 B.C.), Middle (500 B.C.–A.D. 900), and Late (A.D. 900 – 1600) periods based on changes in ceramic types, lithic technologies, subsistence patterns, and social development. The Woodland period is marked by the introduction of ceramics, significant population growth, and the development of semi-sedentary and sedentary ways of life. Production innovations, as reflected in ceramic types, have become a significant basis for dating Woodland period site components.

Early Woodland Period (1,000–500 B.C.)

There appears to have been little change from the Transitional Late Archaic period and the Early Woodland period. The major distinguishing characteristic is the introduction of ceramic vessels; however, this did not appear to fundamentally change lifeways in the Mid-Atlantic region. Mouer (1991) argues for continued refinement of the cultural trajectories established during the preceding period.

The earliest ceramic types from the area are the steatite-tempered Bushnell wares, which are followed by sand or crushed quartz-tempered Accokeek wares (Egloff 1991). These ceramics are associated with fishtail and corner-notched PPK types. In particular, Accokeek ceramics are often associated with Calvert and Rossville points (Wesler et al. 1981). Pope's creek ceramic can occur in the Early Woodland period, continuing into the Middle Woodland (Egloff and Potter 1982).

Artifacts characteristic of the Early Woodland period include Calvert, Rossville, Potts, and Piscataway PPK types, some of which are also found in Late Archaic contexts (Dent 1995; Hranicky 1991, 1993, 1994; Hranicky and Painter 1989). Other artifact types include drills, perforators, flake tools, scrapers, bifaces, anvil stones, net sinkers, mortars, pestles, manos, metates, groundstone tools (e.g., axes, adzes, celts), ground slate, gorgets, and tools made from animal bone and teeth.

Settlement patterns in the Early Woodland period are similar to those of the Late Archaic. Early Woodland occupations succeed earlier Late Archaic occupations with little to no evidence of a break in occupation.

Sites are typified by large base camps located in riverine settings, especially near the junction of fresh and brackish water streams (Barse and Harbison 2000). Smaller sites generally associated with specialized ventures are found on or near interior drainages. The hearth features found at Late Archaic sites continue into the Early Woodland and pit features for both storage and cooking become much more common at Early Woodland sites (Klein and Klatka 1991). These features are indicative of an increasingly sedentary lifestyle as greater amounts of labor were invested in non-portable processing and storage facilities.

Mouer (1991) has posited that territorial boundaries were becoming more firmly established during the period and that maintenance of group territories was accomplished by means of buffer zones or overlapping frontiers. One such buffer area may have existed around the current project vicinity. There have been no Early Woodland period sites found on Mulberry Island, or in the

eastern portions of the peninsula between the York and James Rivers (Monroe and Birkett 2012). However, surveys conducted along the Route 199 corridor in nearby James City County resulted in the identification of small shell midden sites on the southern bank of the York River (Hunter et al. 1993).

Mouer (1991) describes the Currituck Culture between the mouth of the James and Albemarle Sound, south of the James River. The Currituck Culture sites are characterized by shell-tempered, flat bottomed, beaker-shaped vessels, tubular pipes, beads, and decorative gorgets, which may have been influenced by the Adena Cultures of the Ohio Valley (Painter 1988). Radiocarbon dates from the Currituck sites generally fall within the range of 800–540 B.C. (Painter 1988).

The Currituck ceramics were considerably different from the Marcy Creek type vessels found at most Early Woodland sites in the Mid-Atlantic. Marcy Creek vessels were fashioned to resemble the flat-bottomed steatite Late Archaic vessel forms. In fact, the clay paste of many of the early vessels was tempered with crushed steatite (Egloff and Potter 1982). Marcy Creek wares are typically recovered from sites dated ca. 1,200–800 B.C.

Middle Woodland Period (500 B.C.–A.D. 900)

The Middle Woodland period is not well-defined, and researchers disagree about the exact boundaries of the period. Dent (1995) has referred to this period of "technological homogenization" where "ceramic and PPK variability becomes limited to fewer types" (Dent 1995:235). Despite the presence of fewer ceramic and projectile point/knife styles, the Middle Woodland period represents a continuation and further development of cultural complexity that culminates in the Late Woodland period. In addition, intensification in trade networks over a large region is one of the notable trends evident by the onset of the Middle Woodland period. It is thought that warmer and drier conditions may have prevailed during this period (Kellogg and Custer 1994).

The Middle Woodland period in the Coastal Plain province of Virginia was a period of elaboration of earlier developments. Long-distance contacts and trade networks are indicated by stylistic similarities in artifacts over a broad region, and through the presence of exotic materials at sites. Larger semi-permanent settlements and the possible emergence of an elite class of leaders also points to the development of new ways of managing people and resources (McLearen 1992).

The earliest stages of the Middle Woodland period in the Mid-Atlantic are defined by the presence of crushed quartz or sand ceramics with net impressed exterior surfaces. These ceramics include Broadhead ware in the Delaware Valley, Wolf Net and Colburn wares on Maryland's Eastern Shore, Pope's Creek wares on the Delmarva Peninsula, and Prince George net-impressed vessels in southern Virginia (Barse et al. 2006). By ca. A.D. 200, theses wares are replaced throughout the region by the more homogeneous Mockley ceramics.

McLearen (1992:41) describes a Middle Woodland, Pan-Chesapeake cultural interaction sphere which extended from north of the James River, into northern Maryland, and including the Delmarva Peninsula. Sites participating in the interaction sphere are defined by the presence of distinctive Mockley ceramics. These are hemispherical or cylindrical vessels that taper into a semi-conical base. They are fashioned from shell-tempered clay and decorated with net-impressed or cord-marked exterior surfaces (McLearen and Mouer 1989). Sites from which these vessels have been recovered generally date between ca. A.D. 200 and A.D. 800 (McLearen and Mouer 1989).

Different diagnostic PPK types are associated with the Pope's Creek and Mockley phases of the Middle Woodland period. Rossville and Adena points are found at early Middle Woodland sites in association with Pope's Creek ceramics. Lithic artifacts associated with Mockley ceramics include crudely flaked, side notched and parallel stemmed Selby Bay points or Fox Creek points. These PPK types are followed by terminal Middle Woodland styles such as Jack's Reef corner-notched (Barse and Harbison 2000; Sperling 2008; Wright 1973).

Trade extended beyond the core of the interaction sphere. Mockley ceramics sometimes exhibit zoned punctate decorations reminiscent of Abbot styles found in the Delaware River Valley region of what is now southern New Jersey (McLearen 1992). These sherds are recovered most frequently from sites close to the James River, as well as from sites in the Inner Coastal Plain (McLearen 1992). Square stemmed, lanceolate Fox Creek and Selby Bay style PPKs fashioned from Pennsylvania metarhyolites frequently co-occur with Mockley sherds (McLearen 1992). Finally, exotic materials and artifacts, reminiscent of the Adena mortuary ritual in the Ohio Valley, have been recovered from some sites; though generally from those on the Delmarva Peninsula (Dent 1995). Access to exotic artifacts is viewed by some authors (e.g., Dent 1995) as evidence to the emergence of social ranking.

Artifacts associated with the Early-Middle Woodland Adena culture of the Ohio River Valley have been recovered at mortuary sites in these areas. Grave goods, such as large ovate late-stage bifaces made from Ohio cherts and chalcedony, tubular pipes made from Ohio pipestone, and ornaments made from Upper Great Lakes copper, have been found at distinct mortuary sites (Dent 1995). These sites have been described as "mortuary-exchange centers" by Custer (1984) based on the presence of imported, exotic exchange goods found at mortuary centers lacking any evidence of habitation.

McLearen (1992) proposes the emergence of a system in which the possession of rare goods would have imbued their owners with increased social status. The increased status may have been earned or inherited, but the occurrence of large sites where populations would have seasonally aggregated (e.g., during fish spawning runs) would have provided opportunity for, and required the care of, managers to successfully exploit the resource base.

The Middle Woodland settlement system and subsistence practices are viewed as a transitional period in Mid-Atlantic prehistory between more mobile collectors of the Late Archaic/Early Woodland periods and the fully sedentary villages of the Late Woodland period (Sperling 2008). Middle Woodland period sites from the Coastal Plain include large macro-social unit settlements, moderately sized, seasonal to semi-permanent seasonal base camps occupied by smaller groups, and small foray or specialized resource extraction camps (Potter 1982). The largest sites are usually near tidal estuaries where access to fresh and salt water resources would have been available. Sites like the Great Neck site near Virginia Beach and the 44HT36 and 44HT37 sites at Hampton University (in Hampton Roads), to the southeast of Mulberry Island, include deep, rubbish filled storage pits indicating prolonged occupation (Stewart 1992). These sites also frequently feature dense shell midden deposits. The Maycock's Point site in Tar Bay, Virginia, (approximately 66 kilometers (km) [41 miles {mi}] up the James River from Mulberry Island) features a deep mussel shell midden dating to ca. A.D. 300–800 (McLearen 1992). A large number of Mockley-ware sherds, including some with Abbot-ware-like designs, were recovered from the site.

Smaller sites, like the Plum Nelly site in Northumberland County about 50 miles north of Mulberry Island, were located along streams associated with marshlands and also include shell midden deposits (Potter 1982). In addition to shellfish, the remains of lowland and upland game, fish, waterfowl, and starchy wetland tubers indicate a rich and varied resource base. Stewart (1992) argues that Middle Woodland populations, though not outright farmers or gardeners, most likely tended to and encouraged stands of economically important plant resources.

Late Woodland Period (A.D. 900–1600)

The Coastal Plain during the Late Woodland period is characterized by increased reliance upon agriculture, more sedentary settlement patterns, and increasing political complexity (Turner 1992). The second half of the period is marked by increased warfare. The last of these societies were those described by English settlers in the early seventeenth century.

Late Woodland sites in the Coastal Plain province are identified by the presence of small triangular and pentagonal PPKs (most likely used with bow and arrow), chipped stone blades, ground stone axes and pipes; shell beads, pendants and gorgets; bone tools like fish hooks and pins; as well as rare exotic materials such as copper beads and pendants (Turner 1992). Ceramics from period sites are shell-tempered, globular vessels with plain, fabric impressed or incised surfaces. These are collectively known as Townsend wares, and their distribution closely mirrors that of the Middle Woodland Mockley ceramics. The distribution of Townsend wares becomes restricted in the later part of the period, as ceramic production became more regionalized, and trade decreased (Turner 1992).

While trade between neighbors might have become restricted, long distance exchange of exotic materials (possibly relating to elites) continued. For example, steatite from West Virginia was used to carve smoking pipes, and at least some of the copper artifacts may be sourced to Great Lakes region quarries (Turner 1992). Potter (1989) described a shell gorget discovered in Stafford County in 1869, as being decorated with an incised weeping eye motif common in the iconography of the Mississippian chiefly societies stretching from Georgia to Oklahoma, and as far north as southeastern Wisconsin. Specialized goods were also produced locally. Turner (1992) describes a possible shell-bead workshop at the Great Neck site near Virginia Beach. Shell dust paste, shell cores, and lithic microdrills were all recovered from the workshop area. The refined shells may have been exported out of the area but may have also been used by local elites. For example, Powhatan's preserved mantle features thousands of marginella shell beads sewn into patterns on a cloak fashioned from four sewn deer hides (Potter 1982). Similarly, the "Great King of Great Neck" burial featured over 15,000 shell beads in a child's grave (Turner 1992:117).

Late Woodland peoples were horticulturists and agriculturalists who relied heavily upon tropical cultigens. An example of early use of tropical cultigens (maize, beans, and squash) exists in the form of cucurbit and legume seeds found at the Reynolds-Alvis site in southern Virginia. The seeds were found in a pit feature radiocarbon dated to ca. A.D. 920 (Gleach 1986). Ethnohistoric data indicate that tropical cultigens comprised a large part of local diets, and Turner (1978) suggests the heavy reliance on cultigens may have coincided with local over-exploitation of game. At the Great Neck site, remains of cultigens were identified from 54 percent of all flotation samples (Turner 1992).

Site types from the period range from small extraction camps, agricultural hamlets and dispersed villages, to larger villages (both nucleated and internally dispersed), sometimes with palisades. Potter's (1982) survey of the Coan River drainage in Northumberland County identified two

general settlement trends. During the first half of the Late Woodland (ca. A.D. 900–1300) the formerly nucleated Middle Woodland populations had dispersed into long arrangements of farming hamlets located along the Coan River's banks. This settlement pattern would have facilitated self-sufficient agricultural families. After A.D. 1300, the society began to coalesce once again into large mostly sedentary, sometimes internally dispersed villages supported by briefly occupied resource extraction camps.

The nucleated, palisaded villages are characterized by a circular palisade wall enclosing a series of elongated circular wooden post structures arranged around a ring of storage/trash pits which encircles a small open space (Dent 1995). The Late Woodland component of the Great Neck site for example has large palisade posts forming a defensive perimeter around a nucleated village (Egloff and Turner 1984).

The internally dispersed village settlement type is characterized by widely separated residential structures dispersed within a core area and is associated with Townsend/Rappahannock ceramic wares (Potter 1993). These settlements are not bound by a palisade wall and individual residences may be nucleated or widely dispersed over multiple acres but are not as rigidly organized and are more widely separated than those found at villages sites bound by palisade walls (Turner 1992). Examples of this type of settlement include the White Oak Point site in Westmorland County and the Boathouse Pond site in Northumberland County (Potter 1982). These types of sites have a wider distribution throughout the Coastal Plain compared to the palisaded villages (Turner 1992).

In addition to villages, hamlets, and specialized extraction camps, the Late Woodland period archaeological record includes large ossuary sites. Large ossuaries containing human remains and few grave goods have been found throughout the Mid-Atlantic (Dent 1995). Exotic items, such as those found in Early and Middle Woodland period mortuary contexts, are absent from Late Woodland ossuaries. The ossuary tradition involved the disinterment, bundling, and re-interment of individuals into a single burial. More than 300 individuals have been identified in 25 ossuary sites located between the James and York Rivers (Turner 1992). Individual burials appear to have been far less common (Dent 1995). One of the largest concentrations of single internments was found at the Hatch site in Prince George's County near the city of Petersburg (Peebles 1983). The site also included over 100 ritual dog burials, two of which were associated with articulated human forearms.

The coalescence of settlements into larger villages corresponds to developing social hierarchies and possibly warfare. The former is best known from the ethnohistoric record of the late sixteenth and early seventeenth centuries. The Powhatan chiefdom was perhaps the most complex and widespread in the region. It had developed only decades prior to the establishment of Jamestown by absorbing many of the smaller local polities (Feest 1978; Turner 1992). The chiefdoms were inherently short-lived and unstable, and lacked the material signatures of ranked societies from elsewhere (e.g., monumental architecture, an elaborate mortuary tradition for the elites in southeastern societies).

The rise of elites and the introduction of a reliable food source coincided with increased warfare in the area. Not only did fortified villages become more common, but less porous regional boundaries appear to have formed. Archaeologically, this is visible in the restricted range of the formerly widespread Townsend wares, which are found only in what were historically known as Powhatan territories by the end of the Late Woodland period (Turner 1992). In the lower reaches of the James River valley, a sand tempered type known as Roanoke ware replaced the Townsend

wares (Egloff and Potter 1982). Inter-tribal warfare also is evident following European contact, and in the century preceding it. For example, Feest (1978) writes of the Powhatan expansion at the end of the sixteenth century, and of the depopulation of the Virginia Peninsula by Chesapeake tribes shortly before 1607.

3.1.4 Contact Period (ca. A.D. 1600)

The Contact period generally marks the entrance of Europeans into North America. Early exploration of the Chesapeake Bay area began in the late 1500s. Shortly thereafter, in 1608, Captain John Smith documented contacts with local populations in the Chesapeake estuaries.

Native American culture at the time of contact was a continuation of the Late Woodland lifeways. Artifact assemblages and site types from Contact period are not unlike those from Late Woodland sites, with the exception of the presence of variable amounts of European-manufactured goods or objects fashioned from repurposed European materials (Hodges 1993). These include brass gorgets, English and Dutch shell and glass beads, copper and brass kettles, as well as axes and knives, among others. For example, excavations at the Potomac Creek site in Stafford County, led to the recovery of glass beads, copper and lead buttons, hawk bells, copper chains, scissors, an abacus and other copper ornaments, from within a palisaded Late Woodland village (Hodges 1993). Down-the-line exchange with other Native American groups meant that access to European goods often preceded contact with actual Europeans (Hodges 1993). The European goods and materials did not dramatically affect existing lifeways, following their incorporation into existing indigenous cultural systems (Hodges 1993).

The Coastal Plain is occupied by Late Woodland societies with many known names. The largest and most socially complex of these was the Powhatan paramount chiefdom. The Powhatan chiefdom was centered at the confluence of the Pamunkey and Mattaponi Rivers, near the headwaters of the York River, and extended southeast along the James River and north to the Rappahannock (Turner 1992). Mulberry Island was part of Kecoughtan territory, a Powhatan vassal (Rountree 1993). The Chesapeake and Nansemond, living on the south side of the lower James River, were independent and smaller chiefdoms. They are associated with the Roanoke wares (Turner 1992).

European exploration and settlement of the Middle Atlantic area continued through the 1600s. Relations between the Native Americans and the Europeans were marked by periods of peaceful coexistence interrupted by times of tension and hostility. By the 1650s, the Europeans had taken an aggressive role in claiming lands and driving out the Native Americans. Disease and warfare virtually exterminated the extant cultures, and those people that survived eventually were forced out of their homelands or integrated into European society (Hodges 1993).

3.2 HISTORIC CONTEXT

VDHR (2003) has developed eight historic periods that form the basis for the development of historic contexts. These periods and themes reveal the patterns of historic development both at the local and state levels and aid in the identification and evaluation of archaeological resources. The Settlement to Society period (A.D. 1607-1750), the Colony to Nation period (A.D. 1751-1789), the Early National period (A.D. 1790-1829), the Antebellum period (A.D. 1830-1860), the Civil War (A.D. 1861-1865), the Reconstruction and Growth period (A.D. 1866-1916), The World War I to World War II period (A.D. 1917-1945), and the New Dominion period (A.D. 1946-Present).

3.2.1 Settlement to Society Period (A.D. 1607–1750)

The lower reaches of the James River were first described by Captain John Smith in 1608 (in Captain John Smith Four Hundred Project 2015). He described a 3-acre plain and a "little Ile fit for a Castle" connected by a 60-yard neck. Upon the plain, Smith notes the Kecoughtan town of 18 houses, which is shown to be in the vicinity of modern Hampton, Virginia, on Smith's 1624 map of the Chesapeake Bay.

By Royal Grant, Captain Samuel Mathews established a large plantation of over 2000 acres on land between Deep Creek and the Warwick River on Blunt Point (Nugent 1939 I: 4). He had built a house on the tract of land by 1626, naming it "Mathews Manor," eventually building a tobacco storage house on the plantation grounds by 1633 (Mcknight 1959: 195). The growing plantation population needed to have a place to gather for religious worship, and the Debigh Baptist Parish Church was built 3/8ths of a mile southwest of the plantation on the Warwick River (Mason 1949). Captain Mathews continued administration of the plantation and started a family in the new royal colony. By 1630 he had a son, Samuel Mathews, Jr. who would join his father on the Governor's council in 1656 and eventually become governor in 1658. Because there were no wills for the large plantation, it is likely the land was owned in fee tail, in which the descendants gain access rights to the property but were not able to sell the land or grant it to another outside of the family line though a will. If the land was entailed, it would not have appeared in the wills of Samuel Mathews descendants.

On March 22, 1622, the Powhatan, Chickahominy, Wicocomoco, Piscataway, and Nacochtank grew weary of frequent English efforts to control the indigenous population and launched raids on the English settlements stretching the James River. Over 350 English colonists were killed in the region (Feest 1978). Among the English participants in this conflict was Captain Samuel Mathews, who was appointed to the Governor's Council during the conflict in 1625 (Fausz 1988: 98). The attack failed to fully dislodge the English colonists from Virginia and led to frequent warfare for the remainder of the 1620s and 1630s. A second concerted attack in 1644 against 15,000 English and their Accomac and Rappahannock allies failed as well, and the resulting treaty expelled the Native populations from all lands between the York River in the north to the Blackwater River to the south and west (Feest 1978). The project area was likely within Samuel Mathew's patent, which extended along both sides of Deep Creek (Nugent 1934). Over 2,200 acres in the area of Blunt Point had been patented by 1627 (Jester 1961).

Throughout the seventeenth century, tobacco farming was the economic lynchpin of the Virginia colonies, and tobacco plantations were the primary settlement type in the colonies. Each tobacco plantation was a self-sufficient village, staffed and occupied by indentured servants, and later slaves (Horn 1998). Menard (1988) argued that the Headright indentured servitude system began to falter by the middle of the seventeenth century, as conditions for the servant class improved in England. As a result, Chesapeake Bay landowners began to rely increasingly upon enslaved labor to manage the difficult work of tobacco farming.

Many of the individuals living in the Virginia colony in the mid-seventeenth century were indentured servants or slaves. Interclass strife, continued Indian attacks, and perceived mismanagement by the colonial government led to a rebellion in 1676, headed by Nathaniel Bacon. Bacon's Rebellion was an armed uprising of all classes against the rule of Governor William Berkley (Webb 1995). The armed insurgents marched on Jamestown and torched the capital. Intermittent fighting continued into 1677. Berkley was recalled, but the colony was placed under

more direct Royal oversight (Webb 1995). Twenty-three of the rebel leaders were executed, and class segregation became more strictly enforced. Cooper (2000) argued that participation of indentured servants and slaves in the rebellion contributed to the growing institution of racially based slavery as a means for landowners to control a portion of the non-landowning population. The rebellion also strengthened xenophobic feelings towards Natives remaining in the area, and remaining populations of Appamatuck, Chicahominy, and Pamunkey were consigned to reservations (Feest 1978).

Through the Towns Law of 1691, Warwick Towne was established with 50 acres of land purchased from the estate of Samuel Mathews prior to the law. This land was at the mouth of Deep Creek and the Warwick River. A town site was established and subdivisions and lots were laid out. Eventually a courthouse, jail, a tavern, and several houses were built. The new Warwick Towne was still isolated as compared to the larger towns of Hampton, Portsmouth, and Norfolk and never had a large number of people, still isolated in the rural surrounding. Warwick Towne was not included in the Town Law of 1705 that establishing boroughs and ports (McKnight 1959: 194).

Mathews Manor was a successfully run plantation with several industries in operation including: shoemaking, weaving, a blacksmith, and a distilling operation producing naval stare goods such as turpentine and pine tar. The land was purchased by the Digges estate in 1720 after which the Denbigh Plantation was founded with a new home built at what is now 12 Governors Drive, Newport New, VA (Plantations Neighborhood Association [PNA] 2013). The plantation continued to prove productive in the rural economy of Warwick County up until the Revolutionary War (McKnight 1959: 196).

Small towns, like Yorktown, Williamsburg, and Hampton began to grow during the late seventeenth century. The growth of towns also led to the development of local cottage industries, such as brick making in Yorktown (Richter 2000). As more goods became available from local manufacturers, and from increasingly developed trade routes with England and continental Europe, elites began to acquire more and higher quality goods (Monroe and Birkett 2012). The distinction between elite and commoner became more pronounced and rigid by the middle of the eighteenth century.

3.2.2 Colony to Nation Period (A.D. 1751–1789)

This period is marked by the development of Georgian (i.e., modern) worldviews and the surge of institutionalized slavery. Monroe and Birkett (2012) follow Deetz's (1996) argument that, by the mid-eighteenth century, Enlightenment philosophies about an ordered universe were materially manifest in new concepts of design and in social segregation by race, class, and sex. Monroe and Birkett (2012) point out that the shifting worldview could be archaeologically manifest in the form of symmetrical and ordered Georgian architecture, contrasts in the quality (and not just volume) of material goods found at common and elite households and shifts in the organization of household space into discreet units. Warwick County's general level of wealth can be indirectly measured by the volume of enslaved peoples living there. By 1775, over 60 percent of the county population was black and largely enslaved, and by 1782, 84 percent of households had at least one enslaved occupant (Richter 2000).

During the Revolutionary War, the capital of Virginia was moved from Williamsburg to Richmond, and the surrounding area, including Warwick County, began to decline economically and in population. Larger plantations were subdivided into smaller holdings, and cross-river commercial traffic decreased. This trend continued to affect the economy of Warwick after the

Revolutionary War, with commerce moving to larger Chesapeake Bay cities like Baltimore and Norfolk (McKnight 1959: 199).

Little fighting took place along the James River and in Warwick County. British ships patrolled the James River and skirmishes occurred at Warwick Courthouse. No fighting occurred in the Warwick River area though a detachment of Warwick Militia served with Lafayette's troops during the Yorktown campaign (Richter 2000).

In 1781, Benedict Arnold led British raiders into Richmond and Portsmouth (Lengel 2005). In March of that year, British General Phillips took over the forces and continued raids into the Virginia Piedmont and attacked Petersburg. The forces were preparing to burn Richmond when forces led by the Marquis de Lafayette arrived and the British withdrew to Petersburg (Lengel 2005). In May of 1781, General Cornwallis took over command of the British forces in Virginia and prepared to attack Lafayette. When Lafayette withdrew from Richmond, Cornwallis moved his forces east, where he was ordered to construct defenses at Yorktown for a Royal Navy port (Grainger 2005). Cornwallis was pursued by Lafayette, while, at the same time, forces led by George Washington and Comte de Rochambeau left New York to link with a French landing force commanded by General De Grasse headed to invade the mouth of the Chesapeake (Grainger 2005). On September 5, De Grasse's invasion fleet defeated the Royal Navy fleet during the Battle of Chesapeake, and Cornwallis found himself surrounded at the newly constructed semi-circle of earthen redoubts constructed at Yorktown, with no means to escape by sea. In Late September 1781, Washington and Rochambeau's troops arrived at Williamsburg (Lengel 2005).

Cornwallis' 9,000 men set up defenses along a hemispherical series of redoubts surrounding the southern side of the town of Yorktown. Washington meanwhile had command of nearly 19,000 men (Lengel 2005). The siege began with the allied occupation of the abandoned outer earthworks, and artillery bombardments of the British positions. The British returned heavy artillery fire onto the allied batteries, causing moderate casualties (Lengel 2005). On the night of October 14, French and American troops stormed the redoubts, inflicting heavy casualties. The forces then established positions that allowed them to shell the town itself (Lengel 2005). The British attempted to escape by boat to Gloucester Point, on the north bank of the York River, but were unsuccessful. On the morning of October 17, 1781, negotiation began, and Cornwallis surrendered his remaining forces (Lengel 2005).

Following the Battle of Yorktown, members of the Warwick Militia were sent to dismantle the Yorktown earthworks to ensure that they would not be retaken by the British (Richter 2000). However, the British army would prove incapable of mustering a capable fighting force in the colonies after Yorktown. Yorktown was the last major battle of the Revolutionary War and a formal peace was drafted by November 30, 1782, and signed September 3, 1783 (Lengel 2005).

3.2.3 Early National Period (A.D. 1790–1829)

The decline of the plantation system in Warwick County continued after the Revolution. A sharecropping system developed as landowners continued to move west to the Richmond area and beyond. The former plantation lands were subdivided and rented to tenant farmers, who worked the smaller plots along with enslaved peoples (some owned by the wealthier sharecroppers) (Monroe and Birkett 2012). In nearby Elizabeth City County, more than one third of the land was owned by absentee landlords (Monroe and Birkett 2012). Though British foraging parties made incursions into Warwick County during the war of 1812, there were no major battles during that conflict (McKnight 1959: 199).

Agricultural lands were used to grow mixed crops for subsistence and market sale. The overall economic activity remained ongoing in the larger cities leaving Warwick Towne to be abandoned by 1807. The maintenance of a rural character of the county allowed the sale of the 2,700-acre Denbigh Plantation to the Young family in 1810 (PNA 2013). Farmsteads featured simple earth fast houses and root cellars. Privies were uncommon, and refuse was deposited in sheet middens or thrown off of bluffs, rather than buried in storage pits (Monroe and Birkett 2012).

3.2.4 Antebellum Period (A.D. 1830–1860)

Economic conditions in Warwick County began to improve during the 1830s and 1840s. Improvements in farming techniques allowed the land to produce higher crop yields (Rosenthal and Monroe 2008). Mills and small manufacturing factories were established in local towns. The farmers became less self-sufficient as growing urban markets began to provide inexpensive home goods and supplies. Populations in Warwick County peaked around 1,740, still very small as compared to the larger tidewater communities (Monroe and Birkett 2012).

Warwick County changed very little in this period, remaining a rural community of the Tidewater. Most of the small farm lots were still occupied by tenant farmers and enslaved peoples. Monroe and Birkett (2012) describe a typical farm as consisting of a main house, kitchen, barn, corn house, meat house, and slave-quarters. Buildings were of frame or log construction, and often in a state of disrepair on poorer lots where sharecroppers could not afford the upkeep of non-essential structures (King 1994).

3.2.5 The Civil War (A.D. 1861–1865)

The Peninsula became geographically prominent in the early years of the American Civil War. The Peninsula Campaign, an early attempt by Union Armies to capture Richmond, saw fighting from Yorktown to the outskirts of Richmond between March and July 1862 (Sears 1992). Despite the Union's numerical and logistical advantages, tepid Union command led to Union withdrawal from the Peninsula (Sears 1992).

In May of 1861, Confederate Major General John Bankhead Magruder was ordered to build fortifications along the Peninsula to protect Richmond from Union attacks from the east (Sears 1992). He constructed three lines of defenses. The first was at Big Bethel from Deep Creek to the Poquoson River. The second line ran on the Warwick River from Yorktown to Lee's Mill, and also included fortifications on Mulberry Island meant to guard against vessels sailing down the James River. The third line of fortifications connected College and Queens Creeks east of Williamsburg (Monroe and Birkett 2012).

Fortifications in the area included a marine barricade of four barges sunk at the mouth of the Warwick River between Mulberry Island and the Peninsula. Additional fortifications included rifle lines further south at Milner's Farm and on the Warwick River side of the island; underwater obstructions at the mouth of the Warwick River (44N0065); an elevated earthwork, likely for a mortar as well a Confederate encampment on Deep Creek (44NN0051); a fortification at the mouth of Deep Creek (44NN0278) (Higgens et al. 1992); and a fortification at Land's End, at the southern tip of the island (Monroe and Birkett 2012). No fighting took place at Mulberry Island or the area around the former Warwick Towne on the Peninsula.

The Union Army of the Potomac landed on the Peninsula at Fort Monroe in March of 1862 and began to advance towards the Warwick River defenses near Yorktown (Sears 1992). Union General McClellan greatly overestimated the strength of Magruder's 13,000 men, assuming a force

of around 100,000. McClellan thus halted his advance to prepare a siege of what he thought was a heavily defended Yorktown (Sears 1992). Neither army pressed an attack, and a standoff ensued as Confederate reinforcements began to arrive in April (Sears 1992). The reinforcing troops were commanded by General Joseph Johnston, commander of the Army of Northern Virginia. Johnston did not find the Warwick line to be a favorable position and withdrew the Confederates closer to Richmond. McClellan's army pursued the Confederates and engaged at Williamsburg but failed to stop the withdrawal to Richmond (Sears 1992). The Confederate fighting retreat continued to the outskirts of Richmond.

In the final days of May 1862, the Confederate forces turned and attacked the Union army at Seven Pines. The battle halted the Union advance and forced McClellan to redeploy his forces, which allowed the Confederates to strengthen their defenses around Richmond (Sears 1992). By late June, fierce attacks by the Confederates (the Seven Days Battles) unnerved McClellan, who pulled his troops back to The Peninsula. Early in July, President Abraham Lincoln ordered McClellan to withdraw his troops back to Washington (Sears 1992). There was no significant in Warwick County for the remainder of the war.

3.2.6 Reconstruction and Growth Period (A.D. 1866–1916)

Few things changed on the Peninsula in the years immediately following the Civil War. Small dispersed farmsteads continued to dot the landscape of most of Warwick county (McKnight 1959). This began to change with the upswing of commercial activity following the arrival of the Chesapeake and Ohio railroad in the 1880s. The City of Newport News grew around the rail terminus after the rail company purchased 18,000 acres in the area (Monroe and Birkett 2012). Part of the development included the building of wharves and shipping terminals, which spurred industrial and commercial growth, and the beginning of the area's ship building industry (Rosenthal and Monroe 2008). The population of Warwick County tripled by the 1890s with many formerly enslaved peoples resettled on Mulberry Island by the Bureau of Refugees working as tenant farmers (Rosenthal and Monroe 2008).

During this period, a portion of the Young property was purchased by the founders of the local Mennonite Colony (PNA 2013). The Mennonite Colony was founded by I.D. Hertzler and D.Z. Yoder from Pennsylvania and Daniel Schenk from Ohio. The Colony was first established in 1897 and remains active in the community (Warwick River Mennonite Church 2020). Most of the area on the Peninsula remain largely rural, despite the growth of the City of Newport News. Hudson Mench, another settler from Pennsylvania, purchase a large tract of land from the Young family between deep Creek and Lynch Creek (Newport News Department of Planning and Development 1989). He was able to run a successful lumber business and post office at this location. In 1918 the family sold 251 acres of land to the city of Newport News for the establishment of a prison and farm facility. The area now known as Menchville is named after Hudson Mench (Newport News Office of Planning and Development [NNOPD] 1989).

3.2.7 World War I to World War II (A.D. 1917–1946)

The area retained a rural character through the first half of the twentieth century. The land along deep Creek was purchased by the City of Newport News became a prison and farm by the 1930s. across the Warwick River, in 1917–1918, the U.S. Army purchased the land owned by the Davis and Kimpton Brickyard to begin construction of Camp Eustis (Monroe and Birkett 2012). Fort Eustis on Mulberry Island was an important training and logistics center for the military during the Second World War. This made an integrated industrial complex in the Tidewater region vitally

important. The ensuing economic boom required the building of new homes to house the growing population.

With the establishment of a large military base much of the formerly rural landscape of Warwick county needed to be put to use as housing for the necessary support population. Hundreds of new homes were built to house the growing population, numbered at over 9,00 in 1940 (McKnight 1959), with businesses opening to service the new arrivals. Part of the growth of the county and the Tidewater Region in general required support facilities. The Hampton Roads Sanitary Division was established through two subsequent charters in 1938 and 1940 with a mandate to build and modernize the stormwater and sewage management of the Peninsula (Lillis 2015). The HRSD eventually built the James River Treatment Plant at the confluence of Warwick River and Deep Creek.

3.2.8 The New Dominion (1946-Present)

Warwick County and Newport News continued growing in the post war years. The area became an import region for military agencies and facilities and the support industries required. The growth boom increased in speed and intensity after the war years, the population of Warwick county had reached over 50,000 people by the early 1950s. The growth of Warwick County and Newport News required a new governmental arrangement. The citizens of the county resisted the idea of being annexed by the City of Newport News in the distant south of the county, so in 1952 it was decided, by referendum, to make the County of Warwick and the City of Newport News a single entity, Newport News (McKnight 1959).

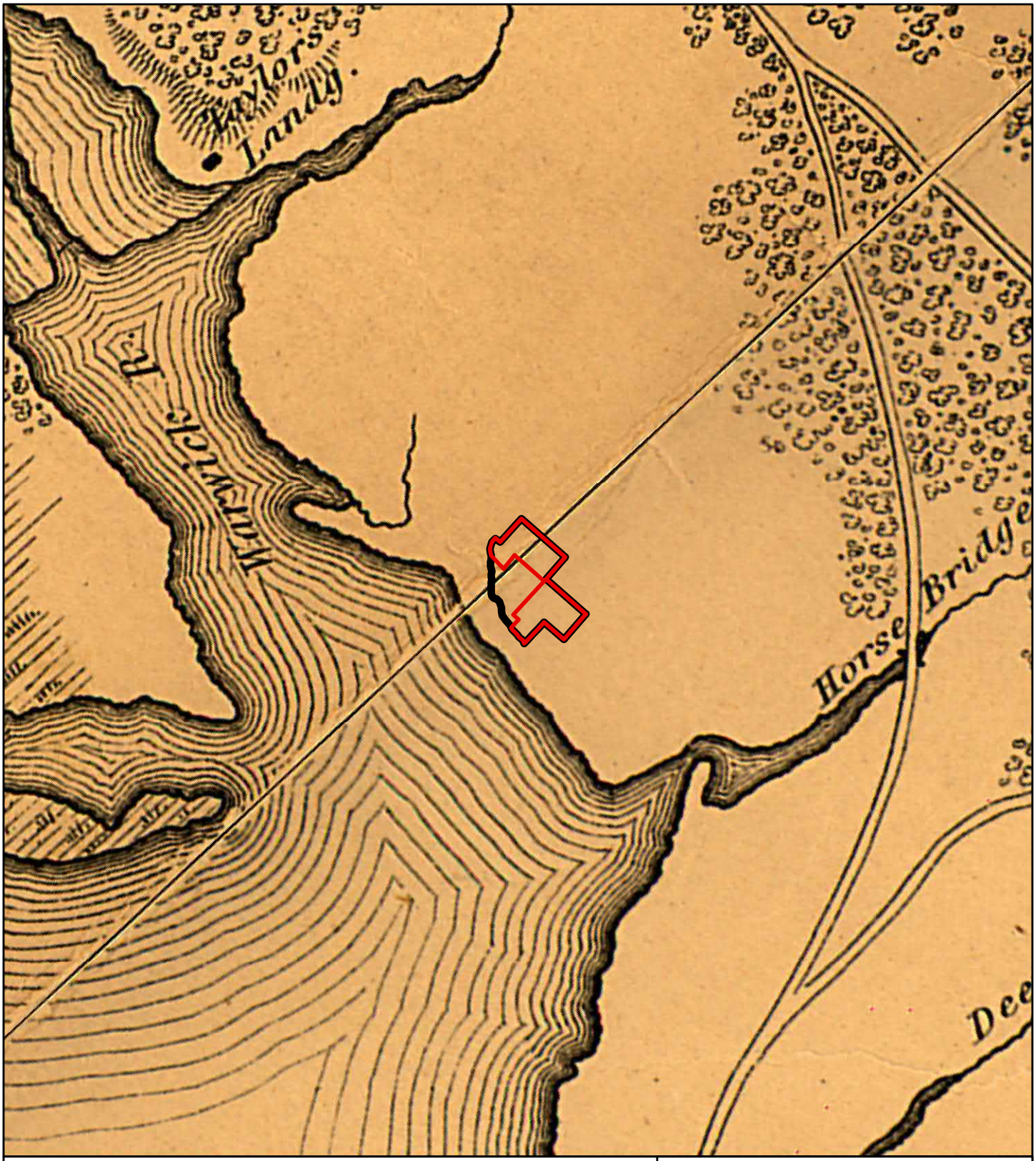
Newport News continues to be an important community not only in support of the government facilities in the area (Fort Eustis, Langley Air Force Base, and the Norfolk Naval Shipyard) but also an important hub in industry and technology. The entire county has undergone drastic change and dynamic growth in the past three quarters of a century.

3.2 PROJECT-SPECIFIC HISTORY

Due to the loss of so many Warwick County legal records during the Civil War, it is not possible to compile a complete chain-of-title the property. However, it is known that the project area was most likely a portion of land granted to Samuel Mathews by Royal Decree in 1619 (Nugent 1939). Some fifty acres near to the project area were sold from the Mathews' estate for the purpose of forming Warwick Towne along Deep Creek. No maps of Warwick Towne are known, and the size and footprint of the settlement remain unknown. Though the settlement was described as small and was abandoned by 1807, there could have been buildings from that period within the project area. When the plantation was acquired by the Digges estate in 1720, the project area likely changed hands as well. The property again changed hands when it was purchased by the Young family in 1810 (PNA 1983). No record or evidence of any buildings or structures from these early historic periods could be found.

While no antebellum maps of the project area could be found, an 1862 map of the Yorktown to Williamsburg campaign shows roads extending into the project area, but no houses are depicted (Figure 3-1). A portion of the land was sold to Hudson Mench in the late 1860s, though the size and shape of the tract was not identified. The 1882 Navigation Chart of the James River shows roads to the north of the project area, no roads or structures are depicted on the map within or immediately adjacent to the project area (Figure 3-2).

By 1907 the community known as Menchville is labeled on the 1907 Yorktown USGS Quadrangle (Figure 3-3). It is known that he sold 251 acres to the City of Newport News in 1917 for use as a prison farm. By the 1930s the prison farm was in operation over most of the land sold by Mench (NNOPD 1989). A possible dirt or gravel road associated with the Newport News Prison Farm is present within the project area and can be seen on the 1950 Mulberry Island USGS Quadrangle (Figure 3-4). The land remained in prison use until 1962 when over 30 acres of land was purchased by the HRSD for the construction of the JRTP. The JRPT was completed in 1967 and is mapped on the 1971 revision of the 1965 Mulberry Island USGS Quadrangle (Figure 3-5). Parts of the project area within the former Newport News Prison Farm became part of the Riverview Park after the Prison Farm permanently closed in 2015 (Dujardin 2015).



Legend

- Project Area
- Direct APE

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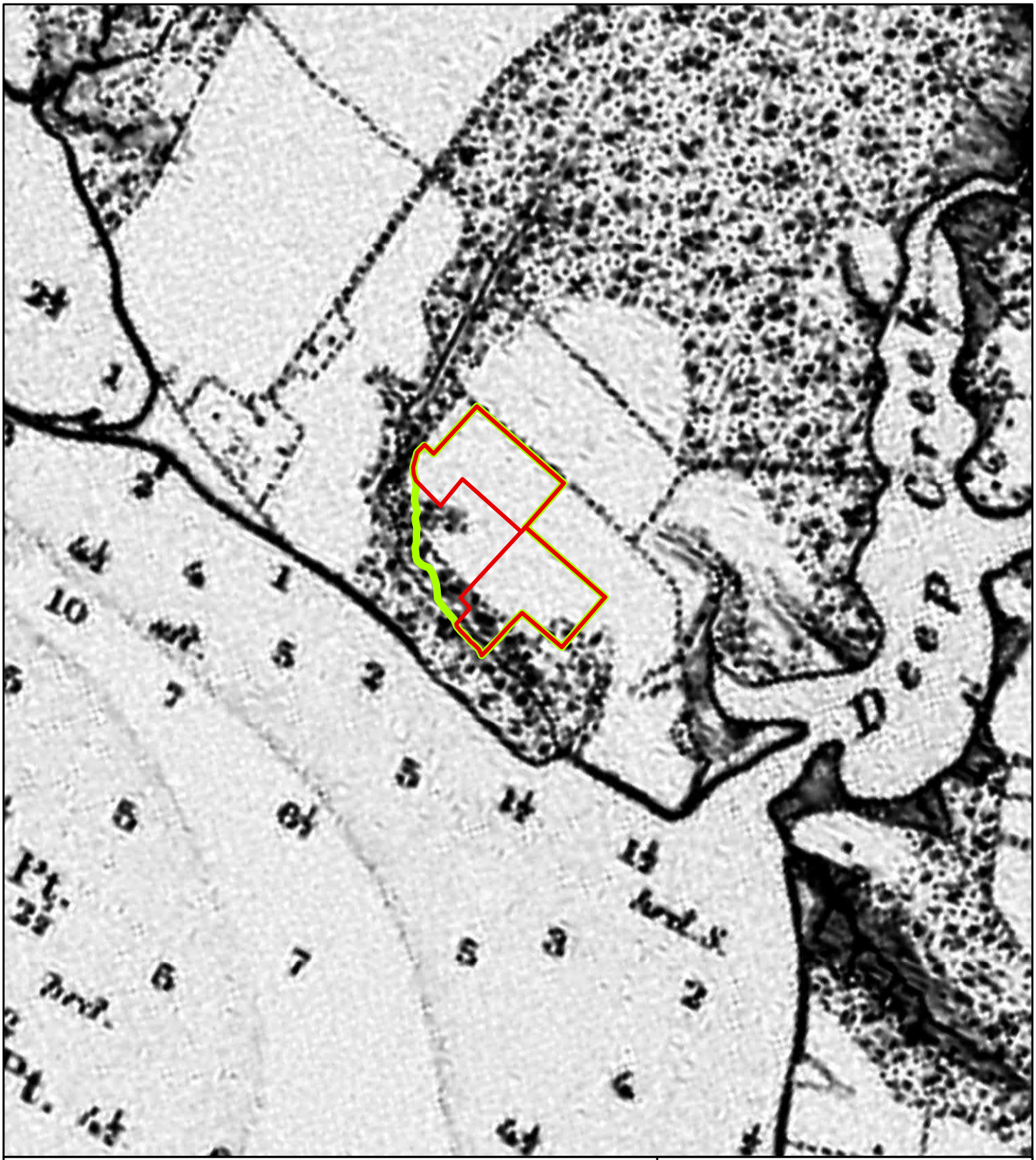
1862 Yorktown to Williamsburg Map

Source: Abbot 1862

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 3-1



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1882 Navigation Chart of the James River

Source: NOAA Office of Coast Survey 2020

Project No.	Prepared by	Date	
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Legend

- Project Area
- Direct APE

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1907 USGS Yorktown Quad Map

Source: USGS 1907

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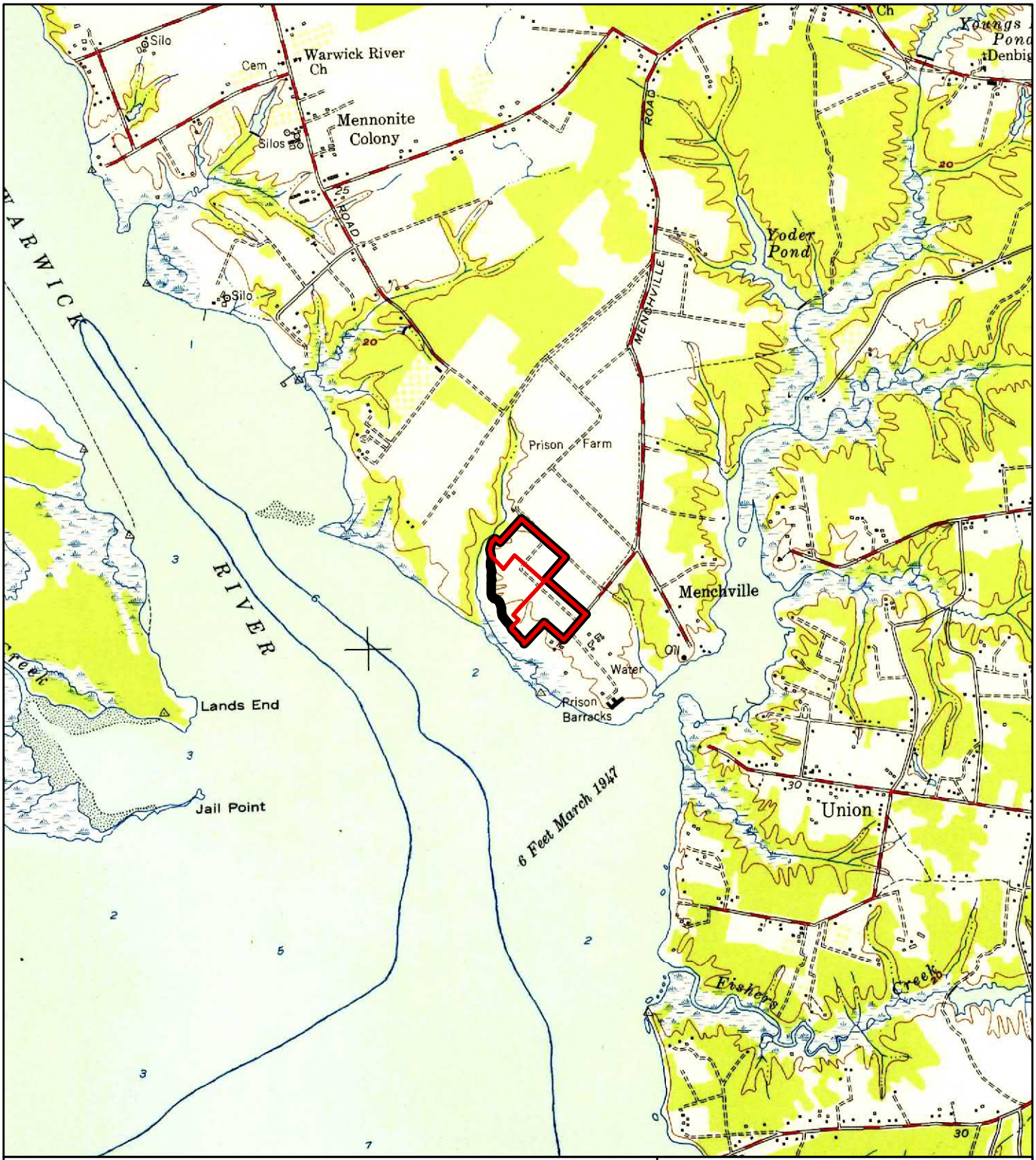

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- Project Area
- Direct APE

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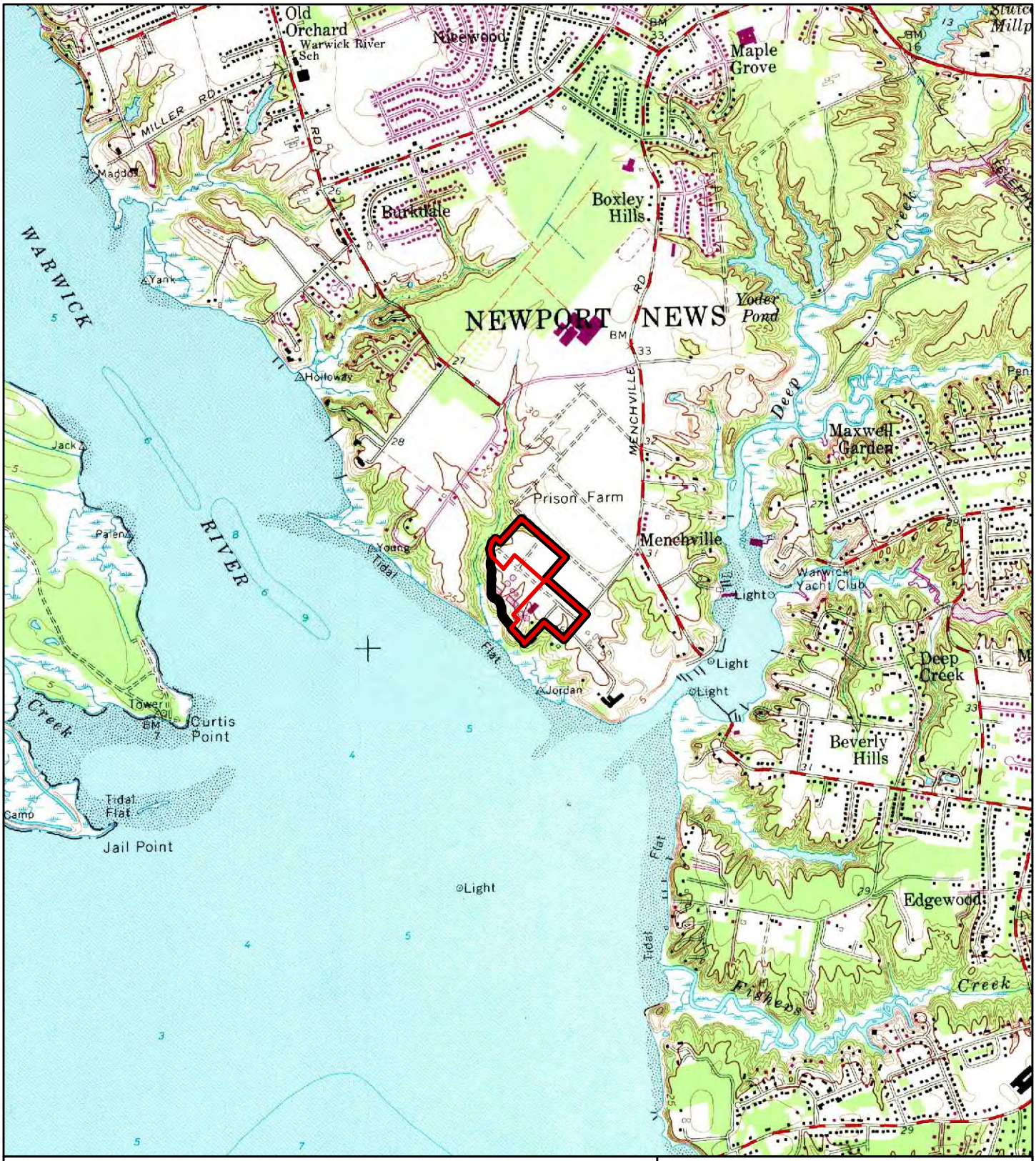
1950 USGS Mulberry Island Quad Map

Source: USGS 1950

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 3-4



Legend

- Project Area
- Direct APE

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1965 USGS Mulberry Island Quad Map
(1971 Revision)

Source: USGS 1965

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 3-5

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4.0 PREVIOUS INVESTIGATIONS

AECOM conducted background research using DHR's on-line Virginia Cultural Resource Information System (V-CRIS) in March 2020. The primary goal of this research was to identify previously recorded archaeological sites within one mile of the project area and any associated archaeological survey reports. Additionally, this research was conducted to identify any above-ground cultural resources within one mile of the project area.

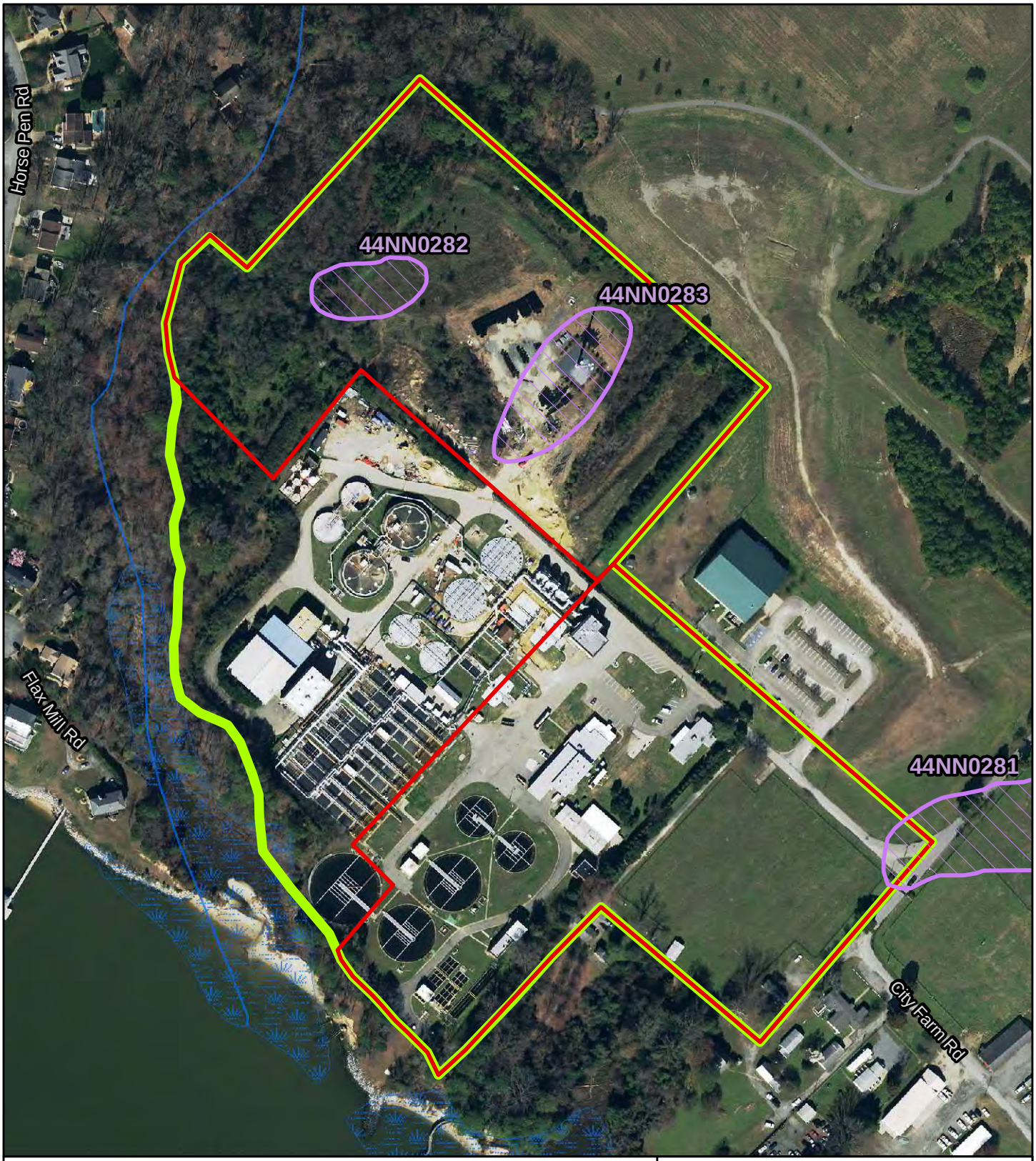
4.1 PREVIOUSLY RECORDED ARCHAEOLOGICAL RESOURCES

One single archaeological survey has occurred within the footprint of the project area, though the survey was not performed in accordance with current DHR guidelines. The project area was within a larger survey area of for the City of Newport News performed by The William and Mary Center for Archaeological Research (WMCAR) ahead of the establishment of the proposed Riverview Farm Park on portions of the Newport News City Prison Farm. The survey involved subsurface testing of five different areas deemed to have a high potential for the presence of archaeological resources. The areas were tested with shovel test pits (STPs) placed at a 75-ft (22.6-m) interval with radial STPs around any finds. The survey included a total of 433 STPs excavated over the 280-acre project area (Higgins et al. 1992). In the course of the survey, nine archaeological sites were identified (Higgins et al. 1992), including the three within the footprint of the current project: 44NN0281, 44NN0282, and 44NN0283 (Figure 4-1).

Site 44NN0281 is a multi-component site with historic and prehistoric artifacts. The site boundary extends into a small portion of the current APE in the northeast corner of Section 1 (Figure 4-2). The site had a variety of eighteenth and nineteenth century artifacts like salt-glazed Stoneware, Pearlware, wrought and cut nails, as well as handmade brick. There was also a scatter of quartz debitage within the site (DHR 2020a). Higgens et al. (1992) recommended the site eligible for the National Register of Historic Places (NRHP). Sites 44NN0282 and 44NN0283 were documented entirely with the project area. Figure 4-3 shows the 1992 plan mapping for these two sites. The larger site, 44NN0283, had a quartzite biface fragment, four quartzite flakes, and seven fire cracked rock (FCR) recovered from the plow zone (DHR 2020b). Site 44NN0282 consisted of only three quartzite flakes (DHR 2020c). Neither of the sites was deemed eligible for the NRHP by DHR.

Within a mile of the project area there are an additional 18 archaeological sites located within a 1-mile radius of the project area (Table 4-1). Other nearby sites documented during the WMCAR study include 44NN0068, a lithic scatter, and 44NN0284, a woodland scatter of sand-tempered ceramic, quartzite bifaces, hammerstones and debitage (Higgens et al. 1992). Site 44NN0069 was a mixture of seventeenth and nineteenth century domestic of artifacts scattered on the surface; no foundations or features were identified on the plowed surface (Higgens et al. 1992). Site 44NN0280 includeed a variety of nineteenth century and twentieth century artifacts domestic artifacts; no associated structures were identified during the survey (Higgens et al. 1992).

There are a number of Civil War-era sites in the vicinity. The sites on the Peninsula include 44NN0278, a defensive earthwork at the mouth of Deep Creek that measures 144-ft long and between 12 and 15-ft wide. The site also includes older artifacts such as pearlware, Delftware, and wrought and cut nails, indicating a much earlier occupation (Higgens et al. 1992). Site 44NN0051, located upstream of the mouth of Deep Creek by about a half a mile, is a military encampment with a large earthwork that was likely a pad for a high caliber mortar. Artifacts found were indicative of a military camp and included the bottom of an amber whiskey bottle, lead glass, brick,



Legend

- Project Area
- Direct APE
- Archaeology Site

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0 100 200 300 Feet

0 50 100 Meters

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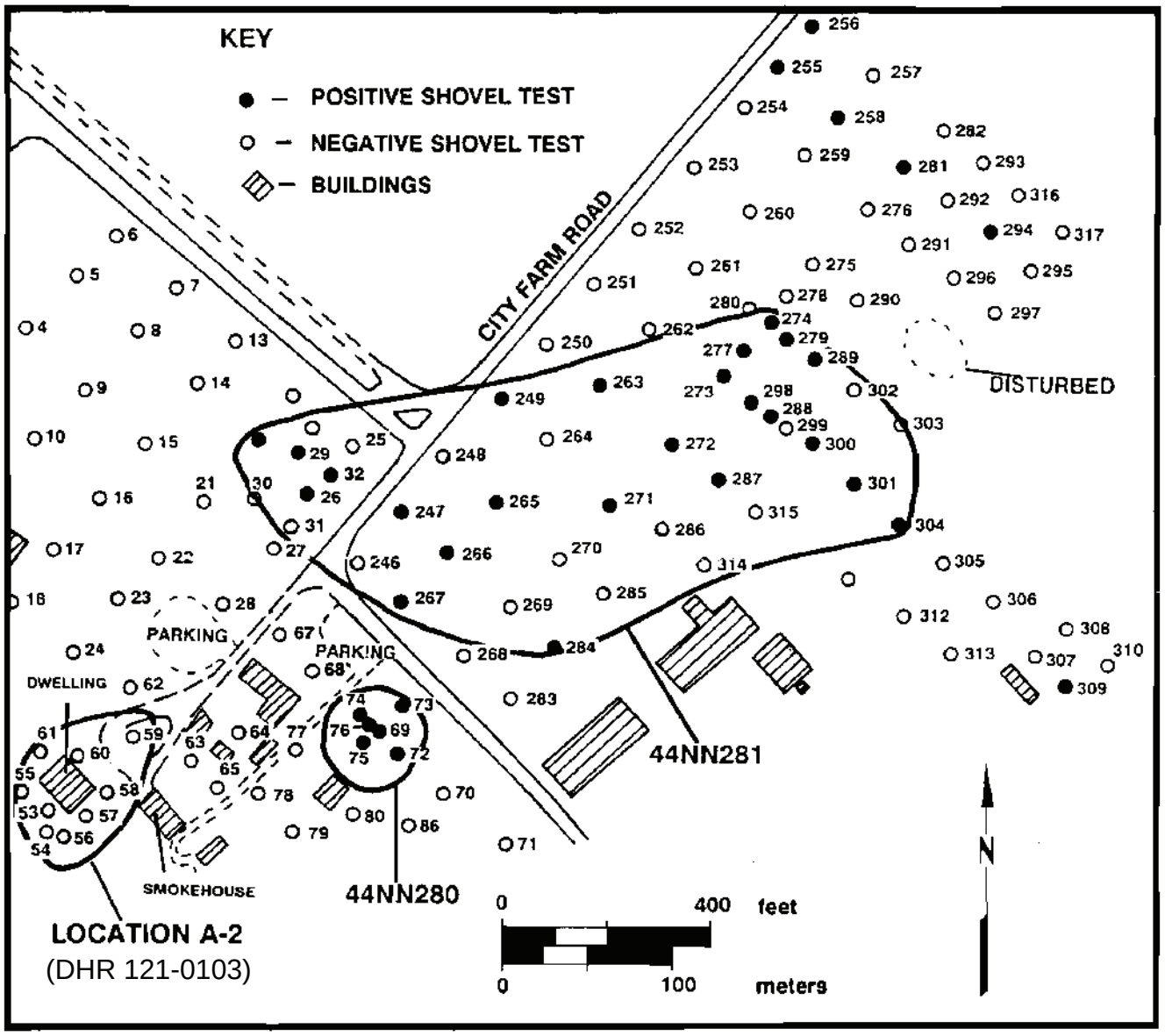
Map of Previously Recorded Archaeological Sites in the APE

Source: VCRIS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 4-1



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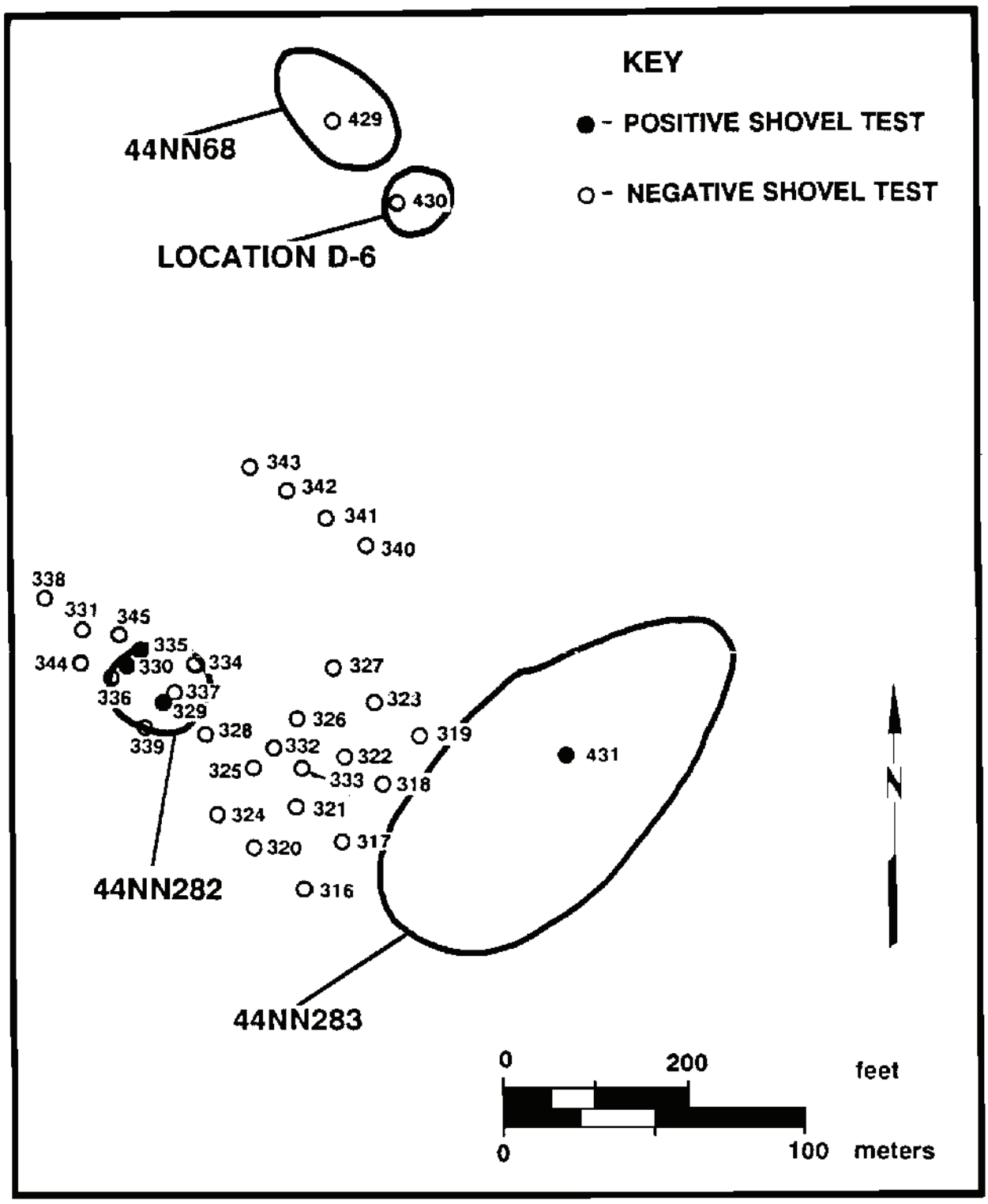
1992 Plan Map of 44NN0281
(Higgins et al. 1992)

Source: Higgins et al. 1992

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 4-2



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1992 Plan Map of 44NN0282 and 44NN0283 (Higgins et al. 1992)

Source: Higgins et al. 1992

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 4-4

shells, and the neck of a baking powder bottle; also found through metal detection were spoon fragments, nails, a reed plate from a harmonica, and various hooks and sheet of metal (Higgens et al. 1992). Site 44NN0065 is the location where four barges were sunk to barricade the entrance of the Warwick River. These were sunk by Lt. Junius DeLagnal between October 4 and 12, 1861. These were thought to have been completely decayed by the brackish tidal estuary at the time of the report in 1972.

Table 4-1. Previously Recorded Archaeological Sites within 1.0 Mile of the Project Area

DHR_ID	Site Types	Time Periods	Evaluation Status
44NN0019	Camp, Unknown	Unknown Prehistoric (15000 B.C. - 1606 A.D.) Mid-19th Century (1825 -1875)	Not Evaluated
44NN0020	Camp, base, Earthworks, Other	Late Woodland (1000 - 1606), Late 18th Century (1750 - 1799), 19th Century (1800 - 1899), 20th Century	Not Evaluated
44NN0021	Earthworks	3rd quarter 19th Century (1850 - 1874)	Not Evaluated
44NN0038	Denbigh Plantation Site, Other	17th Century (1600 - 1699), 18th Century (1700 - 1799)	NRHP Listed, VLR Listed
44NN0041	Other	Early 17th Century (1600 - 1649)	Not Evaluated
44NN0043	First Denbigh Parish Church Archaeological Site, Church	Early 17th Century (1600 - 1649)	NRHP Listed, VLR Listing
44NN0044	Mathews Manor, Other	17th Century (1600 - 1699), 18th Century (1700 - 1799)	Not Evaluated
44NN0051	Military camp	3rd quarter 19th Century (1850 - 1874)	Not Evaluated
44NN0065	Sunken Barges (Warwick River), Shipwreck	3rd quarter 19th Century (1850 - 1874)	Not Evaluated
44NN0068	Camp, temporary	Unknown Prehistoric (15000 B.C. - 1606 A.D.)	Not Evaluated
44NN0069	Other	17th Century (1600 - 1699), 19th Century (1800 - 1899)	Not Evaluated
44NN0074	Other, Shell midden	Historic/Unknown, Woodland (1200 B.C. - 1606 A.D.)	Not Evaluated
44NN0157	Dwelling, single	Mid-18th Century (1725 - 1774)	Not Evaluated
44NN0270	Camp, Other	Late 19th to Early 20th Century (1850 1950)	Not Evaluated
44NN0273	Other	19th Century (1800 -1899)	Not Evaluated
44NN0278	Earthworks, Other	18th Century, 19th Century (1700 - 1899)	Eligible
44NN0280	Other	19th Century, Early 20th Century (1800 - 1949)	Not Evaluated
44NN0281	Other	Unknown Prehistoric (15000 B.C. - 1606 A.D.); 18th Century, 19th Century (1700 - 1899)	Not Evaluated
44NN0282	Camp	Unknown Prehistoric (15000 B.C. - 1606 A.D.)	Not Eligible
44NN0283	Camp, temporary	Unknown Prehistoric (15000 B.C. - 1606 A.D.)	Not Eligible
44NN0284	Camp	Woodland (1200 B.C. - 1606 A.D.)	Not Evaluated

Nearby resources from the seventeenth century includes the Denbigh Plantation (44NN0038), Mathews Manor (44NN0044), and the first Denbigh Baptist Church (44NN0043). All of these

sites have undergone extensive examination and development since the 1940s, and Denbigh Plantation and Church are both listed in the NRHP. Another early historic site is 44NN0041, a scatter of two seventeenth century pipe stems and a seventeenth century plate. Site 44NN0074 is a shell midden with Woodland, eighteenth and nineteenth century components. The midden seems to have substantial thickness in depth and bore a wide variety of artifacts.

4.2 PREVIOUSLY RECORDED ABOVE-GROUND RESOURCES

Architectural resources in the immediate vicinity of the project area include the Newport News City Prison Farm (DHR 121-0104), which contains a prison barracks and several outbuildings as well as a ca. 1940 colonial revival farmhouse (DHR 121-0103). Across Deep Creek there is Deep Creek Pier, a historic wooden pier built in the 1930s that is strong enough to support the weight of a truck (DHR 121-5073). Associated with the pier on the mainland of the Peninsula is the Deep Creek Historic District (DHR 121-5074), a collection of 1920s houses, churches and piers that were owned and used by local oyster bed workers. The historic district continues along Deep Creek Road nearly a mile inland. A portion of the battle of Yorktown (DHR 099-5283) is mapped nearby going up the center of the Warwick River.

None of these resources are within the project area and are not expected to be affected by the undertaking.

5.0 RESEARCH DESIGN

5.1 OBJECTIVES

The objectives of the Phase I archeological survey were to identify archeological deposits within the areas of proposed disturbance, if any, relocate previously recorded archaeological sites 44NN0281, 44NN0282, and 44NN0283, if possible, define the size and approximate site boundaries of any archaeological sites encountered, and determine the NRHP eligibility status of any archaeological sites documented, if possible.

5.2 METHODS

5.2.1 Research

AECOM conducted background research utilizing V-CRIS for access to DHR records. The purpose of the research was to gather information on previously identified archaeological sites and NRHP-eligible or listed properties within a one-mile radius of the project area and to obtain data for the historic context and to aid in evaluating site significance. Historic maps and historic aerial photographs were collected from the Library of Congress (LOC) and USGS digital map collections, and electronic resources were utilized to compile historic context information to more thoroughly document the area's cultural background.

5.2.2 Field Survey

The focus of the field survey was on pedestrian inspection and subsurface testing via STP excavation. Prior to the field investigation, a prepopulated grid of alpha-numerically labeled STPs were plotted in 50-ft (15-m) intervals along transects aligned to an arbitrary project grid within the APE. If an STP was found to contain cultural materials, radial STPs were excavated at 25-ft (7.5-m) intervals from the initial STP. Radial STPs were not excavated between two positive STPs adjacent to one another on the 50-ft grid. Each STP was a circular excavation measuring approximately 12 inches (30 centimeter [cm]) in diameter and excavated to the water table, 4 inches (10 cm) into sterile subsoil, or to a maximum depth of 40 inches (131 cm) below the current ground surface. All soils were screened through 0.25-inch (0.625-cm) hardware mesh to ensure uniform artifact recovery. All STPs were backfilled after being excavated.

Field data were recorded on standard field forms and in general field notes. The forms included Munsell soil color, soil texture, depth, artifacts recovered and discarded, excavator's initials and the date of excavation. The locations of STPs were noted on field maps. Select STPs, structural remains, and other fixed points were also recorded on a Trimble GeoExplorer CE GPS unit to facilitate subsequent geo-referencing of field maps. Artifacts collected from STPs were bagged in 4 mil plastic sealing bags, which had been punctured to prevent potentially-damaging moisture retention. Each bag was labeled with the project name and area, STP number, depth and number finds, and transported to the AECOM archaeology laboratory in Gaithersburg, Maryland.

5.2.3 Laboratory Analysis

Following transportation to the AECOM archaeology laboratory in Gaithersburg, Maryland, artifacts were cleaned, cataloged, and analyzed according to the Secretary of the Interior's *Standards and Guidelines for Curation* (United States Department of the Interior 1991) and *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017). The objectives of laboratory processing and analysis were to determine, to the extent possible, the date, function,

cultural affiliation, and potential significance of artifacts, as well as to prepare the artifacts for curation. Prior to analysis and curation, artifacts were gently washed using tap water and a soft toothbrush. After drying, the artifacts were analyzed, cataloged, and rebagged according to provenience. Artifact data were entered into a relational database. Following the conclusion of this project, the artifacts will be returned to the landowner.

Historic artifacts were classified using Orser's (1988) functional typology (Table 5-1), which provides a means for interpreting the function of specific historic artifact classes. Orser's typology was used as opposed to South's (1977) as it was specifically designed for post-Civil War assemblages, while South's is more applicable to earlier assemblages. Within Orser's system, historic artifacts were analyzed according to material type and function, when possible. One additional category, 6. Unknown, was added to the functional typology to better capture unidentified artifacts. An additional subcategory has been added to the labor category, 5c. Household, to capture artifacts used during household work, i.e., cleaning products, etc.

Table 5-1 Functional Typology (modified from Orser 1988).

1.	**Foodways**
a.	Procurement – Ammunition, fishhooks, fishing weights, etc.
b.	Preparation – Baking pans, cooking vessels, large knives, etc.
c.	Service – Fine earthenware, flatware, tableware, etc.
d.	Storage – Coarse earthenware, stoneware, glass bottles, canning jars, bottle stoppers, etc.
e.	General Foodways – Unidentified glass and ceramic containers
f.	Floral – Nut shells, seeds, fruit pits, phytoliths, pollen
g.	Faunal – Animal bones, antlers, horns, shells and other remains.
2.	**Clothing**
a.	Fasteners – Buttons, eyelets, snaps, hooks, eyes, etc.
b.	Manufacture – Needles, pins, scissors, thimbles, etc.
c.	Other – Shoe leather, metal shoe shanks, clothes hangers, etc.
3.	**Household/Structural**
a.	Architectural/Construction – Nails, flat glass, spikes, mortar, bricks, slate, etc.
b.	Hardware – Hinges, tacks, nuts, bolts, staples, hooks, brackets, etc.
c.	Furnishings/Accessories – Stove parts, furniture pieces, lamp parts, fasteners, etc.
4.	**Personal**
a.	Medicinal – Medicine bottles, droppers, etc.
b.	Cosmetic – Hairbrushes, hair combs, jars, etc.
c.	Recreational – Smoking pipes, toys, musical instruments, souvenirs, etc.
d.	Monetary – Coins, etc.
e.	Decorative – Jewelry, hairpins, hatpins, spectacles, etc.
f.	Other – Pocketknives, fountain pens, pencils, ink wells, etc.
5.	**Labor**
a.	Agricultural – Barbed wire, horse shoes, harness buckles, hoes, plow blades, scythe blades, etc.
b.	Industrial – Tools, etc.
c.	Household – Household cleaning products, Iron, etc.
6.	**Unknown**
a.	Miscellaneous artifacts

Many of the historic artifacts were identifiable as to material, form, and function, while others required research to determine their function and/or dates of manufacture. Numerous internet resources were helpful such as the Historic Bottle website (Lindsey 2015) and the Jefferson Patterson Park and Museum's website (2015). Most artifact dating and identification were based on the following sources: Lindsey (2015); Miller (2000); South (1977).

An attempt was made to classify all historic ceramics according to published pottery types. (e.g., whiteware, pearlware, stoneware). Those sherds not easily recognized were assigned a descriptive name based on surface treatment and paste. Diagnostic ceramic types and maker's marks, when present, were used to estimate dates for site activities.

The same attributes were recorded for all artifacts, including: count; material (i.e., the main material composition of the artifact); and form. The form was often difficult to determine given the fragmentary nature of artifacts. Identical, or nearly identical, artifacts within a provenience were grouped together under the same catalog number. (Note: The catalog number is the bag number followed by artifact number.) For example, all the window glass fragments within a single bag number (i.e., all from the same provenience) would be given the same artifact number. Whenever possible, mendable artifacts were grouped together.

5.2.4 Accessioning and Curation

All material remains and associated records were prepared for accessioning and curation following the *Regional Archaeological Curation Facility Collections Standards* in accordance with 36 CFR Part 79, *Curation of Federally Owned and Administered Archaeological Collection.* The collection will be returned to the landowner at the conclusion of the project.

During analysis artifacts were separated, within each unique catalog number, by material type (i.e. glass, metal, and shell) and subdivided, where possible, by attributes such as ware type, form and function. A unique artifact number was then assigned to each grouping and rebagged. Artifacts were bagged in appropriately sized, perforated 4-millimeter (mil) polyethylene zip-lock bags.

All diagnostic artifacts were labeled with the state site number, provenience, and their individual artifact number using a base coat of archivally safe sealant (such as Paraloid B-72), ink, and a final coat of sealant. Artifacts such as glass, nails, and brick were bagged together with their group within their individual provenience but do not require direct labeling. Bags were labeled with provenience information using permanent black ink; acid-free archival tags with the same information were placed in each bag or special container.

All artifacts were bagged according to catalog number, ordered sequentially, and placed in Hollinger-style archival boxes measuring 15-x-12-x-10 inches with lids and affixed with a temporary label and numbered according to the Regional Facility' specifications. An inventory for each box was placed inside detailing all artifacts/documents present within an individual box.

All original documentation and one stable, acid-free copy were submitted along with the artifacts. Acid-free secondary containers such as file folders were used to organize the records in a logical manner and are in permanent ink with the contents. Photographs and digital media were formatted according to current collections best standards and burned onto an archival disk; hard copies of digital photos are also included. An inventory describing all media submitted with an explanation of the information in the inventory of associated records, photographic documentation and artifacts were submitted with the collection.

5.3 EXPECTED RESULTS

Based on historic background information gathered for this project, it was expected that cultural materials deposited any time from the seventeenth century to the present-day could be encountered. It was also expected that prehistoric artifacts could be encountered due to the project area's location along the James River and the adjacent unnamed tributaries and swamps.

6.0 RESULTS

The Phase I archaeological survey of the JRTP included pedestrian inspection of the entire APE and shovel testing except in areas of prior development, steep slope, or poorly drained soils. A total of 383 STPs were pre-plotted across the APE prior to the survey, but due to field conditions, only 92 were excavated, along with an additional 39 radial delineation STPs. The survey resulted in the recovery of 67 artifacts from 18 positive STPs and resulted in the relocation of 44NN0281 and the documentation of two new archaeological sites within the APE, 44NN0359 and 44NN0360. No evidence of previously recorded 44NN0282 and 44NN0283 was encountered. To better manage the project, the APE was divided into two distinct areas, Section 1 in the southeast quarter of the project area and Section 2 in the Northwest quarter. Figure 6-1 shows Section 1 and Section 2 as well as the locations of the documented archaeological sites.

6.1 SECTION 1

Pedestrian inspection of Section 1 found that most of this section consisted of previous development such as structures, buildings, roads, and parking lots. Of the 198 pre-plotted STPs to in Section 1, only 49 were able to be excavated, almost entirely within the manicured lawn in the southern portion of the section (Figure 6-2). Thirteen of the grid STPs excavated in Section 1 were positive for cultural material, resulting in the relocation of 44NN0281 within the APE as well as the documentation of two new historic archaeological sites, 44NN0359 and 44NN0360, and one isolated find (STP E-7). Isolated find STP E-7 consisted of a twentieth century embossed bottle fragment and an unidentifiable nail within the Ap horizon between 0 to 28 cm (0 to 11 inches) below ground surface (bgs).

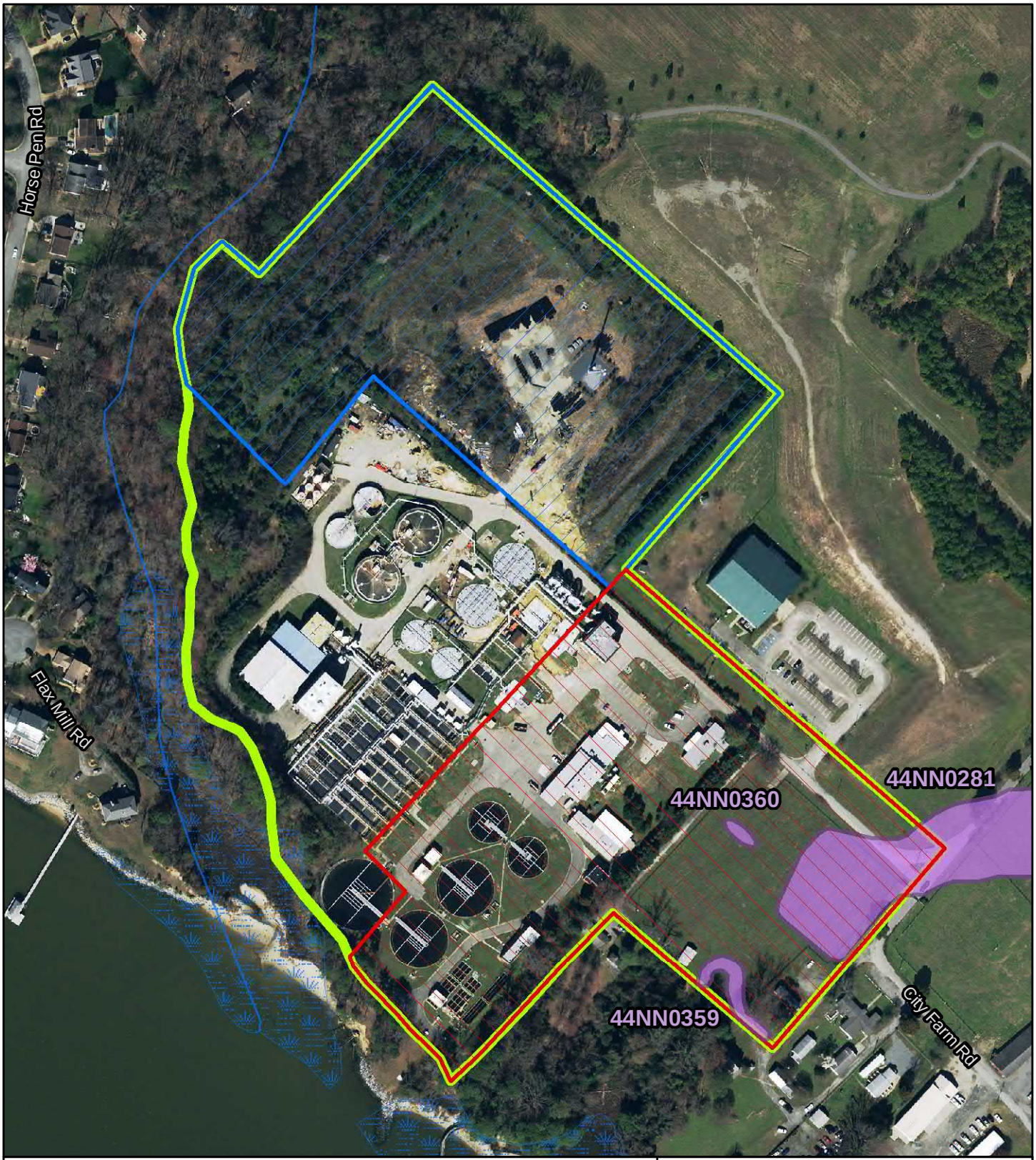
Where the soil had not been obviously disturbed, the typical profile exhibited extensive erosion, with the topsoil and E horizon often mixed with the subsoil. STP B-6 exhibited some amount of erosion resulting in a profile with a pale brown (10YR 6/3) sandy loam A horizon extending to 28 cm (11 inches) bgs underlain by a yellowish brown (10YR 5/6) loam Bt Horizon. Figure 6-3 contains representative STP profiles from Section 1.

6.1.1 Site 44NN0281

Site 44NN0281 was originally documented in 1992 (Higgins et al. 1992), and a portion of the site boundary as depicted on project plan maps and on V-CRIS extended into the APE. This portion of the APE is a manicured lawn (Figures 6-4 and 6-5). Six grid STPs in the mapped location of the site contained cultural material, and an additional four radial STPs also contained cultural material (Figure 6-6). All 41 of the historic artifacts recovered came found the Ap horizon of these STPs.

STP D-3 contained a soil profile representative of that encountered across the site. The STP encountered an Ap horizon of a pale brown (10YR 6/3) sandy loam extending to a depth of 24 cm (9.4 inches) bgs over a yellowish brown (10YR 5/6) sandy loam Bt horizon.

The artifacts include a variety of architectural materials and domestic artifacts. Over 75 percent (n=32) of the artifacts are architectural in nature including 7 wire nails, 7 unidentifiable nails, 11 brick fragments, and 7 shards of window glass. Domestic artifacts include five bottle glass fragments, a single canning jar fragment, and a unidentified hollowware shard. The labor group consists of a single fence staple, and there was an unidentifiable fragment of iron in the miscellaneous group.



Legend

- Project Area
- Archaeology Site

Direct APE

- Section 01
- Section 02

N

0 100 200 300 Feet

0 50 100 Meters

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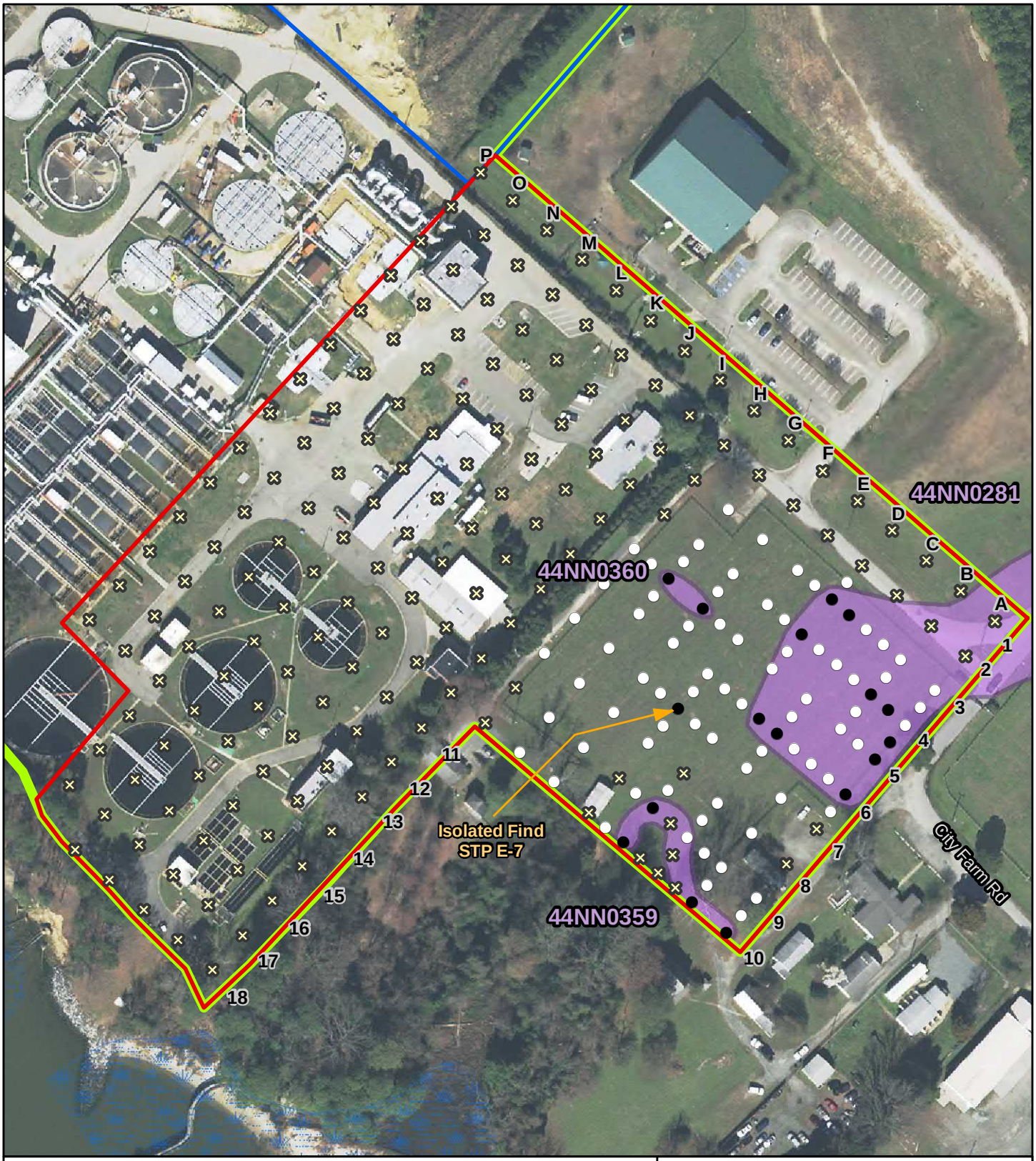
Project Plan

Source: VCRIS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 6-1



Legend

- Project Area
- Archaeology Site

Direct APE

- Section 01
- Section 02

STPs

- Positive STP
- Negative STP
- Not Dug

N

0 100 200 Feet

0 20 40 60 Meters

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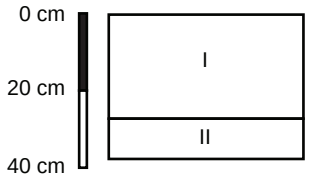
Germantown, MD 20876

Section 1 Plan

Source: VCRIS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/15/20	Figure 6-2

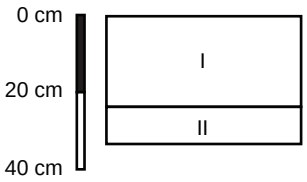
Section 1
B-6



I Ap Horizon
Pale brown (10YR 6/3) sandy loam

II Bt Horizon
Yellowish brown (10YR 5/6) loam

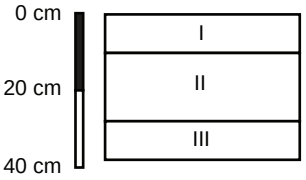
Section 1
D-3
(44NN0281)



I Ap Horizon
Pale brown (10YR 6/3) sandy loam
with 3% gravel

II Bt Horizon
Yellowish brown (10YR 5/6) sandy loam
with 3% gravel

Section 1
A-10
(44NN0359)

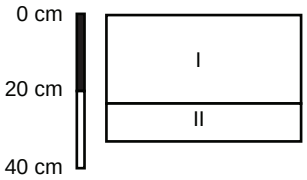


I Fill
Very dark brown (10YR 2/2) mixed with brown (10YR 4/3)
sandy loam with 60% pea-sized gravel

II Fill
Very pale brown (10YR 7/3) mixed with yellowish brown
(10YR 5/6) sandy loam with 30% pea-sized gravel

III Bt Horizon
Yellowish brown (10YR 5/6) loam

Section 1
D-9
(44NN0359)



I Ap Horizon
Pale brown (10YR 6/3) sandy loam with 3% gravel

II Bt Horizon
Yellowish brown (10YR 5/6) sandy loam with 3% gravel

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Section 1 Representative STP Profiles

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 6-3

Figure 6-4. View of 44NN0281, Facing Southwest

Figure 6-5. View of 44NN0281, Facing West

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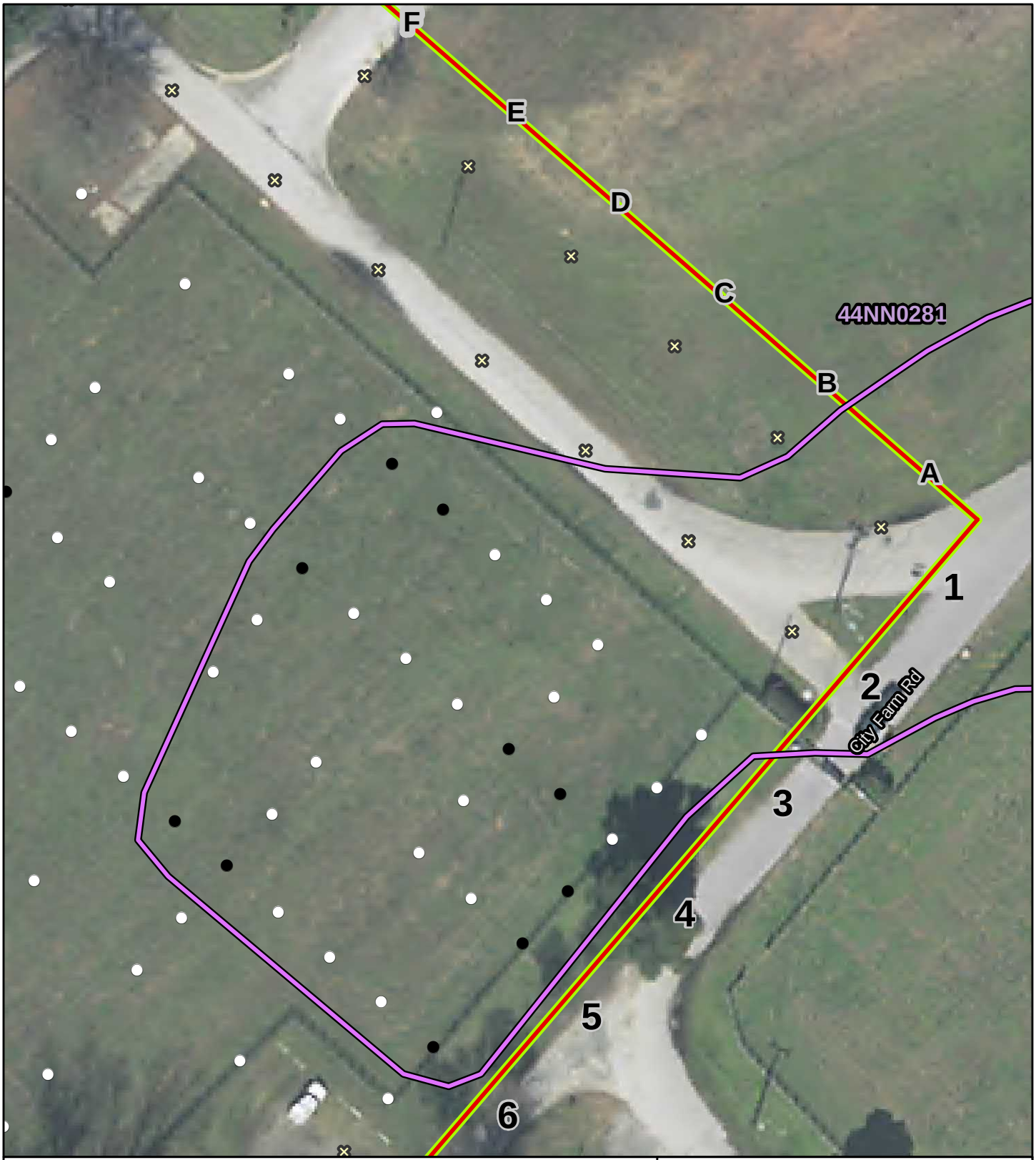
Project Photographs

Project No.	Prepared by	Date	Figures 6-4 and 6-5
60617789	KAF	05/14/20	



Legend

- Project Area
- Archaeology Site

Direct APE

- Section 01
- Section 02

STPs

- Positive STP
- Negative STP
- Not Dug

N

0 20 40 60 Feet

0 10 20 Meters

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Site 44NN0281 Plan

Source: VCRIS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/15/20	Figure 6-6

Table 6-1 Artifacts from 44NN0281

Group	Material	Object	Count
Foodways	Glass	Unidentified Bottle	5
		Canning Jar	1
		Unidentified Vessel	1
Household/Structural	Brick	Brick	11
	Glass	Window Glass	7
	Metal, Iron	Wire Nail	7
	Metal, Iron	Unidentified Nail	7
Labor	Metal, Iron	Fence Staple	1
Miscellaneous	Metal, Iron	Unidentified	1
Grand Total			**40**

The recovered artifacts from 44NN0281 within the APE largely date to the twentieth century. The assemblage in this newly found portion of 44NN0281 is most likely associated with the Newport News City Prison Farm, which occupied the wider vicinity by 1931. All the recovered artifacts came from the historic plow zone, and no evidence of cultural features was noted. The archaeological deposits within the APE do not have the potential to yield significant information about the twentieth century occupation of the APE and do not contribute to the potential NRHP eligibility of 44NN0281 as a whole.

6.1.2 44NN0359

Shovel testing in the southern portion of Section 1 near a ca. 1940s house (DHR 121-0103) resulted in five positive STPs containing 21 artifacts and the documentation of 44NN0359 (Figure 6-7). The site is located on a landform that overlooks the James River and is bounded by steep slopes (Figure 6-8). Ten of the artifacts were recovered from the Ap horizon of STPs B-10, C-9, D-9, and D-10, while 11 came from the second fill layer documented in STP A-10 (Figure 6-9).

STP D-9 is representative of the typical soil profile for the site. It encountered a pale brown (10YR 6/3) sandy loam Ap horizon extending to 26 cm (11.2 inches) bgs underlain by a yellowish brown (10YR 5/6) sandy loam Bt horizon (Figure 6-3). The soil profile of STP A-10, however, is atypical and included multiple fill layers. The profile consisted of very dark brown (10YR 2/2) sandy loam mixed with a brown (10YR 4/3) sandy loam and about 60 percent pea-gravel fill that extended to 10 cm (3.9 inches) bgs. This was underlain by a second fill layer was composed of very pale brown (10YR 7/3) sandy loam mixed with yellowish brown (10YR 5/6) sandy loam and 30 percent pea-gravel that extended to 29 cm (11.4 inches) bgs. The fill layers were underlain by a yellowish brown (10YR 5/6) loam Bt horizon (Figure 6-3).

The 10 artifacts from STPs B-10, C-9, D-9, and D-10 include a variety of architectural (n=5) and foodways artifacts (n=4), including five brick fragments, two sherds of a refined earthenware plate, and two shards of unidentified vessel glass as well as a single iron strap. The artifacts from the fill layer in STP A-10 are a mix of both historic artifacts and modern trash. Six of the artifacts represent the foodways group, and include two sherds of a porcelain tea service, two sherds of a stoneware plate, one glass shard from a bottle, and one from a glass tumbler. The other five artifacts include two brick fragments and three miscellaneous artifacts, two unidentified iron and one unidentified plastic. Artifacts from are summarized in Table 6-2.

Figure 6-7. View of House near 44NN0359, Facing Southwest

Figure 6-8. View of Erosion near STP B-10

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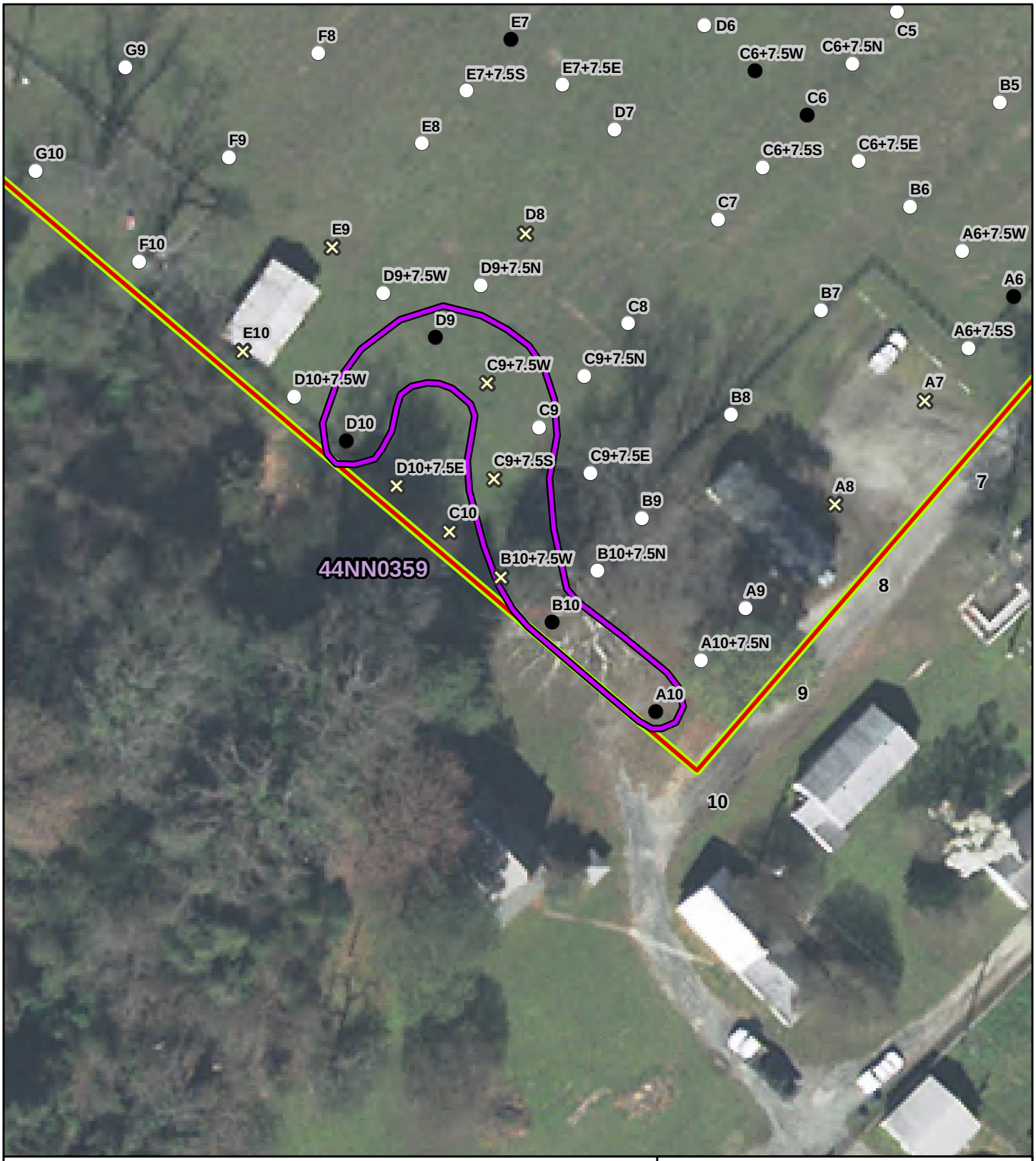
Project Photographs

Project No.	Prepared by	Date	Figures 6-7 and 6-8
60617789	KAF	05/14/20	



Legend

- Project Area
- Archaeology Site

Direct APE

- Section 01

STPs

- Positive STP
- Negative STP
- Not Dug

N

0 20 40 60 Feet

0 10 20 Meters

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Site 44NN0359 Plan

Source: VCRIS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/15/20	Figure 6-9

Table 6-2. Artifacts from 44NN0359

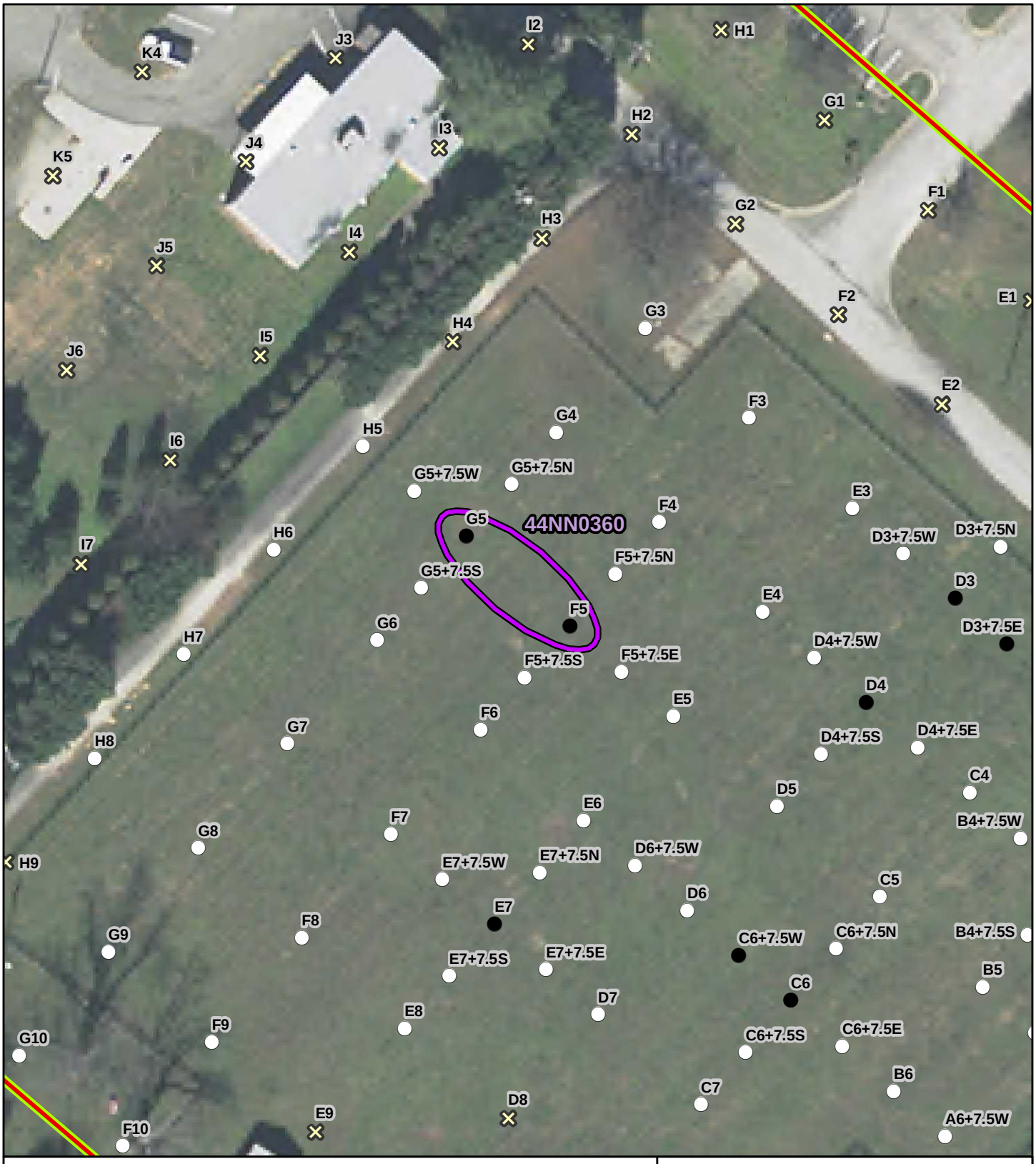
Group	Material	Object	Count
Foodways	Ceramic	Refined Earthenware Plate	4
		Porcelain Tea Service	2
	Glass	Glass Tumble	1
		Unidentified Vessel	3
Household/Structural	Brick	Brick	7
Miscellaneous	Metal, Iron	Unidentified Iron	2
		Unidentified Strap	1
	Synthetic	Unidentified Plastic	1
Grand Total			**21**

The recovered artifacts from 44NN0359 largely date to the twentieth century and is most likely associated with either the nearby house (DHR 121-0103) and/or the Newport News City Prison Farm, which occupied the wider vicinity by 1931. All the recovered artifacts came from the historic plow zone or fill, and no evidence of cultural features was noted. The archaeological deposits at 44NN0359 do not have the potential to yield significant information about the twentieth century occupation of the APE, and the site is recommended not eligible for the NRHP.

6.1.3 44NN0360

44NN0360 was documented by two adjacent positive STPs in the center of the grass field in the southern part of Section 1 (Figure 6-10). STP F-5 contained two fragments of iron, and STP G-5 contained a cast iron/lead alloy sphere resembling a musket ball. All three artifacts came from the Ap horizon. STP F-5 is representative of the soil profile at the site. It encountered a pale brown (10YR 6/3) sandy loam Ap horizon to a depth of 25 cm (9.8 inches) bgs over a yellowish brown (10YR 5/6) Bt horizon.

The iron fragments may be representative of agricultural activities or activities related to the Newport News City Prison Farm. The single musket ball is likely an isolated artifact from hunting or target practice or may be a stray item from Civil War engagements in the vicinity. All the recovered artifacts came from the historic plow zone or fill, and no evidence of cultural features was noted. The archaeological deposits at 44NN0360 do not have the potential to yield significant information about the historic occupation of the APE, and the site is recommended not eligible for the NRHP.



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Site 44NN0360 Plan

Source: VCRIS 2020; VGIN 2020

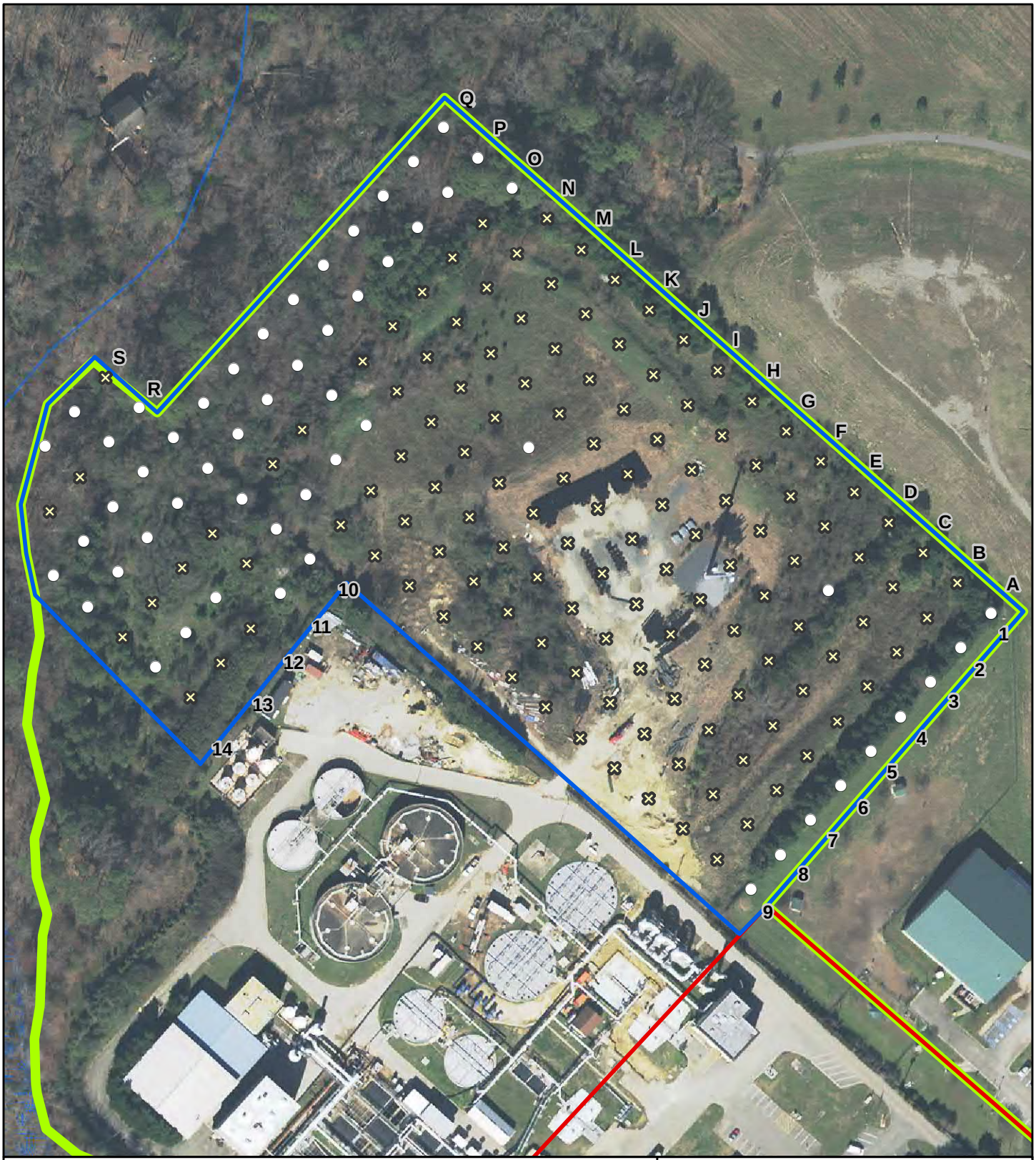
Project No.	Prepared by	Date	
60617789	KAF	05/15/20	Figure 6-10

6.2 SECTION 2

Of the 185 pre-plotted STPs to in Section 2, only 43 were able to be excavated (Figure 6-11). Pedestrian inspection of Section 1 found that most of this section consisted of previous development (e.g. cell tower), areas of obvious disturbance (e.g., grading, push piles, utility trenches), and steep slopes (Figures 6-12 and 6-13).

No cultural material was encountered in Section 2, including within the mapped locations of previously recorded sites 44NN0282 and 44NN0283, both of which appear to have been destroyed. The mapped location of 44NN0283 contains a cellular tower, associated support structure, and an access road. The ground surface has been graded, and the top soil had been stripped away leaving subsoil visible at the surface. The mapped location of 44NN0282 has undergone grading as well, leaving the area devoid of topsoil, with only subsoil visible at the surface.

The soils in the west portion of Section 2 near the steep slopes down to the unnamed drainage forming the western boundary of the APE has been subjected to erosion as seen in the profile of STP P-3 (Figure 6-14). This STP encountered a shallow pale brown (10YR 6/3) sandy loam A horizon to a depth of 10 cm (3.9 inches) bgs overlying a yellowish brown (10YR 5/6) loam Bt horizon. Within the southeastern edge of Section 2, some areas of intact soil were encountered, as represented by STP A-3 (Figure 6-14). This STP encountered a thin O horizon composed of a very dark brown (10YR 2/2) sandy loam to a depth of 3 cm (1.2 inches) bgs over a pale brown (10YR 6/3) sandy loam Ap horizon that extended to 37 cm (14.6 inches) bgs. The Bt horizon consisted of a yellowish brown (10YR 5/6) loam.



Legend

- Project Area
- Archaeology Site

Direct APE

- Section 02
- Section 01

STPs

- Positive STP
- Negative STP
- Not Dug

N

0 100 200 Feet

0 20 40 60 Meters

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Section 2 Plan

Source: VCRIS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	05/15/20	Figure 6-11

Figure 6-12. View of Disturbance in Section 2, Facing North

Figure 6-13. View of Steep Slope in Section 2, Facing North

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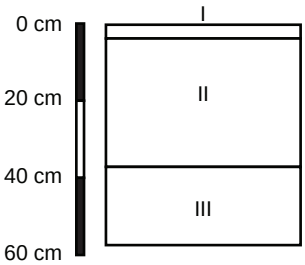
Project Photographs

Project No.	Prepared by	Date	Figures 6-12 and 6-13
60617789	KAF	05/14/20	

Section 2
A-3

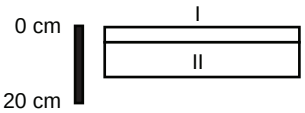


I O Horizon
Very dark brown (10YR 2/2) sandy loam

II Ap Horizon
Pale brown (10YR 6/3) sandy loam

III Bt Horizon
Yellowish brown (10YR 5/6) loam

Section 2
P-3



I O Horizon
Very dark brown (10YR 2/2) silt loam
with less than 5% gravel, disturbed

II Bt Horizon
Brownish yellow (10YR 6/6) clay loam
with less than 5% gravel

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Section 2 Representative STP Profiles

Project No.	Prepared by	Date	
60617789	KAF	05/14/20	Figure 6-14

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7.0 CONCLUSIONS AND RECOMMENDATIONS

AECOM conducted a Phase I archaeological survey for HRSD of areas of proposed ground disturbance (APE) for the JRTP in Newport News, Virginia, in support of the SWIFT program, funded in part by a loan financed through the EPA WIFIA program. Work was conducted pursuant to Section 106 of the NHPA of 1966, as amended, and the ACHP's "Protection of Historic and Cultural Properties" (36 CFR 800; U USDI 2004). The study also conformed to the DHR *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

The Phase I archaeological survey of the JRTP APE resulted in the relocation of a portion of 44NN0281 within the APE and the documentation of two new archaeological sites within the APE, Site 1 and Site 2. No evidence of previously recorded 44NN0282 and 44NN0283 was encountered. The archaeological deposits associated with 44NN0281 consist of a subsurface scatter of late nineteenth and twentieth century artifacts all found within the topsoil that appear to be associated with the Newport News City Prison Farm. Site 44NN0359 is also a subsurface scatter of late nineteenth and twentieth century artifacts all found within the topsoil that appear to be associated with the Newport News City Prison Farm. Site 44NN0360 consists of two fragments of sheet metal and a cast iron/lead alloy sphere resembling a musket ball.

The archaeological deposits associated with 44NN0281 within the APE do not have the potential to yield significant information about the twentieth century occupation of the APE and do not contribute to the potential NRHP eligibility of 44NN0281 as a whole. The archaeological deposits at 44NN0359 and 44NN0360 do not have the potential to yield significant information about the historic occupation of the APE, and the sites are recommended not eligible for the NRHP.

It is recommended that the proposed development at the JRTP project be allowed to proceed without concern for impacts to significant archaeological sites. However, should project designs change to include un-surveyed portions of the property, additional archaeological investigations may be necessary. Additionally, adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

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Appendix A:
Artifact Catalog

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Piney Run Ph I

Site Number 44NN0281 **Locus:** **STP:** A-5 **Feature** **Strat:** I **Depth:** 0 to 24 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Labor	Metal, Iron	Fence Staple, Fragment			---	

Site Number 44NN0281 **Locus:** **STP:** A-5 **Feature** **Strat:** I **Depth:** 0 to 24 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Miscellaneous	Metal, Iron	Indeterminate, Fragment			---	

Site Number 44NN0281 **Locus:** **STP:** A-5 **Feature** **Strat:** I **Depth:** 0 to 24 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0281 **Locus:** **STP:** A-5-N **Feature** **Strat:** I **Depth:** 0 to 34 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0002.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Shoulder	Colorless	Machined	Stippling---	

Site Number 44NN0281 **Locus:** **STP:** A-5-N **Feature** **Strat:** I **Depth:** 0 to 34 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0002.000	2	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua		---	

Site Number 44NN0281 **Locus:** **STP:** A-5-N **Feature** **Strat:** I **Depth:** 0 to 34 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0002.000	1	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Wire Wound	---	

Site Number 44NN0281 **Locus:** **STP:** A-5-N **Feature** **Strat:** I **Depth:** 0 to 34 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0002.000	1	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0281 **Locus:** **STP:** A-6 **Feature** **Strat:** I **Depth:** 0 to 22 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0003.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Colorless	Mold Blown, Indeterminate	---	Likely an early machine bottle; Rounded corner/edge, possible panel bottle

Site Number 44NN0281 **Locus:** **STP:** A-6 **Feature** **Strat:** I **Depth:** 0 to 22 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0003.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua		---	

Site Number 44NN0281 **Locus:** **STP:** A-6 **Feature** **Strat:** I **Depth:** 0 to 22 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0003.000	1	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** B-4 **Feature** **Strat:** I **Depth:** 0 to 31 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0005.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Fragment	Aqua	Indeterminate	---

Site Number 44NN0281 **Locus:** **STP:** B-4 **Feature** **Strat:** I **Depth:** 0 to 31 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0005.000	2	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** B-4-E **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0006.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Fragment	Olive Green	Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** B-4-E **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0006.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua		---	

Site Number 44NN0281 **Locus:** **STP:** B-4-E **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0006.000	2	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Wire Wound	---	

Site Number 44NN0281 **Locus:** **STP:** B-4-E **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0006.000	2	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** B-4-E **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0006.000	3	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0281 **Locus:** **STP:** C-6 **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0008.000	3	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Wire Wound	---	

Site Number 44NN0281 **Locus:** **STP:** C-6 **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0008.000	1	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** C-6-W **Feature** **Strat:** I **Depth:** 0 to 31 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Base Sherd	Colorless	Machined	---	

Site Number 44NN0281 **Locus:** **STP:** C-6-W **Feature** **Strat:** I **Depth:** 0 to 31 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua		---	

Site Number 44NN0281 **Locus:** **STP:** C-6-W **Feature** **Strat:** I **Depth:** 0 to 31 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	1	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** D-3 **Feature** **Strat:** I **Depth:** 0 to 25 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0011.000	1	Historic, Foodways	Glass, Common Glass	Vessel, Hollowware, Fragment	Colorless	Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** D-3 **Feature** **Strat:** I **Depth:** 0 to 25 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	5	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0281 **Locus:** **STP:** D-3-E **Feature** **Strat:** I **Depth:** 0 to 23 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0012.000	1	Historic, Foodways	Glass, Common Glass	Jar, Canning, Body Sherd	Aqua Blue	Indeterminate	---	Air bubbles present in glass, likely blown in mold

Site Number 44NN0281 **Locus:** **STP:** D-3-E **Feature** **Strat:** I **Depth:** 0 to 23 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0012.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 44NN0281 **Locus:** **STP:** D-4 **Feature** **Strat:** I **Depth:** 0 to 20 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	1	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Wire Wound	---	

Site Number 44NN0281 **Locus:** **STP:** D-4 **Feature** **Strat:** I **Depth:** 0 to 20 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	1	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0359 **Locus:** **STP:** A-10 **Feature** **Strat:** II **Depth:** 10 to 29 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0004.000	2	Historic, Foodways	Ceramic, Porcelain	Cup, Coffee/Tea, Base/Body Sherd		Porcelain, Hard Paste	---	Sherds mend

Site Number 44NN0359 **Locus:** **STP:** A-10 **Feature** **Strat:** II **Depth:** 10 to 29 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0004.000	2	Historic, Foodways	Ceramic, Refined Earthenware	Plate, Base Sherd		Ironstone/Stone China/White Granite	---	Sherds mend

Site Number 44NN0359 **Locus:** **STP:** A-10 **Feature** **Strat:** II **Depth:** 10 to 29 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0004.000	1	Historic, Foodways	Glass, Common Glass	Drinking Glass, Tumbler, Rim Sherd	Colorless, Solarized	Pressed	Molded---Fluted	

Site Number 44NN0359 **Locus:** **STP:** A-10 **Feature** **Strat:** II **Depth:** 10 to 29 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0004.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Fragment	Colorless	Indeterminate	---	

Site Number 44NN0359 **Locus:** **STP:** A-10 **Feature** **Strat:** II **Depth:** 10 to 29 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0004.000	1	Historic, Miscellaneous	Synthetic, Plastic	Plastic, Unid,	White		---	

Site Number 44NN0359 **Locus:** **STP:** A-10 **Feature** **Strat:** II **Depth:** 10 to 29 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0004.000	2	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0359 **Locus:** **STP:** A-10 **Feature** **Strat:** II **Depth:** 10 to 29 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0004.000	2	Historic, Miscellaneous	Metal, Iron	Indeterminate, Fragment		Indeterminate	---	

Site Number 44NN0359 **Locus:** **STP:** B-10 **Feature** **Strat:** I **Depth:** 0 to 21 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0007.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Base Sherd	Aqua	Machined	---	

Site Number 44NN0359 **Locus:** **STP:** B-10 **Feature** **Strat:** I **Depth:** 0 to 21 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0007.000	1	Historic, Miscellaneous	Metal, Iron	Indeterminate Strap, Fragment		Indeterminate	---	Possible door hinge fragment

Site Number 44NN0359 **Locus:** **STP:** C-9 **Feature** **Strat:** I **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0010.000	2	Historic, Foodways	Ceramic, Refined Earthenware	Plate, Rim Sherd		Pearlware	Painted-Impressed-Blue-Shell Edge, Even Scalloped, Curved Lines	Sherds do not mend, but likely same vessel

Site Number 44NN0359 **Locus:** **STP:** C-9 **Feature** **Strat:** I **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0010.000	1	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0359 **Locus:** **STP:** D-9 **Feature** **Strat:** I **Depth:** 0 to 24 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0014.000	1	Historic, Foodways	Glass, Common Glass	Vessel, Hollowware, Fragment	Colorless	Mold Blown, Indeterminate	Embossed---Indeterminate	

Site Number 44NN0359 **Locus:** **STP:** D-9 **Feature** **Strat:** I **Depth:** 0 to 24 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0014.000	2	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0359 **Locus:** **STP:** D-10 **Feature** **Strat:** I **Depth:** 0 to 11 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	2	Historic, Household/Structural	Ceramic, Brick	Brick, Fragment			---	

Site Number 44NN0360 **Locus:** **STP:** F-5 **Feature** **Strat:** I **Depth:** 0 to 25 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0017.000	1	Historic, Household/Structural	Metal, Iron	Nail, Almost Complete		Indeterminate	---	Likely a complete wire nail, heavily oxidized; Clinched

Site Number 44NN0360 **Locus:** **STP:** F-5 **Feature** **Strat:** I **Depth:** 0 to 25 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0017.000	1	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	

Site Number 44NN0360 **Locus:** **STP:** G-5 **Feature** **Strat:** I **Depth:** 0 to 13 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0018.000	1	Historic, Foodways	Metal, Iron	Musket Ball, Complete		Cast	---	Buckshot impression; very heavy, possibly combination of iron and lead

Site Number ISO-1 **Locus:** **STP:** E-7 **Feature** **Strat:** I **Depth:** 0 to 29 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0016.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Colorless	Machined	Embossed---Other	Crosshatch/diamond pattern on glass surface

Site Number ISO-1 **Locus:** **STP:** E-7 **Feature** **Strat:** I **Depth:** 0 to 29 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0016.000	1	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	

Artifact Total: **66**

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Appendix B:
Qualifications of Investigators

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Scott K. Seibel, M.Sc., RPA

Principal Investigator

Areas of Expertise

Archaeology

Cultural Resource Management

US NHPA and NEPA Compliance

Education

M.Sc., Archaeomaterials, University of Sheffield, 1997

BA, Archaeological Studies, University of Texas, 1996

Licenses/Registrations

36 CFR 61 (Archaeology and History)

Registered Professional Archaeologist

Years of Experience

With AECOM	8+
With Other Firms	14

Professional Associations

Society for American Archaeology

Training and Certifications

NEPA 101: An Introduction to the National Environmental Policy Act, Instructors: Brian Boose and Suzanne Richert, 2016

Introduction to Archaeological Damage Assessment, Society for American Archaeology, Instructor: Martin McAllister, 2014

Introduction to Archaeological Data Management, Society for American Archaeology, Instructor: Francis McManamon and Jode Reeves Flores, 2014

Environmental Review and Compliance for Natural Gas Facilities, Federal Energy Regulatory Commission, Multiple Instructors, 2013

Environmental and Historic Preservation Compliance Training, Communications and Broadcast

Summary

Mr. Seibel is a Registered Professional Archaeologist (RPA) with over 22 years of experience in cultural resources management who exceeds the Secretary of Interior Standards for archaeology and history. Mr. Seibel has extensive experience in the design, management, and technical execution of historical and archaeological investigations. He has managed reconnaissance and intensive investigations on prehistoric and historic sites throughout the southeastern United States, Mid-Atlantic, South, West, and Midwest. Mr. Seibel's experience includes Phase I archaeological surveys tens of thousands of acres, the Phase II archaeological testing of dozens of archaeological sites, and the Phase III data recovery of prehistoric and historic archaeological sites ranging from a deeply buried Early Archaic occupation to a 20th century tenant farm. He has experience in complying with federal, state, and local regulations and has successfully worked with State Historic Preservation Offices (SHPOs) to develop work plans and create Memoranda of Agreement (MOA) for cultural resources management.

Representative Experience

White Oak Technology Park, Henrico County Economic Development Agency, Principal Investigator, 2018-Present. Principal Investigator for the Phase II archaeological testing of three sites, the delineation of three historic cemeteries, and the exhumation and reburial of remains from two cemeteries in anticipation of the client selling development sites. The project included obtaining an anticipatory Archaeological Excavation of Human Remains permit from the Virginia Department of Historic Resources and extensive consultation with descendant family members.

Cultural Resources Investigations and Training in Support of NEPA, Newport, Rhode Island, Earle, New Jersey, and Chicago, Illinois, Naval Facilities Engineering Command Southeast, Project Manager, 2018-Present. Project Manager for three task orders including: Phase I and Phase II archaeological investigations at Naval Station Newport; character-defining features assessment at Naval Weapons Station Earle; and preparation of a public outreach plan and historic masonry training at Naval Station Great Lakes. Included submittal of monthly updates, Independent Technical Review of work products from Naval Station Newport, and preparation of an Abbreviated Accident Prevention Plan and Environmental Protection Plan for Naval Station Great Lakes work.

Training Area 1 Environmental Assessment, Joint Base Langley-Eustis (JBLE), Newport News, Virginia, Air Force Civil Engineer Center, Principal Archaeologist, 2017-Present. Principal Archaeologist for the preparation of an Environmental Assessment for

Towers, Federal Communications Commission, Multiple Instructors, 2013

Section 4(f) Workshop, Federal Highway Administration National Resource Center, Instructor: Dave Gamble, 2004

Section 106: Principles and Practice, SRI Foundation, Instructor: Lynne Sebastian, 2003

Indirect and Cumulative Impact Assessment, NC Department of Transportation, Instructors: Larry Pesesky and Scott Lane, 2003

Accounting for Cumulative Effects in the NEPA Process, Nicholas School of the Environment and Earth Science, Duke University, 2003

Section 106: An Introduction, National Preservation Institute, Instructor: Thomas F. King, 1999

shoreline erosion activities within Training Area 1 at Ft. Eustis, JBLE. Work includes consultation pursuant to Section 106 of the National Historic Preservation Act regarding the presence of an archaeological site determined eligible for listing in the National Register of Historic Places.

Statewide Cultural Resources Open-End Contract, Virginia Department of Transportation (VDOT), Principal Investigator, 2017-Present. Serving as a key Principal Investigator, Operations Manager, and Alternate Contact for a five-year open-end contract to supply cultural resources to VDOT, including preparing the majority of responses to Requests for Proposal.

Statewide Cultural Resources Open-End Contract, Maryland State Highway Administration (MD SHA), Principal Investigator and Project Manager, 2017-Present. Serving as a one of five key staff and the Secondary Liaison for a five-year open-end contract to supply cultural resources to MD SHA, including serving as Project Manager and/or Principal Investigator on Task Orders.

Atlantic Sunrise Project, Construction Monitoring Spreads 1-7, Wyoming, Luzerne, Lycoming, Clinton, Columbia, Northumberland, Schuykill, Lebanon, and Lancaster Counties, Pennsylvania, Williams Transco, Principal Archaeologist, 2017-2018. Serving as a Principal Archaeologist and back-up to the project Principal Investigator for the archaeological monitoring of construction activities, including review of archaeological monitoring reports, oversight of archaeological monitors, and assessment of and reporting on unanticipated discoveries.

1619 King Street, Documentary Study, Demolition Monitoring, and Phase I Archaeological Survey, Alexandria, Virginia, Magna Hospitality, Principal Investigator and Project Manager, 2017-2018. Serving as Principal Investigator and Project Manager for a Documentary Study for a parcel at 1711 King Street, archaeological monitoring of the demolition of buildings and parking lots for all parcels and 1619 and 1711 King Street, and the Phase I archaeological survey of all parcels following demolition, as well as consultation with Alexandria Archaeology.

Phase I Archaeological Survey, Phase II Evaluation, and Memorandum of Agreement, Powder Mill Sewer Interceptor, Baltimore County, Maryland, Washington Suburban Sanitary Commission, Principal Investigator, 2016-2018. Served as the Principal Investigator for the Phase I archaeological survey of the Area of Potential Effects for the proposed Powder Mill sewer interceptor and the Phase II evaluation of site 18BA139, the remains of a nineteenth century gunpowder mill, which was determined eligible for listing in the National Register of Historic Places. Work includes the preparation of a Memorandum of Agreement for adverse effects to the site by the project.

Hampton Roads Bridge Tunnel, Phase I Terrestrial and Underwater Archaeological Survey, Hampton and Norfolk, Virginia, Virginia Department of Transportation, Principal Archaeologist, 2017. Responsible for the preparation of the technical approach and costing as well as staffing support and the Internal Technical Review of the project deliverables for a Phase I terrestrial archaeological survey along I-64 at I-664 in Hampton to I-564 in Norfolk and underwater survey within the James River.

South Washington Street 12-inch Waterline Project, Phase I

Archaeological Survey and Archaeological Monitoring, Alexandria, Virginia, Virginia American Water, Principal Investigator and Project Manager, 2014-2017. Served as the Principal Investigator for a Phase I archaeological survey for a proposed water line to be placed adjacent to St. Mary's Cemetery in Alexandria, Virginia, to determine the depth or potential depth of unmarked burials within the proposed Limits of Disturbance in order to ascertain if the proposed project would impact unmarked burials. Also served as Principal Investigator for the archaeological monitoring of a pre-construction trench across South Washington Street between St. Mary's Cemetery and Freedmen's Cemetery.

Wallops Island Alternatives Analysis for Disposition of Wallops Flight Facility Coast Guard Station, Wallops Flight Facility, Accomack County, Virginia, National Aeronautical and Space Administration, Project Manager, 2015-2016. Project Manager for cultural resources support to Wallops Flight Facility for the disposition of the National Register of Historic Places eligible Coast Guard Station pursuant to a 2014 Programmatic Agreement. The project includes the preparation of a cost analysis, alternatives analysis, and materials for submittal to the Virginia Department of Historic Places as well as the production of a short documentary film about the Coast Guard Station.

Phase I Archaeological Survey, Phase II Archaeological Evaluation, and Erosion Study, Environmental Services at Installation Support Team EAST Region Installations, Ft. Eustis, Newport News, Virginia, and Tyndall Air Force Base, Bay County, Florida, Air Force Civil Engineer Center, Principal Investigator and Task Manager, 2014-2016. Served as the Task Manager for Phase II archaeological evaluation of six archaeological sites and an erosion study to assist with future cultural resource management planning at Fort Eustis and the Phase I archaeological survey of 2,368 acres and Phase II archaeological evaluation of two sites at Tyndall Air Force Base. Also served as the Principal Investigator of the aforementioned tasks at Ft. Eustis. The project is for AFCEC, contracted through the General Services Administration.

Phase I Archaeological Survey, Phase II Evaluation, and Boundary Delineation, Sites 7K-D-1 and 7K-D-151, Kent County, Delaware, U.S. Army Corps of Engineers, Omaha District, Principal Investigator, 2015-2016. Served as Principal Investigator for additional archaeological investigations at site 7K-D-1, combined with former site 7K-D-2, to complete delineation of its boundary on Dover Air Force Base and assess the potential of a 5.1-acre portion of the site on Dover Air Force Base to contain unmarked prehistoric burials as well as conduct a Phase I survey and Phase II evaluation of the former location of an historic farmstead in support of the proposed construction of a new school to replace the existing Dover Air Force Base Middle School/George S. Welch Elementary School. The report included the incorporation of all previous archaeological investigations at site 7K-D-1 on Dover Air Force Base.

Section 106 Consultation, Phase I Archaeological Survey, Phase II Archaeological Evaluation, Memorandum of Agreement, Perryville, Cecil County, Maryland, Maryland Transit Administration, Principal Investigator/Task Manager, 2013-2016. Serving as Principal Investigator and Task Manager for the Section 106 support of a proposed MARC railyard for the Maryland Transit Authority in Perryville,

Maryland. The investigations include a Phase I archaeological survey, Phase II archaeological evaluation of a late eighteenth to twentieth century farmstead, a survey and assessment of above-ground resources, and preparation of a Memorandum of Agreement.

Phase I and Phase II Terrestrial and Underwater Archaeological Investigations in the Duluth-Superior Harbor, St. Louis Estuary, St. Louis County, Minnesota, U.S. Army Corps of Engineers, Detroit District, Task Manager and Principal Archaeologist, 2015. Served as the Task Manager and Principal Archaeologist for the Phase I terrestrial survey of multiple survey areas covering 311 acres, the Phase IA underwater remote sensing survey of multiple survey areas covering 670 acres, and the Phase II underwater archaeological evaluation of eight submerged archaeological sites and shipwrecks in support of the Remedial Action Plan for the St. Louis River Area of Concern. The project included an aggressive schedule that required the completion some of the draft reports while field investigations were still on-going and all six reports within four months of Notice to Proceed. All project schedule milestones were met on time.

Phase II Archaeological Evaluation, MD 222, Cecil County, Maryland, Maryland State Highway Administration, Principal Investigator/Project Manager, 2014-2015. Serving as Principal Investigator and Project Manager for the Phase II National Register of Historic Places evaluation of site 18CE378 within the proposed Limits of Disturbance for the replacement of the MD 222 bridge over Rock Run in Port Deposit, Maryland.

Atlantic Sunrise Project, Virginia Replacements and Mainline Valves, Phase I Archaeological Survey and Above-Ground Effects Analysis, Prince William County, Virginia, Williams Transco, Principal Investigator and Task Manager, 2014-2015. Served as Principal Investigator and Task Manager for pipeline upgrades to a portion of the Transco Pipeline in Prince William County Virginia. Project includes Phase I archaeological survey of temporary work spaces and access roads outside of the existing right-of-way (ROW) and the locations of previously recorded archaeological sites within the ROW as well as an assessment of indirect effects from the construction of new mainline valves.

Environmental and Social Impact Assessment (ESIA), South Stream Natural Gas Pipeline, Trans-boundary Pipeline Crossing Black Sea: Anapa, Russia, Crossing Turkish EEZ and Landfall in Varna, Bulgaria, South Stream Pipeline Company, 2011-2014. Currently serving as the Task Manager for the marine cultural heritage portions of the ESIA for the marine crossing of the Black Sea by an over 900-kilometer long natural gas pipeline. Overseeing staff and institution of quality control for the trans-boundary UNESCO, IMF, EU, Russian, Turkish, and Bulgarian cultural heritage material laws, data analysis, and synthesis.

Phase I Archaeological Survey, Phase II Archaeological Evaluation, Co-Field Director, New Market Streetscapes, New Market, Frederick County, Maryland, Maryland State Highway Administration, 2013-2014. Served as Co-Field Director and Project Manager for a MD SHA-led archaeological investigation of two late eighteenth and early nineteenth century taverns in New Market, Maryland for as alternative mitigation for proposed streetscape improvements.

Battlefield Study, Cockpit Point, Prince William County, Virginia, Prince William County Planning Department, Principal Investigator, 2013-2014. Serving as Principal Investigator for the study of the Civil War-era Confederate Cockpit Point batteries along the Virginia shore of the Potomac River in support of an American Battlefield Protection Program-funded grant to Prince William County, Virginia.

Phase I Archaeological Survey, Quiggins Sinkhole, Hardin County, Kentucky, FEMA, Task Manager, 2012-2013. Task Manager for the Phase I archaeological survey of approximately 36 acres for proposed water retention ponds to alleviate flooding in and around the City of Radcliff in Hardin County, Kentucky, including managing an archaeological subconsultant for the field investigations. Conducted under HMTAP Task Order 8 for FEMA Region IV.

Phase I Archaeological Survey, Warrenton Training Center, Station D, Culpeper County, Virginia, Warrenton Training Center, Principal Investigator, 2012-2013. Served as Principal Investigator and Task Manager for an archaeological survey and metal detecting of 30 acres of Station D of the Warrenton Training Center (WTC) in Culpeper County, Virginia, which contains Civil War encampments related to the Battle of Brandy Station and the Mine Run Campaign. The work was conducted in support of both Section 106 and Section 110 compliance activities under contract to WTC.

Phase II Archaeological Testing, Archaeological Testing in the Lake Wister Archeological District, LeFlore County, Oklahoma, Tulsa District, U.S. Army Corps of Engineers, Principal Investigator, 2012-2013. Served as Principal Investigator for additional Phase II excavations at the Pee Wee/Bear Claw site along Fourche Maline Creek, which contains evidence of Middle Archaic through Historic period occupations, including the presence of two midden mounds and human burials. The site is located within the Lake Wister Archaeological District in LeFlore County, Oklahoma. All work was conducted in support of a task order with the Tulsa District of the U.S. Army Corps of Engineers.

Historic Documentary Research, Archaeological Potential Assessment, Phase I Archaeological Survey, Jefferson-Houston School, Alexandria, Virginia, Principal Investigator, 2012. Directed the documentary research and Phase I archaeological survey for proposed construction at the Jefferson-Houston School within a project area containing the former locations of an early 19th century ropewalk, a Civil War stockyard, mid-late 19th century residential occupations, and an early 20th century school, as well as the potential remains of a slaughterhouse. Additional Phase II testing and Phase III data recovery activities were conducted the site of a late 19th century slaughterhouse in 2012 and 2013.

Archaeological Geophysical Survey, Phase I Archaeological Survey, Geophysical and Phase I Archaeological Survey of the Federal Penitentiary and U.S. Arsenal at Fort McNair, Washington, D.C., Joint Base Myer-Henderson Hall, Principal Investigator/Task Manager, 2011-2012. Geophysical and archaeological investigation of the former locations of 19th century Federal Penitentiary and 18th-20th century U.S. Arsenal for Joint Base Myer-Henderson Hall conducted for the USACE Norfolk District.

Phase II Archaeological Testing, Testing of 40HA552 and Revised

Right-of-Way State Route 317 (Apison Pike) from State Route 321 to East Brainerd Road, Hamilton County, Tennessee, Tennessee Department of Transportation, Principal Investigator/Senior Project Manager, 2010-2011. Principal Investigator for archaeological investigations for this new location and roadway expansion project in Hamilton County, Tennessee, for the Tennessee Department of Transportation (TDOT) in 2010 and 2011, supporting TDOT in the identification of multiple archaeological sites as well as evaluation of NRHP eligibility pursuant to Section 106. Mr. Seibel also provided recommendations for site avoidance and possible mitigation plans.

Phase I Archaeological Survey, Enoree New Lands, Sumter National Forest, Newberry and Sumter Counties, South Carolina, U.S. Forest Service, Principal Investigator/Senior Project Manager, 2010-2011. Served as Principal Investigator for the Phase I archaeological survey of 1,357 acres of timber stands and 8.511 linear feet of logging roads in the Enoree Ranger District of the Sumter National Forest in Newberry and Sumter counties, South Carolina, for the U.S.D.A. Forest Service. Project resulted in the identification of 51 archaeological sites and 30 isolated finds, with nine of the sites recommended potentially eligible or eligible for listing in the National Register of Historic Places.

Phase III Archaeological Data Recovery, Cherokee Brick Sites, Bibb County, Georgia, Cherokee Brick and Tile Company, Principal Investigator/ Project Manager, 2007-2011. Principal Investigator for the data recovery of three prehistoric archaeological sites in the floodplain of the Ocmulgee River for the Cherokee Brick and Tile Company. The sites included a deeply stratified site containing Early Archaic and Late Archaic components, including a Late Archaic structure, a shallow site containing a Late Archaic component and a Mississippian farmstead, and an Early Archaic through Woodland period lithic reduction site.

Phase III Archaeological Data Recovery, Lower Cape Fear River: Data Recovery of the Southside Site (31NH802), New Hanover County, North Carolina, Cape Fear Public Utility Authority, Principal Investigator/Senior Project Manager, 2009-2010. Served as Principal Investigator for the Phase III archaeological data recovery of the Southside Site, a Late Archaic through Middle Woodland occupation along the Cape Fear River in New Hanover County, North Carolina, in support of the proposed expansion of a wastewater treatment plant for the Cape Fear Public Utility Authority. The investigation included the excavation of 162 1-x-1 meter excavation units and the recovery of 15,134 ceramic and lithic artifacts and 14 cultural features.

Phase III Archaeological Data Recovery, Windsor Site (31BR201/201), US 17 Windsor Bypass, Bertie County, North Carolina, North Carolina Department of Transportation, Principal Investigator/Senior Project Manager, 2006-2009.** Served as Principal Investigator for the Phase III archaeological data recovery of the Windsor Site, an over 90,000 square meter site containing Early Archaic through Woodland period and historic period occupations along the Cashie River in Bertie County, North Carolina, which was conducted as mitigation in advance of the construction of the US 17 Windsor Bypass by the North Carolina Department of Transportation. The investigations included the mechanical clearing of 4,451 square meters of plow zone and the excavation of 106 1-x-1 meter excavation units as well as a

geomorphic investigation, which resulted in the identification of 1,602 cultural features and 2,120 prehistoric and historic artifacts and the identification and dating of paelo-channels of the Cashie River associated with the prehistoric occupations. Data recovered from the site assisted in the identification of a new Middle Woodland ceramic type, the Middletown series.

Phase III Archaeological Data Recovery, Riversound Site (31CO167/167), Chowan County, North Carolina, Private Developer, Principal Investigator/Senior Project Manager, 2009.** Served as the Principal Investigator for the Phase III data recovery of the Middle Woodland component of the Riversound site, located along the Yeopim River in Chowan County, North Carolina, for Waterfront Group of NC, LLC, in advance of the construction of a residential development. The investigation included the excavation of 61 1-x-1 meter excavation units. Combined with the initial Phase I and Phase II investigations, a total of 11 cultural features were documented and a total of 42,638 artifacts were analyzed. Among the data recovered from the site was evidence of a new, previously hypothesized, Middle Woodland ceramic type, the Middletown series.

Phase I Archaeological Survey, Phase II Archaeological Testing, KOKOA Battlefield Assessment, The Battle of Black Mingo, Georgetown and Williamburg Counties, South Carolina, Francis Marion Trail Commission and Francis Marion University, Principal Investigator/Senior Project Manager, 2009. Conducted research and archaeological investigations to identify the boundaries of the Revolutionary War battlefield related to Francis Marion, the “Swamp Fox,” using the NPS KOKOA principals.

Phase III Data Recovery, Edenmoor, Lancaster County, South Carolina, Principal Investigator and Project Manager, 2009. Phase III data recovery excavations of a late eighteenth to early nineteenth century farmstead occupied by Anglo-American settlers just outside the boundary of the Catawba Nation and containing evidence of the interactions between Anglo settlers and Native American communities. Conduct in support of a private client in advance of the construction of a residential development.

Phase I Archaeological Survey, Honey Hill Analysis Area Part II, Berkeley and Charleston Counties, South Carolina, USDA Forest Service, Principal Investigator/Senior Project Manager, 2007. Principal Investigator for the archaeological investigation of multiple forest compartments for the U.S. Department of Agriculture (USDA) Forest Service in the Francis Marion National Forest in Berkeley and Charleston Counties, South Carolina. This work, which was conducted in support of Section 106 compliance efforts, identified a wide range of archaeological sites and provided recommendations for preservation and avoidance.

Phase III Archaeological Data Recovery, Two Dogs Site (31PR92): A Prehistoric Dacite Quarry in Person County, North Carolina, Hodges, Harbin, Newberry and Tribble and Republic Services, Principal Investigator/ Project Manager, 2006. Conducted the Phase III data recovery of a Middle Archaic and Woodland period dacite quarry in advance of the expansion of a landfill. The project included integration with the North Carolina Lithic Sourcing project, which included the University of North Carolina at Chapel Hill, North Carolina State University, and the Cultural Resource Management Program at Fort

Bragg.

Baseline Assessment Surveys, Environmental Permitting, Eastern North Carolina Natural Gas Pipeline Project, North Carolina, Eastern North Carolina Natural Gas, Senior Archaeologist, 2002-2006. Served as Principal Investigator and Senior Archaeologist for the baseline investigations and cultural resources permitting for the siting and construction of over 500 miles of natural gas transmission and distribution pipelines in 16 counties in eastern North Carolina. In charge of consultation with governmental regulatory agencies and collection of baseline data through field surveys, including in both terrestrial and underwater environments, archaeological site significance testing, cemetery identification and delineation, and the preparation of permitting documents.

Underwater Archaeological Remote Sensing Survey, Underwater Archaeological Survey of the Preferred Corridor Crossing of the Tar River: US 17 Washington Bypass, Beaufort County, North Carolina, North Carolina Department of Transportation, Project Manager, 2005. Served as Project Manager for the underwater remote sensing survey and submerged cultural heritage assessment for a 400 hectare study area within the Tar River for the North Carolina Department of Transportation. The purpose of the investigation was to identify potentially significant submerged cultural heritage objects to ensure avoidance by construction activities.

Phase III Archaeological Data Recovery, Data Recovery Investigations of 41TV441, The Toyah Bluff Site, Travis County, Texas, Travis County, Project Archaeologist, 2001. Phase III data recovery excavations of a Late Woodland period archaeological site at a proposed park along US 71 for Travis County, Texas.

Phase II Archaeological Testing, Blocks 33 and 34: The Austin Convention Center Expansion Project, City of Austin, Field Director, 1999. Field Director for the Phase II testing of the north halves of two blocks in the City of Austin including large-scale mechanical trenching to confirm the structure placements and design of residential and commercial buildings as depicted on Sanborn Fire Insurance Maps.

Phase III Archaeological Data Recovery, Archaeological Excavations at Metaponto, Italy and Chersonesos, Crimea, Ukraine. The Institute of Classical Archaeology, Research Associate, 1995-1996. Research Associate with the Institute for Classical Archaeology for the analysis and reporting on archaeological excavations at Metaponto in Italy and Chersonesos in the Ukraine, which started as Greek colonies in the 5th Century B.C. Tasks included the preparation of digital site data and the review and compilation of project reports.

AECOM

Scott F. Morris, MA

Archaeological Field Supervisor

Areas of Expertise

Cultural Resource Management
Archaeological Survey and Excavation
Historic Preservation
Technical Writing

Education

2011
The College of New Jersey
B.A. - History / Minors in Anthropology and German

2013
University of Glasgow
M.A. – Archaeological Studies

Years of Experience

With AECOM	6
Other Firms	1

Training and Certifications

AECOM First Aid, CPR, AED, BBP Training
10-Hour OSHA Construction Safety Training
National Safety Council 4-Hour Driver Safety Training
US Navy Hazards of Electromagnetic Radiation to Ordinance (HERO) Training
Spectra Energy Field Safety Training
AECOM Safety for Life
ACE Contractor Safety Training
Enbridge – Contractor Safety Training
Amtrak Contractor Safety Training

Summary

For the past 6 years I have been directly involved in the preservation and management of cultural resources as an archaeological surveyor. This includes my current position as Archaeological Field Director, 1 year as a crew chief and 3 years as an archaeological technician. My duties consist of supervising a field crew ranging from as few as 3 to as many as 15 field technicians, performing archaeological surveys, evaluating, identifying, documenting, and preserving archaeological sites in accordance with national cultural resource standards, including Section 106 of the Historic Preservation Act. During this time I have gained experience conducting Phase I, II, and III survey, excavation, site identification, and cultural resource documentation. My work is integrated into a team effort which ensures client satisfaction and compliance with Section 106. My experience in archaeological survey and excavation includes projects throughout the Northeast and Mid-Atlantic regions of the United States, which include Pennsylvania, New Jersey, New York, Connecticut, Rhode Island, Maryland, Virginia, North Carolina, and South Carolina.

During my academic career, I have participated in a variety of archaeological projects in Scotland. This includes an accredited field school as well as academic research, survey, and excavation. In 2013, I completed my Master's Degree in Archaeological Studies at the University of Glasgow, to which I was awarded my degree with Merit. During this time I learned comprehensive field methods, archaeological theory, and analytical techniques for identifying and preserving cultural resources. This degree concluded with the publication of my Master's dissertation under the guidance of my post graduate supervisor.

Representative Experience

Permitting Consultation – ACE – South Jersey Gas Pump Station – Mullica Hill, New Jersey – Architectural History Survey
Conducted architectural survey along the replacement of an electrical transmission line in Mullica Hill, New Jersey. Four pre-1970s houses were documented as well as the remains of a 19th century farm listed on the National Register of Historic Places. Construction was deemed low impact so as to not cause damage to above ground historic resources.

Phase I – Enbridge – Eagle to Lambertville – Gas Pipeline Replacement – Phoenixville, Pennsylvania
Conducted Phase I survey prior to the replacement of an aging natural gas utility dated to the 1940s.
Results: Phase I survey did not result in the identification of archaeological sites allowing the approval of necessary permitting.

Phase I – HRSD SWIFT - Hampton Roads, Virginia
Conducted Phase I survey prior to the expansion of a water treatment facility along the James River in Hampton Roads, Virginia.
Results: Survey identified outlier portions of a historic farmstead outside of the water treatment facility. Further survey was hindered due to the high

levels of disturbance from the treatment plant construction**.**

Phase I – NJDOT – US Route 1 Penns Neck– Princeton New Jersey
Conducted Phase I survey along US Route 1 in Princeton, New Jersey prior to roadway improvement construction.
Results: Phase I survey resulted in the identification of three distinct archaeological sites and have all been recommended for Phase II evaluation. Listed as secondary author.

Phase I – New Haven Downtown Crossing RT 34 Monitoring – New Haven, Connecticut
Conducted monitoring during the construction of Route 34 Downtown Crossing in downtown New Haven, Connecticut. Ensured no historic resources were impacted during roadway improvements. Listed as secondary author.

Phase I – Scudders Falls Monitoring – Ewing, New Jersey
Conducted monitoring during the construction of the Scudders Falls I-295 Bridge Improvement along the Delaware Canal in Ewing, New Jersey. Prevented destruction of the canal during construction operations.

Phase I – D&R Canal Monitoring Odette River House – New Hope, Pennsylvania
Conducted monitoring during the construction of the Odette River Boutique Hotel located on the Delaware Canal in New Hope, Pennsylvania.
Results: Identified several components of the Delaware Canal, A listed monument on the National Register of Historic Places. Identified portions of Lock 8 along the canal and prevented destruction to the historic resource. Listed as a co-author.

Phase I – Monitoring – Amtrak – Westerly, Rhode Island
Conducted monitoring during ADA improvements on the Westerly, Rhode Island Amtrak Station. Results were limited due to scheduling and permitting issues.

Phase III – Pennsylvania Turnpike Commission, Quakertown, Pennsylvania – Unami Creek Open Site & Split Site East
Conducted Phase III data recovery on two precontact sites prior to the construction of Pennsylvania Turnpike improvements within Bucks County, Pennsylvania
Results: Phase III resulted in the identification of nearly 50 precontact features including an intact precontact pit house and furthered the understanding of Late Woodland lifeways within the Schuylkill Drainage. Listed as a secondary author.

Phase I – Penneast Natural Gas Pipeline Condemnation, Hunterton and Mercer Counties, New Jersey
Conducted Phase I survey on condemned properties prior to the construction of the PennEast Natural Gas Pipeline.
Results: Phase I survey resulted in the identification of several archaeological sites along the PennEast Pipeline route, necessitating further Phase II evaluation.

Phase III – PennDOT - I-95 Montgomery Street Cemetery, Philadelphia, Pennsylvania
Conducted burial exhumation and relocation services as field director for the PennDOT I-95 improvement project.
Results: Fieldwork resulted in the removal and reinterring of 26 individuals from an out of use 19th century First Presbyterian Cemetery of Kensington to a modern upkept cemetery within Philadelphia.

Phase II – Penneast Natural Gas Pipeline – UGI Corporation, Northampton and Carbon Counties, Pennsylvania
Walck Site & Temos Precontact Sites
Conducted Phase II archaeological evaluation on two precontact sites in Carbon and Northampton counties for the planning of the PennEast Natural Gas Pipeline.
Results: Phase II survey resulted in significant enough findings to recommend Phase III data recovery. Excavation resulted in the identification of precontact features as well as diagnostic artifacts and materials along the PennEast route.

Phase I – CONNDOT - I-84 Viaduct Hartford, Connecticut
Conducted Phase I archaeological survey in preparation for the improvement of I-84 through downtown Hartford, Connecticut. Several route options were tested throughout a modern urban environment.
Results: Phase I survey identified several areas throughout the city of Hartford that held archaeological potential. Initially the tested areas were thought to be disturbed; however, survey identified areas containing intact soil horizons and historic structures. Listed as a secondary author on the technical report.

Phase I – Fulmer Gathering Pipeline, HEP Tioga Gathering LLC., Tioga & Lycoming Counties, Pennsylvania
Conducted Phase I archaeological survey prior to the construction of a natural gas gathering pipeline in Tioga and Lycoming Counties, Pennsylvania. Survey was conducted in the vicinity of several existing natural gas pipelines; however survey was located through an undeveloped, wooded area.
Results: Phase I survey did not identify any cultural resources in the proposed area of potential effect (APE). As per US Army Corps of Engineers regulations, only areas 100 feet from water crossings were tested. The remainder of the APE was surveyed by means of pedestrian survey.

Phase III – White Oak Technology Center, Services for Cemetery Data Recovery – County of Henrico, Virginia, Elko, Virginia
Conducted Phase III archaeological excavation across three previously surveyed historic sites for Henrico County, Virginia prior to the expansion of the White Oak Technology Center. The aim of the project was to more accurately date the historic foundations within the area of potential effect and to identify the family plot cemeteries associated with the historic sites.
Results: Phase III excavation concluded that much of what was identified as historic features recorded during the previous survey was not eligible for the National Register of Historic Sites. Machine excavation identified the cemetery family plots associated with the historic sites. Graveshafts were identified in order to exhume and reinter the human remains associated with the various historic sites.

Phase I Archaeological Monitoring – Delaware & Raritan Canal, Princeton, New Jersey
Conducted archaeological monitoring for the installation of water return culverts prior to the dredging of the Delaware and Raritan Canal. This included excavation directly adjacent to the historic canal with a known terracotta mill in the area.
Results: Monitoring ensured that the historic canal was not affected and no resources associated with the terracotta mill were disturbed. No new archaeological sites were identified during the installation of the water return culverts.

Phase I – Keyhole F09-Q Extension Project – National Fuel and Gas Midstream Clermont LLC, Elk County, Pennsylvania
Conducted Phase I survey as the Field Director for the proposed natural gas extension pipeline in Elk County, Pennsylvania. This survey was situated in an existing natural gas fracking site; however, the proposed line was through an undeveloped, wooded area.
Results: Survey did not identify any cultural resources through the over 1 mile area of potential effect. Post excavation included writing the negative survey form technical report.

Phase I – Cowanesque and Pine Creek River Water Withdrawal – Eclipse Resources, Tioga County, Pennsylvania
Conducted Phase I survey as the Field Director at water crossings for Eclipse Resources in the vicinity of existing natural gas pipelines. This survey precluded construction of two gathering lines in order to connect existing natural gas lines.
Results: Survey identified a flood plain; however, no cultural resources were identified in either the Cowanesque or the Pine Creek work area.

Phase I/II/III Brumbaugh, Kendall, Grove Farm – Federal Aviation Administration, Hagerstown, Maryland
Conducted Phase I, II, and III survey and excavations on an historic farmstead in Hagerstown, Maryland. Directly worked with the Principal Investigator of the project as the Field Director prior to the demolition of the historic house and barn. Post excavation included monitoring of the demolition of the historic house and barn and recording any unprecedented finds.
Results: During the course of the excavation, the field crew identified the multi-component temporal range of the homestead. This included a prehistoric component as well as multiple historic family owners dated from the mid-18th century to the late 20th century.

Phase III Arch Street Cemetery Excavation – PMC Property Group Inc., Philadelphia, Pennsylvania
Conducted excavation on an historic cemetery dated to the 18th century belonging to the First Baptist Church. The cemetery was uncovered accidentally during the construction of a condominium development in Philadelphia. The remains of heavily damaged coffins and skeletons were recorded, excavated, and transported to the Rutgers Camden forensic laboratory.
Results: During this operation of rescue archaeology the field team successfully identified and exhumed the human remains of over 400 individuals, which would have otherwise been destroyed. After analysis the bodies will be laid to rest in a modern working cemetery.

Phase II/III, I95 Renovation Project – PennDOT District 6, Philadelphia, Pennsylvania
Directed crews within Philadelphia as the project crew chief during the long term excavation of the I-95 construction corridor. Duties included excavation of archeological units in both prehistoric and historic sites, mapping and recording of historic features and structures, artifact identification, and archeological monitoring to ensure the avoidance and impact of archeological sites.
Results: During the long term project in Philadelphia, we identified, documented, and preserved Archaic Native American sites, 18th century colonial features and artifacts including privies and structures, 19th and 20th century industrial and domestic structures and artifacts. Artifacts collected for this project have so far numbered over one million. These artifacts are currently being prepared for a museum dedicated to the excavations of I-

95. As we continue to excavate areas of Philadelphia that will be affected by the construction of the I-95 expansion, we ensure that we are well ahead of PENNDOT construction crews, allowing them to proceed with no hindrance to their schedule nor cultural resources within the construction corridor.

Phase I Naval Weapons Station Earle – Department of US Navy, Colts Neck, New Jersey
Conducted Phase I archeological survey at Naval Weapons Station Earle in order to identify and evaluate the presence of cultural resources on the base. In order to gain access to the facility, I underwent both a background security check as well as Hazards of Electromagnetic Radiation to Ordnance (HERO) training.
Results: During the survey at Naval Weapons Station Earle, I assisted the Field Director in surveying a section of the base in Colts Neck, NJ in order to identify potential Native American settlements within the facility. This project was carried out as exploratory research as Paleo-Indian Clovis Points had been discovered on the facility several decades earlier.

Phase I Bartram's Garden – Eastwick Mansion, Philadelphia, Pennsylvania
Conducted Phase I exploratory trenching at Bartram's Garden in order to find the remnants of Eastwick Mansion. This included several 5 ft. x 2 ft. excavation trenches to identify the foundation of the late 19th century mansion located along the Schuylkill River in Philadelphia, PA.
Results: Phase I trenching during the excavation at Bartram's Garden proved to be inconclusive and no distinct foundations or features were uncovered. It was later determined that after the 19th century mansion was destroyed by fire, the ruins of the building were demolished by machinery and little tangible evidence remained of the structure.

Phase I/II Penneast Natural Gas Pipeline – UGI Corporation, Northeast Pennsylvania/Western New Jersey
Conducted a wide variety of duties during the archeological survey of the 118 mile long Penneast natural gas transmission line. These include:

- Phase I shovel testing and pedestrian survey in order to identify potential cultural resources throughout Eastern Pennsylvania and Western New Jersey under the direction of the project Field Director.
- Phase I 1 meter by 1 meter test unit excavations along the Susquehanna River flood plain in order to identify prehistoric settlements along the waterway.
- Directly supervised archeological field crews as a Crew Chief during the Phase I & II archaeology survey.
- Phase II archaeological delineation and evaluation of several prehistoric sites along the PennEast right of way.
- Wrote survey segment technical reports edited by the Principle Investigator of the project to be submitted to the Pennsylvania Historical and Museum Commission & New Jersey State Historic Preservation Office (SHPO).

Results: During the course of this survey we located several prehistoric and historic sites by means of shovel test and pedestrian survey. Many of the sites were successfully avoided due to the client shifting the original scope of work due to our findings. However, some sites were unable to be avoided, which necessitated Phase II excavation. This included the delineation of a Woodland and possible Archaic Native American settlement on the Susquehanna River in Luzerne County, PA and an as of yet undated Native American site in Northampton County, PA. From the Phase I, the survey team has found historic sites in New Jersey that likely

date to the mid-18th century. Further excavations are pending subject to the client's avoidance strategy.

Phase I Spectra Marcellus to Market Project – Spectra Energy, Bucks County, Pennsylvania
Conducted Phase I archeological survey in Bucks County, Pennsylvania prior to the addition of an auxiliary natural gas line adjacent to existing natural gas lines. This included the identification of potential disruption to cultural resources that may have been in the area. The client mandated that the archaeology field crew undergo safety training provided by them.
Results: Phase I survey was conducted along an existing confluence of two pipelines and so much of the area had previously been disturbed. As such, the survey team did not produce anything culturally sensitive and the planned construction was allowed to proceed with no interruption to cultural resources.

Phase I Skinner's Falls Bridge Rehabilitation – PennDOT District 4, Milanville, Pennsylvania
Conducted 2 Phase I 1 meter by 1 meter test units at the footer of a bridge slatted to be replaced on the Delaware River between New York and Pennsylvania.
Results: The field crew identified a historic out building in the area through outreach with the local residents. We also identified a small prehistoric lithics scatter in a sub-soil horizon.

Phase I Salem to Deepwater Transmission Project – ACE & Company, Salem, New Jersey
Conducted Phase I archeological survey in Salem, New Jersey prior to the replacement of electrical transmission poles by Atlantic City Electric Company. Directly supervised archeological field crews as the Crew Chief for the project.
Results: Phase I survey from Deepwater to Salem, NJ was conducted along an existing powerline and excavation was restricted to this corridor. Several prehistoric artifacts were identified in the vicinity of a previously uncovered Native American site. These artifacts were found at the base of the hilltop where the previously identified site was located, demonstrating that they were likely transported there in colluvial soils.

Phase I Anson County 70 Bridge Replacement – NCDOT, Anson County, North Carolina
Conducted Phase II archaeological survey by means of short interval shovel testing prior to the construction of a bridge replacement by North Carolina Department of Transportation. This included identification of a prehistoric site in potential flood plain conditions.
Results: The results of this survey include the identification of a sizable Woodland Native American settlement along County Route 52 crossing Rocky River in the Eastern Piedmont Region of North Carolina. From this survey we were able to identify, document, and preserve a variety of Native American lithic artifacts prior to the bridge construction.

HRSD James River SWIFT Tranche 1
Agency Correspondence

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 26 2018

OFFICE OF WATER

PRELIMINARY FINDING OF NO SIGNIFICANT IMPACT (FONSI)

To all interested government agencies, public groups, and individuals:

In accordance with the Council of Environmental Quality's (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (40 CFR Part 1500), and the U.S. Environmental Protection Agency's (EPA) procedures for implementing the National Environmental Policy Act (NEPA) (40 CFR Part 6), EPA has completed an environmental review of the following proposed action:

Issuance of Credit Assistance to Water and Waste Water Infrastructure Projects Under the Water Infrastructure Finance and Innovation Act Program

The Environmental Protection Agency is evaluating the issuance of credit assistance to water and waste water infrastructure programs under the Water Infrastructure Finance and Innovation Act (WIFIA) program. The environmental review process, which is documented by the enclosed Programmatic Environmental Assessment (PEA), indicates that no potential significant adverse environmental impacts are anticipated from the proposed action. The PEA analyzes the potential adverse and beneficial environmental impacts associated with providing WIFIA credit assistance to eligible water infrastructure projects in compliance with NEPA. Projects receiving WIFIA credit assistance must also comply with applicable federal laws and regulations and Executive Orders (EO) and other state and local environmental reviews.

Based on the environmental impact analysis in the PEA, EPA has determined that no significant environmental impacts are anticipated from the issuance of WIFIA credit assistance and the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, making the preparation of an Environmental Impact Statement (EIS) unnecessary. Therefore, I am issuing this preliminary Finding of No Significant Impact (FONSI) to document this determination.

Copies of the PEA are available by request or by accessing it through the Federal eRulemaking Portal at http://www.regulations.gov/ under Docket ID No. EPA-HQ-OW-2018-0079. An electronic copy of this document is available for download from EPA's NEPA Compliance Database at https://cdxnodengn.epa.gov/cdx-enepa-public/action/nepa/search and the WIFIA program website at https://www.epa.gov/wifia.

Comments regarding my preliminary decision may be submitted for consideration at http://www.regulations.gov under the above Docket ID. Questions on my preliminary decision can be directed to Mr. Alejandro Escobar by email at wifia@epa.gov.

After evaluating any comments received, the EPA will make a final decision. The preliminary decision and finding will then become final after the 30-day comment period expires if no new significant information is provided to alter this finding.

Andrew D. Sawyers, Director
Office of Wastewater Management

Enclosure

Programmatic Environmental Assessment for the WIFIA Program, April 2018

Andrew D. Sawyers, Director
Office of Wastewater Management

4/26/18
Date

FEDERAL CROSS-CUTTING AUTHORITIES REVIEW MEMORANDUM

From: Alaina McCurdy, WIFIA Program, with support from Jacobs
To: Record
Subject: Federal Cross-Cutting Authorities Review for Hampton Road's SWIFT Program (WIFIA ID 19105VA)
Date: September 22, 2020

This memorandum summarizes the WIFIA Engineering Team's evaluation of the applicability of federal environmental cross-cutting authorities, the impacts from the project, the results of coordination and consultations with other agencies, and documents the review process.

PROJECT DESCRIPTION:

The Hampton Roads Sanitation District (HRSD) proposes to design and construct new facilities to improve water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP) and improving the quality of effluent from the treatment facility. To achieve this, the project includes four separate components detailed in the following sections:

1) James River Sustainable Water Initiative for Tomorrow (SWIFT) Facility (GN016360) - The project includes design, construction, and commissioning of new facilities that will apply advanced water treatment to highly treated wastewater from the JRTP. The resulting SWIFT water will meet drinking water quality standards and be compatible with the Potomac Aquifer. The proposed facility is expected to have an advanced treatment capacity of 16 million gallons per day (MGD). The location of the proposed SWIFT Facility is currently in use as a storage area and includes a Supervisory Control and Data Acquisition (SCADA) communications tower. This project includes the design, supply, construction, and commissioning of the following major new elements:
    - SWIFT Influent Equalization Tank and Pumping Station
    - Rapid-Mix/Flocculation/Sedimentation Facilities
    - Solids Handling Equipment and Piping
    - Ozone Generation Equipment and Reactor Facilities
    - Biologically Active Filter Facilities
    - Intermediate Pump Station
    - Granular Activated Carbon Contactor Facilities
    - Ultraviolet Disinfection System Facilities
    - SWIFT Water Pumping Station
    - SWIFT Chemical Storage and Feed Equipment Facilities
    - SWIFT Power Distribution Equipment and Facilities
    - SWIFT Distributed Control System (DCS) Programming and Equipment

- SWIFT Water and Well Backflush Pipelines
- Site Work including Stormwater Management
- Recharge and Monitoring Well Equipment and Facilities

2) Advanced Nutrient Reduction Improvements (JR013400) - The JRTP Advanced Nutrient Reduction Improvements project includes the design, construction, and commissioning of improvements to the secondary treatment process at the JRTP. These advanced secondary treatment improvements, including nutrient reduction measures, will be required to provide stable source water quality that meets the influent requirements of the Full Scale SWIFT Facility at the JRTP. This project includes the design, supply, construction, and commissioning of the following major new elements:
   - Administration Building
   - Maintenance Building
   - Electrical Building
   - Main Power Distribution Equipment and Facilities
   - Generator and Fuel Storage Facilities
   - Wastewater Chemical Storage and Feed Equipment Facilities
   - Integrated Fixed Film Activated Sludge (IFAS) Effluent Channel
   - Secondary Clarifier Equipment and Facilities
   - Moving Bed Bioreactor Equipment and Facilities
   - Equalization of Well Backflush Water
   - Hydraulic Connection to Existing Chlorine Contact Facilities
   - Main DCS Programming and Equipment
   - Mechanical, Electrical, and Plumbing
   - Site Work including Stormwater Management
3) The project may include demolition of the following existing facilities as needed to complete the work:
   - Main Administration Building including Incoming Power Distribution
   - Bisulfite Storage Building
   - Warehouse Building
   - Portions of Secondary Clarifier Facilities
4) SWIFT Recharge and Monitoring Well Services (GN016361) - This project includes the construction and development of three recharge wells and one on-site monitoring well within the boundaries of the JRTP site. Each of the recharge wells will be housed inside a well house facility similar in scale to a small residential home and the facilities would be designed to complement existing architecture in the vicinity. The recharge wells would be sited at a

minimum of approximately 800 feet apart from one another to recharge the Potomac Aquifer most efficiently.

5) Program Management of SWIFT Full Scale Implementation (GN016320) - The SWIFT Facility Implementation Program Management team will manage the delivery of the advanced water treatment facilities. The Program Management team will also manage the delivery of the recharge wells, monitoring wells, and associated pumping and piping systems to support groundwater augmentation. The Program Management team may also deliver the wastewater treatment plant improvements and outfall modifications needed to ensure successful SWIFT implementation at proposed facilites. The Program Management team will implement the processes, procedures, and systems needed to design, procure, construct, permit, manage, and integrate the new SWIFT related assets into HRSD's existing systems. The Program Management team will also manage the transition of the new SWIFT assets to HRSD operations and life cycle asset management.

PROJECT LOCATION:

The project is located at HRSD's JRTP, which is at 111 City Farm Road in the City of Newport News, Virginia. The coordinates of the JRTP are 37°05'07.1"N 76°32'00.1"W. The JRTP site footprint is approximately 32 acres. It is bordered by the James and Warwick Rivers to the south and west, and is bounded by the City's Riverview Farm Park to the east and north. The access road to the JRTP project site is City Farm Road.

The proposed treatment improvements and four recharge wells are planned entirely within the existing JRTP site, and some improvements will be made in existing buildings. Demolition and improvements will be made to existing facilites at the JRTP.

1. ENVIRONMENTAL JUSTICE EXECUTIVE ORDER NO. 12898

The site is within two Census Block Groups - Census Block Group 517000320012 and Census Block Group 517000320023). Census Block Group 517000320012 has a minority population of 20 percent and Census Block Group 517000320023 has a minority population of 15 percent. Both of these percentages are less than the 37 percent minority population in Virginia and the 56 percent population in the County. In addition, Census Block Group 517000320012 has a low income population of 12 percent and Census Block Group 517000320023 has a low income population of 20 percent. Both of which are less than the 26 percent low income population in Virginia and the 36 percent population in the County. EPA has determined that environmental justice communities are not present.

Most of the potentially adverse effects associated with the project would occur during construction and would be temporary, such as construction noise, air emissions from construction vehicles, erosion from disturbed surfaces and construction vehicle traffic or traffic detours. Impacts to communities from construction would not be expected to be disproportionate to any identified environmental justice populations with the implementation of identified best management practices (BMPs) and as required by Executive Order 12898. The project is intended to have an overall beneficial effect on the environment and local population by providing improved water quality and mitigate potential water scarcity.

Supporting Documentation:

Attachment A: EPA EJScreen data and report (June 3, 2020)

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

2. ENDANGERED SPECIES ACT (16 U.S.C. §§ 1531-1599)

One federally listed species was identified using the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) to generate the official species list, the northern long-eared bat (*Myotis septentrionalis*) (threatened). The effects determination for the project was completed using the Northern Long-eared Bat key within IPaC. On August 12, 2020, a verification letter under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions was generated.

Supporting Documentation:

Attachemnt B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment C: IPaC Species list (July 8, 2020) and NLEB Verification letter (August 12, 2020)

3. BALD AND GOLDEN EAGLE PROTECTION ACT (16 U.S.C. §§ 668-668C)

The southern portion of the peninsula separating the James and Warwick rivers near the mouth of the Warwick River has been documented as containing bald eagle nests that are historic, and nests that may currently be in use. The project area is located beyond the restricted radius of the documented bald eagle nests. The proposed activity does not involve capture, transport, exhibition, collection, control or distrubance of eagles or eagle parts, nests or eggs. Additionally, no construction is expected to occur in close proximity to eagle nests; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

4. FISH AND WILDLIFE COORDINATION ACT (16 U.S.C. § 661 ET SEQ.)

The Project would not control or modify surface waters; therefore, the requirements and regulations of this act do not apply.

5. MARINE MAMMAL PROTECTION ACT (16 U.S.C. §§ 1361-1407)

The Project is not expected to affect marine mammals; therefore, the regulations and requirements of this act do not apply.

6. NATIONAL HISTORIC PRESERVATION ACT (NHPA) AS AMENDED (54 U.S.C. § 300101 ET SEQ.: HISTORIC PRESERVATION) AND ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT, AS AMENDED (54 U.S.C. §§ 312501-312508: PRESERVATION OF HISTORICAL AND ARCHEOLOGICAL DATA)

A review of the Virginia Cultural Resources Information System (VCRIS) maintained by the Virginia Department of Historic Resources (VDHR), the Virginia Archaeological Site Survey Records, the Virginia Historic Inventory Property Forms, and the National Register of Historic Places (NRHP) was conducted as part of a cultural resources desktop survey of the project area. Immediately to the southeast of the James River Water Treatment Plant, along the bank of the Warwick River, is the location of the Colonial settlement of Warwicktowne, which served as the county seat of Warwick County (now the City of Newport News). The project area, therefore, is located in an area of high archaeological potential.

VCRIS shows three previously conducted cultural resource surveys in the project area, dating from 1976 to 1992, of both aboveground and below ground resources. There are three previously identified aboveground properties close to the Limit of Disturbance (LOD) – the Battle of Yorktown (VDHR ID #099-5283), Farmstead (VDHR ID #121-0103), and Newport News City Farm (VDHR ID #121-0104). None of these resources are within the project area and are not expected to be affected by the undertaking (AECOM, 2020)

There are nine previously identified archaeological sites close to the LOD, and two that fall within the LOD (Gray and Pape 2020). A Phase I archaeological survey was performed for those project areas proposed for ground disturbance. The Area of Potential Effects (APE) for the proposed project improvements is approximately 31.92 acres in size. The Phase I archaeological survey resulted in the recovery of 67 artifacts and the relocation of one shovel test pit (44NN0281) and the documentation of two new archaeological sites within the APE (44NN0359 and 44NN0360) consisting of subsurface scatter of late nineteenth and twentieth century artifacts. However, the archaeological deposits encountered during the survey do not have the potential to yield significant information about the historic occupation of the APE, and do not contribute to the potential NRHP eligibility of the site.

The recommendation of the Phase I survey is for the proposed JRTP project to be allowed to proceed since it is not likely to affect archaeological resources. Adherence to the Virginia's regulations regarding the treatment of human remains (Code of Virginia Section 18.2-126, 127) is required and it is recommended that an unanticipated discovery plan be established.

On July 29, 2020, EPA submitted a Section 106 consultation application to the Virginia State Historic Preservation Officer (SHPO) via the SHPO's Electronic Project Information Exchange with the determination of no effect to historic properties. On August 28, 2020, SHPO concurred with EPA's eligibility determinations and recommended that a Phase I architectural survey be conducted. On September 10, 2020, EPA provided an update to SHPO regarding the recommended Phase I survey. The survey is expected to be completed within the near future, and that a report would be expected within a few months. Updates on the progress of the survey will be provided to SHPO, as needed. As the survey will not be completed until after the WIFIA loan closes, the loan agreement contains the following language:

Condition Precedent to First Disbursement: The Borrower shall have demonstrated to the WIFIA Lender's satisfaction that all Governmental Approvals necessary as of the time of such disbursement for the development, construction, operation and maintenance of the Project have been issued and are in full force and effect (and are not subject to any notice of violation, breach or revocation), including final concurrence from the relevant Government Authorities with respect to the portions of the Project subject to the National Historic Preservation Act.

Supporting Documentation:

Attachment D: U.S. Department of the Interior National Park Service's National Register of Historic Places, data accessed through NEPAssist, June 25, 2020.

Attachment E: Phase I Archaeological Survey of the Sustainable Water Initiative for Tomorrow Improvements, 2020.

Attachment F: EPA and SHPO correspondences, July 29, August 28, September 10, 2020.

7. ARCHAEOLOGICAL RESOURCES PROTECTION ACT (16 U.S.C. §§ 470AA-MM)

The project is not located on federal or Indian lands; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment D: EPA Tribal Areas (lower 48 states) data layer, accessed through NEPAssist on July 25, 2020.

8. NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (25 U.S.C. § 3001 ET SEQ.)

The project is not located on federal or Indian lands; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment D: EPA Tribal Areas (lower 48 states) data layer, accessed through NEPAssist on June 25, 2020.

9. CLEAN WATER ACT (SECTION 404) AND RIVERS AND HARBORS ACT (SECTION 10)

Wetland delineations were conducted in January and May 2020 to determine the extent of jurisdictional waters of the U.S. within and adjacent to the project area. Seven forested, non-tidal wetlands were identified during the surveys of which five were located within the proposed project area. One stream was delineated along the northwest edge of the project area and was identified as non-tidal. Minimization and avoidance of impacts to jurisdictional waters of the U.S. would occur during site design. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the U.S. result from the project.

The project does not involve the construction of any structure in or over any navigable waters of the United States under Section 10 of the Rivers and Harbors Act.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment G: Wetlands and Waters Delineation Report Prepared for the James River HRSD SWIFT Project.

10. PROTECTION OF WETLANDS (EXECUTIVE ORDER NO. 11990 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12608 (1997))

Wetland delineations were conducted in January and May 2020 to determine the extent of jurisdictional waters of the U.S. within and adjacent to the project area. Seven forested, non-tidal wetlands were identified during the surveys of which five were located within the proposed project area. One stream was delineated along the northwest edge of the project area and was identified as non-tidal. Minimization and avoidance of impacts to jurisdictional waters of the U.S. would occur during site

design. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the U.S. result from the project.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment G: Wetlands and Waters Delineation Report Prepared for the James River HRSD SWIFT Project.

11. FLOOD PLAIN MANAGEMENT (EXECUTIVE ORDER NO. 11988 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12148 (1979))

According to the most recent Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the proposed project improvements are located outside the 100-year and 500-year floodplains, as depicted on Figure 7 of the Environmental Questionairre for WIFIA Credit Assistance Projects prepared for the project. Floodplains to the south and southwest do occur within the project boundary; however, the proposed site layout avoids encroachment into or disturbance of the floodplain. The nearby floodplains are associated with the James River, Warwick River, and the unnamed tributary to the Warwick River located along the western parcel boundary of the treatment plant.

The project would have an overall long-term benefit on flood risk, aquifers, and the groundwater supply by reducing aquifer-related land subsidence in coastal Virginia and allowing additional time to adapt to sea level rise and protect valuable coastal wetlands for decades longer than currently projected. Therefore, the project is in accord with the executive order.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

12. SAFE DRINKING WATER ACT (42 U.S.C. §§ 300F-300J-26)

The project site is not underlain by or within 0.25 mile of a designated sole source aquifer. The most significant change to water resources proposed by the project would be the pumping of large volumes of water into the deepwater Potomac Aquifer. However, the project's net impact would be beneficial, as the recharged water would be treated to drinking water standards prior to being returned to the aquifer.

It is anticipated that higher quality discharge waters would result in improvements in downstream waters and aquatic habitats. The project would utilize advanced water treatment (AWT) processes to treat secondary wastewater treatment plant effluent to drinking water standards. The SWIFT water would subsequently be used to recharge the Potomac Aquifer system to counter depleting aquifer levels and provide additional environment benefits (HRSD 2019). Analytical groundwater flow and geochemical modeling using various treatment and recharge techniques have been conducted to determine the optimal treatment and recharge methods (HRSD 2019). The modeling represented the Virginia Department of Environmental Quality's (VDEQ) preferred metric for determining the beneficial impacts of proposed pumping/recharge on the Potomac Aquifer. The AWT is expected to improve drinking water sources, i.e., the Potomac Aquifer, by treating and reducing contamination and removing disease-causing agents (HRSD 2019). The project would provide a sustainable source of groundwater to the Potomac Aquifer, increase the hydrostatic pressure within the aquifer, prevent saltwater intrusion

into the aquifer, and slow land subsidence related to aquifer withdrawals. The project is intended to have an overall beneficial effect on water resources.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment D: Data.gov Sole Source Aquifer data accessed through NEPAssist, accessed June 25, 2020.

13. FARMLAND PROTECTION POLICY ACT (7 U.S.C. §§ 4201-4209)

As detailed in Table 2 in the Environmental Questionnaire, none of the mapped soils in the project area have been identified by the Natural Resources Conservation Service (NRCS) as Prime or Unique Farmland; however, very small pockets of a Farmland of Statewide Importance (Nevarc-Uchee complex, 6 to 15 percent slopes) occur along the southern boundary of the project area (NRCS 2020) (Figure 5). However, the site is mapped within an urbanized areas as identified by the U.S. Census Bureau and, therefore, the Farmland Protection Policy Act's regulations and requirements do not apply.

Supporting Documentation:

Attachment B: Environmental Questionnaire for WIFIA Credit Assistance Projects

Attachment D: Urbanized Area data, accessed through NEPAssist, June 25, 2020.

14. COASTAL ZONE MANAGEMENT ACT (16 U.S.C. §§ 1451-1466)

The site is located along the James River, a tidal tributary to Chesapeake Bay. The project is located within areas regulated by Virginia's Coastal Zone Management Program. Virginia has designated eight coastal planning districts to implement the state's Coastal Zone Management policies. The project is located within the Hampton Roads Planning District. On July 13, 2020, EPA submitted a federal consistency determination to the VDEQ. EPA determined that the project was consistent with Virginia's coastal zone management (CZM) program. On August 11, 2020, VDEQ responded to EPA's determination. VDEQ stated that the proposed activity is consistent with the Virginia CZM Program, since it will have no effect on the enforceable policies of the Program based on the information provided. In addition, VDEQ found that the proposal will have no effect on the advisory policies of the Virginia CZM Program.

Attachment H: VA DEQ Coastal Zone Correspondences, July 13 and August 11, 2020

15. COASTAL BARRIERS RESOURCES ACT (16 U.S.C. §§ 3501-3510)

According to the United States Fish and Wildlife Servce (USFWS) Official Coastal Barrier Resources System Maps, there are no coastal barrier units within or near the project area. Therefore, the project would not conflict with the Coastal Barrier Resources Act. (See https://www.fws.gov/CBRA/Maps/Mapper.html).

16. WILD AND SCENIC RIVERS ACT (16 U.S.C. §§ 1271-1287)

There are no Wild and Scenic Riviers within the project area; therefore, the regulations and requirements of this act do not apply. (See https://www.rivers.gov/virginia.php).

17. ESSENTIAL FISH HABITAT CONSULTATION PROCESS UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (16 U.S.C. §§ 1801-1891)

The James River, which is located adjacent to the project area, is designated by the National Marine Fisheries Service as an essential fish habitat. The project would not result in a violation of the existing National Polluntant Elimination System (NPDES) permit or degrade water quality, nor is any in water work proposed, and would therefore not significantly affect essential fish habitat. In addition, no significant impacts to biological resources would be expected to result from the proposed SWIFT project. Practicable mitigation measures include implementation of avoidance and minimization measures and BMPs, implementation of recommendations from relevant governmental wildlife agencies, and the prevention of spills and leaks from vehicles and equipment. During the design phase, protective measures would be identified in coordination with the National Marine Fisheries Service, as applicable, to protect federally threatened or endangered species that may inhabit or otherwise utilize the project area. Protective measures may include time-of-year restrictions and/or design modifications, among others. (See https://www.habitat.noaa.gov/application/efhmapper).

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

18. MIGRATORY BIRD TREATY ACT (16 U.S.C. §§ 703-712)

The proposed project will require the removal of trees on the site; however, no significant impacts to biological resources would be expected to result from the proposed SWIFT project. Potential effects could include reduced vegetative cover, habitat fragmentation, introduction of invasive species, changes in water availability, and disturbance from construction noise and dust. Practicable mitigation measures include implementation of avoidance and minimization measures and BMPs and implementation of recommendations from relevant governmental wildlife agencies. During the design phase and once a contractor team has been selected, the project footprint and vicinity would be evaluated for the potential presence of federally protected species and their respective habitat requirements. Protective measures would be identified in coordination with the U.S. Fish and Wildlife Service to protect federally protected species that may inhabit or otherwise utilize the project area. Protective measures may include time-of-year restrictions, population relocations, and/or design modifications, among others.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

19. CLEAN AIR ACT CONFORMITY (42 U.S.C. § 7506(C))

The JRTP is within an area designated as in attainment for most criteria pollutants except for the ozone (8-hr 1997) criteria for which the area is designated as non-attainment/maintenance for federal standards.

No significant impacts to air quality during construction or operation are anticipated. Effects could include generation of construction dust and emissions, and generation of operational emissions (including criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic) and are expected to be minor and short-term; however, practicable mitigation measures that would be employed include odor-minimizing facility design, use of energy-efficient designs and technologies, and use of dust suppression techniques.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment D: U.S. EPA Non-Attainment Area data accessed through NEPAssist, accessed June 25, 2020

20. WILDERNESS ACT (16 U.S.C. § 1131 ET SEQ.)

Project is not located within a National Wilderness Area, therefore the Wilderness Act's regulations and requirements do not apply. (See http://www.wilderness.net/map.cfm).

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 1111 East Main Street, Suite 1400, Richmond, VA 23219
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Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

August 11, 2020

Ms. Alaina McCurdy
Environmental Engineer, WIFIA
U.S. Environmental Protection Agency
Washington, DC 20460
Via email: McCurdy.Alaina@epa.gov

RE: Intergovernmental Review, James River Treatment Plant SWIFT Project, City of Newport News, DEQ #4169

Dear Ms. McCurdy:

On behalf of the Commonwealth of Virginia, the Department of Environmental Quality(DEQ) is responsible for reviewing and responding to the documentation submitted in accordance with the Intergovernmental Review of Federal Programs (E.O. 12372) for the review of federal financial assistance to state and local governments (15 CFR, Subpart F, §930.90 *et seq.).* Pursuant to the Coastal Zone Management Act of 1972, as amended, because this project will be federally funded, it must be constructed and operated in a manner that is consistent with the Virginia Coastal Zone Management (CZM) Program.

PROJECT DESCRIPTION

According to the submission dated July 13, 2020, the U.S. Environmental Protection Agency (USEPA) is issuing financial assistance under the Water Infrastructure Finance and Innovation Act (WIFIA) to the Hampton Roads Sanitation District (HRSD) for the SWIFT (Sustainable Water Initiative for Tomorrow) project (SWIFT). WIFIA is a federal credit program for eligible water and wastewater infrastructure projects. USEPA selected HRSD to submit an application for credit assistance for the SWIFT project.

The project consists of designing and constructing new facilities (including recharge wells and an on-site monitoring well) to improve the water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP) and improving the quality of effluent from the treatment facility. It also includes the possible demolition of the following existing facilities: the Main Administration Building, the Bisulfite Storage Building, the Warehouse Building, and portions of

secondary clarifier facilities. The JRTP site footprint is approximately 32 acres; the proposed treatment improvements and four recharge wells are planned entirely within the existing JRTP site; demolition and improvements will be made to existing facilities at the JRTP.

FEDERAL CONSISTENCY

The proposed activity is consistent with the Virginia CZM Program, since it will have no effect on the enforceable policies of the Program based on the information provided. In addition, DEQ finds that the proposal will have no effect on the advisory policies of the Virginia CZM Program. If any of the enforceable policies are applicable, please contact the relevant agencies to obtain applicable permits or approvals. The applicant must obtain any permits and approvals listed under the enforceable policies of the Virginia CZM Program that may be applicable. The DEQ Tidewater Regional Office (TRO) administers the enforceable programs listed under DEQ's jurisdiction. Please contact DEQ TRO (757-518-2000) for assistance in meeting the requirements of applicable DEQ programs.

Should the project change, and it is anticipated that the proposed activity will effect coastal uses or resources substantially different than originally described, supplemental coordination with DEQ will be required in accordance with 15 CFR, Subpart F, § 930.101 *et seq*.

The analysis that follows pertains to the enforceable policies of the Virginia CZM Program that may apply to this project. In general, to the extent practicable, any construction and/or demolition must incorporate features that prevent significant adverse impacts on ambient air quality, water quality, wetlands, historic structures, fish and wildlife, and species of plants, animals, or insects listed by state or federal agencies as rare, threatened, or endangered.

1. Air Pollution Control. Although no adverse impacts to air quality are anticipated, during construction and/or demolition, fugitive dust must be kept to a minimum. This requires, but is not limited to, measures such as application of water to suppress dust and washing down construction vehicles and paved roadways immediately adjacent to construction areas (9VAC5-50-60 *et seq.).* For information on air pollution control and possible air pollution permitting, please contact DEQ TRO (Craig Nicol at Craig.Nicol@deq.virginia.gov, or 757-518-2173).

2. Coastal Lands Management. Pursuant to the Chesapeake Bay Preservation Act (Virginia Code § 62.1-44.15:67 *et seq.)* and the Regulations for the Designation and Management of Chesapeake Bay Preservation Areas (9VAC25-830-10 *et seq.),* localities within the state's coastal zone have enacted programs designed to improve water quality in the Chesapeake Bay through the mitigation of the impacts of development and redevelopment on sensitive environmental features such as streams, wetlands, floodplains, highly erodible and highly permeable soils. Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) have been designated in each

locality; these areas consist of groupings of sensitive environmental features. RPA features (tidal wetlands, certain non-tidal wetlands, tidal shores, and buffer areas) are the most sensitive; in general, only water-dependent uses may be constructed in an RPA. RMA features (highly erodible soils, highly permeable soils, and certain non-tidal wetlands) are less sensitive than RPA features, but no less important. Development in an RMA requires that activities meet certain performance criteria designed to mitigate negative environmental impacts. Contact appropriate locality officials for review and approval of the project pursuant to the local Chesapeake Bay Preservation Area program as applicable.

3. Point Source Pollution Control. The point source program is administered by the State Water Control Board pursuant to Virginia Code §62.1-44.15. Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to §402 of the federal Clean Water Act and administered in Virginia as the VPDES permit program. The Water Quality Certification requirements of §401 of the Clean Water Act of 1972 is administered under the Virginia Water Protection Permit program. The applicant should coordinate with the DEQ TRO (Jeff Hannah, 757-518-2146, email Jeffrey.Hannah@deq.virginia.gov).

4. Non-point Source Pollution Control.

4(a) Erosion and Sediment Control Plan and Stormwater Management Plan. A project-specific erosion and sediment control (ESC) plan must be submitted to the appropriate local authority for review and approval pursuant to the local ESC requirements, if the project involves a land-disturbing activity of equal to or greater than 10,000 square feet (2,500 square feet or more in a Chesapeake Bay Preservation Area). Depending on local requirements, the area of land disturbance requiring an ESC plan may be less. The ESC plan must be approved by the locality prior to any land disturbing activity at the project site. All regulated land-disturbing activities associated with the project, including on- and off-site access roads, staging areas, borrow areas, stockpiles, and soil intentionally transported from the project, must be covered by the project-specific ESC plan. Depending on local requirements, a Stormwater Management (SWM) plan may be required. Local ESC and SWM program requirements are available from the locality (Reference: Virginia Erosion and Sediment Control Law §62.1-44.15 *et seq.;* Virginia Erosion and Sediment Control Regulations 9VAC25-840-30 *et seq.;* Virginia Stormwater Management Act §62.1-44.15 et *seq.;* Virginia Stormwater Management (VSMP) Permit Regulations 9VAC25-870-54 et. *seq.).*

4(b) General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities (VAR 10). The owner or operator of projects involving land-disturbing activities of equal to or greater than 1 acre is required to apply for registration coverage under the General Permit for Discharges of Stormwater from Construction Activities. Specific questions regarding the Stormwater Management Program requirements should be directed to DEQ (Holly Sepety at 804-698-4039). General information and registration forms for the General Permit are

available at http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/ConstructionGeneralPermit.aspx.

5. Water Quality and Wetlands. Potential adverse impacts to water quality and wetlands resulting from surface runoff must be avoided or minimized. Minimization can be achieved by using Best Management Practices (BMPs). In general, DEQ recommends that the amount of stream and wetland impacts be avoided to the maximum extent practicable. For unavoidable impacts, DEQ encourages the following practices to minimize the impacts to wetlands and waterways: use of directional drilling from upland locations; operation of machinery and construction vehicles outside of stream-beds and wetlands; use of synthetic mats when in-stream work is unavoidable; stockpiling of material excavated from the trench for replacement if directional drilling is not feasible; and preservation of the top 12 inches of trench material removed from wetlands for use as wetland seed and root stock in the excavated area.

Federal and state governments regulate impacts to streams and wetlands. The Virginia Marine Resources Commission serves as the clearinghouse for the Joint Permit Application (JPA) used by the:

1. U.S. Army Corps of Engineers, for issuing permits pursuant to section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act;

2. Department of Environmental Quality, for issuance of Virginia Water Protection Permits pursuant to section 401 of the Clean Water Act, Virginia Code sections 62.1-44.2 *et seq.*, Virginia Code section 62.1-44.15:5, and *Virginia Administrative Code* 9 VAC 25-210-10 *et seq*.;

3. Virginia Marine Resources Commission, for permits to encroach on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code sections 28.2-1200 through 1400; and

4. Local wetlands board, for impacts to wetlands.

According to the submission, three non-tidal wetlands and a portion of one tidal wetland were identified on the SWIFT project site. If any streams or wetlands are impacted by the construction/demolition activity, the city should contact VMRC at (757) 247-2200 for a JPA. VMRC will distribute the application to the appropriate agencies. Each agency will conduct its review and respond.

The applicant should coordinate with the DEQ TRO (Jeff Hannah, 757-518-2146, email Jeffrey.Hannah@deq.virginia.gov) if impacts to wetlands or waterbodies are necessary to obtain the required permits.

6. Fisheries Management. The fisheries management enforceable policy is administered by the Virginia Marine Resources Commission (VMRC) (Virginia Code Section 28.2-200 to 28.2-713) and the Department of Wildlife Resources (DWR)

(Virginia Code Section 29.1-100 to 29.1-570). The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. In addition, State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The VMRC, DWR, and Virginia Department of Agriculture and Consumer Services (VDACS) share enforcement responsibilities (Virginia Code §3.1-249.59 through §3.1-249.62).

Questions on compliance with the fisheries management enforceable policy should be directed to DWR (Amy Ewing at Amy.Ewing@dwr.virginia.gov); VMRC (Randy Owen, randy.owen@mrc.virginia.gov); and VDACS (Keith Tignor at Keith.Tignor@vdacs.virginia.gov) as necessary.

ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

With respect to federal consistency, no further action is necessary if none of the enforceable programs of Virginia CZM Program apply to this project. However, the project must comply with all other applicable federal, state and local laws and regulations. The following discussion is provided as a guideline of programs administered by DEQ and other agencies of the commonwealth, which could be applicable. Final determinations concerning potential impacts on these programs rest with the DEQ TRO (757-518-2000) and the appropriate agency administering each program. It is the responsibility of the applicant (i.e., the locality) to coordinate with these agencies.

1. Solid and Hazardous Waste Management. DEQ administers the Virginia Solid Waste Management Regulations (9VAC20-81) and the Virginia Hazardous Waste Management Regulations (9VAC20-60). DEQ recommends that all solid wastes generated by this project be reduced at the source, re-used, or recycled. All hazardous wastes should be minimized. Otherwise, all solid waste, hazardous waste, and hazardous material must be managed in accordance with all applicable federal, state, and local environmental regulations. Contact DEQ TRO (Melinda Woodruff, Melinda.Woodruff@deq.virginia.gov, 757-518-2174) concerning the location and availability of waste management facilities in the project area.

2. Pollution Prevention. DEQ advocates that principles of pollution prevention and sustainability be used in all construction projects as well as in facility operations. Effective siting, planning, and on-site Best Management Practices (BMPs) will help to ensure that environmental impacts are minimized. However, pollution prevention and sustainability techniques also include decisions related to construction materials, design, and operational procedures that will facilitate the reduction of wastes at the source.

DEQ's Office of Pollution Prevention provides information and technical assistance relating to pollution prevention techniques. For more information, contact DEQ's Office of Pollution Prevention (Meghann Quinn, (804-698-4021).

3. Public Water Supply. The Virginia Department of Health (VDH), Office of Drinking Water (ODW) reviews projects for the potential to impact public drinking water sources (groundwater wells and surface water intakes). VDH administers both federal and state laws governing waterworks operation. Potential impacts to public water distribution systems or sanitary sewage collection systems should be verified by the local utility. Contact VDH, Arlene Fields Warren, with questions (804-864-7781).

4. Natural Heritage Resources. The Department of Conservation and Recreation's Division of Natural Heritage (DNH) maintains a Biotics Data System (Biotics) for occurrences of natural heritage resources in identified project areas. Natural heritage resources are defined as the habitat of rare, threatened, or endangered animal and plant species, unique or exemplary natural communities, and significant geologic communities. Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Department of Conservation and Recreation (DCR), DCR has the authority to report for VDACS on state-listed plant and insect species. Contact DCR-DNH, Rene Hypes at (804) 371-2708, to secure information on natural heritage resources.

5. Wildlife Resources. The Department of Wildlife Resources (DWR), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects (*Virginia Code* Title 29.1). DWR is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 *et seq.*), and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DWR determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts. For more information, contact Amy Ewing at (804) 367-2211.

Thank you for your inquiry. We appreciate your interest in complying with Virginia's environmental regulations. If you have any further questions, please call me at (804) 698-4326.

Sincerely,

Julia Wellman, EIR Coordinator
Office of Environmental Impact Review

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

July 13, 2020

Electronic Submittal

Ms. Valerie Fulcher, Environmental Program Specialist
Virginia Department of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, Virginia 23218

Re: Federal Consistency Determination for the Hampton Roads Sanitation District's SWIFT Project

Dear Ms. Fulcher:

This document provides the Commonwealth of Virginia with the Environmental Protection Agency's (EPA) Consistency Determination under CZMA section 307(c)(1) [or (2)] and 15 CFR Part 930, subpart C, for the issuance of financing under the Water Infrastructure Finance and Innovation Act (WIFIA) to the Hampton Roads Sanitation District (HRSD) for the SWIFT (Sustainable Water Initiative for Tomorrow) project ("the Project").

WIFIA was signed into law in 2014 and authorized the WIFIA program to be managed by EPA Headquarters. WIFIA was amended by section 1445 of the Fixing America's Surface Transportation Act of 2015 and section 5008 of the Water Infrastructure Improvements for the Nation Act of 2016. WIFIA is a federal credit program for eligible water and wastewater infrastructure projects. EPA selected HRSD to submit an application for credit assistance for the Project.

The information in this Consistency Determination is provided pursuant to 15 CFR §930.39. This activity includes:

HRSD proposal to design and construct new facilities to improve water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP) and improving the quality of effluent from the treatment facility. To achieve this, the project includes four separate components detailed in the following sections:

1) James River SWIFT Facility- The project includes design, construction, and commissioning of new facilities that will apply advanced water treatment to highly treated wastewater from the JRTP (Figures 1A and 1B). The resulting SWIFT water will meet drinking water quality standards and be compatible with the Potomac Aquifer. The proposed facility is expected to have an advanced treatment capacity of 16 million gallons per day (MGD). The

location of the proposed SWIFT Facility is currently in use as a storage area and includes a SCADA communications tower. This project includes the design, supply, construction, and commissioning of the following major new elements:

- SWIFT Influent Equalization Tank and Pumping Station
- Rapid-Mix/Flocculation/Sedimentation Facilities
- Solids Handling Equipment and Piping
- Ozone Generation Equipment and Reactor Facilities
- Biologically Active Filter Facilities
- Intermediate Pump Station
- Granular Activated Carbon Contactor Facilities
- Ultraviolet Disinfection System Facilities
- SWIFT Water Pumping Station
- SWIFT Chemical Storage and Feed Equipment Facilities
- SWIFT Power Distribution Equipment and Facilities
- SWIFT Distributed Control System (DCS) Programming and Equipment
- SWIFT Water and Well Backflush Pipelines
- Site Work including Stormwater Management
- Recharge and Monitoring Well Equipment and Facilities

2) Advanced Nutrient Reduction Improvements- The JRTP Advanced Nutrient Reduction Improvements project includes the design, construction, and commissioning of improvements to the secondary treatment process at the JRTP. These advanced secondary treatment improvements, including nutrient reduction measures, will be required to provide stable source water quality that meets the influent requirements of the Full-Scale SWIFT Facility at the JRTP. This project includes the design, supply, construction, and commissioning of the following major new elements:

- Administration Building
- Maintenance Building
- Electrical Building
- Main Power Distribution Equipment and Facilities
- Generator and Fuel Storage Facilities
- Wastewater Chemical Storage and Feed Equipment Facilities
- Integrated Fixed Film Activated Sludge (IFAS) Effluent Channel
- Secondary Clarifier Equipment and Facilities
- Moving Bed Bioreactor Equipment and Facilities
- Equalization of Well Backflush Water
- Hydraulic Connection to Existing Chlorine Contact Facilities
- Main DCS Programming and Equipment
- Mechanical, Electrical, and Plumbing
- Site Work including Stormwater Management

3) The project may include demolition of the following existing facilities as needed to complete the work:

- Main Administration Building including Incoming Power Distribution
- Bisulfite Storage Building
- Warehouse Building
- Portions of Secondary Clarifier Facilities

4) SWIFT Recharge and Monitoring Well Services- This project includes the construction and development of three recharge wells and one on-site monitoring well within the boundaries of the JRTP site. Each of the recharge wells will be housed inside a well house facility similar in scale to a small residential home and the facilities would be designed to complement existing architecture in the vicinity. The recharge wells would be sited at a minimum of approximately 800 feet apart from one another to recharge the Potomac Aquifer most efficiently.

5) Program Management of SWIFT Full-Scale Implementation- The SWIFT Facility Implementation Program Management team will manage the delivery of the advanced water treatment facilities. The Program Management team will also manage the delivery of the recharge wells, monitoring wells, and associated pumping and piping systems to support groundwater augmentation. The Program Management team may also deliver the wastewater treatment plant improvements and outfall modifications needed to ensure successful SWIFT implementation at proposed facilities. The Program Management team will implement the processes, procedures, and systems needed to design, procure, construct, permit, manage, and integrate the new SWIFT related assets into HRSD's existing systems. The Program Management team will also manage the transition of the new SWIFT assets to HRSD operations and life cycle asset management.

The project is located at HRSD's JRTP, which is at 111 City Farm Road in the City of Newport News, Virginia. The coordinates of the JRTP are 37°05'07.1"N 76°32'00.1"W. The JRTP site footprint is approximately 32 acres. It is bordered by the James and Warwick Rivers to the south and west and is bounded by the City's Riverview Farm Park to the east and north. The access road to the JRTP project site is City Farm Road.

The proposed treatment improvements and four recharge wells are planned entirely within the existing JRTP site, and some improvements will be made in existing buildings. Demolition and improvements will be made to existing facilities at the JRTP. The project vicinity and study area are depicted in Figure 2. The JRTP facility and proposed recharge well locations are depicted in Figure 3.

The EPA has evaluated the activity's effects to the land or water uses or natural resources of Virginia, including public access, recreation, fishing, historic or cultural preservation, development, energy infrastructure and use, hazards management, marinas, floodplain management, scenic and aesthetic enjoyment, and resource creation or restoration. EPA also considered coastal resources including biological or physical resources that are found within the coastal zone on a regular or cyclical basis, as well as biological and physical resources including, but are not limited to, air, tidal and non-tidal

wetlands, ocean waters, estuaries, rivers, streams, lakes, aquifers, submerged aquatic vegetation, land, plants, trees, minerals, fish, shellfish, invertebrates, amphibians, birds, mammals, and reptiles, etc.

The Virginia Coastal Zone Management Program contains the following applicable enforceable policies:

Fisheries Management, Subaqueous Lands Management, Wetlands Management, Dunes Management, Shoreline Sanitation, Air Pollution Control, Non-point Source Pollution Control, Point Source Pollution Control, and Coastal Lands Management.

Based upon the following information, data, and analysis, the EPA finds that the SWIFT Project is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Zone Management Program.

Subaqueous Lands Management, Wetlands Management, Non-point Source Pollution Control, Point Source Pollution Control- A wetland delineation was conducted in January 2020 to determine the extent of jurisdictional waters of the U.S. within and adjacent to the project area. Three nontidal wetlands and a portion of one tidal wetland were identified on the SWIFT project site. Two of the wetlands are located in previously disturbed areas within the fenced portion of the James River Treatment Plant property. The third wetland is located in the forested area at the southern edge of the project area. The remaining tidal wetland is located along the southwest project boundary adjacent to an unnamed tidal tributary to the Warwick River. Appropriate federal, state, and local wetland permits would be secured prior to commencement of the project.

The project would not result in a violation of the existing NPDES permit or degrade water quality, nor is any in water work proposed. Effects could include ground and soil-disturbing activities, direct impacts to surface water or wetlands, new or expanded outfalls and discharges of effluent to water resources. Practicable mitigation measures include use of erosion and sediment control measures and BMPs, compliance with permit requirements, effective site selection and design, consistency with Executive Order 11990 and the Clean Water Act Section 404(b)(1) guidelines, water efficiency, coordination with Regional utilities, and planning for extreme weather. Minimization and avoidance of impacts to jurisdictional waters of the U.S. would occur during site design. Erosion and sediment control measures would be implemented during construction to protect surface waters from sediment and nutrient transport and deposition. Treatment processes would be identified to ensure protection of groundwater resources and water quality. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the U.S. result from the project.

Air Pollution Control- The JRTP is within an area designated as in attainment for most criteria pollutants except for the ozone (8-hr 1997) criteria for which the area is designated as non-attainment/maintenance for federal standards. No significant impacts to air quality during construction or operation are anticipated. Temporary effects could include generation of construction dust and emissions, and generation of operational emissions (including criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic); however, practicable mitigation measures that would be employed include odor-minimizing facility design, use of energy-efficient designs and technologies, and use of dust suppression techniques

Pursuant to 15 CFR Section 930.41, the Virginia Coastal Zone Management Program has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR section 930.41(b). Virginia's concurrence will be presumed if its response is not received by the EPA on the 60th day from receipt of this determination. The State's response should be sent electronically to me. I can be reached at 202-564-6996, or McCurdy.Alaina@epa.gov. Thank you for your coordination on this project.

Sincerely,

Alaina McCurdy
Environmental Engineer, WIFIA

Enclosure – Figures 1-3

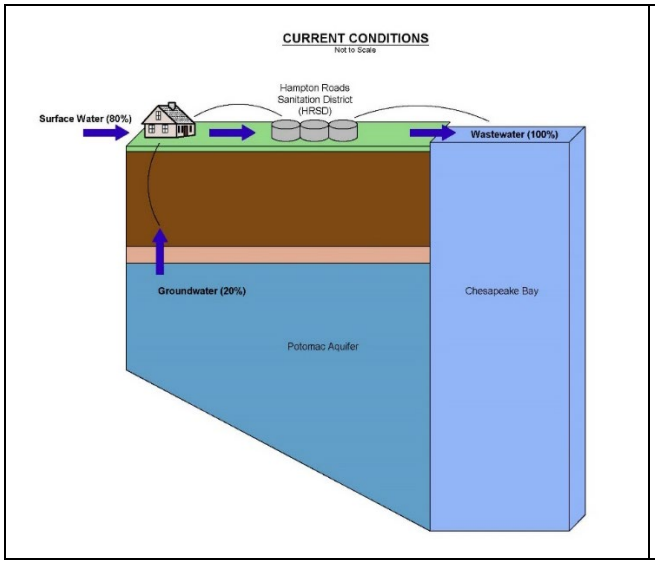


Figure 1A. Current Water Treatment Conditions

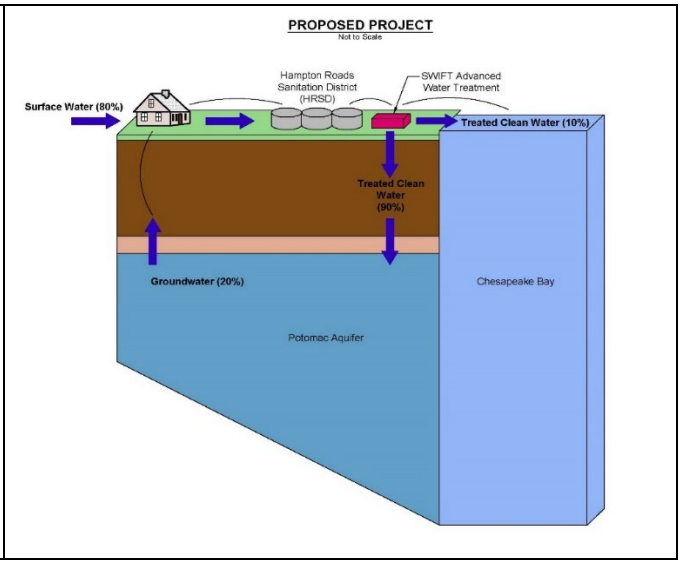


Figure 1B. Proposed Project Water Treatment Conditions

Legend

Site Boundary

0 1,250 2,500 Feet

AECOM

10 Patewood Drive, Building 6, Suite 500 Greenville, SC 29615

James River
Site Topography Map

Project No.	Prepared by	Date	
60617789	K. Clark	2/10/2020	Figure 2

Legend

0 250 500 Feet

- Proposed Recharge Wells
- Site Boundary
- Proposed SWIFT Facilities/Advanced Nutrient Reduction Improvements

AECOM
10 Patewood Drive,
Building 6, Suite 500
Greenville, SC 29615

James River Treatment Plant SWIFT Facilities Layout

Project No.	Prepared by	Date	
60617789	K. Clark	2/10/2020	Figure 3

United States Department of the Interior

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

IPaC Record Locator: 355-22467797 August 12, 2020

Subject: Consistency letter for the 'HRSD-SWIFT James River TP' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Matthew Batdorf:

The U.S. Fish and Wildlife Service (Service) received on August 12, 2020 your effects determination for the 'HRSD-SWIFT James River TP' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

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

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

1. Name

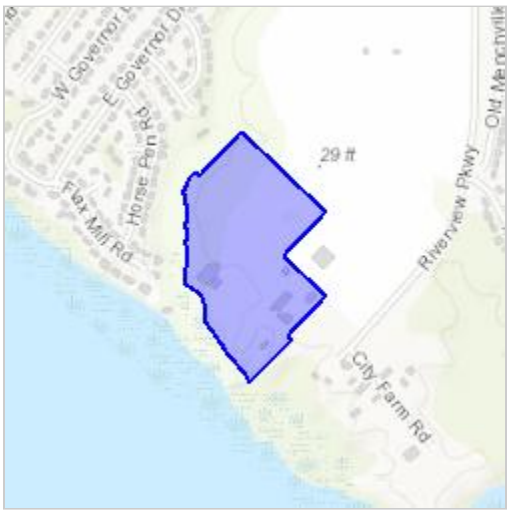
HRSD-SWIFT James River TP

2. Description

The following description was provided for the project 'HRSD-SWIFT James River TP':

> Design, Construction, and Modification of Facility Infrastructure

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.08586017251028N76.53418146773154W



Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

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

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

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

   No

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

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

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

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

   Yes

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

   No

6. Will the action involve Tree Removal?

   Yes

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

   No

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

   No

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

   No

Project Questionnaire

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

1. Estimated total acres of forest conversion:

1.6

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

1.6

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

0

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

4. Estimated total acres of timber harvest

0

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

0

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

0

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

7. Estimated total acres of prescribed fire

0

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

0

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

0

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

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: 07/08/2020

Self-Certification Letter

Project Name: James River Treatment Plant and SWIFT Facility

Dear Applicant:

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

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

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

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

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

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

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

Sincerely,

Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

COMMONWEALTH of VIRGINIA

Matthew Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

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www.dhr.virginia.gov

August 18, 2021

Ashley Longrie
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: The SWIFT Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. Longrie:

This letter in response to updated project information (dated July 22, 2021). The HRSD is seeking funds from EPA's Water Infrastructure Finance and Innovation Act (WIFIA) Program to assist in financing the SWIFT Project. EPA's UIC Program is also involved in a portion of the undertaking related to the permitting of the underground injection control (UIC) wells included in the project. T

Consistent with our previous correspondence (dated August 28, 2020, December 30, 2020, and June 8, 2021), we concur that the Hampton Roads Sanitation District (HRSD) SWIFT (Sustainable Water Initiative for Tomorrow) Project (2020-4124) will result in no adverse effect to historic properties.

Implementation of the undertaking in accordance with the finding of **No Adverse Effects** as documented fulfills the Federal agency's responsibilities under Section 106 of the National Historic Preservation Act. If for any reason the undertaking is not or cannot be conducted as proposed in the finding, consultation under Section 106 must be reopened.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

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962 Kime Lane
Salem, VA 24153
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Northern Region Office
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June 8, 2021

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: *Phase I Archaeological Survey of the Sustainable Water Initiative for Tomorrow James River Treatment Plant Recharge wells*
Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

We received for review the report referenced above on May 10, 2021, prepared by AECOM, on behalf of the Hampton Roads Sanitation District (HRSD). The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the SWIFT program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program.

The report documents an archaeological survey for the HRSD areas of proposed ground disturbance for the JRTP monitoring and recharge wells. The survey resulted in the relocation of a portion of 44NN0281 and 44NN0278 within the APE. No evidence of previously recorded 44NN0068 or 44NN0069 was encountered.

44NN0281 consists of a subsurface scatter of mid- to late nineteenth century artifacts all found within the former plow zone. AECOM recommends that the portions of the site identified within the APE do not contribute to the eligibility for listing in the National Register of Historic Places (NRHP). 44NN0278 consists of a small, subsurface scatter of early to mid-twentieth century artifacts all found within the former plowzone that may be associated with the Newport News City Prison Farm. AECOM recommends that the archaeological deposits associated with 44NN0278 within the APE do not have the potential to yield significant information. No additional work is recommended at this time. Based on the submitted information, *DHR concurs with theses recommendation*. **Please send a hard copy of the report for our records.**

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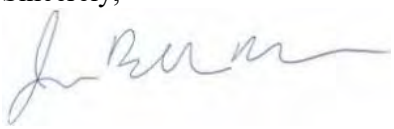
If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

COMMONWEALTH of VIRGINIA

Matthew Strickler
Secretary of Natural Resources

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February 19, 2021

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: The SWIFT Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

This letter in response to updated project information and a conference call on February 9, 2021. The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program. Additionally, two monitoring wells and 10 recharge wells will be installed as part of the SWIFT project, to be permitted by EPA Region 3 Underground Injection Control (UIC) program. These actions are considered one undertaking.

Previously, an archaeological report (AECOM 2020) documenting the survey of 32 acres was submitted to DHR. In a letter dated, August 28, 2020, DHR concurred that sites 44NN0359 and 44NN0360 were *not eligible* for listing in the National Register of Historic Places (NRHP). Sites 44NN0282 and 44NN0283 were not re-located. DHR concurred with the recommendation that the portions of 44NN0281 located within the surveyed area did not retain integrity, however the portions of the site that extended outside of the survey boundaries should be considered *potentially eligible*. DHR requested additional information about architectural resources that may affected by undertaking.

On November 17th, 2020 DHR received project plans related to the proposed well installations, permitted by the UIC program.

In a letter dated December 30, 2020, DHR concurred that the following architectural resources are *not eligible* for listing in the National Register of Historic Places (NRHP): DHR ID Nos. 121-0103, 121-0104, and 121-5463. At that time DHR, requested information about the proposed well location and how they related to the SWIFT program construction at the JRTP.

On January 7, 2021, DHR received an updated site map showing the locations of the proposed well locations, previous survey boundaries, and VCRIS archival data. In addition to the AECOM 2020 survey area, the proposed well locations are within the boundaries of a 1992 survey conducted by WMCAR, *A*

Phase I Cultural Resource Survey of The Proposed Riverview Farm Park Property City of Newport News, Virginia. Unfortunately, much of that survey area (WMCAR 1992) was not subjected to shovel testing and does not meet DHR's current *Guidelines for Conducting Historic Resources Survey in Virginia* (2017).

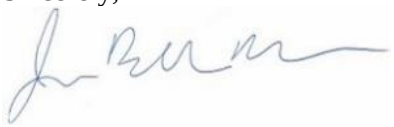
A conference call was then held on February 9, 2021, to discuss the project information. During this call DHR stated that additional survey for the wells within the AECOM 2020 survey area would not be needed, but that the wells located outside the recent survey boundaries may require archaeological survey. Based on the recently submitted information, six recharge wells and one monitoring well are located outside of the AECOM 2020 survey boundaries.

In order to identify historic properties that may be affected by this undertaking, DHR recommends that a Phase I archaeological study be conducted within remaining well locations. This survey must be conducted by qualified professionals in accordance to the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-42) and DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (2017). One bound copy and one digital copy of the resulting report should be submitted to our office for review.

Given the relatively small footprint of these wells, a small survey area (approximately 1 sq. acre) around the proposed well location(s) should suffice. If intact archeological deposits are identified, DHR recommends that the EPA consider avoidance. The archaeological survey should be be utilized as a planning tool to avoid impacts to cultural resources.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

c.
Barb Okorn, EPA
Ashley Longrie, EPA
Mark Nelson, EPA

COMMONWEALTH of VIRGINIA

Matthew Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

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December 30, 2020

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: Addendum Archaeology Report and Architectural Survey of the SWIFT Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

We received for review the addendum report referenced above on November 30, 2020, prepared by AECOM, on behalf of the Hampton Roads Sanitation District (HRSD). The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the SWIFT program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program.

Based on the submitted information, DHR concurs that the following architectural resources are *not eligible* for listing in the National Register of Historic Places (NRHP): DHR ID Nos. 121-0103, 121-0104, and 121-5463.

On November 17th, DHR received project plans for an Underground Injection Control program permit as part the larger SWIFT undertaking. The project plans included in the November 17th submission include recharge wells (JR_MAR_05 and JR_MAR_06) that appear to be located close to or within the boundaries of archaeological sites 44NN0278 and 44NN0281.

In order to continue our review, DHR needs clarification on locations of all wells associated with this undertaking.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

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August 28, 2020

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: Hampton Roads Sanitation District (HRSD) SWIFT (Sustainable Water Initiative for Tomorrow) Project
Phase I Archaeological Survey of the Sustainable Water Initiative For Tomorrow (SWIFT) Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

We have received for review the report referenced above, prepared by AECOM, on behalf of the Hampton Roads Sanitation District (HRSD). The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the SWIFT program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program. We are pleased to inform you that this survey and report generally meet the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-42) and DHR's *Survey Guidelines* (rev. 2017). **Please send a bound copy of the report to our office for archival purposes**.

The report documents an archaeological survey of the proposed undertaking's direct footprint, approximately 32 acres. During the course of the survey, one previously identified archaeological site (44NN0281) was re-located, two new archaeological sites were identified (44NN0359-44NN0360), and two previously recorded sites were not re-located (44NN0282-44NN0283).

Site 44NN0359 consists of a subsurface scatter of late nineteenth and twentieth century artifacts. Site 44NN0360 consists of two fragments of sheet metal and a cast iron/lead alloy sphere resembling a musket ball. AECOM recommends **44NN0359** and **44NN0360** as *not eligible* for listing in the National Register of Historic Places. *DHR concurs with these recommendations*.

The portion of 44NN0281 located within the current surveyed area consists of artifacts dating to the 20th century and likely associated with the Newport News City Farm Prison. AECOM recommends that the archaeological deposits located within the footprint of the proposed undertaking do not have the potential to yield significant information, and do not contribute to the overall eligibility of 44NN0281. *DHR concurs with this recommendation*. Please note, however, that portions of the site located immediately outside of

the current survey's boundary have been investigated recently as part of an examination of the former Warwicktowne (*History in Two Acts: Archaeological Examination of Warwicktowne and a Confederate Encampment on the Former City Farm*; Pope et al 2020). Overall **44NN0281** remains *Potentially Eligible.* If the proposed undertaking changes, additional archaeological investigation may be needed.

While the report addresses the potential effects to archaeological sites located within the direct footprint of the proposed project area, the submission does not include a discussion of potential indirect effects that the undertaking may have on nearby historic resources.

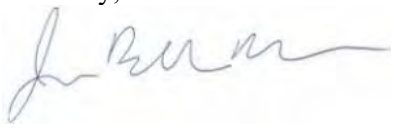
Given the proximity to previously recorded resources (DHR ID No. 121-0103 and 121-0104) and the age of the existing treatment plant, we recommend that a Phase I architectural survey be conducted to identify historic properties that may be located within the area of potential effects (APE). The survey should update existing information for previously recorded resources, document current conditions, evaluate eligibility and discuss impacts the undertaking may have (if any) on historic properties. The survey must be conducted by a qualified professional in accordance the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-42) and DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (2017). One bound copy and one digital copy of the resulting report should be submitted to our office for review and approval prior to proceeding with the proposed activities.

Additionally, in order to provide meaningful comments regarding the effects to historic properties, please provide the following information:

- Project plans/drawings.
- Detailed description of proposed activities
- Maps highlighting the locations of the proposed activities.
- Photos of the project area and surrounding setting.
- Locations of laydown yards/off site workspaces
- Plans for avoiding impacts to 44NN0281 and other sites outside of the project area footprint (e.g. temporary construction fencing)

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

Appendix A

APPENDIX A: ENVIRONMENTAL QUESTIONNAIRE FOR WIFIA CREDIT ASSISTANCE PROJECTS

This questionnaire will be used for most projects receiving WIFIA credit assistance and supports the Programmatic Environmental Assessment (PEA) "tiering" framework, the PEA's associated preliminary Finding of No Significant Impact (FONSI), and project-specific NEPA documentation for the WIFIA program. WIFIA credit assistance to State Revolving Fund (SRF) programs should use the questionnaire in Appendix B.

1. **Project title:**

   James River SWIFT Land Acquisition (GN016343),

   James River Treatment Plant Advanced Nutrient Reduction Improvements (JR013400), and

   James River Recharge Wells (GN016362), collectively referred to herein as "the Project".

2. **Prospective Borrower:**

   Hampton Roads Sanitation District (HRSD) Sustainable Water Initiative for Tomorrow (SWIFT) Project

3. **Project description:**

   The purpose of HRSD's SWIFT Project is to improve the quality of the Chesapeake Bay by reducing surface water discharge of treated effluent; to provide a sustainable source of groundwater to the Potomac Aquifer; to increase the hydrostatic pressure within the aquifer to prevent saltwater contamination; to slow, stop or reverse land subsidence related to aquifer withdrawals in coastal Virginia; and to reduce future capital investment needs in wastewater treatment plant upgrades. The SWIFT Project includes design and construction of new facilities that will apply advanced water treatment to already highly treated wastewater effluent from existing treatment plants. The treated water would subsequently be used to recharge the Potomac Aquifer via recharge wells (Figures 1A and 1B).

   The James River SWIFT Land Acquisition (GN016343) project will fund HRSD's acquisition of a 10-acre parcel of land adjacent to the existing James River Treatment Plant from the City of Newport News. Approximately 4 acres of the 10-acre parcel will be developed (Figure 2) and the remaining 6 acres, which includes the undeveloped forested lands and Warwick River shoreline southwest of the Project area, will be placed in a conservation easement protecting the waterfront from future development.

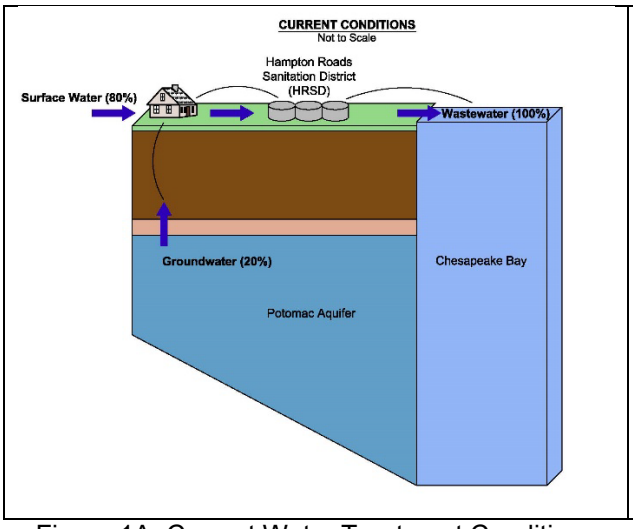


Figure 1A. Current Water Treatment Conditions

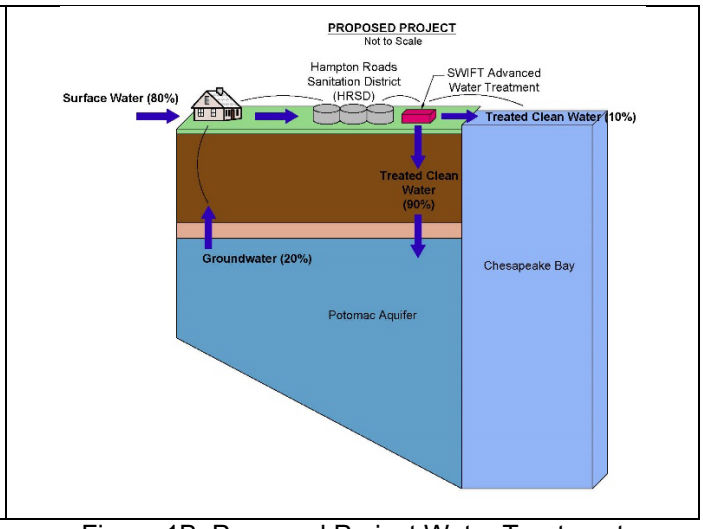


Figure 1B. Proposed Project Water Treatment Conditions

The James River Treatment Plant Advanced Nutrient Reduction Improvements (ANRI) (JR013400) project involves construction of an administrative/maintenance building, chemical storage facilities, and expanded parking lots, driveways, security gates and fencing associated with the adjacent ANRI facilities at the existing treatment plant.

The James River Recharge Wells Project (GN016362) includes construction of seven recharge wells, one on the 4-acre portion of the newly purchased HRSD parcel and six on adjacent City of Newport News-owned property. This project component also includes installation of eight monitoring wells associated with the recharge wells. The recharge wells will be housed inside well house facilities similar in scale to small residential homes and the facilities would be designed to complement existing architecture in the vicinity. The recharge wells will be sited at a minimum of approximately 800 to 1,000 feet apart from other wells to most efficiently recharge the Potomac Aquifer. This WIFIA project scope includes site development, installation of mechanical equipment, and piping associated with the conveyance of SWIFT water to the recharge wells.

This document specifically addresses the aforementioned Project components, but also considers the overall effects of James River SWIFT Project, including the James River Tranche 1 projects, for which USEPA issued a Programmatic Environmental Assessment Adequacy Memorandum in September 2020.

4. **Project location (briefly describe the surroundings and environment around the project location and attach map, as necessary):**

The proposed facilities and improvements associated with this Project would be located on the grassy parcels immediately east and northeast of HRSD's existing James River Treatment Plant, located at approximately 111 City Farm Road, Newport News, VA, 23602. The Project boundary and surrounding vicinity are depicted on Figure 2. The proposed SWIFT facilities, recharge wells, and ANRI layout are depicted on Figure 3.

Legend

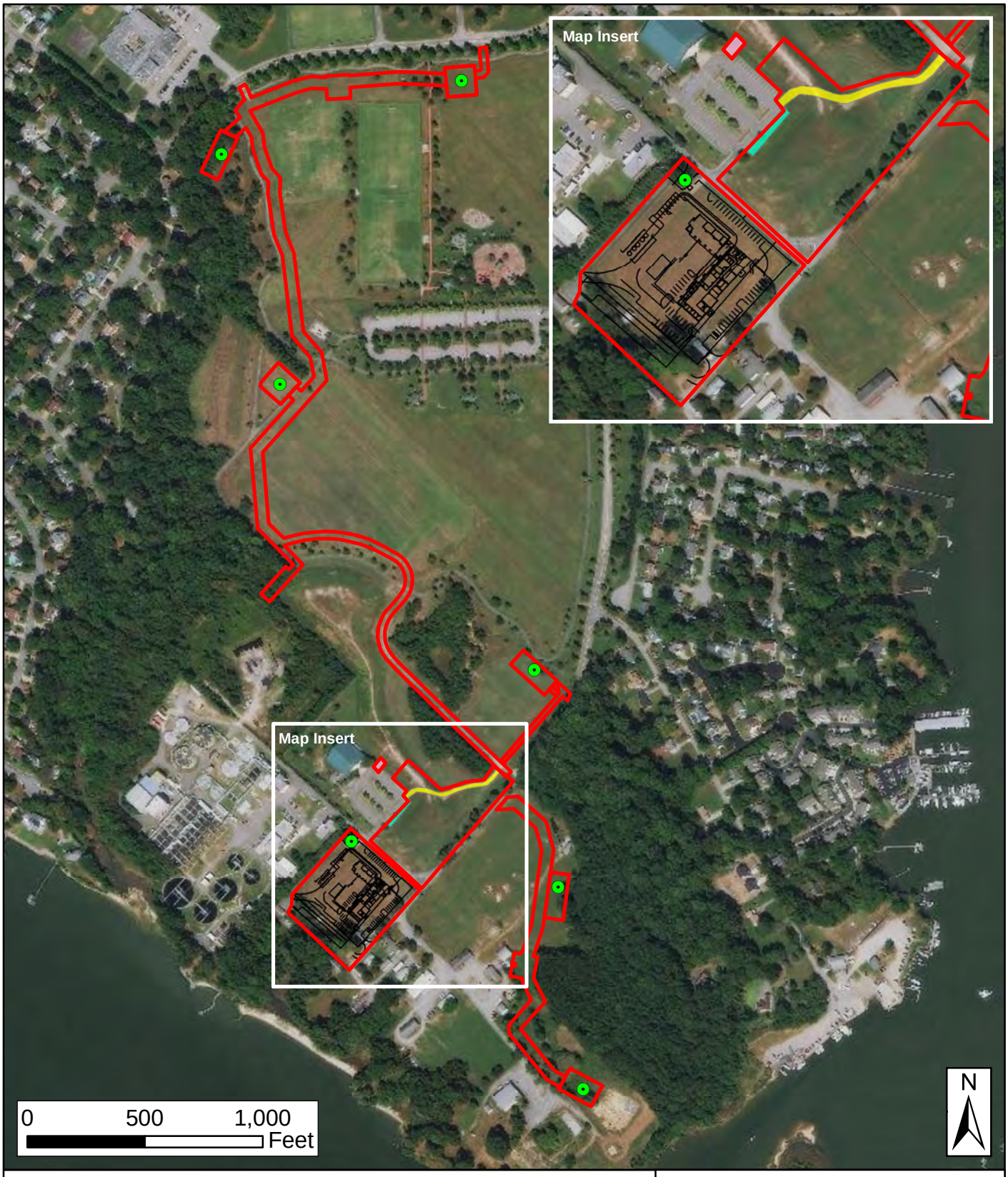
- Project Boundary
- Well House
- Easement

0 1,250 2,500 Feet

AECOM
10 Patewood Drive,
Building 6, Suite 500
Greenville, SC 29615

James River Tranche 2 SWIFT Project Site Topography Map

Project No.	Prepared by	Date	
6063587	K. Clark	6/8/2021	Figure 2



Legend

- Proposed Recharge Well
- Project Boundary
- Proposed Gymnastics Center Dumpster
- Proposed Gymnastics Center Entrance
- Parking Spaces Relocated
- Proposed SWIFT Facilities/Advanced Nutrient Reduction Improvements

AECOM
10 Patewood Drive,
Building 6, Suite 500
Greenville, SC 29615

James River
Tranche 2 SWIFT Project
Project Layout

Project No.	Prepared by	Date	
6063587	K. Clark	6/18/2021	Figure 3

To minimize operational costs as well as energy requirements, SWIFT facilities have been sited to minimize movement of large volumes of water. To that end, HRSD would maximize the installation of groundwater recharge wells within existing property lines (Figure 3).

5. **Project type: (Check all that apply):**

☒	Wastewater Projects
☐	Drinking Water Projects
☐	Energy Efficiency Enhancement Projects
☒	Repair, Rehabilitation, and Replacement Projects
☐	Brackish or Seawater Desalination Projects
☐	Drought Prevention, Reduction, or Mitigation Projects
☒	Acquisition of Real Property Projects
☐	A combination of Wastewater or Drinking Water Projects
☒	Other [Please explain] Saltwater intrusion and subsidence

6. **Describe any environmental permits needed for the project (e.g., federal, state, local) and the status of any permit:**

- Underground Injection Control permit - EPA - *Pending approval*
- Section 404 of Clean Water Act permit – U. S. Army Corp of Engineers - *Pending preliminary jurisdictional determination*
- Consultation under Section 7 of Endangered Species Act – U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) - *Self-Verified regarding Endangered Species Act Section 4(d) rule; consultation with NMFS not required as project does not involve in-water work.*
- Water Quality Certificate under Section 401 of Clean Water Act - Virginia Department of Environmental Quality (VDEQ) water division - *Pending design development*
- Virginia Pollutant Discharge Elimination System Industrial Discharge permit - VDEQ water division - *Pending design development*
- VA Water Protection Permit - VDEQ water division - *Pending design development*
- General Permit for Discharge of Stormwater from Construction Activities (VAR10) - VDEQ water division - *Pending design development*
- Certificate to Construct - VDEQ water division - *Pending design development*
- Certificate to Operate - VDEQ water division - *Pending design development*
- Air permits (NSR Permit and State Operating Permit) - VDEQ Air division - *Pending design development*
- Consistency under Coastal Zone Management Act (CZMA) - VDEQ CZMA - *Pending design*

development

- Natural Heritage / protected species consultation - VA Department of Wildlife Resources (VDWR)- *Pending design development*
- Consultation under Section 106 of National Historic Preservation Act - VA Department of Historic Resources (VDHR)- *Completed – see Section G below.*
- VA Scenic Rivers Clearance - VA Department of Conservation and Recreation - *Pending design development*
- Conditional Use Permits - City of Newport News - *Pending design development*
- Building Permits - City of Newport News - *Pending design development*
- Land Disturbance / Erosion and Sediment Control - City of Newport News - *Pending design development*
- Wetland Permit - Wetlands Board of City of Newport News - *Pending design development*
- Chesapeake Bay Preservation Act Compliance - Chesapeake Bay Board - *Pending design development*

A. LAND USE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Conversions of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), to non-agricultural use as defined under the Farmland Protection Act 7 U.S.C. 4201 et seq.	□	☒	□
2. Conflicts with any applicable land use plan, policy, act, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, habitat conservation plan, specific plan, local plan, or zoning ordinance).	☒	□	□

7. **Please provide mitigation measures related to land use, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

   Review of recent aerial photography and onsite visual assessments was conducted to evaluate the existing land use within and surrounding the Project area. The 16.8-acre Project area consists of relatively flat terrain with small hills and depressions, ranging in elevation from approximately 20 to 35 feet above mean sea level (msl) (US Geological Survey [USGS] 2018).

The location of the proposed SWIFT Project is currently used as a public recreation area. The majority of the Project area comprises mowed grassy fields maintained by the City of Newport News with a few scattered buildings and sheds along the south and southeast sides of the Project area. Deciduous forest abuts the west and southwest boundary of the Project area. The James River Treatment Plant and the Riverview Gymnastics Center lie to the west of the site, undeveloped forested lands with recreation trails lie to the south along the Warwick River, grassy public recreation space lie to the northeast, and the Newport News City Farm and associated buildings are to the east.

As detailed in Table 1, the National Land Cover Database classifies the majority of the Project area as developed open space (13.9 acres), with some developed low intensity areas (1.2 acres), and less than an acre of developed medium intensity, deciduous forest, evergreen forest, and shrub/scrub areas (Figure 4). Photos 1 and 2 are representative of the land cover types of the proposed Project area.

Table 1. Land Use / Land Cover Types in the Project Area

Land Cover Type	Area (acres)
Developed Open Space	13.9
Developed Low Intensity	1.2
Developed Medium Intensity	0.6
Deciduous Forest	0.6
Evergreen Forest	0.3
Shrub/Scrub	0.2
Total	**16.8**

The lands surrounding the Project area are currently developed as the James River Treatment Plant, residential neighborhoods, public schools, and recreational areas, including indoor and outdoor athletic facilities, a playground, and a large public park. There are constructed berms strategically sited around the treatment plant that provide screening and reduction of noise, odor, and visual intrusion of the treatment plant for nearby residents and people using the park.

Photo 1. View facing southwest of the Project area.

Photo 2. View facing northeast of the Project area.

Legend

- Project Boundary
- Well House
- Easement

Land Use Land Cover

- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub

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James River
Tranche 2 SWIFT Project
SWIFT Land Use

Project No.	Prepared by	Date	
6063587	K. Clark	6/14/2021	Figure 4

As detailed in Table 2, none of the mapped soils in the Project area have been identified by the Natural Resources Conservation Service (NRCS) as Prime or Unique Farmland nor a Farmland of Statewide Importance (NRCS 2020) (Figure 5).

Table 2. Soil Type Occurrence in the Project Area

Map Unit Symbol	Soil Type	Acreage in Project Area	Prime Farmland?	Farmland of Statewide Importance?
16C	Nevarc-Uchee complex, 6 to 15 percent slopes	1.6	No	No
16D	Nevarc-Uchee complex, 15 to 50 percent slopes	0.3	No	No
21A	Slagle-Urban land complex, 0 to 2 percent slopes	8.3	No	No
9A	Craven-Urban land complex, 0 to 2 percent slopes	5.1	No	No
26	Udorthents-Dumps complex	0.1	No	No
28	Yemassee-Urban land complex, 0 to 2 percent slope	1.3	No	No
5	Bethera-Urban land complex, 0 to 2 percent slope	0.2	No	No
Total		**16.8**		

The City of Newport News most recently updated their 2040 Comprehensive Plan (City of Newport News 2018) which identifies the planned uses of the land within Newport News for the 2040 planning year. In the Plan, the proposed Project area is denoted as “natural area/open space” as are many of the surrounding areas with the exception of the existing treatment plant, which is denoted as “utilities”. The city has agreed to the conversion of the property for the proposed SWIFT use.

Legend

- Project Boundary
- Well House
- Easement
- 16C - Nevarc-Uchee complex, 6 to 15 percent slopes
- 16D - Nevarc-Uchee complex, 15 to 50 percent slopes
- 21A - Slagle-Urban land complex, 0 to 2 percent slopes
- 26 - Udorthents-Dumps complex
- 28 - Yemassee-Urban land complex, 0 to 2 percent slope
- 5 - Bethera-Urban land complex, 0 to 2 percent sl
- 9A - Craven-Urban land complex, 0 to 2 percent slopes

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James River Tranche 2 SWIFT Project Site Soils

Project No.	Prepared by	Date	
6063587	K. Clark	6/14/2021	Figure 5

As part of the purchase agreement with the City of Newport News, HRSD has committed to building transitional buffer areas between the treatment plant industrial uses and the city's future planned park/recreational uses of the lands to the east and south of the SWIFT facilities. The transitional buffer areas would include access to recreation trails along the waterfront as well as parking and restrooms to support recreational use of the existing river access. More than half of the 10-acre acquisition parcel (i.e., 6 acres) would be placed in a conservation easement to protect the waterfront from any future development, while 4 acres of the parcel will be used for the Project.

Given the relatively limited footprint of this SWIFT Project, no significant impact on land use is anticipated. The site would be converted from predominantly open space to industrial/utility uses. Effects from site development would include minor changes in land use cover and designations, alterations to land use patterns, and preclusion of other land uses within or adjacent to Project footprints; however, the proposed Project area is within a previously disturbed area with existing buildings. Practicable mitigation measures such as stakeholder coordination/consultation and/or consolidation of infrastructure during the scoping and design phase would aid in the avoidance or minimization of land use conflicts. The Project would comply with state, tribal, and local land use plans, programs and policies.

B. AIR QUALITY:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Conflicts with or delays in implementation of any applicable federal, state, or local air quality plan.	☒	□	□
2. Violations of any air quality standards or contributions to an existing or projected air quality violation (including protected areas designated as mandatory Federal "Class I").	☒	□	□
3. Increases in any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	□	☒	□
4. Releases of objectionable odors, such as hydrogen sulfide.	□	☒	□

8. **Please provide mitigation measures related to air quality, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

   During the construction phase of the Project, it is unlikely that construction emissions would be greater than de minimis levels and are therefore likely to be of only minimal impact to air quality. Overall, air quality impacts during construction would be localized and short-term, but less than

significant, with the implementation of practicable mitigation measures, including high efficiency engines and anti-idling best management practices (BMPs).

During the operation phase of the Project additional emissions associated with the proposed action would be negligible and are therefore likely to contribute only negligibly to regional emissions of criteria air pollutants, greenhouse gases, and ozone precursors (USEPA 2018]). Based on studies conducted at multiple facilities, the emissions of criteria air pollutants and ozone precursors would result in long-term regional emissions that are below applicable regional thresholds and would not result in considerable increases in, or substantially contribute to, emissions concentrations (ESA 2014; Orange County Water District 2011; San Francisco Planning Department 2017; USEPA 2014).

Some proposed facility improvements would result in reduced air emissions and would lead to positive benefits to air quality, including reduced greenhouse gas emissions through the use of more modern and efficient equipment and technologies (USEPA 2018). Proposed improvements would be aimed at promoting overall quality of life for the communities that HRSD serves, including safe operation, environmental stewardship, transparency, community engagement, education, resiliency, resource management, and affordability.

No significant impacts to air quality during construction or operation are anticipated. Effects could include generation of construction dust and emissions, and generation of operational emissions such as criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic; however, practicable mitigation measures that would be employed include odor-minimizing facility design, use of energy-efficient designs and technologies, and use of dust suppression techniques.

C. NOISE AND VIBRATION:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	☒	□	□
2. Permanent increases in ambient noise levels in the project vicinity above levels existing without the project.	☒	□	□
3. Temporary or periodic increases in ambient noise levels in the project vicinity above levels existing without the project.	□	☒	□
4. Generation of vibration that could increase the risk of structural damage.	☒	□	□

9. **Please provide mitigation measures related to noise and vibration, including those that reduce a significant impact to less than significant. Please provide references and supporting documents:**

Noise would be primarily associated with the construction phase of the Project; however, this noise would be relatively temporary in duration - ceasing at the end of each workday and upon

completion of the construction phase of the proposed SWIFT Project. The construction phase is anticipated to begin in 2021 and last through 2025. The construction schedule would be limited to weekdays; however, if necessary, the contractor may choose to work weekend shifts with approval of a variance from the City of Newport News. The operation of water and wastewater facilities would produce relatively minor levels of noise that would be localized to the Project area. The environmental effects are likely to be minor and short term in duration but could potentially adversely impact nearby sensitive receptors.

The nearest noise-sensitive receptors would be Menchville High School (located 0.6 mile from the Project area) and a few single-family residences near the Project area to the north, west, and east (located approximately 0.2 mile from the Project area). Students, teachers, and administrators at the school and residents of homes adjacent to the property boundary could experience elevated noise levels; however, HRSD has established, and would continue to demonstrate, its strong commitment to its neighbors and the communities it serves. Proposed upgrades would incorporate elements such as noise abatement measures aimed at promoting quality of life, environmental stewardship, transparency, and community engagement.

Construction-related noise would be expected to occur from onsite construction equipment and the movement of construction-related vehicles (i.e., worker trips and material and equipment trips) on surrounding roadways. The level of noise from heavy equipment and construction-related traffic would vary depending on the phase of construction. Construction equipment produces a range of sounds while operational. Construction noise would cause temporary and short-term adverse impacts to the ambient sound environment. Typical noise levels from construction equipment are expected to be 85 dBA or less at a distance of 50 feet from the construction site. These types of noise levels would diminish with distance from the construction site at a rate of approximately 6 dBA per doubling of distance.

The EPA guidance for noise levels affecting residential land use stipulates that noise should be less than 55 dBA for exterior levels and less than 45 dBA for interior levels (USEPA 1974). The U.S. Department of Housing and Urban Development (HUD) also recommends that exterior areas of frequent human use follow the EPA guideline of 55 dBA (HUD 2009). The City of Newport News places general restrictions on excessively loud noise but does not provide specific guidance on construction noise (Newport News 2019). Hence, in the absence of a quantified sound level threshold from local regulations, 55 dBA would be considered a guidance-based threshold for determining potential sound level impacts at noise-sensitive receptors (e.g., residences and schools).

Construction noise would be expected to attenuate to 65 dBA at approximately 500 feet. This noise would attenuate to the recommended EPA noise guideline of 55 dBA at approximately 1,600 feet and would attenuate to 50dBA at approximately 3,200 feet. These distances could be shorter in the field as objects and topography would cause further noise attenuation.

During the operational phase of the Project, noise generated shall comply with local ordinances and shall be in accordance with the land use designations. If required, general mitigation measures would be implemented, such as placing intakes and exhausts facing away from sensitive receivers, housing equipment in buildings, and attenuating fan, pump, and motor noise. In most cases, noise from vehicular traffic created by operations and maintenance of the Project would be incidental in relation to the existing traffic use of surrounding roadways.

The Project includes improvements to facilities which could result in minor noise reduction benefits associated with the use of more modern or efficient equipment. With the implementation of proper mitigation measures in compliance with local ordinances the potential operational noise impacts would be less than significant.

No significant impacts from noise and/or vibration are anticipated. Effects could include generation of construction and operational noise and vibration, but levels of noise and vibrations would not exceed established standards or pose a risk of structural damage. Practicable mitigation measures would comply with local ordinances and designations and general noise reduction measures would be used.

D. GEOLOGY AND SOILS:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Exposure of people or structures to hazards from unstable soils, landslide, lateral spreading, subsidence, liquefaction or collapse.	□	☒	□
2. Increase in soil erosion or loss of topsoil.	□	☒	□
3. Loss of economic viable mineral deposits, scientifically significant paleontological resources, or unique geological features.	□	☒	□

10. **Please provide mitigation measures related to geology and soils, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

Short-term and long-term impacts to geologic and soil resources are anticipated to be to less than significant given the limited footprint of the Project, compliance requirements, consideration of resources during site selection, and implementation of BMPs. Minor effects may include vegetation removal, grubbing, grading, and trenching. Soil erosion would be controlled using appropriate erosion and sediment control measures and BMPs. Erosion control BMPs include the use or installation of sandbags, silt fences, earthen berms, fiber rolls, sediment traps, erosion control blankets, check dams in medium-sized channels, or straw bale dikes in smaller drainage channels. Other BMPs may be specified in the Project Stormwater Pollution Prevention Plan (SWPPP) and fugitive dust control plan.

The SWIFT Project would be expected to have an overall significant beneficial impact on geology, as pumping large volumes of water into the aquifer would increase hydrostatic pressure within the aquifer, prevent saltwater intrusion into the aquifer, and slow land subsidence related to aquifer withdrawals.

E. WATER RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Violations of any water quality standards or waste discharge requirements, including degradation of water quality.	☒	□	□
2. Depletion or contamination of groundwater supplies (including sole-source aquifers) or negatively interfere with groundwater recharge.	☒	□	□

E. WATER RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
3. Alteration of the drainage pattern of a water resource that would result in an increase in erosion or flooding on- or off-site.	□	☒	□
4. Soil erosion or stormwater runoff that increases sediment, pollutants, or contaminates into streams, rivers, or other water resources.	□	☒	□
5. Floodplain modification, development within, or redirection, as defined by executive order 11988.	☒	□	□
6. Increase in flood risk affecting loss on human safety, health, and welfare.	□	☒	□
7. Loss, degradation, or destruction of wetlands and waterbodies through direct removal, filling, hydrological interruption, or other means.	□	☒	□
8. Alteration of wild and scenic rivers as defined by the Wild and Scenic River Act 16 U.S.C. 1271 et seq.	☒	□	□
9. Conflicts with the Rivers and Harbors Act, 33 U.S.C. 403.	☒	□	□
10. Conflicts with the Coastal Barrier Resources Act, 16 U.S.C. 3501 et seq.	☒	□	□
11. Conflicts with the Coastal Zone Management Act, 16 U.S.C. 1451 et seq.	□	☒	□

11. **Please provide mitigation measures related to water resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    The Project would have an overall long-term benefit on flood risk, aquifers, and the groundwater supply by reducing aquifer-related land subsidence in coastal Virginia and allowing additional time to adapt to sea level rise. The Project would also protect valuable coastal wetlands for decades longer than currently projected.

    A wetlands delineation was conducted in January 2020 to determine the extent of jurisdictional waters of the U.S. (WOUS) within and adjacent to the Project area. In May 2020 and April 2021, additional wetlands investigations were conducted by AECOM and HDR to confirm and expand upon the January 2020 findings (AECOM 2020a, HDR 2021). Copies of the wetlands delineation reports are included as Attachment A.

    The wetland field investigations identified six very small isolated wetlands and three drainage ditches within the Project boundary, identified as isolated wetlands IW2, IW4, IW5, IW7, IW8, and IW9, and ditches DA, DB, and DC. No WOUS (wetlands or streams) nor any tidal waterbodies

occur within the Project area. The small isolated wetlands identified onsite are subject to Virginia DEQ jurisdiction. The approximate location and extent of the wetlands and ditches identified in the field are summarized in Table 3 and depicted on Figure 6. Appropriate federal, state, and local wetland permits would be secured prior to commencement of the Project.

Table 3. Summary of Wetlands and Water Features within Project Boundary

Feature	Tidal/Non-Tidal[1]	Cowardin Classification[2]	Area (Acres)
IW2	Non-tidal	PEM	0.02
IW4	Non-tidal	PEM	<0.01
IW5	Non-tidal	PEM	0.03
IW7	Non-tidal	PEM	0.04
IW8	Non-tidal	PEM	0.01
IW9	Non-tidal	PEM	0.04
DA (ditch)	Non-tidal	N/A	33 (linear feet)
DB (ditch)	Non-tidal	N/A	58 (linear feet)
DC (ditch)	Non-tidal	N/A	3.5 (linear feet)
		Total	0.14 ac; 94.5 lf

1. Tidal determinations for wetlands are based on mapped NWI Cowardin classification; not surveyed for mean high/low water. Tidal designations for surface waters are presumed based on proximity to tidal waters but shall be verified prior to permitting.
2. Cowardin classifications assigned according to the USFWS-NWI mapper. PEM is palustrine emergent wetland; N/A is not applicable, as ditches are not NWI-mapped wetland features.

The City of Newport News administers and enforces the Chesapeake Bay Preservation Act (CBPA) within the city limits via the Chesapeake Bay Preservation Act Ordinance (CBPO). Under the CBPO, Resource Protection Areas (RPAs) incorporate tidal wetlands, tidal shores, waterbodies with perennial flow, nontidal wetlands connected by surface flow and contiguous to tidal wetlands or waterbodies with perennial flow, and a 100-foot wide buffer surrounding the aforementioned features. Consistent with the CBPA and CBPO, a potential 100-foot RPA has been mapped along wetlands and streams where it is assumed that they are connected by surface water flow and contiguous to tidal wetlands or water bodies with perennial flow. The RPA does not intersect the Project area and the site avoids disturbance of the RPA. Should the selected contractor determine that encroachment into the RPA may be necessary, a detailed field delineation of the RPA would be conducted, and proper approvals would be obtained from the City of Newport News and VDEQ, as appropriate.

According to the most recent Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the proposed Project improvements are located outside the 100-year and 500-year floodplains, as depicted on Figure 7. Floodplains to the south and southwest occur close to the Project boundary; however, the floodplain does not encroach on the Project area and the proposed site layout avoids disturbance to the floodplain. The nearby floodplains are associated with the James River and Warwick River.

Effects could include ground and soil-disturbing activities, direct impacts to surface water or adjacent wetlands, new or expanded outfalls, and discharges of effluent to water resources. Practicable mitigation measures include use of erosion and sediment control measures and BMPs, compliance with permit requirements, effective site selection and design, consistency with Executive Order 11990 and Clean Water Act Section 404(b)(1) guidelines, water efficiency, coordination with regional utilities, and planning for extreme weather. Minimization and avoidance

of impacts to jurisdictional waters of the U.S. would occur during site design. Erosion and sediment control measures would be implemented during construction to protect surface waters from sediment and nutrient transport and deposition. Treatment processes would be identified to ensure protection of groundwater resources and water quality. Compensatory mitigation would be secured, if needed, to ensure that Project impacts to jurisdictional waters of the U.S. are less than minimal.

Legend

- Project Boundary
- Drainage Ditch
- Offsite Stream
- Offsite Wetlands
- Delineated Wetland
- Resource Protection Area

Note: This map is for reference only; NAD83 State Plane Virginia South; Aerial Image Source: ESRI, 2019; January 2020 wetland delineation by: Hazen and Sawyer; updated 05/28/2020 by AECOM; Riverview Park Delineation dated 05/21/2021
Approximate Waters of the U.S. field flagged and GPS-recorded but have not been confirmed by USACE;

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James River Tranche 2 SWIFT Project Site Wetlands Map

Project No.	Prepared by	Date	
6063587	K. Clark	7/8/2021	Figure 6

Legend

- Project Boundary
- FIRM Panel
- 0.2% Annual Chance Flood Hazard
- 1% Annual Chance Flood Hazard

0 500 1,000 Feet

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James River
Tranche 2 SWIFT Project
FEMA Flood Map

Project No.	Prepared by	Date	
6063587	K. Clark	6/18/2021	Figure 7

Post-construction stormwater impacts may occur due to land use changes; however, effects are anticipated to be minor due to the relatively small Project footprint. Minor effects on stormwater may include vegetation removal, grubbing, grading, and trenching. Soil erosion would be controlled using appropriate erosion and sediment control measures and BMPs. Other BMPs may be specified in the Project SWPPP and post-construction stormwater will be controlled in accordance with the Virginia Stormwater Management Program (VSMP) regulations.

The most significant change to water resources from the proposed Project would be the pumping of large volumes of water into the deepwater Potomac Aquifer. However, the Project's net impact would be beneficial, as the recharge water would be treated to drinking water standards prior to being returned to the aquifer.

It is anticipated that higher quality discharge waters would result in improvements in downstream waters and aquatic habitats. The Project would utilize advanced water treatment (AWT) processes to treat secondary wastewater treatment plant effluent to drinking water standards. The SWIFT water would subsequently be used to recharge the Potomac Aquifer system to counter depleting aquifer levels and provide additional environment benefits (HRSD 2019). Analytical groundwater flow and geochemical modeling using various treatment and recharge techniques has been conducted to determine the optimal treatment and recharge methods (HRSD 2019). The modeling represented the VDEQ preferred metric for determining the beneficial impacts of proposed pumping/recharge on the Potomac Aquifer. The AWT is expected to improve drinking water sources, i.e., the Potomac Aquifer, by treating and reducing contamination and removing disease-causing agents (HRSD 2019). The Project would provide a sustainable source of groundwater to the Potomac Aquifer, increase the hydrostatic pressure within the aquifer, prevent saltwater intrusion into the aquifer, and slow land subsidence related to aquifer withdrawals. The Project is intended to have an overall beneficial effect on water resources; therefore, no significant adverse impacts are anticipated.

F. BIOLOGICAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Jeopardizing the continued existence of any threatened or endangered species identified in local or regional plans, policies, or regulations, or by the U.S. Fish and Wildlife Service or National Marines Fisheries Service.	□	☒	□
2. Modification, fragmentation, or degradation of critical habitat identified in local or regional plans, policies, or regulations, or by the U.S. Fish and Wildlife Service or National Marines Fisheries Service.	□	☒	□
3. Harm to fauna, including mammals, birds, reptiles, amphibians, fish, and invertebrates.	□	☒	□

F. BIOLOGICAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
4. Changes in vegetation type (native to the region), particularly if the vegetation type in the region is already highly fragmented because of human activity.	☐	☒	☐
5. Modification, fragmentation, or degradation of biological sensitive areas other than those mentioned above.	☐	☒	☐
6. Disturbances to marine mammals protected by the Marine Mammal Protection Act as defined under 16 U.S.C 1361-1407.	☒	☐	☐
7. Disturbances to Bald or Golden Eagles as defined under 16 U.S.C. 68 et seq.	☒	☐	☐
8. Disturbances to migratory birds as defined under 16 U.S.C. 703-712 as amended.	☐	☒	☐
9. Conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan.	☒	☐	☐
10. Introduction or spread of invasive species as identified under Executive Order 13112.	☐	☒	☐

12. **Please provide mitigation measures related to biological resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    During construction, it is expected that some vegetation cover would be lost due to direct impacts from clearing, trenching, excavation, soil compaction, and general activity on the site. Given the relatively small footprint of the Project, this impact would be minimal and not likely cause disturbance to vegetation beyond site boundaries.

    Likewise, minor, short-term effects on wildlife could occur as they would likely be deterred by construction activities, vehicles, and equipment. Minor, long-term effects on some wildlife are anticipated due to displacement. Less mobile wildlife species may not be able to relocate outside of the construction area.

    During a review of the Project vicinity via the Information for Planning and Consultation (IPaC) tool, one federally-listed rare, threatened, or endangered species was identified by U.S. Fish and Wildlife Service (USFWS): the northern long-eared bat (NLEB) (*Myotis septentrionalis*) (threatened) (USFWS 2021a). Potentially suitable summer roosting habitat has been observed in the Project area for the NLEB. According to the VDWR NLEB Winter Habitat and Roost Tree Application, the nearest known maternity roost for the NLEB is approximately 35 miles southeast of the proposed Project area (VDWR 2021). There are no documented maternity roosts or hibernacula within 150 feet and 0.25 miles of the Project area, respectively. Therefore, incidental take from tree removal is not prohibited. The Project activities will comply with the USFWS NLEB

4(d) rule, and voluntary conservation measures, such as a time of year restrictions on tree removal (June 1 – July 31) and minimizing light pollution through downward adjusted light angles, will be implemented where practical. Results of the IPaC database search and the NLEB Habitat and Roost Tree Map are included in Attachment B, as well as a USFWS Self-Certification Letter, noting a "may affect, not likely to adversely affect" determination for the NLEB. Prior to commencement of the Project, coordination with USFWS would be conducted regarding the limits and timing of vegetation removal to ensure compliance with the Endangered Species Act.

The Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act confer protection to the bald eagle (*Haliaeetus leucocephalus*) (USFWS 2021b). The southern portion of the peninsula that separates the James and Warwick rivers (i.e., near the mouth of the Warwick River) has been documented as containing bald eagle nests that are historic, and nests that may currently be in use. However, the Project area is located beyond the restricted radius of the documented bald eagle nests. No nests in use by a bald eagle has been observed within the Project vicinity, and no bald eagles were observed flying over, or in the vicinity of, the Project area during the onsite investigations. The Center for Conservation Biology (CCB) Mapping Portal identified the nearest documented bald eagle nest approximately 1,950 feet southeast of the Project area boundary (CCB 2020). The USFWS Virginia Field Office's Bald Eagle Map Tool identified one bald eagle concentration area intersecting the Project area along the southwestern edge of the Project boundary (USFWS 2021). The CCB Map and the USFWS Virginia Field Office's Bald Eagle Concentration Map are included in Attachment B. Due to the distance from the Project construction activities (greater than 660 feet from the documented nest and inland from the shoreline), impacts to the bald eagle concentration area or bald eagle nests are not anticipated.

The VDWR maintains records of species known to occur or likely to occur throughout the Commonwealth of Virginia in the Fish and Wildlife Information Service (FWIS) database. Review of the FWIS database identified eleven federally endangered or threatened species with the potential to occur within a two-mile radius of the Project area (FWIS 2021). The FWIS Project Report is included in Attachment B. Of the eleven species identified, there are no documented occurrences of any of the species, and seven of the species identified are marine species, occurring only in open waters. The remaining four species include the NLEB and three shorebird species which require salt and brackish marsh or shoreline habitats (USFWS 2020). No shoreline, salt marsh, or in-water activities are associated with the Project; therefore, no impacts to these species are anticipated.

The FWIS habitat prediction model also identifies two species with the potential to occur within a two-mile radius of the Project area: the state listed endangered canebrake rattlesnake (*Crotalus horridus*, southeastern population) and the state listed threatened Mabee's salamander (*Ambystoma mabeii*). Canebrake rattlesnake habitat consists of mature hardwood, mixed hardwood-pine forests, forested cane thickets, and ridges adjacent to swampy areas (VDWR 2011). A 100-foot RPA buffer is being placed on tidal wetlands near the Project area which will not be disturbed by Project activities. Therefore, no effect is anticipated to the canebrake rattlesnake. Habitat for Mabee's salamander is described as savannas on the edges of bogs or ponds, low wet woods and swamps, and adjacent to ditches and pools (VHS 2020). A 100-foot RPA buffer has been placed on wetlands near the Project area including low wet woods. The majority of the Project area consists of uplands and managed turf grass. Therefore, no effect is anticipated to the Mabee's salamander.

Based on the land cover of the Project area, mitigation measures, and proposed activities, the Project is expected to have "no effect" on the federally listed threatened and/or endangered species.

No significant impacts to biological resources are expected to result from the proposed SWIFT Project. Potential effects could include reduced vegetative cover, soil compaction, erosion or sedimentation, habitat fragmentation, introduction of invasive species, changes in water availability, and disturbance from construction noise and dust. Practicable mitigation measures may include implementation of avoidance and minimization measures and BMPs, implementation of recommendations from relevant governmental wildlife agencies, prevention of spills and leaks from vehicles and equipment, and implementation of measures to minimize soil compaction and the transportation of noxious, invasive and pest species. Protective measures would be identified in coordination with the USFWS and DWR, as applicable, to protect federally threatened or endangered species that may inhabit or otherwise utilize the Project area. Protective measures may include time-of-year restrictions on tree removal, lighting alterations, and/or design modifications.

G. CULTURAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to historical resources, including archaeological and cultural resources as defined in 36 CFR part 800.	□	☒	□
2. Modification of unique paleontological resources or site or unique geologic features.	□	☒	□
3. Disturbance of human remains, including those interred outside of formal cemeteries.	☒	□	□

13. **Please provide mitigation measures related to cultural resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

Reviews of the Virginia Cultural Resources Information System (VCRIS) maintained by the VDHR, the Virginia Archaeological Site Survey Records, the Virginia Historic Inventory Property Forms, and the National Register of Historic Places (NRHP) were conducted as part of a cultural resources desktop survey of the Project area. Immediately to the southeast of the James River Water Treatment Plant, along the bank of the Warwick River, is the location of the Colonial settlement of Warwicktowne, which served as the county seat of Warwick County (now the City of Newport News) (Gray and Pape 2020). The Project area, therefore, is located in an area of high archaeological potential.

VCRIS shows three previously conducted cultural resource surveys in the Project area, dating from 1976 to 1992, of both aboveground and belowground resources. There are three previously identified aboveground properties close to the Limit of Disturbance (LOD) – the Battle of Yorktown (VDHR ID #099-5283), Farmstead (VDHR ID #121-0103), and Newport News City Prison Farm (VDHR ID #121-0104). There are also several previously identified archaeological sites within and nearby the LOD (Gray and Pape 2020).

AECOM conducted a Phase I Archaeological Survey in April 2020 of areas of proposed ground disturbance (i.e., area of potential effect, APE) at the existing James River Treatment Plant/SWIFT site and the Acquisition Parcel. In October 2020, AECOM expanded the Phase I Archaeological Survey to include the two northeastern parcels near the gymnastics center. In March 2021, AECOM conducted a Phase I Archaeological Survey of the recharge wells and easement area. AECOM also conducted a Phase I Architectural History Survey in October 2020 of the entire Project area. The surveys were conducted pursuant to Section 106 of the NHPA of 1966 (as amended), the Advisory Council on Historic Preservation's "Protection of Historic and Cultural Properties", and the VDHR Guidelines for Conducting Historic Resources Survey in Virginia (AECOM 2020b). A copy of the Phase I Archaeology Survey Report and Addendum and the Phase I Report of the Recharge Wells are included as Attachment C and the Phase I Architectural History Survey Letter Report is included as Attachment D.

The 2020 Phase I Archaeological Surveys of the APE resulted in the documentation of two new archaeological sites within the APE, Site 1 and Site 2, as well as the relocation of a portion of a subsurface scatter of late nineteenth and twentieth century artifacts within the APE. The artifacts, identified as 44NN0281, were found within the topsoil and appeared to be associated with the Newport News City Prison Farm. The 2021 Phase I Archaeological Survey of the recharge wells and easements resulted in the relocation of an additional portion of 44NN0281 and one isolated find. No evidence of previously recorded sites 44NN0068, 44NN0069, and 44NN0278 was encountered during the 2021 field investigation (AECOM 2021).

The archaeological deposits within the APE that are associated with 44NN0281 do not have the potential to yield significant information about the twentieth century occupation of the APE and do not contribute to the potential NRHP eligibility of 44NN0281 as a whole. The archaeological deposits of two previously recorded deposits, identified as 44NN0359 and 44NN0360, which were not encountered during the 2020 Phase I survey, likewise do not have the potential to yield significant information about the historic occupation of the APE. Thus, the sites are recommended not eligible for the NRHP, and the recommendation of the Phase I Archaeological Survey Reports and Addendum is that the proposed Project be allowed to proceed without concern for impacts to significant archaeological sites. Adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

To identify aboveground historic properties in the APE, AECOM conducted a review of available information, including data sourced from HRSD; NRHP listings; VCRIS; historic maps and images (historic aerial photographs, historic topographic maps, etc.); and online research at various agencies, historical societies, and other sources. As a result of archival research and on-site fieldwork, AECOM identified the previously unrecorded James River Treatment Plant (VDHR ID# 121-5463), in addition to the previously identified Farmstead (VDHR ID# 121-0103) and the Newport News City Prison Farm (VDHR ID# 121-0104). The Farmstead is not eligible for listing in the NRHP due to lack of association with a significant event, pattern of events important to history, or person(s) of historical importance; the City Prison Farm is recommended as not eligible for the NRHP individually nor as a historic district due to multiple modern (1970-2002) additions. Thus, the identified historic properties are recommended not eligible for the NRHP, and the recommendation of the Phase I Architectural History Letter Report is that the proposed Project be allowed to proceed without concern for impacts to significant above-ground resources.

The above findings were reviewed and discussed during a June 3, 2021 meeting with tribal representatives of the Upper Mattaponi, Chickahominy Eastern Division, and Nansemond tribes, VDHR, and USEPA NHPA coordinators and the USEPA Underground Injection Control Section; no objections were raised to the recommendations in the reports. In letters dated August 28,

2020, December 30, 2020, and June 8, 2021, VDHR concurred with these findings and recommendations. Copies of this correspondence are included in Attachment E.

Effects to cultural resources could include encroachment, displacement, or destroying or diminishing the historic integrity of NRHP-listed or eligible properties; however, as described in the Phase I Reports, no significant impacts on cultural resources are anticipated. Practicable mitigation measures include consultation with the State Historic Preservation Office and/ or Tribal Historic Preservation Office, minimization of adverse effects and development of an unanticipated discoveries plan. The location and extent of cultural resources in the Project vicinity would be considered during Project design. If impacts to architectural and archaeological resources cannot be fully avoided, HRSD would work with VDHR to determine appropriate measures to protect resources and reduce impacts.

H. SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to the demographics around project location, such as population growth.	□	☒	□
2. Modifications to economic factors such as per capita income, unemployment rate, or poverty.	□	☒	□
3. Alterations to social assets, such as housing or public services.	□	☒	□
4. Disproportionate high and adverse human health environmental effects on minority population and low-income populations as defined under Executive Order 12898.	□	☒	□

14. **Please provide mitigation measures related to socioeconomic resources and environmental justice, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

The analysis for minority populations in the vicinity of the Project area followed the Council on Environmental Quality's (CEQ) guidance for identifying minority and low-income populations. According to a review of the USEPA's EJScreen online mapping tool (USEPA 2021), no environmental justice communities occur within the vicinity of the Project.

The Project would not be expected to have a significant adverse impact on per capita income, unemployment rate, poverty rate, local population size, or projected population growth. The Project is intended to have an overall beneficial effect on the environment and local population by providing improved water quality and mitigating potential water scarcity, which may induce localized population growth or indirectly induce growth by establishing new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises); however, any growth would likely be less than significant.

Most of the potentially adverse effects associated with the Project would occur during construction and would be temporary, such as construction noise, air emissions from construction vehicles, erosion from disturbed surfaces and construction vehicle traffic, and/or traffic detours. Impacts to communities from construction would not be expected to be disproportionate to any identified environmental justice communities with the implementation of identified BMPs and as required by Executive Order 12898.

Overall, adverse impacts to socioeconomics and environmental justice communities as a result of the Project construction and operations are anticipated to be less than significant. Minor effects could include local economic benefits from construction and operation and temporary disruption to communities from construction. Practicable mitigation measures include implementation of construction BMPs to minimize noise, traffic, and air emissions, and measures implemented after conducting meaningful public engagement with environmental justice communities.

	IMPACT ANTICIPATED		
I. TRANSPORTATION AND TRAFFIC:	**NO IMPACT**	**LESS THAN SIGNIFICANT IMPACT**	**POTENTIALLY SIGNIFICANT IMPACT**
1. Changes to traffic patterns around the project area including, but not limited to, the arrival and departure of construction workers, vehicles hauling equipment and materials to the site, road closures or detours, and slower movement and larger turning radii of truck going to project site.	☐	☒	☐

15. **Please provide mitigation measures related to transportation and traffic, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

The primary impacts on transportation and traffic would be short-term and intermittent from the movement of construction trucks potentially reducing roadway capacity. Traffic-generating construction activities would include arrival and departure of constructions workers, trucks hauling equipment and materials to the construction site, the hauling of excavated soils, and potential importing of new fill. Construction equipment used for the Project may include concrete trucks, back-hoes, front-end loaders, trenchers, paving equipment, and periodic delivery of pipes and materials. Measures to minimize congestion and delays would be implemented during construction, including warning signage, limitation of public rights-of-way for staging, use of flag persons, lane closures, and detours. Appropriate coordination with local entities and the implementation of mitigation measures would reduce the potential impacts of the Project's construction activities on traffic to less than significant.

Once construction is completed and the Project is operational, traffic levels and flow would return to original levels. As the Project aims to improve and upgrade water networks, it would ultimately result in less maintenance and fewer unscheduled repairs that would require road closures or detours, and thus, provide a long-term minor benefit.

No significant impacts to transportation and/or traffic are anticipated. Effects could include temporary street closures, lane closures, detours, traffic and parking restrictions, and reduced traffic speeds. Practicable mitigation measures may include coordination with local agencies, use of warning signage, flag persons, and use of lane closures and detours as necessary.

J. UTILITIES AND COMMUNITY SERVICES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to electric, cable, gas, sewer, water, stormwater, and other existing utility services.	□	☒	□
2. Changes to community services, such as open space, recreational and cultural facilities.	□	☒	□

16. **Please provide mitigation measures related to utilities and communication, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

Prior to commencement of construction, existing utilities would be identified and marked in the field to avoid, to the extent possible, impacts to utilities. Project construction will result in improvements and upsizing of the existing utilities to reflect the increased load demand. Contractors may require some utility relocations necessitating close coordination with service providers to minimize service interruptions during construction. Notification procedures of the applicable entity would be followed for known service interruptions to the extent practicable. There may be temporary effects on utilities and services during the construction phase, although no significant long-term impacts would occur.

Community services are located adjacent to and throughout the Project area, including recreational resources such as waterfront hiking trails, soccer fields, and a skate park. Overall, the Project would beneficially impact recreational resources through HRSD's commitment to creating additional hiking trails on nearby parcels, although recreation area and park users may be temporarily affected by noise, closures, or detours during construction. Therefore, the quality of user experience may temporarily decrease during construction, but long-term effects would be beneficial. Close coordination with park and recreational resource managers/agencies would occur to minimize interruptions, display appropriate signage, and other measures. Operation of the Project is not anticipated to impact recreational and park resources.

As part of the purchase agreement with the City of Newport News, HRSD has committed to building transitional buffer areas between the treatment plant industrial uses and the city's future planned park/recreational uses on lands to the east and south of the SWIFT facilities. The transitional buffer areas would include access to recreation trails along the waterfront, parking, and restrooms to support recreational use of the existing river access. More than half of the 10-acre acquisition parcel (6 acres) would be placed in a conservation easement to protect the waterfront from any future development.

No significant impact on utilities and community services is anticipated. Effects could include utility relocations and service interruptions. Practicable mitigation measures include identification and avoidance of utilities, coordination with service providers, minimization of service interruption, and coordination with park and recreational resource managers/agencies.

K. HAZARDOUS AND TOXIC MATERIALS AND WASTE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Accidental releases, spills, or improper storage and disposal of hazardous materials.	☐	☒	☐
2. Conflicts with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Solid Waste Disposal Act, Toxic Substances Control Act, and Emergency Planning and Community Right-to-Know Act.	☒	☐	☐
3. Generation or increase in the amount of sewage sludge that is not in compliance with EPA standards for the use or disposal of sewage sludge.	☒	☐	☐

17. **Please provide mitigation measures related to hazardous and toxic materials and waste including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

    Construction of the Project would require equipment that utilizes hazardous materials such as petroleum fuels and oil. During construction activities, such hazardous materials could accidentally be spilled or otherwise released into the environment exposing construction workers, the public and/or the environment to potentially hazardous conditions. The selected contractor would be responsible for properly maintaining construction vehicles and equipment, along with any hazardous and toxic materials used in their operation, in compliance with applicable laws and regulations. The contractor would also be responsible for the appropriate disposal of all hazardous waste generated during construction in compliance with applicable laws and regulations. Implementation of environmental protection measures, including BMPs (e.g., spill kits), for preventing and responding to potential contamination would result in less than significant impacts.

    As part of the property evaluation process, AECOM/Hazen conducted an Environmental Screening in 2019 and a Phase I Environmental Site Assessment (ESA) in March 2020 of the Project area to establish the presence, former use, or spillage, of hazardous substances or petroleum products onsite. The Phase I ESA identified no Recognized Environmental Conditions (RECs) associated with the proposed Project area; however, one presumed REC was identified immediately adjacent to the Project area and several RECs were identified on nearby parcels. These RECs included existing, leaking, or removed underground storage tanks (USTs) at the James River Treatment Plant, Menchville High School, and a nearby private property (AECOM Hazen 2019, AECOM Hazen 2020a and AECOM Hazen 2020b). The undeveloped forested land that is immediately southwest of the Project area was historically used as a pistol range. Therefore, it is considered to represent a REC due to the potential for subsurface lead to occur in the soil (AECOM Hazen 2020a).

A 2,000-gallon gasoline UST was installed at the James River Treatment Plant in 1968, and a 6,000-gallon diesel UST was installed in 1991. These USTs are reported as having been removed from the ground, although the dates of the removals were not available (EDR 2019). The James River Treatment Plant is reported as having an active 2,500-gallon gasoline UST that was installed in 1991 and an active 20,000-gallon diesel UST that was installed in 2013 (EDR 2019). The selected contractor shall follow state and local procedures for removing any USTs found within the Project area.

The Menchville Landfill, located northeast of the Project area, operated for approximately 20 years and was closed in 1984 (EPA 2019). The landfill has been capped and vegetated with maintained herbaceous species. The landfill is listed in the Superfund Enterprise Management System archive database as not qualifying for the National Priority List with No Further Remedial Action Planned (AECOM Hazen 2019).

No significant impact to hazardous and toxic materials is anticipated. Effects could include accidental spills or releases of materials, but risks would be minimized using standard construction BMPs. Practicable mitigation measures would include compliance with applicable hazardous and toxic materials laws and regulations, implementation of environmental protection measures, BMPs, and SOPs, and development of Emergency Plan/Emergency Response Plan (or similar).

L. HUMAN HEALTH AND SAFETY:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Creating occupational health hazards for workers during construction or operation.	□	☒	□
2. Creating or contributing to environmental health risks and safety risks that may disproportionately affect children.	□	☒	□
3. Creating or contributing to public health risk of immediate injury or long-term health hazards.	□	☒	□

18. **Please provide mitigation measures related to human health and safety, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.**

Project construction could have an effect on occupational human health and safety to personnel involved in the construction activities. Construction-related risks include falls and risks associated with accidental spills and leaks from construction equipment, and extreme hot or cold weather-related risks such as heat stroke or frostbite. Risks would be minimized by limiting site access to authorized personnel involved in the construction activity and through implementation of a comprehensive construction health and safety plan that addresses site-specific health and safety issues (e.g., working with contaminated sediment, soil, and water, and the demolition/removal of hazardous materials), including specific emergency response services and procedures and evacuation measures.

Overall, adverse impacts to human health and safety as a result of the Project construction and O&M are anticipated to be less than significant. Effects could include generation of fugitive dust, and construction-related risks, such as falls and other injuries and accidental spills and leaks from construction equipment. Practicable mitigation measures include implementation of a health and safety plan, limiting site access to authorized personnel only, and implementation of fugitive dust minimization measures.

M. CUMULATIVE IMPACTS	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Land Use.	□	☒	□
2. Air Quality.	□	☒	□
3. Noise and Vibration.	□	☒	□
4. Geology and Soils.	□	☒	□
5. Water Resources.	□	☒	□
6. Cultural Resources.	□	☒	□
7. Socioeconomic and Environmental Justice.	□	☒	□
8. Transportation and Traffic.	□	☒	□
9. Utilities and Community Services.	□	☒	□
10. Hazardous and Toxic Materials and Waste.	□	☒	□
11. Human Health and Safety.	□	☒	□

19. **Please provide all mitigation measures not identified previously in the document that will be included in the project. Identify any mitigation measures that reduce a significant impact to less than significant. Identify all past, present, and reasonably foreseeable actions within the project area. Please provide references and supporting documents:**

    Cumulative impacts are the collective result of the incremental impacts of an action that, when added to the impacts of other past, present, and reasonably foreseeable future actions, would affect the same resources, regardless of what agency or person undertakes those actions. Cumulative impacts can result from individually minor but collectively substantial actions taking place over a period of time. Known nearby projects include the James River SWIFT Tranche 1 Project, planned municipal improvements to enhance and promote recreational activities, and the future HRSD SWIFT projects at the Boat Harbor and Nansemond treatment plants.

    It is unlikely that the proposed Project would have significant contribution to cumulative effects on human health or the environment. The Project may incrementally contribute to cumulative impacts depending on the other past present or reasonably foreseeable actions, but overall, the cumulative impact is expected to be less than significant.

    No significant impacts are anticipated as a result of the Project. Potentially adverse impacts would largely be minimized through avoidance measures and implementation of BMPs and SOPs. The Project would comply with all applicable federal, state, and local laws and regulations and shall be guided by relevant statutes, regulations, and EOs that establish standards and provide guidance on environmental compliance, including natural and cultural resources

management and planning. Efforts to avoid and minimize impacts would be made during the design and construction of the Project. Unavoidable impacts would be minimized and mitigated by utilizing applicable BMPs, complying with regulations and local ordinances, coordinating with regulators and other stakeholders, and developing plans to address unanticipated and incidental adverse effects of the Project.

Therefore, with the implementation of the mitigation measures, BMPs, and agency consultations and recommendations described throughout this document, the impacts of the proposed Project when combined with those of other projects considered, would not result in significant cumulative impacts.

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AECOM

Attachment A: Wetlands and Waters Delineation Reports

Wetland Delineation Report Site Information Summary
Riverview Farm Park
Riverview Parkway (75.5 Acres)
Newport News, Virginia

Date
May 18, 2021

Latitude/ Longitude in Decimal Degrees using coordinate plane (NAD 1983)
37.0896/ -76.5331

Has a previous delineation or JD been performed? If so please provide USACE Project Number:
To our knowledge, a JD for Riverview Farm Park has not been performed; however, a PJD was obtained for the HRSD James River Plant, which will be part of the same project. That PJD was received on April 7, 2020.

Hydrologic Unit Code (HUC)
8-Digit HUC – 02080206 (Lower James)

USGS Topographic Sheet
Mulberry Island Quadrangle

Nearest Waterbody (example given)
Stream S1 is an unnamed tributary to Warwick River that borders the west side of the delineation area. Warwick River lies approximately 430 feet southwest of the delineation area within the same watershed. Deep Creek is approximately 90 feet east of the delineation area.

Delineation Methods
HDR performed the delineation pursuant to the Army Corps of Engineers Wetland Delineation Manual (1987) and subsequent guidance included in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (2010). The North Carolina Division of Water Quality Identification Methods for the Origins of Intermittent and Perennial Streams (February 2005) was used to determine stream perenniality.

On-Site Investigation Date
Wetland boundary delineation and site data collection conducted on April 22, 2021.

Wetland Delineation Plan
The proposed wetland boundaries and Data Sampling Point locations are depicted on the plan entitled “Surface Waters Delineation” prepared by HDR on April 30, 2021 (Figure 4, Appendix A).

Wetland Investigation Results

Wetlands: A total of approximately 0.21 acres of a palustrine forested wetlands (PFO), 0.71 acres of palustrine emergent wetlands (PEM), and 0.12 acres of palustrine unconsolidated bottom (PUB) were identified within the 75.5 acre delineation area during this investigation. Data sheets for these wetlands are located in Appendix B. Photographs are included in Appendix C.

Stream Channels: Approximately 362 linear feet of the delineation area was classified as a lower perennial stream channel (R2UB) and 86 linear feet were identified as an intermittent ditch with a bed and bank and the presence of an ordinary high water mark. Data sheets for these streams are located in Appendix B. Photographs are included in Appendix C.

Other Waters: Several excavated small ponds are located within fields located on the eastern side of the delineation area. These ponds are excavated in uplands.

Water bodies onsite identified as Section 10: None

Uplands: Approximately 74.4 acres of the delineation area were classified as uplands.

100-Year Floodplains
As depicted on the Federal Emergency Management Agency's (FEMA) on-line Flood Insurance Rate Map Panels 5101030106D, 5101030107D, 5101030108D, and 5101030109D effective date 12/9/2014, the Riverview Farm Park delineation area lies outside of a special flood hazard area (SFHA) in an area of minimal flood hazard (Zone X).

National Wetlands Inventory
The National Wetland Inventory (Figure 2, Appendix A) identifies no wetlands within the delineation area.

USDA Soil Survey
The USDA Natural Resource Conservation Service Soil Survey (Figure 2, Appendix A) identifies nonhydric Craven-Urban land complex, as well as predominantly nonhydric Yemassee-Urban land complex and Slagle-Urban land complex throughout the majority of the site. On the northeast corner, predominantly hydric Bethera-Urban and complex is present.

Notes:
The Antecedent Precipitation Tool (APT) showed normal conditions were present during the delineation.

Waters Table:

Wetland/Water	Latitude	Longitude	Cowardin Class	Area (Acres)	Length (Linear Feet)	Class of aquatic resource (Tidal/Non- tidal, Section10/404)
W1	37.08205	-76.52907	PEM	0.001	--	Non-tidal, Section 404
W2	37.08342	-76.52906	PFO	0.172	--	Non-tidal, Section 404
W3	37.08602	-76.53038	PEM	0.072	--	Non-tidal, Section 404
W3	37.08595	-76.53063	PFO	0.023	--	Non-tidal, Section 404
W4	37.08703	-76.53055	PEM	0.283	--	Non-tidal, Section 404
W4	37.08677	-76.53047	PUB	0.071	--	Non-tidal, Section 404
W5	37.08867	-76.53377	PUB	0.037	--	Non-tidal, Section 404
W6	37.09121	-76.53205	PEM	0.026	--	Non-tidal, Section 404
IW1	37.08462	-76.52893	PEM	0.034	--	Non-tidal, Section 404
IW2	37.08519	-76.53123	PEM	0.021	--	Non-tidal, Section 404
IW3	37.08814	-76.53069	PEM	0.103	--	Non-tidal, Section 404
IW4	37.08963	-76.53306	PEM	0.007	--	Non-tidal, Section 404
IW5	37.08939	-76.53329	PEM	0.072	--	Non-tidal, Section 404
IW6	37.08944	-76.53343	PEM	0.005	--	Non-tidal, Section 404
IW7	37.09385	-76.53099	PEM	0.039	--	Non-tidal, Section 404
IW8	37.09183	-76.53274	PEM	0.011	--	Non-tidal, Section 404
IW9	37.09200	-76.53280	PEM	0.039	--	Non-tidal, Section 404
WB	37.08750	-76.53277	PFO	0.016	--	Non-tidal, Section 404
WC	37.08760	-76.53284	PUB	0.008	--	Non-tidal, Section 404
WD	37.08708	-76.53225	PFO	0.001	--	Non-tidal, Section 404
S1	37.09301	-76.53388	R2UB	0.062	362	Non-tidal, Section 404
Ditch1	37.09122	-76.53241	R4SB	0.009	86	Non-tidal, Section 404

A

Figures

LEGEND

Riverview Farm Park Delineation Area

Previous Plant Delineation Area

DATA SOURCES: ESRI Aerial Imagery, ESRI World Transportation
ESRI World Topographic Map

VICINITY MAP

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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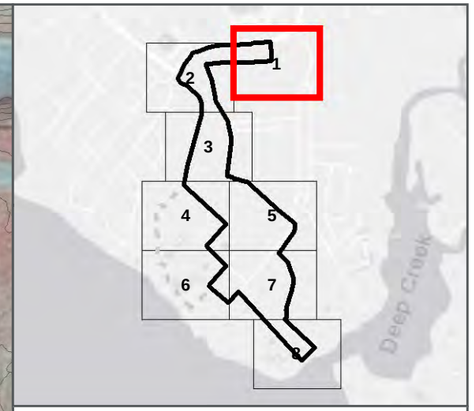
US-A
Ulliman Schutte – Alberici Joint Venture

FIGURE 1

PATH: \\CLTSMAIN\GIS_DATA\GISPROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG1.VICINITY.MXD - USER: RWILK - DATE: 4/30/2021



LEGEND

- Riverview Farm Park Delineation Area
- Previous Plant Delineation Area
- National Hydrography Dataset
- 100-Year Flood (Zone AE)
- 100-Year Flood (Zone VE)
- 500-Year Flood (Zone X)
- Open Water
- NRCS Soil Boundary
- National Wetland Inventory
- 1-Foot Contour

DATA SOURCES: USFWS, FEMA, USGS, USDA-NRCS, NOAA, VGIN-VBMP 2009 Infrared Aerial

ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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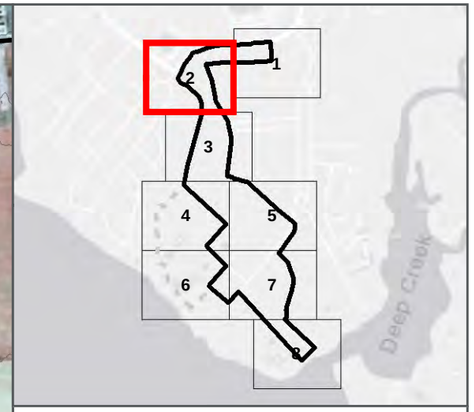
FIGURE 2 - SHEET 1 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDISTI\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021



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ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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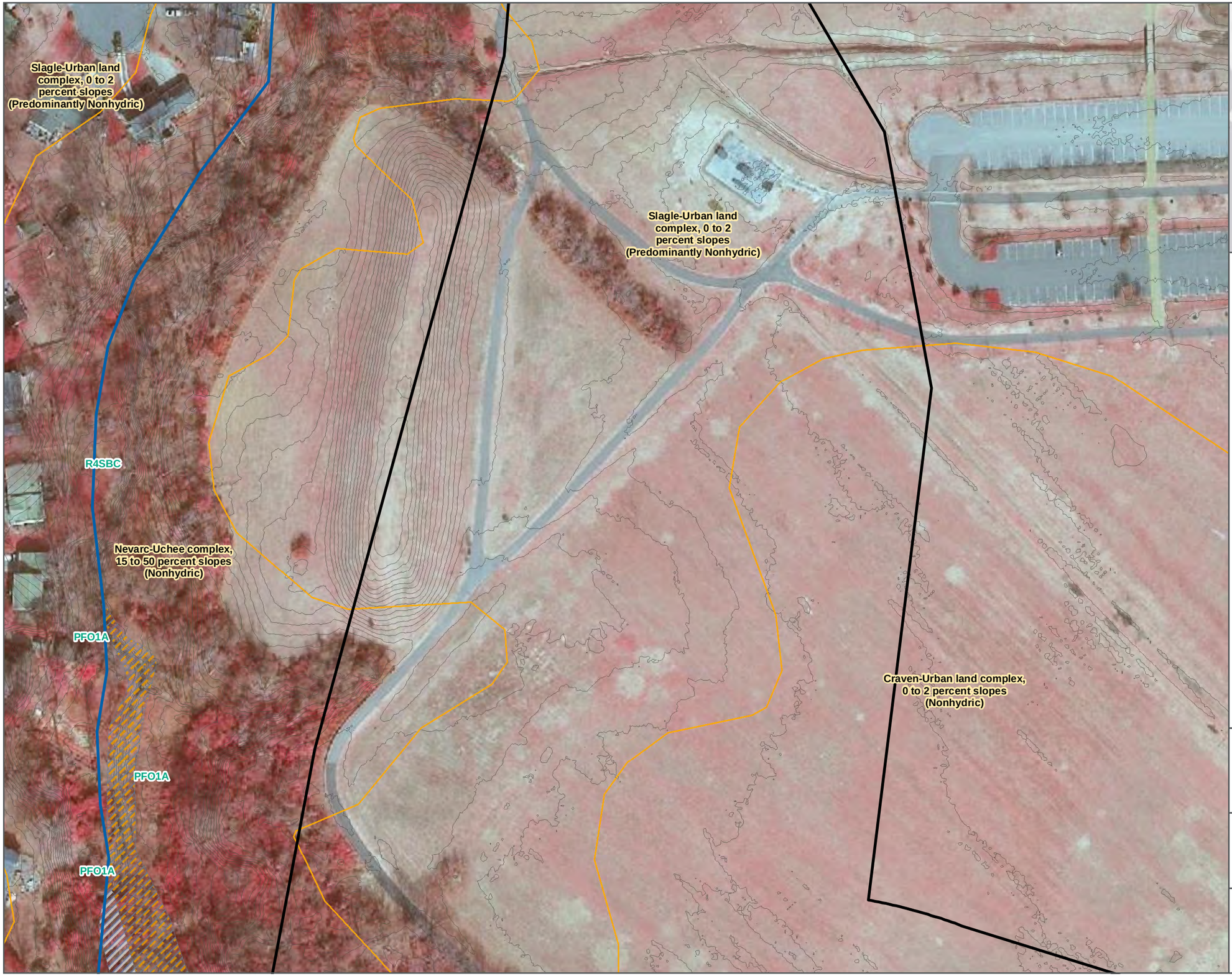
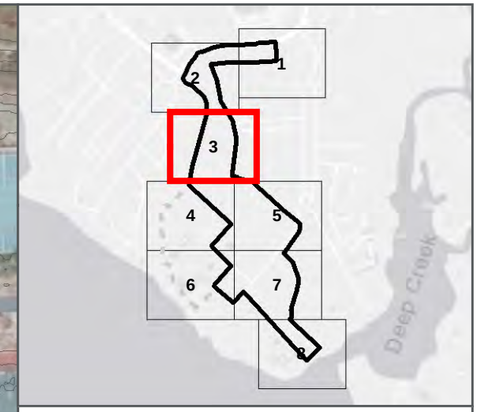
FIGURE 2 - SHEET 2 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GISPROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021





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DATA SOURCES: USFWS, FEMA, USGS, USDA-NRCS, NOAA, VGIN-VBMP 2009 Infrared Aerial

ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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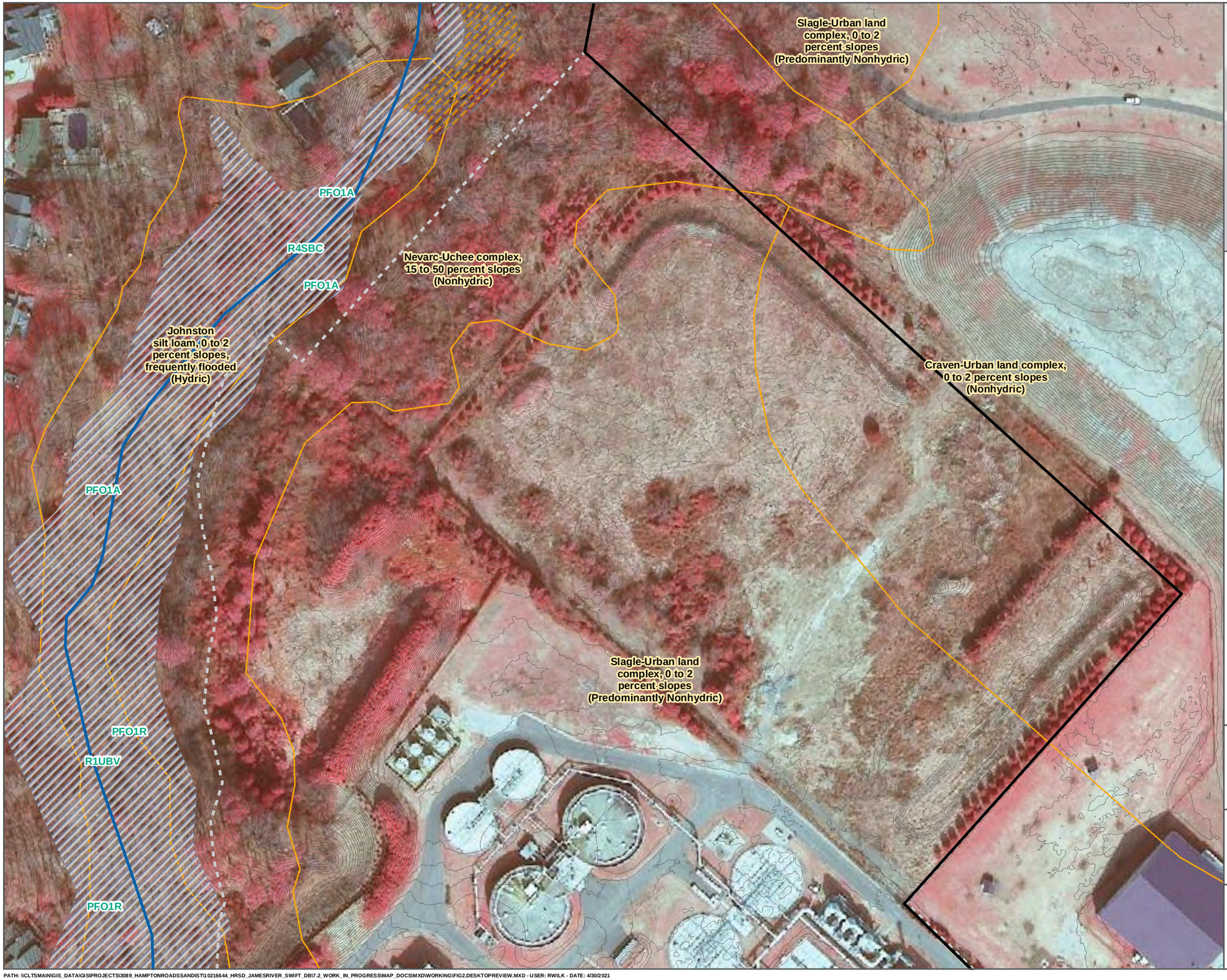
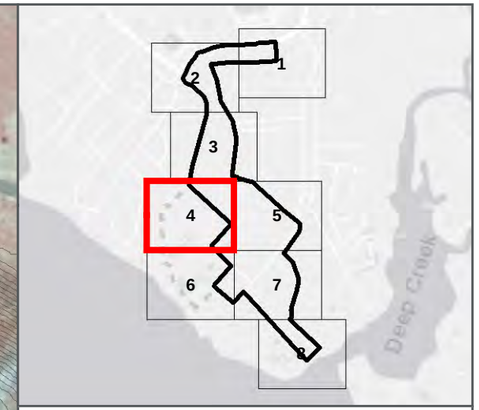
FIGURE 2 - SHEET 3 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GISPROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021





LEGEND

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ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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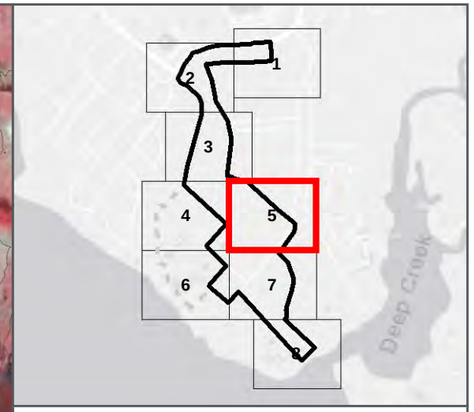
FIGURE 2 - SHEET 4 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021



LEGEND

- Riverview Farm Park Delineation Area
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DATA SOURCES: USFWS, FEMA, USGS, USDA-NRCS, NOAA, VGIN-VBMP 2009 Infrared Aerial

ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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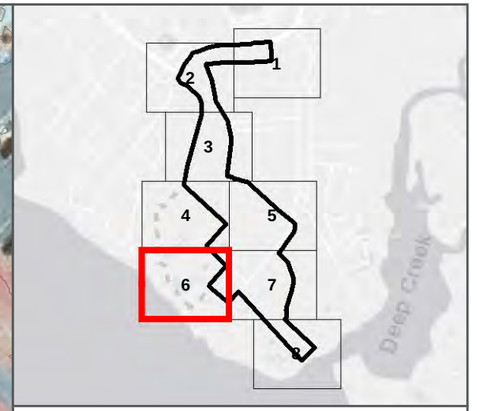
FIGURE 2 - SHEET 5 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021



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DATA SOURCES: USFWS, FEMA, USGS, USDA-NRCS, NOAA, VGIN-VBMP 2009 Infrared Aerial

ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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FIGURE 2 - SHEET 6 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021

Craven-Urban land complex, 0 to 2 percent slopes (Nonhydric)

Craven-Urban land complex, 0 to 2 percent slopes (Nonhydric)

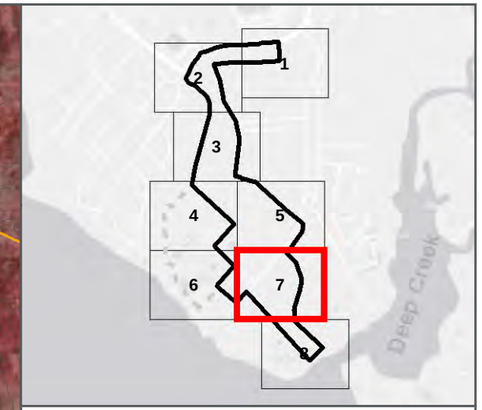
Nevarc-Uchee complex, 6 to 15 percent slopes (Nonhydric)

Udorthents-Dumps complex (Predominantly Nonhydric)

Slagle-Urban land complex, 0 to 2 percent slopes (Predominantly Nonhydric)

Craven-Urban land complex, 0 to 2 percent slopes (Nonhydric)

Nevarc-Uchee complex, 6 to 15 percent slopes (Nonhydric)



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DATA SOURCES: USFWS, FEMA, USGS, USDA-NRCS, NOAA, VGIN-VBMP 2009 Infrared Aerial

ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
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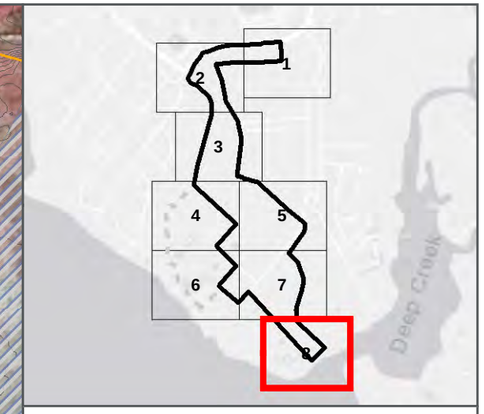
FIGURE 2 - SHEET 7 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021



LEGEND

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DATA SOURCES: USFWS, FEMA, USGS, USDA-NRCS, NOAA, VGIN-VBMP 2009 Infrared Aerial

ENVIRONMENTAL DESKTOP REVIEW

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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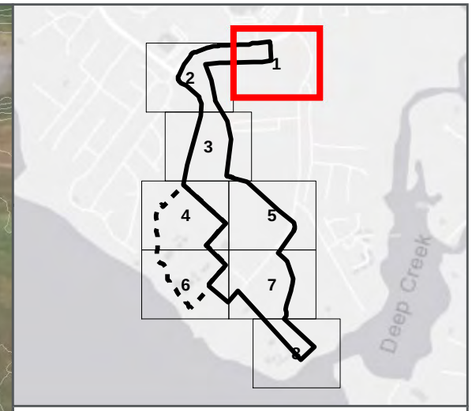
FIGURE 2 - SHEET 8 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG2.DESKTOPREVIEW.MXD - USER: RWILK - DATE: 4/30/2021



LEGEND

- Riverview Farm Park Delineation
- DataPoints
- Culverts

Delineated Watercourse

- Riverine Lower Perennial Unconsolidated Bottom (R2UB)
- Riverine Intermittent Streambed (R4SB)

Delineated Wetland

- Palustrine Unconsolidated Bottom (PUB)
- Palustrine Emergent Wetland (PEM)
- Palustrine Forested Wetland (PFO)
- Approx. Resource Protection Area
- Approx. Resource Management Area
- Previously Delineated Stream
- Previously Delineated Wetland
- Previously Confirmed RPA
- Previous Plant Delineation
- 1-Foot Contour

DATA SOURCES: NOAA, ESRI Aerial Imagery

Delineated features were flagged in the field and collected using sub-meter capable receivers. Data is projected in VA State Plane South NAD 1983 (2011).

SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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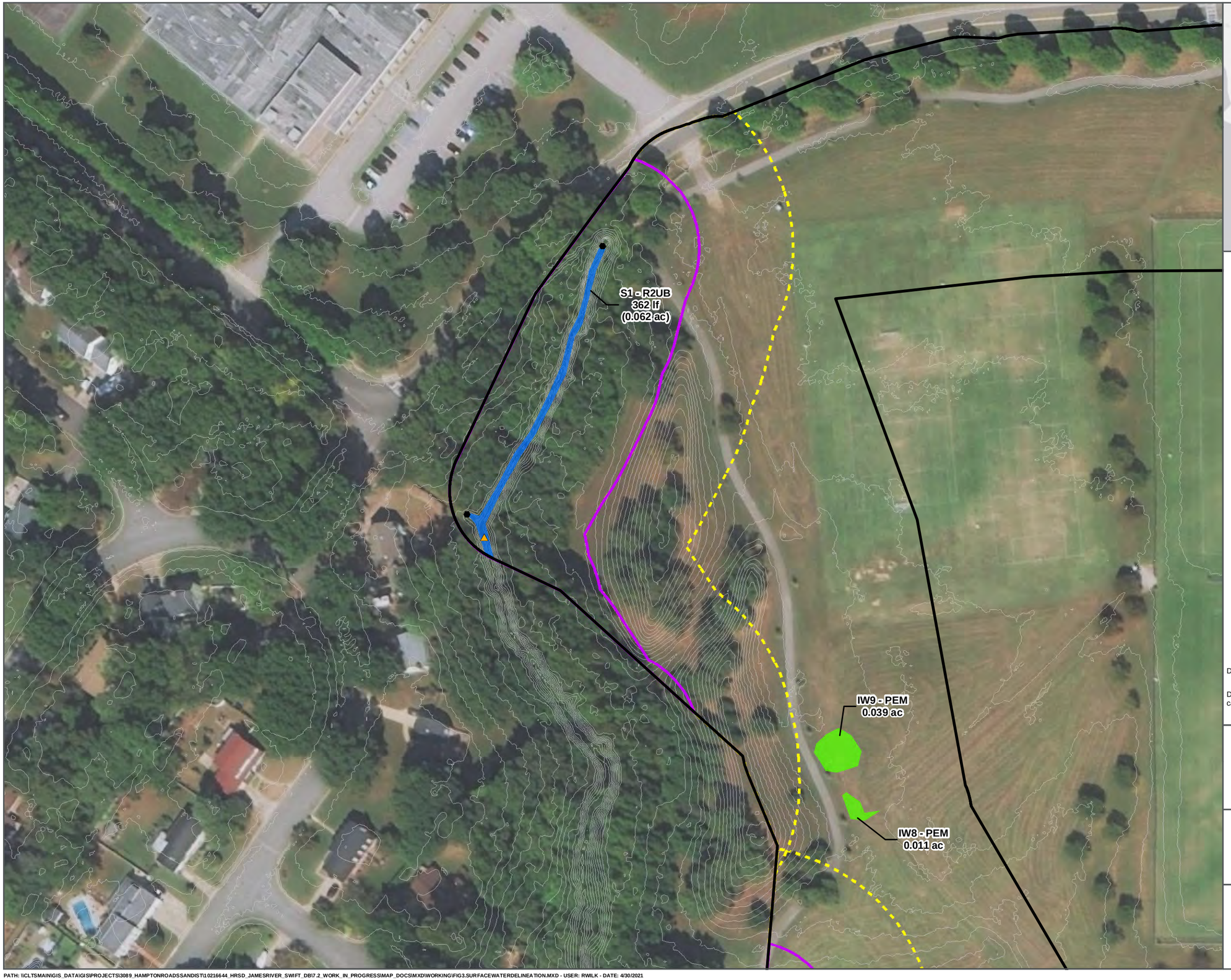
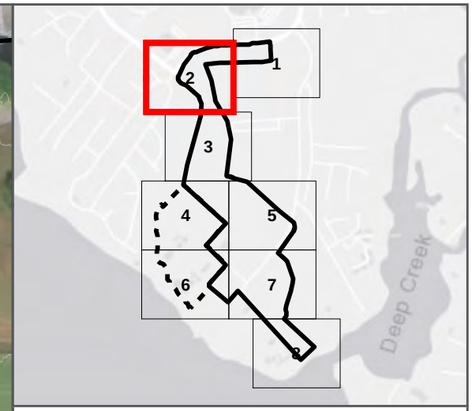
FIGURE 3 - SHEET 1 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021





LEGEND

- Riverview Farm Park Delineation
- DataPoints
- Culverts

Delineated Watercourse

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SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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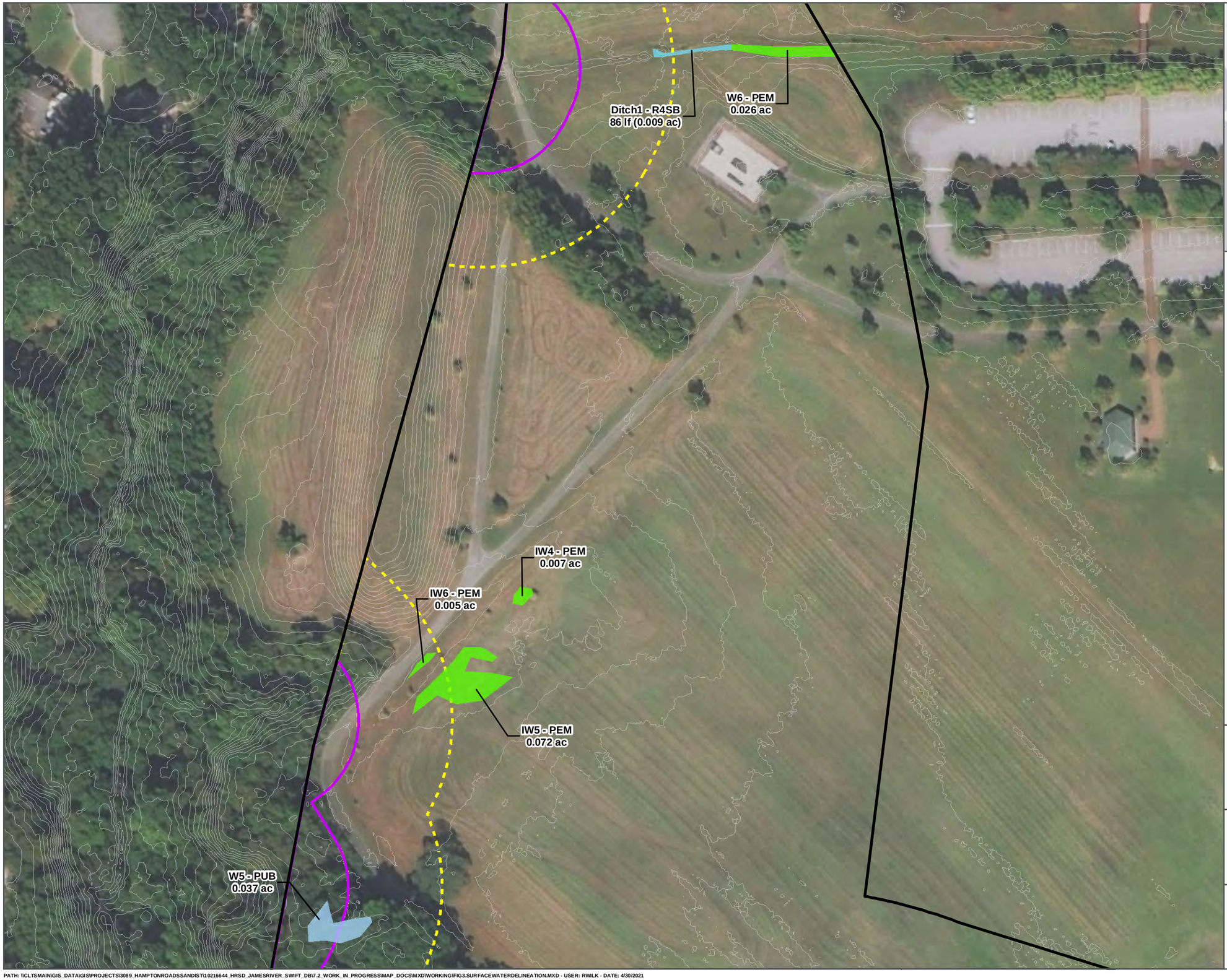
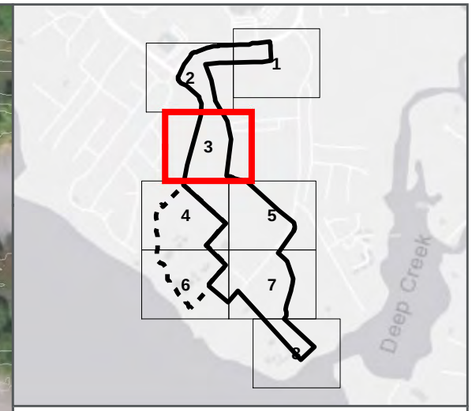
FIGURE 3 - SHEET 2 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DBI7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021





LEGEND

- Riverview Farm Park Delineation
- DataPoints
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Delineated Watercourse

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DATA SOURCES: NOAA, ESRI Aerial Imagery

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SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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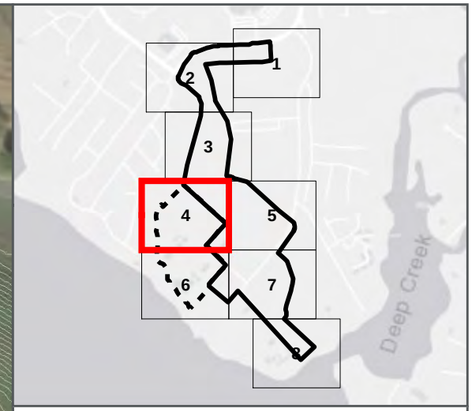
US-A
Ulliman Schutte – Alberici Joint Venture

FIGURE 3 - SHEET 3 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DBI\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021



LEGEND

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- DataPoints
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SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

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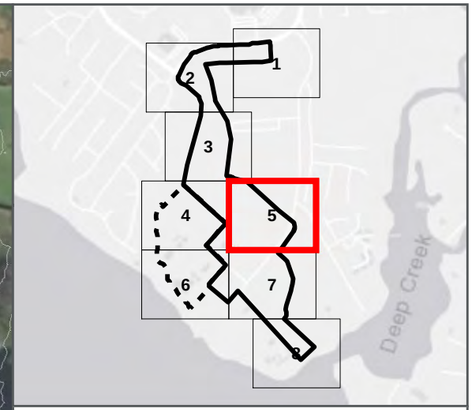
FIGURE 3 - SHEET 4 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDISTL\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021



LEGEND

- Riverview Farm Park Delineation
- DataPoints
- Culverts

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SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
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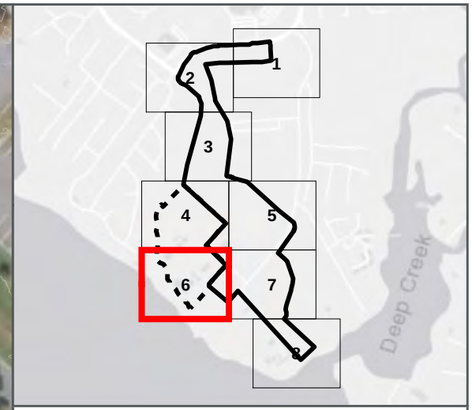
FIGURE 3 - SHEET 5 OF 8

PATH: I:\CLTSMAIN\GIS_DATA\GISPROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021

PJD Obtained April 7, 2020
NAO-2020-00386



LEGEND

- Riverview Farm Park Delineation
- DataPoints
- Culverts

Delineated Watercourse

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SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
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FIGURE 3 - SHEET 6 OF 8

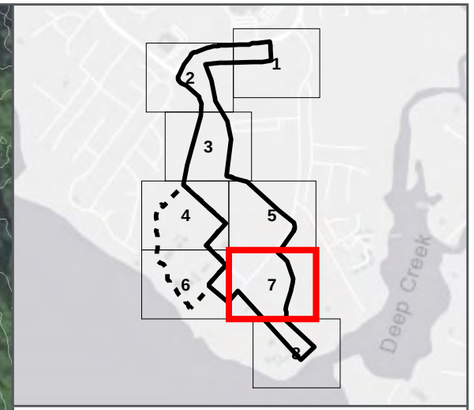
PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DBI\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021

IW2 - PEM
0.021 ac

IW1 - PEM
0.034 ac

Several Excavated Ponded
Depressions Within Field
Not Jurisdictional

W2 - PFO
0.016 ac



LEGEND

- Riverview Farm Park Delineation
- DataPoints
- Culverts

Delineated Watercourse

- Riverine Lower Perennial Unconsolidated Bottom (R2UB)
- Riverine Intermittent Streambed (R4SB)

Delineated Wetland

- Palustrine Unconsolidated Bottom (PUB)
- Palustrine Emergent Wetland (PEM)
- Palustrine Forested Wetland (PFO)
- Approx. Resource Protection Area
- Approx. Resource Management Area
- Previously Delineated Stream
- Previously Delineated Wetland
- Previously Confirmed RPA
- Previous Plant Delineation
- 1-Foot Contour

DATA SOURCES: NOAA, ESRI Aerial Imagery

Delineated features were flagged in the field and collected using sub-meter capable receivers. Data is projected in VA State Plane South NAD 1983 (2011).

SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

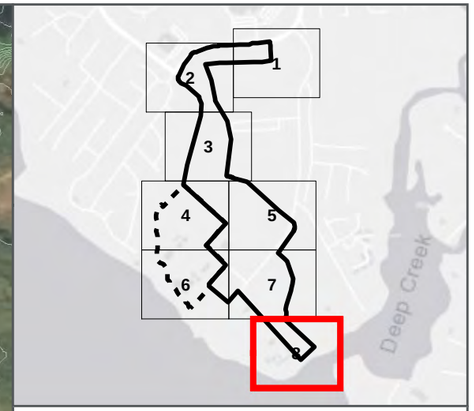
N

0 100 200
FEET

US-A
Ulliman Schutte – Alberici Joint Venture

FIGURE 3 - SHEET 7 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GISPROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DB\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021



LEGEND

- Riverview Farm Park Delineation
- DataPoints
- Culverts

Delineated Watercourse

- Riverine Lower Perennial Unconsolidated Bottom (R2UB)
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- Palustrine Unconsolidated Bottom (PUB)
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- Approx. Resource Management Area
- Previously Delineated Stream
- Previously Delineated Wetland
- Previously Confirmed RPA
- Previous Plant Delineation
- 1-Foot Contour

DATA SOURCES: NOAA, ESRI Aerial Imagery

Delineated features were flagged in the field and collected using sub-meter capable receivers. Data is projected in VA State Plane South NAD 1983 (2011).

SURFACE WATERS DELINEATION

HRSD-SWIFT JAMES RIVER PLANT
APRIL 2021

N

0 100 200
FEET

US-A
Ulliman Schutte – Alberici Joint Venture

FIGURE 3 - SHEET 8 OF 8

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\3089_HAMPTONROADSSANDIST\10216644_HRSD_JAMESRIVER_SWIFT_DBI\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\WORKING\FIG3.SURFACEWATERDELINEATION.MXD - USER: RWILK - DATE: 4/30/2021

B

Data Sheets

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: HRSD SWIFT Riverview Park City/County: Newport News Sampling Date: 4/22/2021

Applicant/Owner: HRSD State: VA Sampling Point: DP-IW

Investigator(s): R. Wilk, J. Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153A Lat: 37.084693 Long: -76.529010 Datum: NAD83

Soil Map Unit Name: Craven-Urban land complex, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation X, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Data sheet for all 9 isolated wetlands. All slight depressions within maintained fields.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15) **(LRR U)**
- ____ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ____ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
standing water up to 2 inches found in some of the isolated wetlands, perched water on top of clay. Saturation was found at surface, but appeared to dissapate farther down. Did not find the water table.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-IW

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5')			
1. *Juncus effusus*	40	Yes	OBL
2. *Ranunculus parviflorus*	10	No	FAC
3. *Eleocharis obtusa*	10	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 =Total Cover		
50% of total cover: 30	20% of total cover: 12		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		80 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL Sampling Point: DP-IW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/1	75	10YR 4/6	25	C	PL/M	Loamy/Clayey	fine sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- X Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Other locations had the following soil profile: 0-2 10YR 3/2 100% fine sandy loam, 2-20 2.5 Y 6/1 85%, 10YR 5/8 15% C M/PL fine sandy loam

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: HRSD SWIFT Riverview Park City/County: Newport News Sampling Date: 4/22/2021

Applicant/Owner: HRSD State: VA Sampling Point: DP-W2-up

Investigator(s): R. Wilk, J. Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR or MLRA): LRR T, MLRA 153A Lat: 37.083590 Long: -76.529130 Datum: NAD83

Soil Map Unit Name: Craven-Urban land complex, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
maintained field next to treeline at top of slope, paired upland point for W2

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrology indicators

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP-W2-up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Juniperus virginiana*	10	Yes	FACU
2. *Pinus taeda*	10	Yes	FAC
3. *Liquidambar styraciflua*	10	Yes	FAC
4.			
5.			
6.			
7.			
8.			
	30 =Total Cover		
50% of total cover: 15	20% of total cover: 6		
Herb Stratum (Plot size: 5')			
1. *Anthoxanthum odoratum*	90	Yes	FACU
2. *Plantago virginica*	15	No	FACU
3. *Poa pratensis*	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115 =Total Cover		
50% of total cover: 58	20% of total cover: 23		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	125	x 4 =	500
UPL species	0	x 5 =	0
Column Totals:	145 (A)		560 (B)

Prevalence Index = B/A = 3.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: DP-W2-up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 6/6	50	5YR 5/8	30	C	M	Loamy/Clayey	
			7.5YR 6/2	20	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: HRSD SWIFT Riverview Park City/County: Newport News Sampling Date: 4/22/2021

Applicant/Owner: HRSD State: VA Sampling Point: DP-W2-wet

Investigator(s): R. Wilk, J. Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 2-5

Subregion (LRR or MLRA): LRR T, MLRA 153A Lat: 37.083305 Long: -76.529092 Datum: NAD83

Soil Map Unit Name: Udorthents-Dumps complex NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
partially maintained PEM, PFO begins at toe of slope

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
standing water in portion of PEM, but not in plot.

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP-W2-wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	60	Yes	FAC
2. *Celtis occidentalis*	15	No	FACU
3. *Quercus coccinea*	15	No	UPL
4.			
5.			
6.			
7.			
8.			
	90	=Total Cover	
50% of total cover: 45		20% of total cover: 18	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Juniperus virginiana*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover: 2	
Herb Stratum (Plot size: 5')			
1. *Microstegium vimineum*	90	Yes	FAC
2. *Viola sororia*	10	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
50% of total cover: 50		20% of total cover: 20	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	160	x 3 =	480
FACU species	25	x 4 =	100
UPL species	15	x 5 =	75
Column Totals:	200 (A)		655 (B)

Prevalence Index = B/A = 3.28

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: DP-W2-wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Loamy/Clayey	Fine sandy loam
4-20	10YR 3/1	90	10YR 5/3	10	C	PL/M	Loamy/Clayey	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- X Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: HRSD SWIFT Riverview Park City/County: Newport News Sampling Date: 4/22/2021

Applicant/Owner: HRSD State: VA Sampling Point: DP-W3-up

Investigator(s): R. Wilk, J. Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): concave Slope (%): 2-5

Subregion (LRR or MLRA): LRR T, MLRA 153A Lat: 37.08624 Long: -76.530728 Datum: NAD83

Soil Map Unit Name: Craven-Urban land complex, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
forested area adjacent to W3 within depression area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP-W3-up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	30	Yes	FAC
2. *Acer rubrum*	20	Yes	FAC
3. *Juniperus virginiana*	20	Yes	FACU
4. *Liquidambar styraciflua*	20	Yes	FAC
5.			
6.			
7.			
8.			
	90	=Total Cover	
50% of total cover: 45		20% of total cover:	18
Sapling/Shrub Stratum (Plot size: 15')			
1. *Liquidambar styraciflua*	15	Yes	FAC
2. *Pinus taeda*	15	Yes	FAC
3. *Morella cerifera*	15	Yes	FAC
4.			
5.			
6.			
7.			
8.			
	45	=Total Cover	
50% of total cover: 23		20% of total cover:	9
Herb Stratum (Plot size: 5')			
1. *Toxicodendron radicans*	15	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover:	3
Woody Vine Stratum (Plot size: 15')			
1. *Campsis radicans*	20	Yes	FAC
2.			
3.			
4.			
5.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover:	4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 88.9% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	150	x 3 =	450
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	170 (A)		530 (B)

Prevalence Index = B/A = 3.12

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: DP-W3-up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Loamy/Clayey	
4-20	10YR 5/4	50	10YR 4/1	30	D	M	Loamy/Clayey	
			10YR 3/1	20				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: HRSD SWIFT Riverview Park City/County: Newport News Sampling Date: 4/22/2021

Applicant/Owner: HRSD State: VA Sampling Point: DP-W3-wet

Investigator(s): R. Wilk, J. Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR T, MLRA 153A Lat: 37.086085 Long: -76.530585 Datum: NAD83

Soil Map Unit Name: Craven-Urban land complex, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
PEM linear wetland within a forested area. PFO spur at culvert on south side of wetland. Culvert fed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
standing water approx 1-2 inches deep

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-W3-wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5')			
1. *Microstegium vimineum*	90	Yes	FAC
2. *Solidago sp.*	15	No	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105 =Total Cover		
50% of total cover: 53	20% of total cover: 21		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		270 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: DP-W3-wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/1	100						organic
1-20	5Y 5/1	70	10YR 4/6	30	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	*OMB Control #: 0710-xxxx, Exp: Pending* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: HRSD SWIFT Riverview Park City/County: Newport News Sampling Date: 4/22/2021

Applicant/Owner: HRSD State: VA Sampling Point: DP-WG

Investigator(s): R. Wilk, J. Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): concave Slope (%): 5-10

Subregion (LRR or MLRA): LRR T, MLRA 153A Lat: 37.088264 Long: -76.533818 Datum: NAD83

Soil Map Unit Name: Craven-Urban land complex, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
called jurisdictional by AECOM in wetland report from 2020. more of an ephemeral wash out area. Soils do not meet hydric criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: DP-WG

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	40	Yes	FACU
2. *Platanus occidentalis*	15	Yes	FACW
3. *Liquidambar styraciflua*	10	No	FAC
4.			
5.			
6.			
7.			
8.			
	65	=Total Cover	
50% of total cover: 33		20% of total cover:	13
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ligustrum sinense*	40	Yes	FAC
2. *Juniperus virginiana*	15	Yes	FACU
3. *Liquidambar styraciflua*	15	Yes	FAC
4. *Prunus serotina*	10	No	FACU
5. *Celtis occidentalis*	5	No	FACU
6.			
7.			
8.			
	85	=Total Cover	
50% of total cover: 43		20% of total cover:	17
Herb Stratum (Plot size: 5')			
1. *Ligustrum sinense*	5	Yes	FAC
2. *Liquidambar styraciflua*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover:	2
Woody Vine Stratum (Plot size: 15')			
1. *Campsis radicans*	20	Yes	FAC
2.			
3.			
4.			
5.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover:	4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	95	x 3 =	285
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	180 (A)		595 (B)
Prevalence Index = B/A =			3.31

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: DP-WG

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Loamy/Clayey	fine sandy loam
2-20	10YR 5/4	60	10YR 2/2	40			Loamy/Clayey	dual matrix, fine sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

NC DWQ Stream Identification Form Version 4.11

Date: 04/22/2021	**Project/Site**: HRSD-SWIFT	**Latitude:** 37.093220
Evaluator: R. Wilk & J. Irvin	**County:** Newport News	**Longitude:** -76.533907
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 30.75	**Stream Determination (circle one)** Ephemeral Intermittent **Perennial**	**Other** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 11.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	2	**3**
2. Sinuosity of channel along thalweg	0	**1**	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	**1**	2	3
4. Particle size of stream substrate	0	**1**	2	3
5. Active/relict floodplain	0	**1**	2	3
6. Depositional bars or benches	0	1	**2**	3
7. Recent alluvial deposits	0	**1**	2	3
8. Headcuts	**0**	1	2	3
9. Grade control	0	**0.5**	1	1.5
10. Natural valley	0	0.5	**1**	1.5
11. Second or greater order channel	No = **0**		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 9.5)				
12. Presence of Baseflow	0	1	2	**3**
13. Iron oxidizing bacteria	0	**1**	2	3
14. Leaf litter	1.5	**1**	0.5	0
15. Sediment on plants or debris	0	**0.5**	1	1.5
16. Organic debris lines or piles	0	0.5	**1**	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = **3**	

C. Biology (Subtotal = 9.75)				
18. Fibrous roots in streambed	3	**2**	1	0
19. Rooted upland plants in streambed	**3**	2	1	0
20. Macrobenthos (note diversity and abundance)	0	**1**	2	3
21. Aquatic Mollusks	**0**	1	2	3
22. Fish	0	**0.5**	1	1.5
23. Crayfish	0	0.5	1	**1.5**
24. Amphibians	0	0.5	**1**	1.5
25. Algae	**0**	0.5	1	1.5
26. Wetland plants in streambed	FACW = **0.75**; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

NC DWQ Stream Identification Form Version 4.11

Date: 04/22/2021	**Project/Site**: HRSD-SWIFT	**Latitude:** 37.091231
Evaluator: R. Wilk & J. Irvin	**County:** Newport News	**Longitude:** -76.532318
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 21	**Stream Determination (circle one)** Ephemeral **Intermittent** Perennial	**Other** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	**2**	3
2. Sinuosity of channel along thalweg	0	**1**	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	**1**	2	3
4. Particle size of stream substrate	**0**	1	2	3
5. Active/relict floodplain	0	**1**	2	3
6. Depositional bars or benches	0	**1**	2	3
7. Recent alluvial deposits	0	**1**	2	3
8. Headcuts	0	**1**	2	3
9. Grade control	0	**0.5**	1	1.5
10. Natural valley	**0**	0.5	1	1.5
11. Second or greater order channel	No = **0**		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)				
12. Presence of Baseflow	0	1	**2**	3
13. Iron oxidizing bacteria	0	**1**	2	3
14. Leaf litter	1.5	**1**	0.5	0
15. Sediment on plants or debris	**0**	0.5	1	1.5
16. Organic debris lines or piles	0	**0.5**	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = **3**	

C. Biology (Subtotal = 5)				
18. Fibrous roots in streambed	3	2	**1**	0
19. Rooted upland plants in streambed	3	**2**	1	0
20. Macrobenthos (note diversity and abundance)	**0**	1	2	3
21. Aquatic Mollusks	**0**	1	2	3
22. Fish	**0**	0.5	1	1.5
23. Crayfish	**0**	0.5	1	1.5
24. Amphibians	**0**	0.5	1	1.5
25. Algae	0	**0.5**	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = **1.5** Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: drains wetland, appears to be a broken culvert or something causing erosion. Water disappears underground into possible pipe.

Sketch:

C

Photographs

Photos

W1: PEM, Culvert empties into field. Small wetland formed at culvert. Looking northeast.

W1: PEM, Culvert empties into field. Small wetland formed at culvert. Looking down at culvert.

Photos

W2: PEM. Maintained area west of PFO portion.

W2:PFO. Looking east.

Photos

IW1: Isolated PEM within maintained field. Looking east.

IW1: Isolated PEM within maintained field. Looking west.

Photos

W3: PEM in middle of forested area. Looking southeast.

W3: PEM in middle of forested area. Looking northwest at boundary between wetland and upland.

Photos

W3: Upland. Forested area adjacent to W3. Looking northwest.

W4: PUB and PEM. Looking north.

Photos

IW3: Isolated PEM within maintained field. Looking southwest.

IW3: Isolated PEM within maintained field. Looking northeast.

Photos

WB: PFO. Expansion of previously delineated feature from plant site. Looking southwest.

WC: PUB. Expansion of previously delineated feature from plant site. Looking east.

Photos

WD: PFO. Expansion of previously delineated feature from plant site. Looking southwest.

DP-WG-Up: Upland forested area with drainage patterns. Looking west.

Photos

W5: PUB. Looking south.

W5: PUB. Looking southeast.

Photos

IW4: Isolated PEM within maintained field. Looking northwest.

IW5: Isolated PEM within maintained field. Looking southwest.

Photos

Ditch1: R4SB. Connects to W6 in maintained field. Stops abruptly at apparent broken culvert. Looking east.

Ditch1: R4SB. Connects to W6 in maintained field just east of headcut. Looking down.

Photos

W6: PEM. Ditch area in maintained field. Looking west.

W6: PEM. Ditch area in maintained field. Looking east.

Photos

IW6: Isolated PEM within maintained field. Looking southwest.

IW7: Isolated PEM within maintained field. Looking west.

Photos

IW8: Isolated PEM within maintained field. Looking southwest.

IW9: Isolated PEM within maintained field. Looking northwest.

Photos

S1: R2UB. Looking upstream through rip rap portion of channel.

S1: R2UB. Looking upstream to culvert at north end of delineation area.

Photos

Excavated ponded area in field located in southeast section of delineation area.

Excavated ponded area in field located in southeast section of delineation area.

Wetlands and Waters Delineation Report

Prepared for the

James River HRSD SWIFT Project

City of Newport News, Virginia

Prepared for

Hampton Roads Sanitation District
SWIFT
1434 Air Rail Avenue
Virginia Beach, VA 23455

Prepared by

4840 Cox Road
Glen Allen, VA 23060

July 16, 2020

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APPENDICES

Appendix A — Figures

Figure 1: Project Vicinity Map
Figure 2: Project Location Map
Figure 3: Background Resources Map
Figure 4: WOUS and RPA Map

Appendix B – USACE Wetland Determination Data Forms

Appendix C – Representative Photographs

1.0 SITE DESCRIPTION

1.1 Introduction

The James River Treatment Plant (TP) and Hampton Roads Sanitation District (HRSD) Sustainable Water Initiative For Tomorrow (SWIFT) program is a three part project that includes: the design and construction of new facilities; improvements to the secondary treatment process at the existing TP; and the construction of three recharge wells and associated monitoring wells. The first part consists of the construction of new facilities that will be used to apply advanced water treatment to wastewater effluent from the existing TP to bring the wastewater up to drinking standard. These new facilities will have a capacity of 16 million gallons per day (MGD) of advanced treatment. The second part consists of improving the existing primary clarifier effluent, Integrated Fixed Film Activated Sludge (IFAS) system; the demolition of existing secondary clarifiers; and other treatment mechanisms. The third part consists of the construction of three recharge wells and associated housing facility designed similar in scaled to a small residential home. These wells will be constructed at a minimum of 1,000 feet apart from each other to recharge the Potomac Aquifer to increase hydrostatic pressure within the aquifer and to slow land subsidence related to aquifer withdrawal.

The Project Area encompasses work associated with the three aforementioned SWIFT program parts located in the City of Newport News, VA. The Project Area is generally situated west of Warwick Boulevard (Route 60), east of the Warwick River, and south of Menchville Road and can be accessed from Riverview Parkway. The approximately 35-acre Project Area and location are depicted in **Appendix A, Figures 1 and 2**.

1.2 Topography and Geology

The United States Geological Survey (USGS) topographic quadrangle map (quad) for Mulberry Island, VA (2019) depicts the Project Area with gently sloping land generally consisting of maintained roads, cleared lands, developed industrial areas, and vegetated lands to the south and east as shown in **Figure 1**. Elevations range from 5 feet above mean sea level (amsl) along the southwest Project Area boundary to 50 feet amsl near the northeast portion of the Project Area. Aerial imagery shows land use consistent with the quad (**Figure 2**)

The Project Area occurs in the Atlantic and Gulf Coastal Plain (USACE, 2010); more specifically, the United States Department of Agriculture (USDA) National Resources Conservation Services (NRCS) Major Land Resource Area (MLRA) Tidewater Area (153B) subregion of Land Resource Region (LRR) T. The topography of the Atlantic and Gulf Coastal Plain region ranges from level to hilly terrain and is composed mainly of sedimentary rocks and alluvial sediments (USACE, 2010).

1.3 Soils

USDA NRCS Web Soil Survey (WSS) indicates the Project Area is predominately underlain by non-hydric soils. Hydric soils present to a lesser extent include: Bohicket muck in the southern corner of the Project Area and Johnston silt loam in a small section of the central-western portion of the Project Area (USDA NRCS, 2020). The USDA NRCS WSS indicates that the following non-hydric soils occur within the study area: Craven-Urban land complex in the northwest corner of the Project Area; Nevarc-Uchee complex along the western and southern boundary of the Project Area; Slagle-Urban land complex in the center of the Project Area; and Udorthents-Dumps complex along the western and southern boundaries of the Project Area (USDA NRCS, 2020). Soil units are shown in **Figure 3** and summarized in **Table 1**.

Table 1: USDA NRCS Web Soil Survey Map Units

SOIL SYMBOL	DESCRIPTION	HYDRIC RATING *	PERCENT OF AOI
6	Bohicket muck, 0 to 1 percent slopes, very frequently flooded	100	0.1
9A	Craven-Urban land complex, 0 to 2 percent slopes	0	13.2
12	Johnston silt loam, 0 to 2 percent slopes, frequently flooded	100	0.2
16C	Nevarc-Uchee complex, 6 to 15 percent slopes	0	6.1
16D	Nevarc-Uchee complex, 15 to 50 percent slopes	0	9.9
21A	Slagle-Urban land complex, 0 to 2 percent slopes	5	69.5
26	Udorthents-Dumps complex	8	1.0
* The hydric rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Each map unit is rated based on its respective components and the percentage of each component within the map unit.			

1.4 NWI Wetlands

The United States Fish and Wildlife Service (USFWS) is the principal US Federal agency tasked with providing information to the public on the status and trends of our Nation's wetlands. The National Wetland Inventory (NWI) is a publicly available resource that provides detailed information on the abundance, characteristics, and distribution of US wetlands. The USFWS-NWI mapper was used to assess the possibility of wetlands occurring within the Project Area (USFWS, 2020). NWI mapping identifies one freshwater palustrine forested/shrub wetland (PFO1A) within the Project Area. PFO1A is mapped along the northwest portion of the Project Area, as shown in **Figure 3**.

1.5 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) were reviewed for floodplains within the Project Area. The FEMA FIRM (panels 5101030109D and 5101030108D) for the city of Newport News, as shown in **Figure 3,** indicates four small sections along the northwest and southwest boundary of the Project Area are within the 100-year floodplain.

2.0 FIELD INVESTIGATION – METHODOLOGY

2.1 Wetlands Investigation and Delineation

On May 28, 2020, a wetland and waters field investigation was conducted by AECOM Technical Services, Inc. (AECOM) in conjunction with an environmental due diligence review of the property. AECOM was retained to review and update, based on current field conditions, a Waters of the United States (WOUS) delineation by Hazen and Sawyer from January 2020 (Prior delineation).

Based on AECOM's field investigation, delineated features were observed from the previous delineation which comprise WOUS features that were demarcated with pink flagging. The delineation was consistent with the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE, 1987), and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0, USACE, 2010). Any WOUS that were extended and/or newly identified were flagged in the field with consecutively numbered Wetland Delineation flags and were

located using a hand-held Global Positioning System (GPS). The collected data were differentially corrected and depicted on **Figure 4**.

Consistent with the Chesapeake Bay Preservation Act (CBPA, § 62.1-44.15:67 et seq. of the Code of Virginia), a potential 100-foot Resource Protection Area buffer (RPA) was placed along wetlands and streams that appeared to continue off-site where it is assumed that tidal and nontidal wetlands are connected by surface water flow and contiguous to tidal wetlands or water bodies with perennial flow. A detailed RPA delineation may clarify or remove the potential RPA buffer based on field findings.

A WOUS and RPA map indicating delineated features and potential RPA buffer is provided in **Appendix A**. USACE Wetland Determination Data Forms are provided in **Appendix B**.

2.2 Surface Water Feature Investigation

Potentially regulated surface water features within the Project Area were delineated in accordance with the USACE Jurisdictional Determination Instructional Guidebook (USACE and EPA, 2007), and the guidelines in the USACE Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification Regulatory Guidance Letter (USACE, 2005).

3.0 FIELD INVESTIGATION – RESULTS

3.1 General Site Conditions

The Project Area is predominantly uplands and heavily developed areas including roads, parking lots, and structures. Site conditions were consistent with aerial imagery (**Figure 2**), which displayed the TP, maintained roadways, cleared uplands, and some wetland signatures. During the on-site investigation AECOM incorporated the Prior delineation (including wetlands WA through WF and streams SA through SD) and flagged the minor extension of wetland WD and five additional off-site drainage ditches near the Project Area. These features are depicted on **Figure 4**.

3.2 Wetland Investigation and Delineation Results

AECOM environmental scientists expanded the extent of wetland WD by approximately 970 square feet (0.02 acres). The Prior delineation indicated that wetlands WA and WF consisted of both tidal and non-tidal wetlands. Classifications were assigned according to the USFWS-NWI mapper which indicated that the tidal portion of wetland WA and WF is likely an estuarine intertidal emergent persistent irregularly flooded wetland (E2EM1P). The non-tidal portion of wetland WA, wetlands WB, WC, WD, WE, WF, and WG were field verified by AECOM as palustrine forested wetland (PFO). The tidal portion of wetland WA, portions of wetlands WB, WD, WE, WF, and wetland WC and WG are located off-site. Wetlands located within the Project Area are described in **Table 1**.

Table 1: Summary of Wetland Features in the Project Area

Wetland	Tidal	Cowardin Classification*	Area (Square Feet)	Area (Acres)
WA	Non-tidal	PFO	5886	0.14
WB	Non-tidal	PFO	1546	0.04
WD	Non-tidal	PFO	7506	0.17
WE	Non-tidal	PFO	15855	0.36
WF	Non-tidal	PFO	76370	1.75
Total			**107,163**	**2.46**
* Cowardin classification based on information from USFWS-NWI mapper, GIS data from Hazen and Sawyer's January 2020 wetland delineation, and AECOM's May 2020 wetland delineation				

3.2.1 Forested Wetlands

PFO wetlands within the Project Area include species frequently found in disturbed areas such as Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*). Additionally, American sycamore (*Platanus occidentalis*) was the dominant canopy species in wetlands within and near the Project Area. Forested uplands within and near the Project Area were typified by eastern redcedar (*Juniperus virginiana*), black cherry (*Prunus serotina*), northern red oak (*Quercus rubra*), northern white oak (*Quercus alba*), Chinese privet, and Japanese honeysuckle.

3.3 Surface Water Feature Investigation Results

The Prior delineation identified four streams (stream SA through SD). AECOM confirmed the extent of the only previously delineated stream (SA) within the Project Area. Stream SA is non-tidal, located along the northwest edge of the Project Area, and the segment that is within the Project Area is approximately 125 linear feet. AECOM identified three drainage ditches (DA and DB) inside the Project Area. Ditch DA is located in the southeast of the Project Area and is approximately 40 linear feet, ditch DB is located in the southeast of the Project Area and is approximately 75 linear feet. Three streams were verified outside of the Project Area by AECOM (stream SB through SD). Stream SB is tidal, located west and southwest of the Project Area, and is approximately 639 linear feet. Stream SC is non-tidal, located southwest of the Project Area, and is approximately 76 linear feet. Stream SD is tidal, located southwest of the Project Area, and based on the quad for Mulberry Island, VA (2019) this feature appears to be the Warwick River. The Prior delineation mapped approximately 670 linear feet of this feature.

AECOM identified three drainage ditches (DC, DD, and DE) outside but near the Project Area. Ditch DC is located southwest of the Project Area and is approximately 30 linear feet, ditch DD is located southwest of the Project Area and is approximately 85 linear feet, and ditch DE is located west of the Project Area and is approximately 40 linear feet. The drainage ditches located southwest and southeast of the HRSD TP drain to unnamed tributaries to Warwick River.

Feature locations and types are shown in **Figure 4**. Associated photos are included in **Appendix C**.

Table 2: Summary of Water Features On-site and Off-site Depicted in Figure 4

Feature	Description	Length (Linear Feet)
***SA (stream)**	On-site	125
*SA (stream)	Off-site	69
*SB (stream)	Off-site	639
*SC (stream)	Off-site	76
*SD (stream)	Off-site	670
**DA (ditch)	On-site	40
**DB (ditch)	On-site	75
**DC (ditch)	Off-site	30
**DD (ditch)	Off-site	85
**DE (ditch)	Off-site	40
Total On-site streams		**125**
Total Off-site streams		1,724
***** Indicates a feature from Hazen and Sawyer wetland delineation: January 2020 ** Indicates a feature from the AECOM delineation: May 2020		

4.0 REFERENCES

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Appendix A: Figures

Note: This map is for reference only;
NAD83 State Plane Virginia South;
USGS Topographic Source: ESRI, 2019

AECOM

HRSD-SWIFT Project 2020

James River Tranche 2 Project
City of Newport News, VA

Last Date Edited: 11/4/2020
Project Number: 60617789

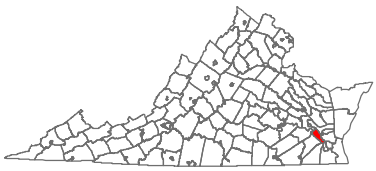
Legend

Study Area

0 1,000 2,000 Feet

N
W E
S

Figure 1
Vicinity Map



City of Newport News

AECOM

HRSD-SWIFT Project
2020

James River Tranche 2 Project
City of Newport News, VA

Last Date Edited: 11/2/2020
Project Number: 60617789

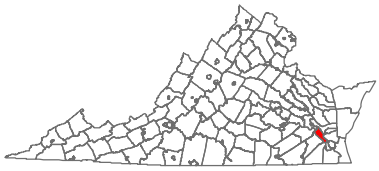
0 250 500
Feet

Legend

Study Area

N
W E
S

Figure 2
Location Map



City of Newport News

AECOM

HRSD-SWIFT Project 2020

James River Tranche 2 Project
City of Newport News, VA

Last Date Edited: 11/2/2020
Project Number: 60617789

Legend

0 250 500 Feet

Study Area

Hydric Soil Rating (NRCS, 2020)

Hydric (1 to 32%)

Hydric (100%)

Waters of the US (NWI, 2020)

PFO EUS
EEM RSB
EUB RUB

Flood Hazard Zones (FEMA, 2020)

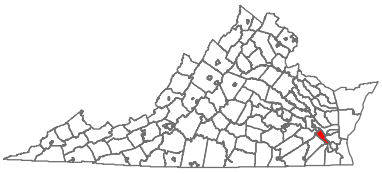
1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

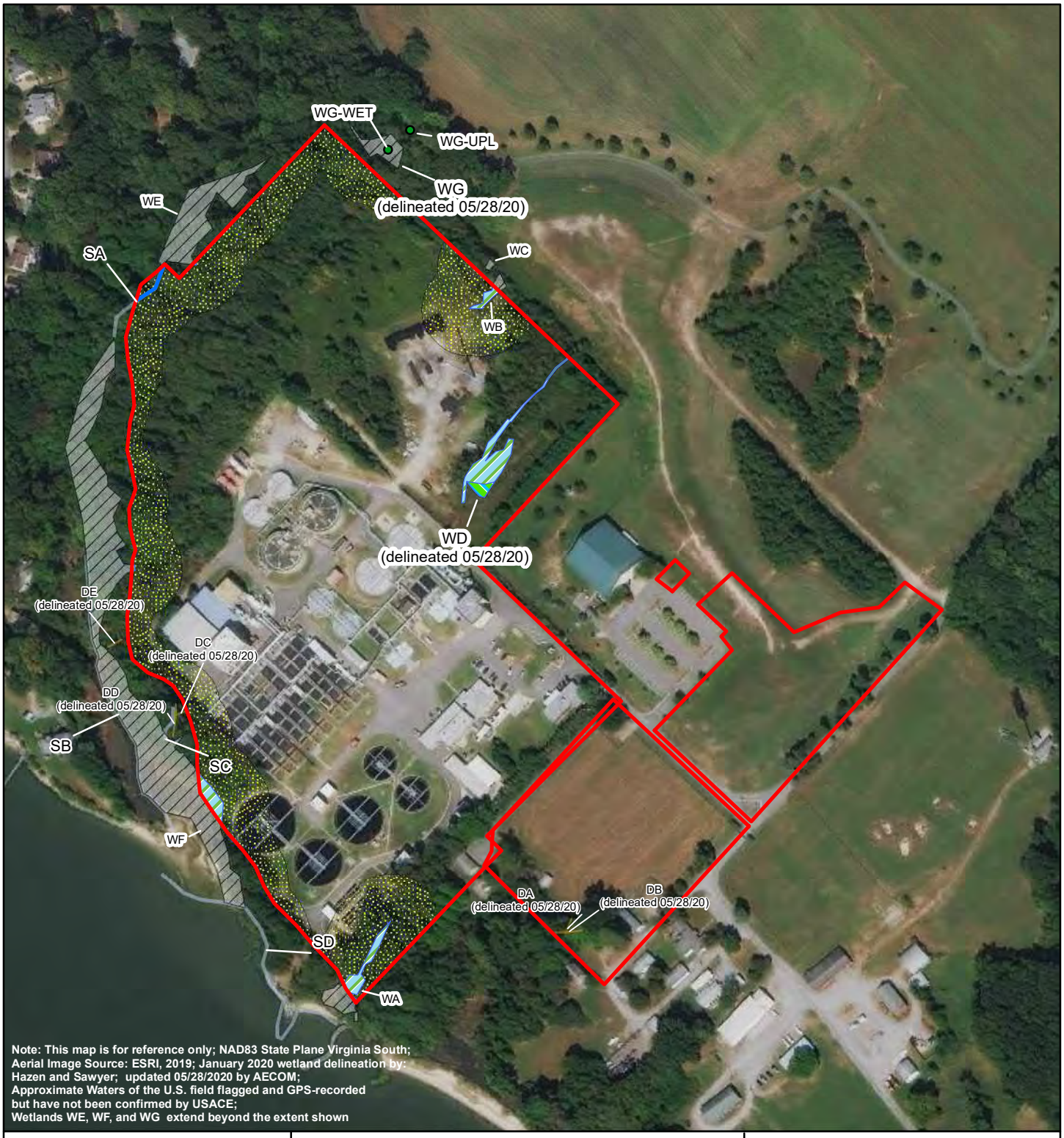
N
W E
S

Figure 3

Background Resources Map



City of Newport News



AECOM

HRSD-SWIFT Project 2020

James River Tranche 2 Project
City of Newport News, VA

Last Date Edited: 11/2/2020
Project Number: 60617789

N
W E
S

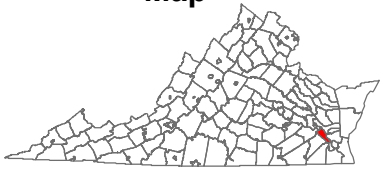
0 250 500 Feet

Legend

- Study Area
- Determination Points
- Previously Delineated Streams
- PFO Delineated 05/28/2020
- PFO Delineated 01/2020
- Potential 100-foot RPA Buffer
- Offsite Wetlands
- Drainage Ditch
- Offsite Streams

Figure 4

WOUS and RPA Map



City of Newport News

Appendix B: USACE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: James River City/County: Newport News Sampling Date: 5/28/2020

Applicant/Owner: HRSD - SWIFT State: VA Sampling Point: WG-WET

Investigator(s): J. Daugustine, C. Lamb Section, Township, Range:

Landform (hillslope, terrace, etc.): Toe of a slope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): MLRA 153A of LRR T Lat: 37.088298 Long: -76.533517 Datum: WGS84

Soil Map Unit Name: 16D - Nevarc-Uchee complex, 15 to 50 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x No _____	**Is the Sampled Area within a Wetland?** Yes x No _____
Hydric Soil Present?	Yes x No _____	
Wetland Hydrology Present?	Yes x No _____	

Remarks:

Data ponint taken inside flag WA-002

Observed Classifications:

Cowardin: PFO

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- x Sparsely Vegetated Concave Surface (B8)
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No x	Depth (inches): _____
Water Table Present?	Yes _____	No x	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No x	Depth (inches): _____

Wetland Hydrology Present? Yes x No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

AECOM has prepared this form using "data-entered" copies of the wetland determination data form in Appendix C in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0, November 2010. The resulting data sheet uses the 2016 National Wetland Plant List (v3.3) Regional List and the 2019 Web Soil Survey.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WG-WET

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Platanus occidentalis, American Sycamore	60	Yes	FACW
2.			
3.			
4.			
5.			
6.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Sapling Stratum (Plot size: 30 ft)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft)			
1. Ligustrum sinense, Chinese Privet	75	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15		
Herb Stratum (Plot size: 30 ft)			
1. Ligustrum sinense, Chinese Privet	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Woody Vine Stratum (Plot size: 30 ft)			
1. Lonicera japonica, Japanese Honeysuckle	15	Yes	FACU
2.			
3.			
4.			
5.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	80	x 3 =	240
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	155 (A)		420 (B)

Prevalence Index = B/A = 2.71

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

x 2 - Dominance Test is >50%

x 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes x No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WG-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100%					Silty loam	
5-19	2.5Y 4/2	80%	7.5YR 3/4	20%	C	M	SILTY Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: James River City/County: Newport News Sampling Date: 5/28/2020

Applicant/Owner: HRSD - SWIFT State: VA Sampling Point: WG-UPL

Investigator(s): J. Daugustine, C. Lamb Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): MLRA 153A of LRR T Lat: 37.088402 Long: -76.533419 Datum: WGS84

Soil Map Unit Name: 16D - Nevarc-Uchee complex, 15 to 50 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes x No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No x	**Is the Sampled Area within a Wetland?** Yes _____ No x
Hydric Soil Present?	Yes _____	No x	
Wetland Hydrology Present?	Yes _____	No x	

Remarks:

Data point taken in an upland adjacent to Wetland WG

Observed Classifications:

Cowardin: _____

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No x	Depth (inches): _____
Water Table Present?	Yes _____	No x	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No x	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

AECOM has prepared this form using "data-entered" copies of the wetland determination data form in Appendix C in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0, November 2010. The resulting data sheet uses the 2016 National Wetland Plant List (v3.3) Regional List and the 2019 Web Soil Survey.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WG-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana, Eastern Red-Cedar	20	Yes	FACU
2. Prunus serotina, Black Cherry	20	Yes	FACU
3.			
4.			
5.			
6.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Sapling Stratum (Plot size: 30 ft)			
1. Juniperus virginiana, Eastern Red-Cedar	15	Yes	FACU
2. Quercus rubra, Northern Red Oak	10	Yes	FACU
3. Quercus alba, Northern White Oak	10	Yes	FACU
4.			
5.			
6.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		
Shrub Stratum (Plot size: 30 ft)			
1. Juniperus virginiana, Eastern Red-Cedar	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 30 ft)			
1. Ligustrum sinense, Chinese Privet	15	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Woody Vine Stratum (Plot size: 30 ft)			
1. Lonicera japonica, Japanese Honeysuckle	15	Yes	FACU
2.			
3.			
4.			
5.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 12.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column Totals:	125 (A)		485 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No x

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WG-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100%					Loam	
4-12	2.5Y 5/4	100%					Silty clay	
12-20	10YR 5/6	100%					Silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** x

Remarks:

Appendix C: Representative Photographs

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **A**	Date: 07/28/2020
Lat: 37.088298	Long: -76.533517

Description:
View of hydric soil at wetland data point WG-WET.

Photo ID: **B**	Date: 07/28/2020
Lat: 37.088182	Long: -76.53356

Description:
View, facing west, of vegetation observed at data point WG-WET.

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **C**	Date: 07/28/2020
Lat: 37.088402	Long: -76.533419

Description:
View of non-hydric soil observed at upland data point WH-UPL.

Photo ID: **D**	Date: 07/28/2020
Lat: 37.088446	Long: -76.533354

Description:
View, facing southeast, of typical vegetation observed at data point WG-UPL.

AECOM

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **E**	Date: 07/28/2020
Lat: 37.086302	Long: -76.532908

Description:
View, facing west, of wetland WD previously delineated in January 2020.

Photo ID: **F**	Date: 07/28/2020
Lat: 37.083822	Long: -76.532174

Description:
View, facing southwest and downstream, of drainage ditch DA.

AECOM

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **G**	Date: 07/28/2020
Lat: 37.083745	Long: -76.532209

Description:
View, facing southwest and downstream, of drainage ditch DB.

Photo ID: **H**	Date: 06/19/2020
Lat: 37.084983	Long: -76.535142

Description:
View, facing southeast, of drainage ditch DC

Project: HRSD James River SWIFT Project	**PHOTOGRAPH LOG**
Applicant: HRSD	

Photo ID: **I**	Date: 07/28/2020
Lat: 37.084988	Long: -76.535163
Description: View, facing south and downstream, of drainage ditch DD.	

Photo ID: **J**	Date: 07/28/2020
Lat: 37.085431	Long: -76.535421
Description: View, facing southwest, of drainage ditch DE.	

AECOM

AECOM

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Attachment B: Threatened and Endangered Species Database Reviews

United States Department of the Interior

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

In Reply Refer To: July 02, 2021
Consultation Code: 05E2VA00-2021-SLI-4532
Event Code: 05E2VA00-2021-E-13070
Project Name: James River

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 ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

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

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

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

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

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

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

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

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

Attachment(s):

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

Official Species List

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

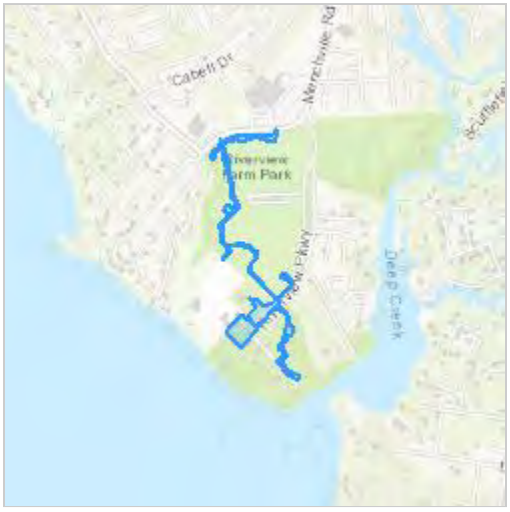
This species list is provided by:

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

Project Summary

Consultation Code: 05E2VA00-2021-SLI-4532
Event Code: 05E2VA00-2021-E-13070
Project Name: James River
Project Type: WATER SUPPLY / DELIVERY
Project Description: James River Tranche 2
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.084244400000046,-76.53193912986484,14z



Counties: Newport News County, Virginia

Endangered Species Act Species

There is a total of 1 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*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

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

USFWS National Wildlife Refuge Lands And Fish Hatcheries

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

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: 07/02/2021

Self-Certification Letter

Project Name: James River Treatment Plant and SWIFT Facility

Dear Applicant:

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

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

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

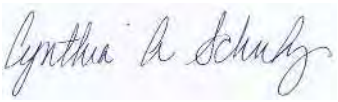
We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the determinations described above for proposed and listed species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

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

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

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

Sincerely,



Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

United States Department of the Interior

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

In Reply Refer To: July 02, 2021
Consultation code: 05E2VA00-2021-TA-4532
Event Code: 05E2VA00-2021-E-13071
Project Name: James River

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

Dear Catherine Lavagnino:

The U.S. Fish and Wildlife Service (Service) received on July 02, 2021 your effects determination for the 'James River' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

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

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

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

---

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

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

1. Name

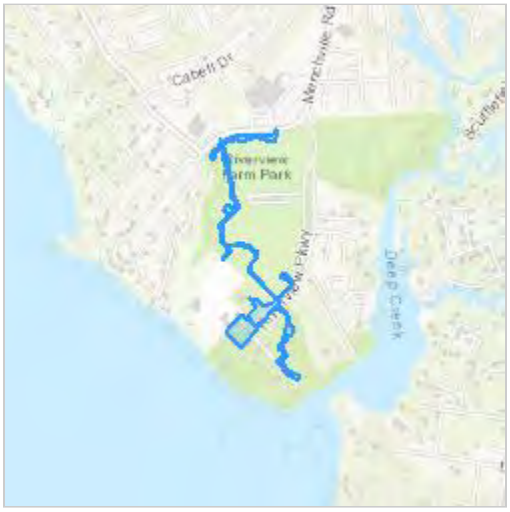
James River

2. Description

The following description was provided for the project 'James River':

James River Tranche 2

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.084244400000046,-76.53193912986484,14z



Determination Key Result

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

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

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

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

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

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

affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

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

Qualification Interview

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

   Yes

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

   No

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

   No

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

   Automatically answered
   No

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

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

   Yes

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

   No

7. Will the action involve Tree Removal?

   Yes

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

   No

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

   No

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

    No

Project Questionnaire

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

1. Estimated total acres of forest conversion:

1.6

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

1.6

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

0

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

4. Estimated total acres of timber harvest

0

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

0

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

0

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

7. Estimated total acres of prescribed fire

0

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

0

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

0

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

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

0

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Species Conclusions Table

Project Name: HRSD SWIFT PM FY20 – James River

Date: 07/15/2020

Species / Resource Name	Conclusion	ESA Section 7	Notes / Documentation
Northern Long-eared Bat (*Myotis septentrionalis*)	Potential habitat present and no current survey conducted	May Affect, Not Likely to Adversely Affect	Relying upon the findings of the 01/05/2016 Programmatic Biological Opinion for Final 4(d) Rule of the NLEB and activities excepted from take prohibitions to fulfill our project-specific Section 7 responsibilities. No maternity roost or hibernaculum in the vicinity of the Project Area.
Loggerhead Sea Turtle *(Caretta caretta)*	No suitable habitat present	No Effect	No in water work will be occurring during the proposed activity.
Eastern Black Rail (*Laterallus jamaicensis jamaicensis*)	No suitable habitat present	No Effect	Habitat for the eastern black rail consists of impounded and unimpounded salt and brackish marshes. These habitats are not present within the Project Area and no positive observations have occurred within a two-mile radius of the Project Area.
Canbrake Rattlesnake (*Crotalus horridus*)	Potential habitat present and no current survey conducted	No Effect	Habitat for canebrake rattlesnakes consists of mature hardwood, mixed hardwood-pine forests, forested cane thickets, and ridges adjacent to swampy areas. A 100-foot RPA buffer has been placed on wetlands fitting this habitat description within the Project Area. Swampy areas in the Project Area outside of the RPA appear to be heavily disturbed by past and current land use and no positive observations have occurred within a two-mile radius of the Project Area.
Henslow's Sparrow (*Centronyx henslowii*)	No suitable habitat present	No Effect	Habitat for Henslow's sparrow consists of hayfields, pastures, wet meadows, undisturbed grasslands enrolled in the Conservation reserve Program, upland portions of salt marshes, and old fields. These habitats are not present within the Project Area and no positive observations

			have occurred within a two-mile radius of the Project Area.
Mabee's Salamander (*Ambystoma mabeii*)	Potential habitat present and no current survey conducted	No Effect	Habitat for Mabee's salamander consists of savannas on the edges of bogs or ponds, low wet woods and swamps, and adjacent to ditches and pools. A 100-foot RPA buffer has been placed on wetlands within the Project Area that could fit this description and no positive observations have occurred within a two-mile radius of the Project Area.
Bald Eagle (*Haliaeetus leucocephalus*)	Unlikely to disturb nesting bald eagles	No Eagle Permit Act Required	According to the Center for Conservation Biology (CCB) Mapping application, there are no nests within 660 feet of the Project Area
Bald Eagle (*Haliaeetus leucocephalus*)	Intersects with an eagle concentration area	No Eagle Permit Act Required	According to the U.S. Fish and Wildlife Service Virginia Field Office's Bald Eagle Map Tool, a time of year restriction will need to be followed from December 15 to March 15 for shoreline activities. No shoreline activities are anticipated for the proposed project.
Critical Habitat	No Critical Habitat Present	No Effect	No construction activity will be conducted in any critical habitat; therefore, AECOM does not anticipate any impacts.

Options
Species Information
By Name
By Land Management
References
Geographic Search
By Map
By Coordinates
By Place Name
Database Search
Help
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VaFWIS Search Report Compiled on 7/2/2021, 10:57:25 AM

Help

Known or likely to occur within a **2 mile radius around point 37,02,26.3 -76,27,05.8** in **650 Hampton City, 700 Newport News City, VA**

View Map of Site Location

546 Known or Likely Species ordered by Status Concern for Conservation (displaying first 39) (39 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
030074	FESE	Ia	Turtle, Kemp's ridley sea	Lepidochelys kempii		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA,HU6
030075	FESE	Ic	Turtle, leatherback sea	Dermochelys coriacea		BOVA
030073	FESE		Turtle, hawksbill sea	Eretmochelys imbricata		BOVA
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta		BOVA
040144	FTST	Ia	Knot, red	Calidris canutus rufa		BOVA,HU6
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA,HU6
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
030072	FTST	Ib	Turtle, green sea	Chelonia mydas		BOVA
040120	FTST	IIa	Plover, piping	Charadrius melodus		BOVA
120030	FTSE	IVb	Manatee, West Indian	Trichechus manatus		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		HU6
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Yes	BOVA,Habitat,SppObs,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA,HU6
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii		HU6
040179	ST	Ia	Tern, gull-billed	Gelochelidon nilotica		BOVA
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes	BOVA,Habitat,SppObs,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Potential	BOVA,Habitat,HU6
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA,HU6
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA
020063		IIa	Toad, oak	Anaxyrus quercicus		HU6
020002		IIa	Treefrog, barking	Hyla gratiosa		HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040033		IIa	Egret, snowy	Egretta thula		BOVA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040114		IIa	Oystercatcher, American	Haematopus palliatus		BOVA,HU6
040192		IIa	Skimmer, black	Rynchops niger	Potential	BOVA,BBA
040181		IIa	Tern, common	Sterna hirundo		BOVA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA,HU6
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		HU6

To view **All 546 species** View 546

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

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

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams (1 records)

View Map of All Anadromous Fish Use Streams

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE*	Highest Tier**	
C92	James River 1	Confirmed	6		IV	Yes

Impediments to Fish Passage

N/A

Colonial Water Bird Survey (1 records)

View Map of All Query Results Colonial Water Bird Survey

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
Urban, Newport News North, Newport News	1	May 4 2013	1			Yes

Displayed 1 Colonial Water Bird Survey

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

are present. View Map of Bald Eagle Concentration Areas and Roosts

(1 records)

BECAR ID	Observation Year	Authority	Type	Comments	View Map
51	2006 - 2007	Center for Conservation Biology at the College of William and Mary/Virginia Commonwealth University	Winter Concentration Area	Eagle_use Low	Yes

Bald Eagle Nests (2 records)

View Map of All Query Results Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
NN0201	1	May 1 2004	HISTORIC	Yes
NN0202	11	Apr 28 2008	Unknown	Yes

Displayed 2 Bald Eagle Nests

Species Observations (106 records - displaying first 41 , 41 Observations with Threatened or Endangered species)

View Map of All Query Results Species Observations

obsID	class	Date	Observer	N Species	View

		Observed		Different Species	Highest TE*	Highest Tier**	Map
630125	SppObs	Dec 18 2016	Dawn ; Currier	1	SE	II	Yes
627139	SppObs	Apr 5 2016	Dawn Currier; Chris Blake; Melissa Henderson; Robert	1	SE	II	Yes
623204	SppObs	May 1 2015	Dawn; Currier| Chris; Blake	1	SE	II	Yes
623110	SppObs	Oct 8 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
624425	SppObs	Sep 28 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
623146	SppObs	Sep 19 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
624424	SppObs	Jul 23 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
623145	SppObs	Jul 23 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
624254	SppObs	Jul 21 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
624231	SppObs	May 27 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
624421	SppObs	May 23 2014	Dawn ; Currier| Chris ; Blake	1	SE	II	Yes
614364	SppObs	Sep 24 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614363	SppObs	Sep 21 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614362	SppObs	Sep 18 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614361	SppObs	Sep 11 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614355	SppObs	Aug 23 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614354	SppObs	Aug 22 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614353	SppObs	Aug 22 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614352	SppObs	Aug 15 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
614351	SppObs	Jul 22 2012	Susan; Watson| Dawn ; Currier	1	SE	II	Yes
616767	SppObs	Apr 15 2012	M. ; Dever| C. ; Blake	1	SE	II	Yes
616763	SppObs	Apr 4 2012	M. ; Dever| C. ; Blake	1	SE	II	Yes
900010	SppObs	Aug 8 2010	David Colley - Newport News Chief Ranger	1	SE	II	Yes
321990	SppObs	Aug 25 2009	John Kleopfer	1	SE	II	Yes
321989	SppObs	Aug 24 2009	John Kleopfer	1	SE	II	Yes
321119	SppObs	Oct 7 2008	John Kleopfer	1	SE	II	Yes
65796	SppObs	May 18 2000	ALAN H. SAVITZKY (PRINCIPLE PERMITTEE), CHRISTOPHER E. PATTERSEN (COLLECTOR)	1	SE	II	Yes
65792	SppObs	Oct 7 1999	ALAN H. SAVITZKY (PRINCIPLE PERMITTEE), CHRISTOPHER E. PATTERSEN (COLLECTOR)	1	SE	II	Yes
65791	SppObs	Sep 14 1999	ALAN H. SAVITZKY (PRINCIPLE PERMITTEE), CHRISTOPHER E. PATTERSEN (COLLECTOR)	1	SE	II	Yes
57854	SppObs	Jan 1 1998	ALAN H. SANITSKY (PRINCIPLE PERMITTEE), CHRISTOPHER E. PETERSON, DEPT. OF BIOL. SCI. , OLD DOMINION UNIV.	2	SE	II	Yes
54397	SppObs	Sep 22 1997	Alan H. Savitzky, ODU	1	SE	II	Yes

54396	SppObs	Sep 21 1997	Alan H. Savitzky, ODU	1	SE	II	Yes
8876	SppObs	Aug 1 1992	A. H. SAVITZKY	1	SE	II	Yes
55260	SppObs	Aug 14 1991	ROBERT A. S. WRIGHT, DELEUW, CATHER, AND CO.	1	SE	II	Yes
4944	SppObs	Jan 1 1991	Alan H. Savitzky, Old Dominion University	1	SE	II	Yes
55261	SppObs	Aug 22 1979	ROBERT A. S. WRIGHT, DELEUW, CATHER, AND CO.	1	SE	II	Yes
55256	SppObs	Oct 21 1975	ROBERT A. S. WRIGHT, DELEUW, CATHER, AND CO.	1	SE	II	Yes
55259	SppObs	Oct 11 1974	ROBERT A. S. WRIGHT, DELEUW, CATHER, AND CO.	1	SE	II	Yes
4945	SppObs	Jan 1 1900	Alan H. Savitzky, Old Dominion University	1	SE	II	Yes
55145	SppObs	Feb 11 1998		1	ST	II	Yes
3536	SppObs	Nov 16 1985	Div. Natural Heritage	1	ST	II	Yes

Displayed 41 Species Observations

Selected 106 Observations View all 106 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species)

View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Yes
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes
040186		IIIa	Tern, least	Sternula antillarum	Yes

Virginia Breeding Bird Atlas Blocks (4 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
59054	Newport News North, CE	1			Yes
59053	Newport News North, CW	67		III	Yes
59056	Newport News North, SE	37		II	Yes
59055	Newport News North, SW	52		III	Yes

Public Holdings:

N/A

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

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
650	Hampton City	397	FESE	I
700	Newport News City	416	FESE	I

USGS 7.5' Quadrangles:
Newport News North

USGS NRCS Watersheds in Virginia:

N/A

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

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
CB23	Southwest Branch Back River	78	FTSE	I
JL43	James River-Cooper Creek	100	FESE	I

Compiled on 7/2/2021, 10:57:26 AM I1103546.0 report=all searchType= R dist= 3218.688 poi= 37,02,26.3 -76,27,05.8

PixelSize=64; Anadromous=0.020195; BBA=0.037532; BECAR=0.026172; Bats=0.017709; Buffer=0.059809; County=0.065249; HU6=0.074308; Impediments=0.017764; Init=0.08789; PublicLands=0.02224; Quad=0.039323; SppObs=0.282307; TEWaters=0.026597; TierReaches=0.037296; TierTerrestrial=0.087957; Total=1.111566; Tracking_BOVA=0.207952; Trout=0.019479; huva=0.038493

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I 1103546

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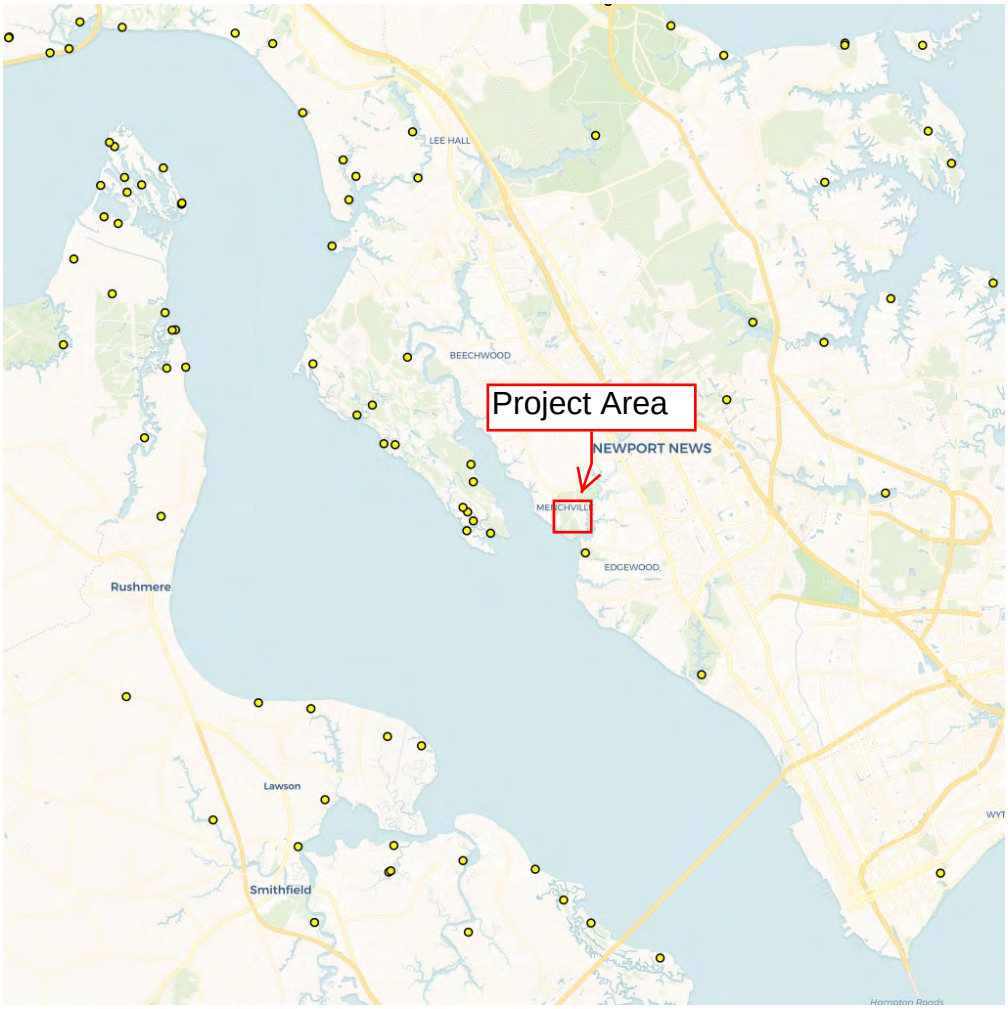
CCB Mapping Portal



Layers: VA Eagle Nest Locator

Map Center [longitude, latitude]: [-76.5387439727783, 37.087809221229406]

Map Link:
https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&zoom=12&lat=37.087809221229406&lng=-76.5387439727783&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 07/02/2021

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the Data Use Agreement to ensure compliance with our data use policies. For additional data access questions, view our Data Distribution Policy, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

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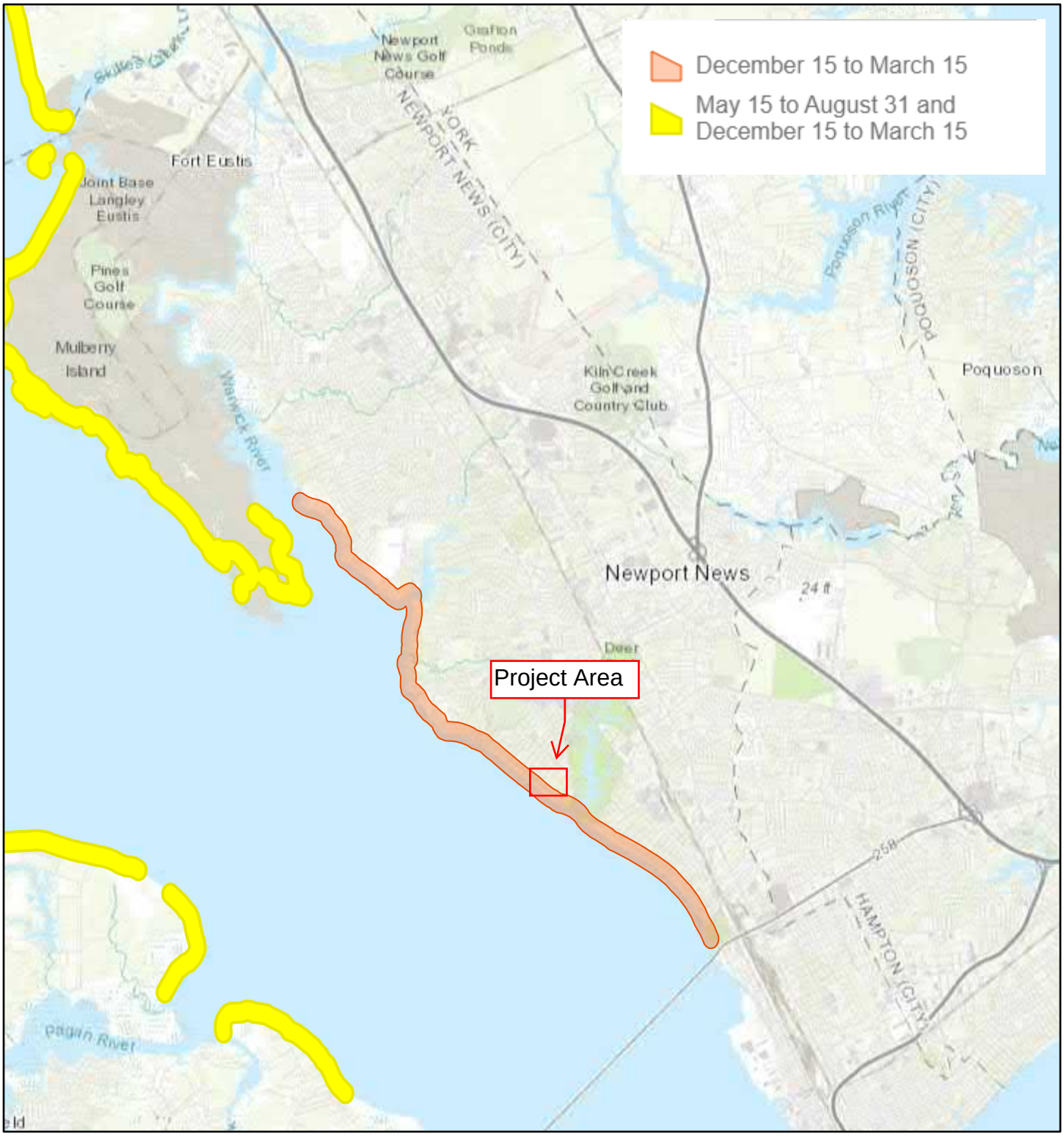
VA Bald Eagle Concentration Areas



July 13, 2020

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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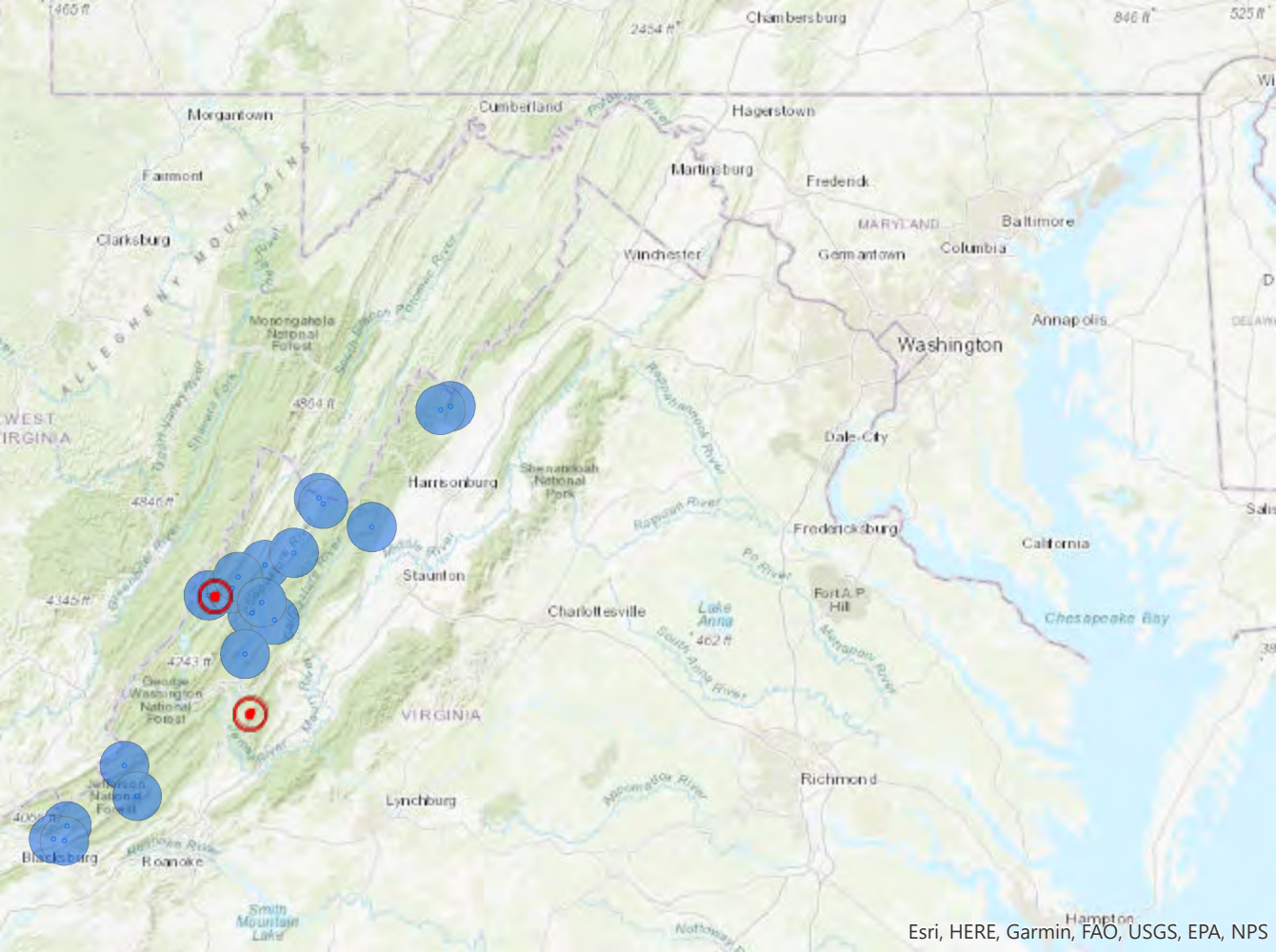
Chambersburg
Morgantown
Cumberland
Hagerstown
Fairmont
Martinsburg
Frederick
Clarksburg
MARYLAND
Baltimore
Winchester
Germantown
Columbia
Annapolis
Washington
Harrisonburg
Dale City
Fredericksburg
California
Staunton
Charlottesville
Fort A.P. Hill
Chesapeake Bay
VIRGINIA
Richmond
Lynchburg
Roanoke
Blacksburg
Hampton
Esri, HERE, Garmin, FAO, USGS, EPA, NPS

Natural Heritage Resources

Your Criteria

County: Newport News (City)

Watershed (8 digit HUC): 02080206 - Lower James River

Subwatershed (12 digit HUC): JL38 - Warwick River

Search Run: 7/2/2021 13:35:39 PM

Result Summary

Total Species returned: 5

Total Communities returned: 1

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
Newport News (City)								
Lower James Warwick River								
REPTILES								
Canebrake Rattlesnake	Crotalus horridus [Coastal Plain population]	Crotalus horridus [Coastal Plain population]	G4T4	S1	None	LE	18	Y
TERRESTRIAL NATURAL COMMUNITY								
Coastal Plain Seasonal Pond (Swamp Tupelo - Overcup Oak Type)	Nyssa biflora - (Quercus lyrata) / Eubotrys racemosus / Carex joorii Forest	Nyssa biflora - (Quercus lyrata) / Eubotrys racemosus / Carex joorii Forest	G1G2	S1S2	None	None	29	Y
VASCULAR PLANTS								
Cuthbert's Turtlehead	Chelone cuthbertii	Chelone cuthbertii	G3	S2	None	None	34	Y
Hazel Dodder	Cuscuta coryli	Cuscuta coryli	G5?	S2	None	None	14	Y
Hairy St. John's-wort	Hypericum setosum	Hypericum setosum	G4G5	S1S2	None	None	16	Y
Rafinesque's seedbox	Ludwigia hirtella	Ludwigia hirtella	G5	S2	None	None	22	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.

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Attachment C: Phase I Archaeological Survey Reports

PHASE I ARCHAEOLOGICAL SURVEY OF THE SUSTAINABLE WATER INITIATIVE FOR TOMORROW JAMES RIVER TREATMENT PLANT RECHARGE WELLS

NEWPORT NEWS, VIRGINIA

DHR Project No. 2020-4124

PREPARED FOR:
HAMPTON ROADS SANITATION DISTRICT
1434 AIR RALE AVENUE, SUITE 203
VIRGINIA BEACH, VIRGINIA 23455

PREPARED BY:
KAYLA MARCINISZYN, MA
SCOTT SEIBEL, MSC, RPA

PRINCIPAL INVESTIGATOR
SCOTT SEIBEL, MSC, RPA

AECOM
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876

MAY 2021

AECOM

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ABSTRACT

Hampton Roads Sanitation District (HRSD) contracted AECOM Technical Services, Inc. (AECOM) to conduct a Phase I archaeological survey of areas of proposed ground disturbance for the James River Treatment Plant (JRTP) monitoring and recharge wells in Newport News, Virginia, in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program and permitted through the U.S. Environmental Protection Agency (EPA) Region 3 Underground Injection Control (UIC) program. The Area of Potential Effects (APE) for the proposed improvements at the JRTP is approximately 9.62 acres in size.

Work was conducted pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Advisory Council on Historic Preservation's (ACHP's) "Protection of Historic and Cultural Properties" (36 CFR 800; U.S. Department of the Interior USDI 2004). The study also conformed to the Virginia Department of Historic Resources' (DHR) *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

Fieldwork consisting of pedestrian inspection and shovel testing was conducted in March 2021 and resulted in the relocation of a portion of 44NN0281 and one isolated find. No evidence of previously recorded sites 44NN0068, 44NN0069, and 44NN0278 was encountered.

The archaeological deposits associated with 44NN0281 within the APE do not have the potential to yield significant information about the nineteenth century occupation of the APE and do not contribute to the National Register of Historic Places (NRHP) eligibility of 44NN0281 as a whole.

It is recommended that the proposed development at the JRTP monitoring and recharge wells project be allowed to proceed without concern for impacts to significant archaeological sites. However, should project designs change to include un-surveyed portions of the property, additional archaeological investigations may be necessary. Additionally, adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

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1.0 INTRODUCTION

Hampton Roads Sanitation District (HRSD) contracted AECOM Technical Services, Inc. (AECOM) to conduct a Phase I archaeological survey of areas of proposed ground disturbance for the James River Treatment Plant (JRTP) monitoring and recharge wells in Newport News, Virginia, in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program and permitted through the U.S. Environmental Protection Agency (EPA) Region 3 Underground Injection Control (UIC) program (Figure 1-1). The Area of Potential Effects (APE) for the proposed monitoring and recharge wells, including the associated utility corridor and temporary construction easement, at the JRTP is approximately 9.62 acres in size (Figure 1-2). The proposed wells, associated utility corridor, and temporary construction easement are part of the same undertaking as the EPA Water Infrastructure Finance and Innovation Act (WIFIA) funded improvements proposed for the JRTP.

Work was conducted pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Advisory Council on Historic Preservation's (ACHP's) "Protection of Historic and Cultural Properties" (36 CFR 800; U.S. Department of the Interior USDI 2004). The study also conformed to the Virginia Department of Historic Resources' (DHR) *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

Fieldwork was conducted in March 2021. Scott Seibel, MSc, Registered Professional Archaeologist (RPA) served as the Principal Investigator, and Kayla Marciniszyn, MA, served as the Field Director. Mary Glenn Krause, Abdul Jones, and Rebecca Sigafoos served as field technicians. Field assistance was provided by Newport News City Archaeologist, Aaron Lamb. Kayla Marciniszyn also served as laboratory technician and director. All supervisory personnel meet the Secretary of the Interior's *Professional Qualification Standards* for Archaeology (36 CFR 61).

Following this Introduction, the report includes six sections of text including: Environmental Setting, Cultural Context, Previous Investigations, Research Design, Survey Results, and Conclusions and Recommendations. The References Cited completes the body of the report. Appendix A, providing the catalog of recovered artifacts, and Appendix B, containing the qualifications of investigators, follow the body of the report.

Legend

Project Area

N

0 500 1,000 Feet

0 100 200 300 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

Project Location

Source: Esri 2021

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 1-1

Legend

- Previously Surveyed
- Well House
- Pipeline Easement
- Temporary Construction Easement
- Wellhouse Easement
- Recharge Wells
- Monitoring Wells

N

0 200 400 600 Feet

0 100 200 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

Area of Potential Effects

Source: VGIN 2020

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 1-2

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2.0 ENVIRONMENTAL SETTING

2.1 GEOLOGY AND TOPOGRAPHY

The project area is in the Tidewater Region of the Lowland sub-province of the Coastal Plain province of Virginia. The Tidewater Region and more generally the Coastal Plain Province of Virginia consists of unconsolidated alternating layers of sediments including sand, sandstone, silt, clay, and gravels overlaying 1,200 meter (m) (4,000 feet [ft]) deep crystalline bedrock reaching 110 miles (mi) westward from the seaboard to the Virginia Fall Line (Virginia Department of Environmental Quality [VDEQ] 2015). The upland terraces are well drained loams and sandy loams underlain by coarse sands (United States Department of Agriculture Natural Resources Conservation Service [USDA NRCS] 2015).

The topography of the region consists of well-drained low relief estuarine terraces, broad rivers, and deeply cut streams. Marine terraces, tidal marshes, and slow meandering streams are common along the broad rivers. The topography of the project area is defined primarily by level terrain with steep slopes down to the James River and adjacent unnamed tributaries. Elevations in the project area range from approximately 20 ft (6.1 m) above mean sea level (amsl) to 29 ft (8.8 m) amsl.

2.2 HYDROLOGY

The project area and vicinity are drained on the west by Flax Mill Creek, a tributary of the James River, and unnamed tributaries of Deep Creek on the east. The James River is located to the south of the project area and vicinity.

2.3 SOILS

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service has mapped six soil units within the boundaries project area (NRCS Web Soil Survey 2020) (Table 2-1 and Figure 2-1).

Table 2-1. Project Area Soils

Symbol	Map Unit Name	Drainage
5	Bethera-Urban land complex, 0-2 percent slopes	Poorly Drained
9A	Craven-Urban land complex, 0-2 percent slopes	Moderately Well
16C	Nevarc-Uchee complex, 6-15 percent slopes	Moderately Well
16D	Nevarc-Uchee complex, 15-50 percent slopes	Moderately Well
21A	Slagle-Urban land complex, 0-2 percent slopes	Moderately Well
26	Udorthents-Dump complex	Moderately Well
28	Yemassee-Urban land complex, 0-2 percent slopes	Somewhat Poorly Drained

Four of the six units consist of urban land complexes. These lands are areas where the soils have been altered or obscured by development, and Udorthents-Dump complex soils are also similarly disturbed by construction. Bethera soils are typically found on marine terraces and are derived from clayey marine sediments. Bethera soils have an approximately 4-inch (10.2 centimeter [cm]) A horizon over an approximately 3-inch (7.6 cm) E horizon overlying B horizon soils. Bethera soils are poorly drained. Craven soils are typically found on marine terraces and are derived from clayey marine sediments.

Nevarc and Uchee soils are also found on marine terraces and are derived from loamy and sandy marine sediments. Slagle soils are also found on marine terraces and are derived from loamy marine sediments. Craven soils have an approximately 7-inch (17.8 cm) thick A horizon over an approximately 2-inch (5.1-cm) thick E horizon overlying B horizon soils. Nevarc soils have an approximately 3-inch (7.6-cm) thick A horizon over an approximately 11-inch (27.9-cm) thick E horizon overlaying B horizon soils. The associated Uchee soils have deeper profiles consisting of an approximately 6-inch (15.2-cm) thick A horizon over an approximately 20-inch (50.8-cm) thick E horizon overlaying B horizon soils. Slagle soils have a thicker A horizon, typically around 9 inches (22.9 cm), but lack an underlying E horizon. All four are moderately well drained.

Yemassee soils are found on marine terraces and are derived from loamy marine deposits. These soils have an approximately 7-inch (17.8 cm) thick A horizon over an approximately 5-inch (12.7 cm) E horizon overlaying B horizon soils. Yemassee soils are somewhat poorly drained.

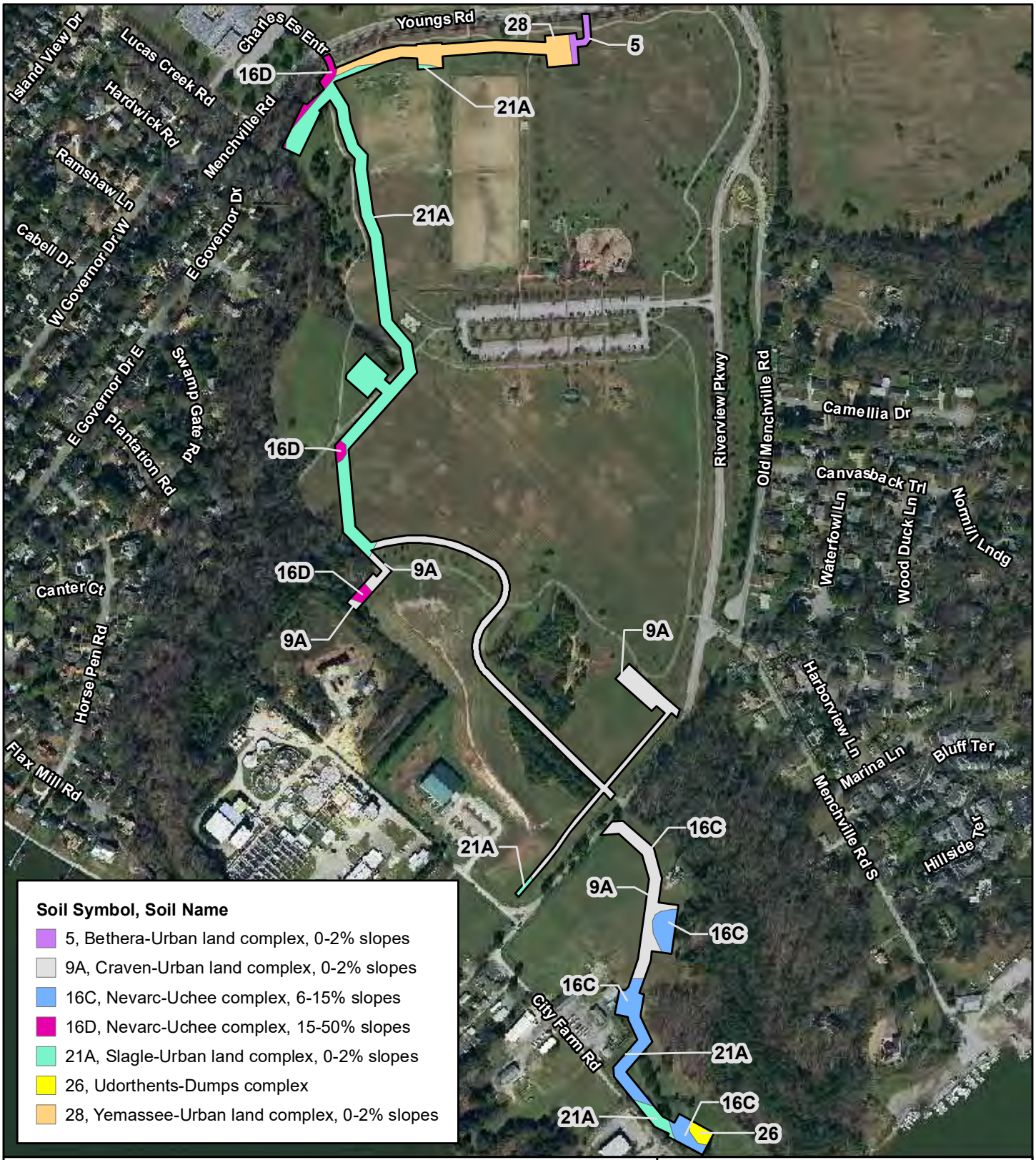
2.4 FLORA AND FAUNA

The natural areas of the project area consist of mixed deciduous maritime forest and estuarine wetland grasses. Tree species include several varieties of hardwoods and pine including: several species of poplar (*Liriodendron* ssp.), oak (*Quercus* ssp.), mulberry (*Morus* ssp.), pine (*Pinus* ssp.), cedar (*Chamaecyperis* ssp.), ash (*Fraxinus* ssp.), and beech (*Fagus* ssp.). Various species of shrubs and other herbaceous plants are present in the understory. The wetland areas have a variety of grasses and several trees and shrubs including: several species of cordgrasses (*Spartina* ssp.), phragmites (*Phragmites australis)*, cattails (*Typha latifolia)*, water chestnut (*Trapa natans)*, shadbush (*Amelanchier canadensis)*, and loblolly pine (*Pinus taeda*) (Chesapeake Bay Program 2012).

A diverse group of mammals are also present along the James River and tributaries including: white-tailed deer (*Odocoileos virginianus*), river otter (*Lontra canadensis*), beaver (*Castor Canadensis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), red foxes (*Vulpes vulpes*), rabbits (*Sylvilagus* ssp.), and squirrels (*Sciurus carolinensis*). There are also a large number of avian species in the area, with turkey (*Meleagris gallopavo*), blue heron (*Ardea herodias*), doves (*Columbidae* sp.) and waterfowl (*Anatidae* spp.) being particularly abundant. Reptiles are also present and include several species of snakes, turtles, and lizards. Over 350 fish species can be found in the Chesapeake Bay and its major tributaries, which include a wide variety of freshwater, anadromous, and migratory fish, as well as a wide range of invertebrate marine animals (Chesapeake Bay Program 2012).

2.5 CURRENT LAND USE

The project area and vicinity consist almost entirely of the Riverview Farm Park and the adjacent JRTP. Most of the project area vicinity is maintained grass, but there are also forested areas, paved and dirt roads, parking lots, sports fields, playgrounds, a cell tower, wastewater treatment facilities, and various buildings.



AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

Project Area Soils

Source: USDA NRCS 2021; VGIN 2020

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 2-1

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3.0 CULTURAL CONTEXT

The DHR has developed cultural contexts which provide a framework for the description and analysis of known and anticipated cultural resources (DHR 2017:107-113). These contexts are the basis for evaluating the significance of resources within the project area. Recognized contexts are organized by geographic region, time/developmental period and theme. The project area is within the Southern Coastal Plain historic context.

3.1 PREHISTORIC CONTEXT

The prehistory of the region is traditionally divided into three major periods known as Paleoindian (10,000–8,000 B.C.), Archaic (8,000–1,000 B.C.), and Woodland (1,000 B.C.–A.D. 1600) periods. The Archaic and Woodland periods are further subdivided into Early, Middle, and Late periods. These periods are characterized by changes in material culture and/or subsistence strategies.

3.1.1 Paleoindian Period (10,000–8,000 B.C.)

The Paleoindian period traditionally begins in North America with the arrival of the first humans from Asia across Beringia, a 1,000-mi wide, ice-age land bridge connecting Siberia with British Columbia and Alaska. Microblade technology similar to that discovered at D'uktai Cave in Siberia (circa [ca.] 16,000 B.C.) has been found in the Yukon (e.g., Bluefish Caves), Alaska (e.g., Tanana Valley sites), and the eastern United States (e.g., Meadowcroft Rockshelter and Cactus Hill; Fagan 2000). The peopling of the "New World" is often debated. A number of additional migration routes into North America have been proposed; future discovery of additional Paleoindian sites and multidisciplinary collaboration (e.g., paleoclimate, genetics, linguistics) will likely aid in understanding of the peopling of North America.

While definitive evidence of human occupation in the Mid-Atlantic region is generally attributed to the Clovis culture with its signature fluted projectile point/knives (PPKs), beginning about 10,000 B.C., traces of earlier occupation are present at a number of regional sites. The Cactus Hill site in southern Virginia (McAvoy and McAvoy 1997), the Meadowcroft Rockshelter site in southwestern Pennsylvania (Adovasio et al. 1998), and the Barton site in western Maryland have all yielded carbon-dates pre-dating Clovis occupation, although no clear diagnostic artifacts have been identified in the earliest deposits at these sites (Wall 2008).

Paleoindian cultures in Virginia are represented largely by isolated surface finds of distinctive fluted projectile points. Brennan (1982:35-37) describes numerous finds in the Coastal Plain province, including at least three on Mulberry Island. However, the finds likely represent small transient groups of peoples moving through the landscape, as opposed to established populations (Gardener 1989; Turner 1989).

More recent models of Paleoindian societies (e.g., Waguespack and Surovell 2003) describe them as very mobile generalist hunter/gatherers dependent on a broad range of natural resources ranging from large prey to smaller fauna and plant resource. Diets almost certainly included some degree of extinct Pleistocene megafauna (e.g., mammoth and mastodon), though these were not likely the prime dietary sources once thought (e.g., Alroy 1998; Boyd 1989). Gardener (1974) describes a regional settlement pattern for these foragers based on access to outcroppings of high-quality stone used in tool making rather than on food resource availability. Jasper outcrops appear to have been favored for quarries and lithic reduction stations. Large multi-use basecamp sites were located in

floodplains near the quarries where there was access to numerous resources. Smaller transient camps were located around second and third order streams (Gardener 1977).

Gardener's (1977) model was based in large part on his excavations of the Flint Run complex sites in the Shenandoah River valley. A similar large sized quarry/basecamp complex was identified in eastern Virginia at the Williamson Site in Dinwiddie County, near the city of Petersburg. The 55 to 75-acre site is one of the largest Paleoindian sites in eastern North America (Barber and Barfield 1989). Surface finds included approximately 175 fluted PPKs and over 1,000 end and side scrapers. Paleoindian stone tools were also identified in buried contexts at the site (Barber and Barfield 1989). A large number of the isolated fluted PPKs found in eastern Virginia have been sourced to the Williamson quarry. Sites like the Williamson quarry may have served as a central nexus for small, far-ranging populations moving through the landscape, collecting resources at locations like Mulberry Island, but tethered to the quarries. These groups would periodically return after collecting resources at locations, like Mulberry Island, and coalesce at the larger basecamp sites (Gardener 1977).

It is worth noting that during the Pleistocene period the continental coastline would have been located further east than it is today. The Chesapeake Bay did not exist in its current configuration at this time, and the tidal tributaries such as the James River would likewise have been lower order streams. Rising sea levels during the Early Holocene period flooded former stream margins leaving only sites located in highland regions exposed (Lowery 2000; 2001).

3.1.2 Archaic Period (8,000–1,000 B.C.)

The Archaic period is conventionally sub-divided into the Early (ca. 8,000–6,000 B.C.), Middle (ca. 6,000–3,000/2500 B.C.), and Late/Transitional (ca. 2,500–1,000 B.C.) periods. The Archaic period generally refers to pre-ceramic sites associated with hunter-gatherers that occupied the emerging deciduous forests of the Eastern Woodlands. Human populations living in the region during the Archaic period were adapting to major changes in the environment.

Early Archaic Period (8,000–6,000 B.C.)

The Early Archaic period is marked by human adaptations to climate change. With temperature rise came the retreat of glaciers, sea-level rise, and changes in the floral and faunal communities (Cleland 1966). These changes manifest in the archaeological record by way of noticeable shift in settlement and subsistence patterns, along with changes in tool kits, reflecting a broader range of resource use.

In the Coastal Plain province, the Early Archaic stone tool tradition is represented by the Palmer and Kirk complexes. Both projectile PPK types are triangular with corner notches and featuring serrated edges (Egloff and McAvoy 1989). The Palmer complex has been dated to the period from approximately 8,000-7,300 B.C., while the Kirk complex has been dated between 7,300 and 6,800 B.C. (Egloff and McAvoy 1989). The Early Archaic toolkit also contained tools such as end and side scrapers, which were also part of the Paleoindian toolkit. Ground stone adzes and other woodworking tools reflect increased woodworking practices (Opperman and Polk 1989; Custer 1989). There was an apparent shift in lithic raw material preferences during the Early Archaic period. At the beginning of the Early Archaic period, there was still a focus on imported stone for tool manufacturing. Tools produced using locally available stone became more prevalent by the time the bifurcate tradition appeared.

Settlement patterns in this period were dictated by the distribution of floral and faunal resources, and are, therefore, scattered across a wider range of environmental zones (Barse and Harbison 2000). The number and distribution of Early Archaic sites across the region likely reflects an adaptation to the abundant and diverse game species that inhabited the rapidly spreading deciduous forests.

White-tailed deer was the most commonly exploited game animal during this period, but analysis of faunal assemblages from other Early Archaic sites indicate that a wide variety of species were exploited (Formica et al. 2009). The easy availability of animal proteins directly led to a population increase (Formica et al. 2009; Barse and Harbison 2000). Employed plants included squash, mash, amaranth, and chenopod, which were all indigenous to the East Coast region (Lowery and Custer 1990).

Custer (1990) interpreted available settlement data as indicating a cyclical settlement system model for the Early Archaic period. In this model, Early Archaic groups began a movement "cycle" at the quarries where they produced their lithic tool kit. This tool kit was then carried with the group as they moved among various camps to exploit available resources. While this interpretation demonstrates the continuity between the "tethered nomadic" system seen in the Paleoindian period, it allows for the incorporation of resource seasonality as a determining factor within Early Archaic settlement systems.

The settlement system in the Coastal Plain became characterized by semi-sedentary base camps located along the confluences of major and tributary streams, typically near wetlands (Opperman and Polk 1989). Smaller, extractive camps were located in upland ridges and near smaller tributary streams. The lands between the James and York Rivers appear to have been used primarily for smaller transient camps, and four such short-term occupations have been previously identified on Mulberry Island (Brown et al. 1986; Higgins et al. 1989; Hodges and Hodges 1994).

Middle Archaic Period (6,000–3,000 B.C.)

During the Middle Archaic period, the Atlantic climatic episode characterized by the continued spread of deciduous forests, an increase in deciduous species, and marked seasonality of plant resources significantly altered the Mid-Atlantic region (Barse and Harbison 2000). The start of the Middle Archaic period coincides with the Altithermal (also known as the Hypsithermal), a significant warming trend. During this time, the effects of sea-level rise following deglaciation were visible; extensive riverine swamps formed, and river and estuary systems took on their modern configurations.

Stemmed and side-notched projectile point forms are characteristic of the Middle Archaic period. Diagnostic PPKs include Stanly, Morrow Mountain, Guilford, Halifax, Otter Creek, and Brewerton series (Coe 2006; Dent 1995; Hranicky 1994; Klein and Klatka 1991). Mid-Atlantic Middle Archaic sites show considerable regional variability in styles. Monroe and Birkett (2012) argue that this variability results from cultural traditions becoming more geographically circumscribed as repeated use of formal group territories became established.

Increased reliance on collecting and harvesting of plant resources also required the developments of a more specialized toolkit to process diverse resources. This included the introduction of ground stone tools, which permitted the exploitation of floral resources in new ways (Chapman 1975; Barse and Harbison 2000).

A rise in the number of Middle Archaic sites is indicative of steady population growth. Settlement patterns of the period are defined by a foraging subsistence strategy that emphasized the use of seasonally available floral and faunal resources (Barse and Harbison 2000). Base camps were no longer located adjacent to lithic sources but were situated near seasonally available resources (Formica et al. 2009). Rising sea levels created numerous freshwater wetlands, swamps, and bogs along the Coastal Plain of Virginia and Maryland. Large Middle Archaic occupations have been identified around Zekeiah and Mattawoman Swamps in southern Maryland and the Dismal Swamp in Virginia as Middle Archaic populations expanded into these newly emerging, ecologically productive environments (Custer 1990).

Nevertheless, the Middle Archaic period is not well represented in the Mid-Atlantic region (Monroe and Birkett 2012). Most period sites have been identified based on surface finds of diagnostic projectile points. However, two key sites are located along the Nottoway River, which is about 40 miles to the southeast of Mulberry Island. McAvoy (1988) points to a notable increase in the use of hickory nuts at the Slade and Doershuk sites in southern Virginia and northern North Carolina (Coe 1964). Characteristic PPK styles from these sites include the stemmed Morrow Mountain and Stanley points (Egloff and McAvoy 1989).

Late Archaic Period (3,000–1,000 B.C.)

The Late Archaic period coincides with the Atlantic Sub-Boreal Transition (ca. 3,000–700 B.C.). This was a warm, dry period during in which open grasslands reappeared throughout parts of the Mid-Atlantic region (Barse et al. 2006). Mouer (1991) divides the Late Archaic into two stages. His Late Archaic stage encompasses the end of the Middle Archaic and continues to ca. 2,500 B.C., at which point there is a shift in settlement and subsistence systems referred to as the Transitional period.

The Late Archaic stage is characterized by continuity with earlier Archaic cultures. This period is characterized by the exploitation of sylvan resources. The Laurentian Tradition (ca. 4,000–2,000 B.C.) began at the end of the Middle Archaic period and continued into the early Late Archaic period. This tradition is represented by Otter Creek, Vosburg, and Brewerton corner-and side-notched PPK types (Ritchie 1980). Other diagnostic PPKs of the Late Archaic period include the Piscataway, Vernon, and Bare Island/Holmes types of the Piedmont Tradition (Steponaitis 1983). However, Mouer (1991) assigns Piscataway and Vernon points to the Early Woodland period.

In the Coastal Plain province, these cultures are exemplified by side-notched Halifax PPKs and a settlement system strongly adapted to upper river terrace woodlands, with extensions into stream bottomland environments (Mouer 1991). Halifax societies consisted of small forest-adapted groups who intensively exploited local resources and developed strong regional variations of their parent cultures. Interactions were limited between neighboring groups (Mouer 1991). In the Coastal Plain province, these cultures are best represented in the Inner Coastal Plain, particularly along reaches of the James and Chickahominy Rivers in Henrico County (Mouer 1991). There are no known sites from this period in the Mulberry Island area.

Mouer's (1991) Transitional period (ca. 2,500–1,000 B.C.) is marked by a shift to riverine settlements. This adaptation is viewed as a response to a rise in sea level between 4,000 and 5,000 years ago. Higher sea levels resulted in the saline cline moving upriver in tidal environments. The movement of the saline cline meant that fresh-water spawning fish had to travel further upstream to spawn resulting in seasonal fish runs in the rivers and streams along the coastal plain. Brackish water estuaries developed in the greater Chesapeake area which encouraged the spread of aquatic

food species, including oysters and blue crabs (Gardner and Curry 1977; Gardner 1982; Barse et al. 2006).

In the James River valley, this period is best represented by the Savannah River culture (ca. 2,200–1,000 B.C.). By this period, the diversity of natural resources being exploited was reflected in the toolkit and the increased number of site types and site locations. Typical of this stage of the Late Archaic period are artifacts that include the multi-purpose, broad-bladed PPKs known as broadspears. In addition to their probable use as a hunting tool, Witthoft (1953) has argued that the broadspear PPKs served as fish processing blades, while Catlin et al. (1982) argue for their use in shaping wooden and bone fishing implements. Other finds from period sites contain scrapers and drills (often fashioned from re-sharpened PPKs), adzes, celts, net sinkers, anvil stones, and steatite bowls (McLearen 1991). Large shallow stone mortars and grinding stones have been found at Piedmont and Coastal Plain province sites, indicating processing of seeds and mast (Mouer 1991).

The steatite bowls from Late Archaic sites represent the first archeologically visible, durable container technology in the Mid-Atlantic. It is believed that prior to the appearance of steatite bowls, the prehistoric inhabitants of the region had been using containers made from more perishable organic materials such as wood or woven baskets (Fagan 2000). The most common steatite vessel form is the shallow, round to oblong, thick-walled bowl with an unrestricted opening and opposing lug handles on the side (Dent 1995). Traditionally, these bowls have been interpreted as cooking vessels used in indirect heat cooking, whereby the contents of the bowl were boiled by the addition of heated stones (Dent 1995; Klein 1997).

Other characteristics of the period are increased population density and increased sedentism. This settlement system is characterized by seasonally occupied base camps and associated smaller resource procurement camps as well as relatively large, seasonally occupied macro-band base camps. Base camps are interpreted as representing seasonally shifting occupations consisting of bands comprised of multiple family groups. Macro-band base camps represent seasonal aggregations of multiple bands at sites that were re-occupied each year (Dent 1995; Mouer 1991).

The subsistence base associated with the Broad Blade Tradition riverine settlement system represents a departure from the earlier Narrow Blade Tradition. Broad Blade groups appear to have focused on riverine and inland wetlands with a particular focus on estuarine environments (Dent 1995; Mouer 1991). Estuarine environments seem to have been the preferred location of macro-band camp sites and were most likely associated with harvesting seasonally available resources such as anadromous fish runs and shellfish beds.

Population growth correlates with the intensification of fish harvests and mast and seed processing. These reliable resources would have supported larger populations in one area for a longer period of time. It is not possible to say at this point whether growing populations led to intensified exploitation of a wider resource base or if resource surplus allowed the population to grow. Most likely the two factors were coeval.

A notably higher frequency of Savannah River components, relative to Halifax components, was found at the Doershuk site (Mouer 1991). The same pattern holds true for much of the Coastal Plain and Piedmont provinces (Klein and Klatka 1991). The largest Late Archaic sites on the James River are the Deep Bottom and Bremo sites, located near Richmond, Virginia. These sites are approximately 5 acres in size and contain communal platform hearth features. Mouer (1991) argues that these reflect locations where populations coalesced during spring and summer fish

runs. Smaller base camps occupied by extended families or small bands, include sites such as Four Mile Creek in Henrico County. Large steatite bowls found at this site suggest resources gathered from extraction camps were processed at the site, since the large bowls would have been impractical to transport to more transient occupations (Gleach 1986).

3.1.3 Woodland Period (1,000 B.C.–A.D. 1600)

The Woodland period is divided into the Early (1,000–500 B.C.), Middle (500 B.C.–A.D. 900), and Late (A.D. 900 – 1600) periods based on changes in ceramic types, lithic technologies, subsistence patterns, and social development. The Woodland period is marked by the introduction of ceramics, significant population growth, and the development of semi-sedentary and sedentary ways of life. Production innovations, as reflected in ceramic types, have become a significant basis for dating Woodland period site components.

Early Woodland Period (1,000–500 B.C.)

There appears to have been little change from the Transitional Late Archaic period and the Early Woodland period. The major distinguishing characteristic is the introduction of ceramic vessels; however, this did not appear to fundamentally change lifeways in the Mid-Atlantic region. Mouer (1991) argues for continued refinement of the cultural trajectories established during the preceding period.

The earliest ceramic types from the area are the steatite-tempered Bushnell wares, which are followed by sand or crushed quartz-tempered Accokeek wares (Egloff 1991). These ceramics are associated with fishtail and corner-notched PPK types. In particular, Accokeek ceramics are often associated with Calvert and Rossville points (Wesler et al. 1981). Pope's creek ceramic can occur in the Early Woodland period, continuing into the Middle Woodland (Egloff and Potter 1982).

Artifacts characteristic of the Early Woodland period include Calvert, Rossville, Potts, and Piscataway PPK types, some of which are also found in Late Archaic contexts (Dent 1995; Hranicky 1991, 1993, 1994; Hranicky and Painter 1989). Other artifact types include drills, perforators, flake tools, scrapers, bifaces, anvil stones, net sinkers, mortars, pestles, manos, metates, groundstone tools (e.g., axes, adzes, celts), ground slate, gorgets, and tools made from animal bone and teeth.

Settlement patterns in the Early Woodland period are similar to those of the Late Archaic. Early Woodland occupations succeed earlier Late Archaic occupations with little to no evidence of a break in occupation.

Sites are typified by large base camps located in riverine settings, especially near the junction of fresh and brackish water streams (Barse and Harbison 2000). Smaller sites generally associated with specialized ventures are found on or near interior drainages. The hearth features found at Late Archaic sites continue into the Early Woodland and pit features for both storage and cooking become much more common at Early Woodland sites (Klein and Klatka 1991). These features are indicative of an increasingly sedentary lifestyle as greater amounts of labor were invested in non-portable processing and storage facilities.

Mouer (1991) has posited that territorial boundaries were becoming more firmly established during the period and that maintenance of group territories was accomplished by means of buffer zones or overlapping frontiers. One such buffer area may have existed around the current project vicinity. There have been no Early Woodland period sites found on Mulberry Island, or in the

eastern portions of the peninsula between the York and James Rivers (Monroe and Birkett 2012). However, surveys conducted along the Route 199 corridor in nearby James City County resulted in the identification of small shell midden sites on the southern bank of the York River (Hunter et al. 1993).

Mouer (1991) describes the Currituck Culture between the mouth of the James and Albemarle Sound, south of the James River. The Currituck Culture sites are characterized by shell-tempered, flat bottomed, beaker-shaped vessels, tubular pipes, beads, and decorative gorgets, which may have been influenced by the Adena Cultures of the Ohio Valley (Painter 1988). Radiocarbon dates from the Currituck sites generally fall within the range of 800–540 B.C. (Painter 1988).

The Currituck ceramics were considerably different from the Marcy Creek type vessels found at most Early Woodland sites in the Mid-Atlantic. Marcy Creek vessels were fashioned to resemble the flat-bottomed steatite Late Archaic vessel forms. In fact, the clay paste of many of the early vessels was tempered with crushed steatite (Egloff and Potter 1982). Marcy Creek wares are typically recovered from sites dated ca. 1,200–800 B.C.

Middle Woodland Period (500 B.C.–A.D. 900)

The Middle Woodland period is not well-defined, and researchers disagree about the exact boundaries of the period. Dent (1995) has referred to this period of "technological homogenization" where "ceramic and PPK variability becomes limited to fewer types" (Dent 1995:235). Despite the presence of fewer ceramic and projectile point/knife styles, the Middle Woodland period represents a continuation and further development of cultural complexity that culminates in the Late Woodland period. In addition, intensification in trade networks over a large region is one of the notable trends evident by the onset of the Middle Woodland period. It is thought that warmer and drier conditions may have prevailed during this period (Kellogg and Custer 1994).

The Middle Woodland period in the Coastal Plain province of Virginia was a period of elaboration of earlier developments. Long-distance contacts and trade networks are indicated by stylistic similarities in artifacts over a broad region, and through the presence of exotic materials at sites. Larger semi-permanent settlements and the possible emergence of an elite class of leaders also points to the development of new ways of managing people and resources (McLearen 1992).

The earliest stages of the Middle Woodland period in the Mid-Atlantic are defined by the presence of crushed quartz or sand ceramics with net impressed exterior surfaces. These ceramics include Broadhead ware in the Delaware Valley, Wolf Net and Colburn wares on Maryland's Eastern Shore, Pope's Creek wares on the Delmarva Peninsula, and Prince George net-impressed vessels in southern Virginia (Barse et al. 2006). By ca. A.D. 200, theses wares are replaced throughout the region by the more homogeneous Mockley ceramics.

McLearen (1992:41) describes a Middle Woodland, Pan-Chesapeake cultural interaction sphere which extended from north of the James River, into northern Maryland, and including the Delmarva Peninsula. Sites participating in the interaction sphere are defined by the presence of distinctive Mockley ceramics. These are hemispherical or cylindrical vessels that taper into a semi-conical base. They are fashioned from shell-tempered clay and decorated with net-impressed or cord-marked exterior surfaces (McLearen and Mouer 1989). Sites from which these vessels have been recovered generally date between ca. A.D. 200 and A.D. 800 (McLearen and Mouer 1989).

Different diagnostic PPK types are associated with the Pope's Creek and Mockley phases of the Middle Woodland period. Rossville and Adena points are found at early Middle Woodland sites in association with Pope's Creek ceramics. Lithic artifacts associated with Mockley ceramics include crudely flaked, side notched and parallel stemmed Selby Bay points or Fox Creek points. These PPK types are followed by terminal Middle Woodland styles such as Jack's Reef corner-notched (Barse and Harbison 2000; Sperling 2008; Wright 1973).

Trade extended beyond the core of the interaction sphere. Mockley ceramics sometimes exhibit zoned punctate decorations reminiscent of Abbot styles found in the Delaware River Valley region of what is now southern New Jersey (McLearen 1992). These sherds are recovered most frequently from sites close to the James River, as well as from sites in the Inner Coastal Plain (McLearen 1992). Square stemmed, lanceolate Fox Creek and Selby Bay style PPKs fashioned from Pennsylvania metarhyolites frequently co-occur with Mockley sherds (McLearen 1992). Finally, exotic materials and artifacts, reminiscent of the Adena mortuary ritual in the Ohio Valley, have been recovered from some sites; though generally from those on the Delmarva Peninsula (Dent 1995). Access to exotic artifacts is viewed by some authors (e.g., Dent 1995) as evidence to the emergence of social ranking.

Artifacts associated with the Early-Middle Woodland Adena culture of the Ohio River Valley have been recovered at mortuary sites in these areas. Grave goods, such as large ovate late-stage bifaces made from Ohio cherts and chalcedony, tubular pipes made from Ohio pipestone, and ornaments made from Upper Great Lakes copper, have been found at distinct mortuary sites (Dent 1995). These sites have been described as "mortuary-exchange centers" by Custer (1984) based on the presence of imported, exotic exchange goods found at mortuary centers lacking any evidence of habitation.

McLearen (1992) proposes the emergence of a system in which the possession of rare goods would have imbued their owners with increased social status. The increased status may have been earned or inherited, but the occurrence of large sites where populations would have seasonally aggregated (e.g., during fish spawning runs) would have provided opportunity for, and required the care of, managers to successfully exploit the resource base.

The Middle Woodland settlement system and subsistence practices are viewed as a transitional period in Mid-Atlantic prehistory between more mobile collectors of the Late Archaic/Early Woodland periods and the fully sedentary villages of the Late Woodland period (Sperling 2008). Middle Woodland period sites from the Coastal Plain include large macro-social unit settlements, moderately sized, seasonal to semi-permanent seasonal base camps occupied by smaller groups, and small foray or specialized resource extraction camps (Potter 1982). The largest sites are usually near tidal estuaries where access to fresh and salt water resources would have been available. Sites like the Great Neck site near Virginia Beach and the 44HT36 and 44HT37 sites at Hampton University (in Hampton Roads), to the southeast of Mulberry Island, include deep, rubbish filled storage pits indicating prolonged occupation (Stewart 1992). These sites also frequently feature dense shell midden deposits. The Maycock's Point site in Tar Bay, Virginia, (approximately 66 kilometers (km) [41 miles {mi}] up the James River from Mulberry Island) features a deep mussel shell midden dating to ca. A.D. 300–800 (McLearen 1992). A large number of Mockley-ware sherds, including some with Abbot-ware-like designs, were recovered from the site.

Smaller sites, like the Plum Nelly site in Northumberland County about 50 miles north of Mulberry Island, were located along streams associated with marshlands and also include shell midden deposits (Potter 1982). In addition to shellfish, the remains of lowland and upland game, fish, waterfowl, and starchy wetland tubers indicate a rich and varied resource base. Stewart (1992) argues that Middle Woodland populations, though not outright farmers or gardeners, most likely tended to and encouraged stands of economically important plant resources.

Late Woodland Period (A.D. 900–1600)

The Coastal Plain during the Late Woodland period is characterized by increased reliance upon agriculture, more sedentary settlement patterns, and increasing political complexity (Turner 1992). The second half of the period is marked by increased warfare. The last of these societies were those described by English settlers in the early seventeenth century.

Late Woodland sites in the Coastal Plain province are identified by the presence of small triangular and pentagonal PPKs (most likely used with bow and arrow), chipped stone blades, ground stone axes and pipes; shell beads, pendants and gorgets; bone tools like fish hooks and pins; as well as rare exotic materials such as copper beads and pendants (Turner 1992). Ceramics from period sites are shell-tempered, globular vessels with plain, fabric impressed or incised surfaces. These are collectively known as Townsend wares, and their distribution closely mirrors that of the Middle Woodland Mockley ceramics. The distribution of Townsend wares becomes restricted in the later part of the period, as ceramic production became more regionalized, and trade decreased (Turner 1992).

While trade between neighbors might have become restricted, long distance exchange of exotic materials (possibly relating to elites) continued. For example, steatite from West Virginia was used to carve smoking pipes, and at least some of the copper artifacts may be sourced to Great Lakes region quarries (Turner 1992). Potter (1989) described a shell gorget discovered in Stafford County in 1869, as being decorated with an incised weeping eye motif common in the iconography of the Mississippian chiefly societies stretching from Georgia to Oklahoma, and as far north as southeastern Wisconsin. Specialized goods were also produced locally. Turner (1992) describes a possible shell-bead workshop at the Great Neck site near Virginia Beach. Shell dust paste, shell cores, and lithic microdrills were all recovered from the workshop area. The refined shells may have been exported out of the area but may have also been used by local elites. For example, Powhatan's preserved mantle features thousands of marginella shell beads sewn into patterns on a cloak fashioned from four sewn deer hides (Potter 1982). Similarly, the "Great King of Great Neck" burial featured over 15,000 shell beads in a child's grave (Turner 1992:117).

Late Woodland peoples were horticulturists and agriculturalists who relied heavily upon tropical cultigens. An example of early use of tropical cultigens (maize, beans, and squash) exists in the form of cucurbit and legume seeds found at the Reynolds-Alvis site in southern Virginia. The seeds were found in a pit feature radiocarbon dated to ca. A.D. 920 (Gleach 1986). Ethnohistoric data indicate that tropical cultigens comprised a large part of local diets, and Turner (1978) suggests the heavy reliance on cultigens may have coincided with local over-exploitation of game. At the Great Neck site, remains of cultigens were identified from 54 percent of all flotation samples (Turner 1992).

Site types from the period range from small extraction camps, agricultural hamlets and dispersed villages, to larger villages (both nucleated and internally dispersed), sometimes with palisades. Potter's (1982) survey of the Coan River drainage in Northumberland County identified two

general settlement trends. During the first half of the Late Woodland (ca. A.D. 900–1300) the formerly nucleated Middle Woodland populations had dispersed into long arrangements of farming hamlets located along the Coan River's banks. This settlement pattern would have facilitated self-sufficient agricultural families. After A.D. 1300, the society began to coalesce once again into large mostly sedentary, sometimes internally dispersed villages supported by briefly occupied resource extraction camps.

The nucleated, palisaded villages are characterized by a circular palisade wall enclosing a series of elongated circular wooden post structures arranged around a ring of storage/trash pits which encircles a small open space (Dent 1995). The Late Woodland component of the Great Neck site for example has large palisade posts forming a defensive perimeter around a nucleated village (Egloff and Turner 1984).

The internally dispersed village settlement type is characterized by widely separated residential structures dispersed within a core area and is associated with Townsend/Rappahannock ceramic wares (Potter 1993). These settlements are not bound by a palisade wall and individual residences may be nucleated or widely dispersed over multiple acres but are not as rigidly organized and are more widely separated than those found at villages sites bound by palisade walls (Turner 1992). Examples of this type of settlement include the White Oak Point site in Westmorland County and the Boathouse Pond site in Northumberland County (Potter 1982). These types of sites have a wider distribution throughout the Coastal Plain compared to the palisaded villages (Turner 1992).

In addition to villages, hamlets, and specialized extraction camps, the Late Woodland period archaeological record includes large ossuary sites. Large ossuaries containing human remains and few grave goods have been found throughout the Mid-Atlantic (Dent 1995). Exotic items, such as those found in Early and Middle Woodland period mortuary contexts, are absent from Late Woodland ossuaries. The ossuary tradition involved the disinterment, bundling, and re-interment of individuals into a single burial. More than 300 individuals have been identified in 25 ossuary sites located between the James and York Rivers (Turner 1992). Individual burials appear to have been far less common (Dent 1995). One of the largest concentrations of single internments was found at the Hatch site in Prince George's County near the city of Petersburg (Peebles 1983). The site also included over 100 ritual dog burials, two of which were associated with articulated human forearms.

The coalescence of settlements into larger villages corresponds to developing social hierarchies and possibly warfare. The former is best known from the ethnohistoric record of the late sixteenth and early seventeenth centuries. The Powhatan chiefdom was perhaps the most complex and widespread in the region. It had developed only decades prior to the establishment of Jamestown by absorbing many of the smaller local polities (Feest 1978; Turner 1992). The chiefdoms were inherently short-lived and unstable, and lacked the material signatures of ranked societies from elsewhere (e.g., monumental architecture, an elaborate mortuary tradition for the elites in southeastern societies).

The rise of elites and the introduction of a reliable food source coincided with increased warfare in the area. Not only did fortified villages become more common, but less porous regional boundaries appear to have formed. Archaeologically, this is visible in the restricted range of the formerly widespread Townsend wares, which are found only in what were historically known as Powhatan territories by the end of the Late Woodland period (Turner 1992). In the lower reaches of the James River valley, a sand tempered type known as Roanoke ware replaced the Townsend

wares (Egloff and Potter 1982). Inter-tribal warfare also is evident following European contact, and in the century preceding it. For example, Feest (1978) writes of the Powhatan expansion at the end of the sixteenth century, and of the depopulation of the Virginia Peninsula by Chesapeake tribes shortly before 1607.

3.1.4 Contact Period (ca. A.D. 1600)

The Contact period generally marks the entrance of Europeans into North America. Early exploration of the Chesapeake Bay area began in the late 1500s. Shortly thereafter, in 1608, Captain John Smith documented contacts with local populations in the Chesapeake estuaries.

Native American culture at the time of contact was a continuation of the Late Woodland lifeways. Artifact assemblages and site types from Contact period are not unlike those from Late Woodland sites, with the exception of the presence of variable amounts of European-manufactured goods or objects fashioned from repurposed European materials (Hodges 1993). These include brass gorgets, English and Dutch shell and glass beads, copper and brass kettles, as well as axes and knives, among others. For example, excavations at the Potomac Creek site in Stafford County, led to the recovery of glass beads, copper and lead buttons, hawk bells, copper chains, scissors, an abacus and other copper ornaments, from within a palisaded Late Woodland village (Hodges 1993). Down-the-line exchange with other Native American groups meant that access to European goods often preceded contact with actual Europeans (Hodges 1993). The European goods and materials did not dramatically affect existing lifeways, following their incorporation into existing indigenous cultural systems (Hodges 1993).

The Coastal Plain is occupied by Late Woodland societies with many known names. The largest and most socially complex of these was the Powhatan paramount chiefdom. The Powhatan chiefdom was centered at the confluence of the Pamunkey and Mattaponi Rivers, near the headwaters of the York River, and extended southeast along the James River and north to the Rappahannock (Turner 1992). Mulberry Island was part of Kecoughtan territory, a Powhatan vassal (Rountree 1993). The Chesapeake and Nansemond, living on the south side of the lower James River, were independent and smaller chiefdoms. They are associated with the Roanoke wares (Turner 1992).

European exploration and settlement of the Middle Atlantic area continued through the 1600s. Relations between the Native Americans and the Europeans were marked by periods of peaceful coexistence interrupted by times of tension and hostility. By the 1650s, the Europeans had taken an aggressive role in claiming lands and driving out the Native Americans. Disease and warfare virtually exterminated the extant cultures, and those people that survived eventually were forced out of their homelands or integrated into European society (Hodges 1993).

3.2 HISTORIC CONTEXT

VDHR (2003) has developed eight historic periods that form the basis for the development of historic contexts. These periods and themes reveal the patterns of historic development both at the local and state levels and aid in the identification and evaluation of archaeological resources. The Settlement to Society period (A.D. 1607-1750), the Colony to Nation period (A.D. 1751-1789), the Early National period (A.D. 1790-1829), the Antebellum period (A.D. 1830-1860), the Civil War (A.D. 1861-1865), the Reconstruction and Growth period (A.D. 1866-1916), The World War I to World War II period (A.D. 1917-1945), and the New Dominion period (A.D. 1946-Present).

3.2.1 Settlement to Society Period (A.D. 1607–1750)

The lower reaches of the James River were first described by Captain John Smith in 1608 (in Captain John Smith Four Hundred Project 2015). He described a 3-acre plain and a "little Ile fit for a Castle" connected by a 60-yard neck. Upon the plain, Smith notes the Kecoughtan town of 18 houses, which is shown to be in the vicinity of modern Hampton, Virginia, on Smith's 1624 map of the Chesapeake Bay.

By Royal Grant, Captain Samuel Mathews established a large plantation of over 2000 acres on land between Deep Creek and the Warwick River on Blunt Point (Nugent 1939 I: 4). He had built a house on the tract of land by 1626, naming it "Mathews Manor," eventually building a tobacco storage house on the plantation grounds by 1633 (Mcknight 1959: 195). The growing plantation population needed to have a place to gather for religious worship, and the Debigh Baptist Parish Church was built 3/8ths of a mile southwest of the plantation on the Warwick River (Mason 1949). Captain Mathews continued administration of the plantation and started a family in the new royal colony. By 1630 he had a son, Samuel Mathews, Jr. who would join his father on the Governor's council in 1656 and eventually become governor in 1658. Because there were no wills for the large plantation, it is likely the land was owned in fee tail, in which the descendants gain access rights to the property but were not able to sell the land or grant it to another outside of the family line though a will. If the land was entailed, it would not have appeared in the wills of Samuel Mathews descendants.

On March 22, 1622, the Powhatan, Chickahominy, Wicocomoco, Piscataway, and Nacochtank grew weary of frequent English efforts to control the indigenous population and launched raids on the English settlements stretching the James River. Over 350 English colonists were killed in the region (Feest 1978). Among the English participants in this conflict was Captain Samuel Mathews, who was appointed to the Governor's Council during the conflict in 1625 (Fausz 1988: 98). The attack failed to fully dislodge the English colonists from Virginia and led to frequent warfare for the remainder of the 1620s and 1630s. A second concerted attack in 1644 against 15,000 English and their Accomac and Rappahannock allies failed as well, and the resulting treaty expelled the Native populations from all lands between the York River in the north to the Blackwater River to the south and west (Feest 1978). The project area was likely within Samuel Mathew's patent, which extended along both sides of Deep Creek (Nugent 1934). Over 2,200 acres in the area of Blunt Point had been patented by 1627 (Jester 1961).

Throughout the seventeenth century, tobacco farming was the economic lynchpin of the Virginia colonies, and tobacco plantations were the primary settlement type in the colonies. Each tobacco plantation was a self-sufficient village, staffed and occupied by indentured servants, and later slaves (Horn 1998). Menard (1988) argued that the Headright indentured servitude system began to falter by the middle of the seventeenth century, as conditions for the servant class improved in England. As a result, Chesapeake Bay landowners began to rely increasingly upon enslaved labor to manage the difficult work of tobacco farming.

Many of the individuals living in the Virginia colony in the mid-seventeenth century were indentured servants or slaves. Interclass strife, continued Indian attacks, and perceived mismanagement by the colonial government led to a rebellion in 1676, headed by Nathaniel Bacon. Bacon's Rebellion was an armed uprising of all classes against the rule of Governor William Berkley (Webb 1995). The armed insurgents marched on Jamestown and torched the capital. Intermittent fighting continued into 1677. Berkley was recalled, but the colony was placed under

more direct Royal oversight (Webb 1995). Twenty-three of the rebel leaders were executed, and class segregation became more strictly enforced. Cooper (2000) argued that participation of indentured servants and slaves in the rebellion contributed to the growing institution of racially based slavery as a means for landowners to control a portion of the non-landowning population. The rebellion also strengthened xenophobic feelings towards Natives remaining in the area, and remaining populations of Appamatuck, Chicahominy, and Pamunkey were consigned to reservations (Feest 1978).

Through the Towns Law of 1691, Warwick Towne was established with 50 acres of land purchased from the estate of Samuel Mathews prior to the law. This land was at the mouth of Deep Creek and the Warwick River. A town site was established and subdivisions and lots were laid out. Eventually a courthouse, jail, a tavern, and several houses were built. The new Warwick Towne was still isolated as compared to the larger towns of Hampton, Portsmouth, and Norfolk and never had a large number of people, still isolated in the rural surrounding. Warwick Towne was not included in the Town Law of 1705 that establishing boroughs and ports (McKnight 1959: 194).

Mathews Manor was a successfully run plantation with several industries in operation including: shoemaking, weaving, a blacksmith, and a distilling operation producing naval stare goods such as turpentine and pine tar. The land was purchased by the Digges estate in 1720 after which the Denbigh Plantation was founded with a new home built at what is now 12 Governors Drive, Newport New, VA (Plantations Neighborhood Association [PNA] 2013). The plantation continued to prove productive in the rural economy of Warwick County up until the Revolutionary War (McKnight 1959: 196).

Small towns, like Yorktown, Williamsburg, and Hampton began to grow during the late seventeenth century. The growth of towns also led to the development of local cottage industries, such as brick making in Yorktown (Richter 2000). As more goods became available from local manufacturers, and from increasingly developed trade routes with England and continental Europe, elites began to acquire more and higher quality goods (Monroe and Birkett 2012). The distinction between elite and commoner became more pronounced and rigid by the middle of the eighteenth century.

3.2.2 Colony to Nation Period (A.D. 1751–1789)

This period is marked by the development of Georgian (i.e., modern) worldviews and the surge of institutionalized slavery. Monroe and Birkett (2012) follow Deetz's (1996) argument that, by the mid-eighteenth century, Enlightenment philosophies about an ordered universe were materially manifest in new concepts of design and in social segregation by race, class, and sex. Monroe and Birkett (2012) point out that the shifting worldview could be archaeologically manifest in the form of symmetrical and ordered Georgian architecture, contrasts in the quality (and not just volume) of material goods found at common and elite households and shifts in the organization of household space into discreet units. Warwick County's general level of wealth can be indirectly measured by the volume of enslaved peoples living there. By 1775, over 60 percent of the county population was black and largely enslaved, and by 1782, 84 percent of households had at least one enslaved occupant (Richter 2000).

During the Revolutionary War, the capital of Virginia was moved from Williamsburg to Richmond, and the surrounding area, including Warwick County, began to decline economically and in population. Larger plantations were subdivided into smaller holdings, and cross-river commercial traffic decreased. This trend continued to affect the economy of Warwick after the

Revolutionary War, with commerce moving to larger Chesapeake Bay cities like Baltimore and Norfolk (McKnight 1959: 199).

Little fighting took place along the James River and in Warwick County. British ships patrolled the James River and skirmishes occurred at Warwick Courthouse. No fighting occurred in the Warwick River area though a detachment of Warwick Militia served with Lafayette's troops during the Yorktown campaign (Richter 2000).

In 1781, Benedict Arnold led British raiders into Richmond and Portsmouth (Lengel 2005). In March of that year, British General Phillips took over the forces and continued raids into the Virginia Piedmont and attacked Petersburg. The forces were preparing to burn Richmond when forces led by the Marquis de Lafayette arrived and the British withdrew to Petersburg (Lengel 2005). In May of 1781, General Cornwallis took over command of the British forces in Virginia and prepared to attack Lafayette. When Lafayette withdrew from Richmond, Cornwallis moved his forces east, where he was ordered to construct defenses at Yorktown for a Royal Navy port (Grainger 2005). Cornwallis was pursued by Lafayette, while, at the same time, forces led by George Washington and Comte de Rochambeau left New York to link with a French landing force commanded by General De Grasse headed to invade the mouth of the Chesapeake (Grainger 2005). On September 5, De Grasse's invasion fleet defeated the Royal Navy fleet during the Battle of Chesapeake, and Cornwallis found himself surrounded at the newly constructed semi-circle of earthen redoubts constructed at Yorktown, with no means to escape by sea. In Late September 1781, Washington and Rochambeau's troops arrived at Williamsburg (Lengel 2005).

Cornwallis' 9,000 men set up defenses along a hemispherical series of redoubts surrounding the southern side of the town of Yorktown. Washington meanwhile had command of nearly 19,000 men (Lengel 2005). The siege began with the allied occupation of the abandoned outer earthworks, and artillery bombardments of the British positions. The British returned heavy artillery fire onto the allied batteries, causing moderate casualties (Lengel 2005). On the night of October 14, French and American troops stormed the redoubts, inflicting heavy casualties. The forces then established positions that allowed them to shell the town itself (Lengel 2005). The British attempted to escape by boat to Gloucester Point, on the north bank of the York River, but were unsuccessful. On the morning of October 17, 1781, negotiation began, and Cornwallis surrendered his remaining forces (Lengel 2005).

Following the Battle of Yorktown, members of the Warwick Militia were sent to dismantle the Yorktown earthworks to ensure that they would not be retaken by the British (Richter 2000). However, the British army would prove incapable of mustering a capable fighting force in the colonies after Yorktown. Yorktown was the last major battle of the Revolutionary War and a formal peace was drafted by November 30, 1782, and signed September 3, 1783 (Lengel 2005).

3.2.3 Early National Period (A.D. 1790–1829)

The decline of the plantation system in Warwick County continued after the Revolution. A sharecropping system developed as landowners continued to move west to the Richmond area and beyond. The former plantation lands were subdivided and rented to tenant farmers, who worked the smaller plots along with enslaved peoples (some owned by the wealthier sharecroppers) (Monroe and Birkett 2012). In nearby Elizabeth City County, more than one third of the land was owned by absentee landlords (Monroe and Birkett 2012). Though British foraging parties made incursions into Warwick County during the war of 1812, there were no major battles during that conflict (McKnight 1959: 199).

Agricultural lands were used to grow mixed crops for subsistence and market sale. The overall economic activity remained ongoing in the larger cities leaving Warwick Towne to be abandoned by 1807. The maintenance of a rural character of the county allowed the sale of the 2,700-acre Denbigh Plantation to the Young family in 1810 (PNA 2013). Farmsteads featured simple earth fast houses and root cellars. Privies were uncommon, and refuse was deposited in sheet middens or thrown off of bluffs, rather than buried in storage pits (Monroe and Birkett 2012).

3.2.4 Antebellum Period (A.D. 1830–1860)

Economic conditions in Warwick County began to improve during the 1830s and 1840s. Improvements in farming techniques allowed the land to produce higher crop yields (Rosenthal and Monroe 2008). Mills and small manufacturing factories were established in local towns. The farmers became less self-sufficient as growing urban markets began to provide inexpensive home goods and supplies. Populations in Warwick County peaked around 1,740, still very small as compared to the larger tidewater communities (Monroe and Birkett 2012).

Warwick County changed very little in this period, remaining a rural community of the Tidewater. Most of the small farm lots were still occupied by tenant farmers and enslaved peoples. Monroe and Birkett (2012) describe a typical farm as consisting of a main house, kitchen, barn, corn house, meat house, and slave-quarters. Buildings were of frame or log construction, and often in a state of disrepair on poorer lots where sharecroppers could not afford the upkeep of non-essential structures (King 1994).

3.2.5 The Civil War (A.D. 1861–1865)

The Peninsula became geographically prominent in the early years of the American Civil War. The Peninsula Campaign, an early attempt by Union Armies to capture Richmond, saw fighting from Yorktown to the outskirts of Richmond between March and July 1862 (Sears 1992). Despite the Union's numerical and logistical advantages, tepid Union command led to Union withdrawal from the Peninsula (Sears 1992).

In May of 1861, Confederate Major General John Bankhead Magruder was ordered to build fortifications along the Peninsula to protect Richmond from Union attacks from the east (Sears 1992). He constructed three lines of defenses. The first was at Big Bethel from Deep Creek to the Poquoson River. The second line ran on the Warwick River from Yorktown to Lee's Mill, and also included fortifications on Mulberry Island meant to guard against vessels sailing down the James River. The third line of fortifications connected College and Queens Creeks east of Williamsburg (Monroe and Birkett 2012).

Fortifications in the area included a marine barricade of four barges sunk at the mouth of the Warwick River between Mulberry Island and the Peninsula. Additional fortifications included rifle lines further south at Milner's Farm and on the Warwick River side of the island; underwater obstructions at the mouth of the Warwick River (44N0065); an elevated earthwork, likely for a mortar as well a Confederate encampment on Deep Creek (44NN0051); a fortification at the mouth of Deep Creek (44NN0278) (Higgens et al. 1992); and a fortification at Land's End, at the southern tip of the island (Monroe and Birkett 2012). No fighting took place at Mulberry Island or the area around the former Warwick Towne on the Peninsula.

The Union Army of the Potomac landed on the Peninsula at Fort Monroe in March of 1862 and began to advance towards the Warwick River defenses near Yorktown (Sears 1992). Union General McClellan greatly overestimated the strength of Magruder's 13,000 men, assuming a force

of around 100,000. McClellan thus halted his advance to prepare a siege of what he thought was a heavily defended Yorktown (Sears 1992). Neither army pressed an attack, and a standoff ensued as Confederate reinforcements began to arrive in April (Sears 1992). The reinforcing troops were commanded by General Joseph Johnston, commander of the Army of Northern Virginia. Johnston did not find the Warwick line to be a favorable position and withdrew the Confederates closer to Richmond. McClellan's army pursued the Confederates and engaged at Williamsburg but failed to stop the withdrawal to Richmond (Sears 1992). The Confederate fighting retreat continued to the outskirts of Richmond.

In the final days of May 1862, the Confederate forces turned and attacked the Union army at Seven Pines. The battle halted the Union advance and forced McClellan to redeploy his forces, which allowed the Confederates to strengthen their defenses around Richmond (Sears 1992). By late June, fierce attacks by the Confederates (the Seven Days Battles) unnerved McClellan, who pulled his troops back to The Peninsula. Early in July, President Abraham Lincoln ordered McClellan to withdraw his troops back to Washington (Sears 1992). There was no significant in Warwick County for the remainder of the war.

3.2.6 Reconstruction and Growth Period (A.D. 1866–1916)

Few things changed on the Peninsula in the years immediately following the Civil War. Small dispersed farmsteads continued to dot the landscape of most of Warwick county (McKnight 1959). This began to change with the upswing of commercial activity following the arrival of the Chesapeake and Ohio railroad in the 1880s. The City of Newport News grew around the rail terminus after the rail company purchased 18,000 acres in the area (Monroe and Birkett 2012). Part of the development included the building of wharves and shipping terminals, which spurred industrial and commercial growth, and the beginning of the area's ship building industry (Rosenthal and Monroe 2008). The population of Warwick County tripled by the 1890s with many formerly enslaved peoples resettled on Mulberry Island by the Bureau of Refugees working as tenant farmers (Rosenthal and Monroe 2008).

During this period, a portion of the Young property was purchased by the founders of the local Mennonite Colony (PNA 2013). The Mennonite Colony was founded by I.D. Hertzler and D.Z. Yoder from Pennsylvania and Daniel Schenk from Ohio. The Colony was first established in 1897 and remains active in the community (Warwick River Mennonite Church 2020). Most of the area on the Peninsula remain largely rural, despite the growth of the City of Newport News. Hudson Mench, another settler from Pennsylvania, purchase a large tract of land from the Young family between deep Creek and Lynch Creek (Newport News Department of Planning and Development 1989). He was able to run a successful lumber business and post office at this location. In 1918 the family sold 251 acres of land to the city of Newport News for the establishment of a prison and farm facility. The area now known as Menchville is named after Hudson Mench (Newport News Office of Planning and Development [NNOPD] 1989).

3.2.7 World War I to World War II (A.D. 1917–1946)

The area retained a rural character through the first half of the twentieth century. The land along deep Creek was purchased by the City of Newport News became a prison and farm by the 1930s. across the Warwick River, in 1917–1918, the U.S. Army purchased the land owned by the Davis and Kimpton Brickyard to begin construction of Camp Eustis (Monroe and Birkett 2012). Fort Eustis on Mulberry Island was an important training and logistics center for the military during the Second World War. This made an integrated industrial complex in the Tidewater region vitally

important. The ensuing economic boom required the building of new homes to house the growing population.

With the establishment of a large military base much of the formerly rural landscape of Warwick county needed to be put to use as housing for the necessary support population. Hundreds of new homes were built to house the growing population, numbered at over 9,00 in 1940 (McKnight 1959), with businesses opening to service the new arrivals. Part of the growth of the county and the Tidewater Region in general required support facilities. The Hampton Roads Sanitary Division was established through two subsequent charters in 1938 and 1940 with a mandate to build and modernize the stormwater and sewage management of the Peninsula (Lillis 2015). The HRSD eventually built the James River Treatment Plant at the confluence of Warwick River and Deep Creek.

3.2.8 The New Dominion (1946-Present)

Warwick County and Newport News continued growing in the post war years. The area became an import region for military agencies and facilities and the support industries required. The growth boom increased in speed and intensity after the war years, the population of Warwick county had reached over 50,000 people by the early 1950s. The growth of Warwick County and Newport News required a new governmental arrangement. The citizens of the county resisted the idea of being annexed by the City of Newport News in the distant south of the county, so in 1952 it was decided, by referendum, to make the County of Warwick and the City of Newport News a single entity, Newport News (McKnight 1959).

Newport News continues to be an important community not only in support of the government facilities in the area (Fort Eustis, Langley Air Force Base, and the Norfolk Naval Shipyard) but also an important hub in industry and technology. The entire county has undergone drastic change and dynamic growth in the past three quarters of a century.

3.2 PROJECT-SPECIFIC HISTORY

Due to the loss of so many Warwick County legal records during the Civil War, it is not possible to compile a complete chain-of-title the property. However, it is known that the project area was most likely a portion of land granted to Samuel Mathews by Royal Decree in 1619 (Nugent 1939). Some fifty acres near to the project area were sold from the Mathews' estate for the purpose of forming Warwick Towne along Deep Creek. No maps of Warwick Towne are known, and the size and footprint of the settlement remain unknown. Though the settlement was described as small and was abandoned by 1807, there could have been buildings from that period within the project area. The 1807 Madison Map of Virginia does, however, identify the location of the courthouse on the east side of Deep Creek (Figure 3-1). When the plantation was acquired by the Digges estate in 1720, the project area likely changed hands as well. The property again changed hands when it was purchased by the Young family in 1810 (PNA 1983). No record or evidence of any buildings or structures from these early historic periods could be found.

An 186(?) Military Map of a Part of the Peninsula indicates the southeast portion of the project area intersected with the general location of a military camp and earthworks (Figure 3-2). A portion of the land was sold to Hudson Mench in the late 1860s, though the size and shape of the tract was not identified. The 1882 Navigation Chart of the James River shows a road running through the east-central portion of the project area, as well as another road running through the northern portion of the project area. The poor resolution of the 1882 Navigation Chart of the James River makes it

difficult to determine if structures are depicted on the map. There are what are presumably open fields on the east side of Deep Creek with small black dots that could be representative of a structure in that location. There is a small black dot that could potentially be a structure documented in the southwestern section of the APE on what is now Riverview Parkway (Figure 3-3).

By 1907 the community known as Menchville is labeled on the 1907 Yorktown USGS Quadrangle (Figure 3-4). It is known that Mench sold 251 acres to the City of Newport News in 1917 for use as a prison farm. By the 1930s the prison farm was in operation over most of the land sold by Mench (NNOPD 1989). A possible dirt or gravel road associated with the Newport News Prison Farm is present within the project area and can be seen on the 1950 Mulberry Island USGS Quadrangle (Figure 3-5). The land remained in prison use until 1962 when over 30 acres of land was purchased by the HRSD for the construction of the JRTP. The JRPT was completed in 1967 and is mapped on the 1971 revision of the 1965 Mulberry Island USGS Quadrangle (Figure 3-6). Parts of the project area within the former Newport News Prison Farm became part of the Riverview Park after the Prison Farm permanently closed in 2015 (Dujardin 2015).

Legend

Approximate Project Location

N

0 5,000 10,000 Feet

0 1,000 2,000 3,000 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

1807 Madison Map

Source: Madison 1807

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 3-1

Legend

APE

N

0 1,000 2,000 Feet

0 200 400 600 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

186x Military Map of a Part of the Peninsula

Source: Worret 186x

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 3-2

Legend

APE

N

0 500 1,000 Feet

0 100 200 300 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

1882 Navigation Chart
of the James River

Source: USCGS 1882

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 3-3

Legend

APE

N

0 500 1,000 1,500 Feet

0 250 500 Meters

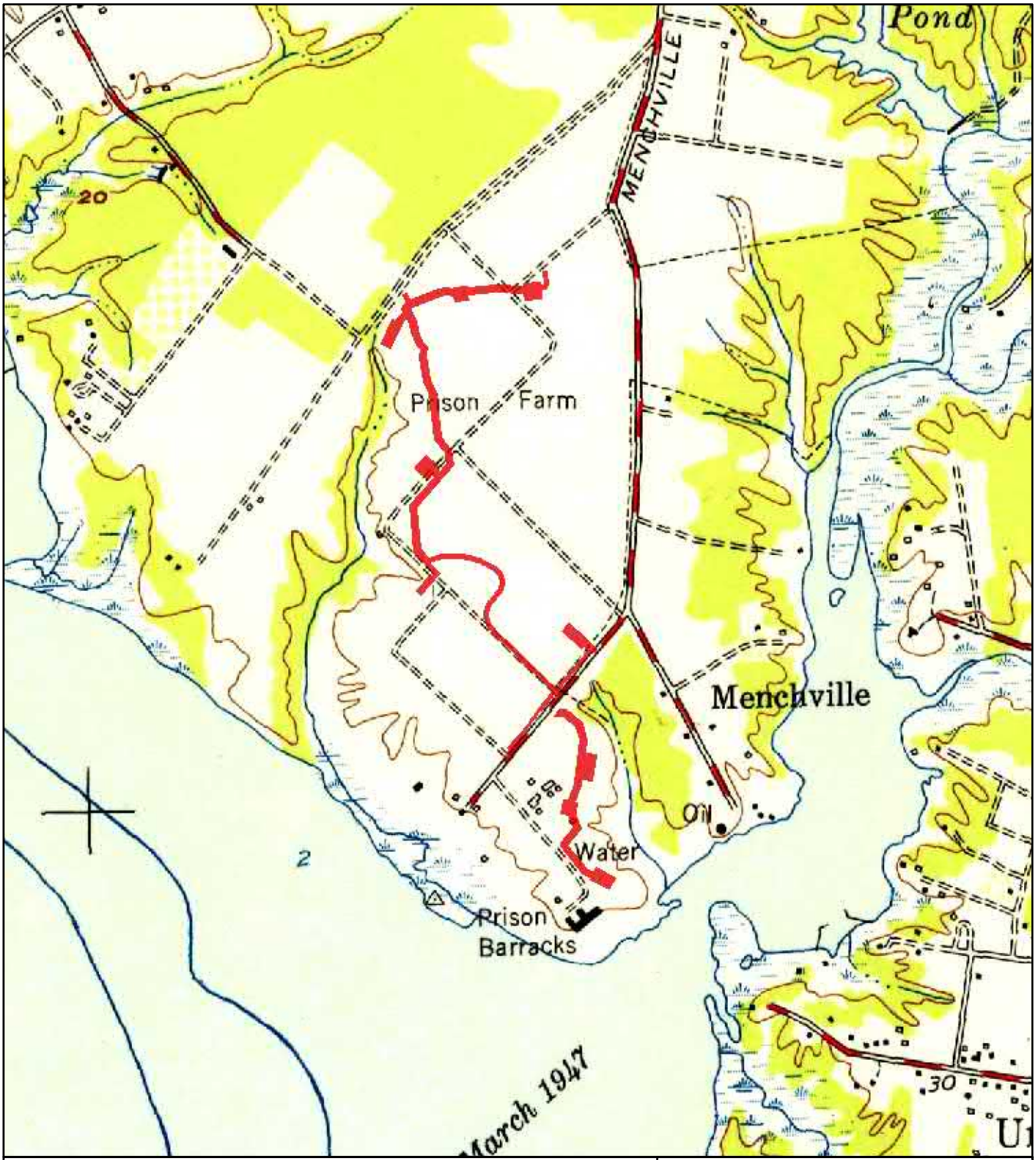
AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

1907 USGS Yorktown Quad

Source: USGS 1907

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 3-4



Legend

APE

N

0 500 1,000 1,500 Feet

0 250 500 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

1950 USGS Mulberry Island Quad

Source: USGS 1950

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 3-5

Legend

APE

N

0 500 1,000 1,500 Feet

0 250 500 Meters

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1965 USGS Mulberry Island Quad
(1971 Revision)

Source: USGS 1965

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 3-6

4.0 PREVIOUS INVESTIGATIONS

AECOM conducted background research using DHR's on-line Virginia Cultural Resource Information System (V-CRIS) in March 2021. The primary goal of this research was to identify previously recorded archaeological sites within one mile of the project area and any associated archaeological survey reports. Additionally, this research was conducted to identify any above-ground cultural resources within one mile of the project area.

4.1 PREVIOUSLY RECORDED ARCHAEOLOGICAL RESOURCES

Numerous archaeological investigations have occurred within and in the immediate vicinity of the project area, and there are numerous previously recorded sites within and in the vicinity of the APE, notably 44NN0068, 44NN0069, 44NN0278, and 44NN0281 (Figures 4-1 and 4-2).

The earliest known archaeological survey in the project area vicinity occurred along Flax Mill Creek in 1981. During that investigation, the Virginia Research Center for Archaeology (VRCA) identified 44NN0068 and 44NN0069, discussed in more detail, below (Hazzard and Luccketti 1981a, b; noted in Higgens et al. 1992, no citation provided). Espey Huston and Associates conducted a Phase I survey of approximately 7.5 acres for soccer fields in the area between 44NN069 and 44NN0284 on March 10, 1991 (Figure 4-1; Outlaw 1991 as noted in Higgens et al. 1992; no citation provided). This survey area is not depicted in V-CRIS and did not document any archaeological sites.

A large survey for the City of Newport News performed by The William and Mary Center for Archaeological Research (WMCAR) ahead of the establishment of the proposed Riverview Farm Park on portions of the Newport News City Prison Farm (Figures 4-1 to 4-3). The survey, which was not performed in accordance with current DHR guidelines, involved subsurface testing of five different areas deemed to have a high potential for the presence of archaeological resources. The areas were tested with shovel test pits (STPs) placed at a 75-ft (22.6-m) interval with radial STPs around any finds. The survey included a total of 433 STPs excavated over the 280-acre project area (Higgins et al. 1992). In the course of the survey, nine archaeological sites were documented (Higgins et al. 1992), including the four within or immediately adjacent to the APE of the current project: 44NN0068, 44NN0069, 44NN0278, and 44NN0281 (Figure 4-2).

VRCA originally identified 44NN0068 in 1981 (Hazzard and Luccketti 1981a). The work estimated the site as approximately 25-ft 97.6-m) in diameter based on a light surface scatter of oyster shell. The 1992 WMCAR study expanded the site boundary to approximately 100-x-160-ft (30.5-x-48.8-m) based on a very light surface scatter of four lithic debitage and 14 fire-cracked rock (FCR) (Higgens et al. 1992; Figure 4-4). The single shovel test excavated in the site did not yield any artifacts. WMCAR recommended the site not eligible for the NRHP.

Site 44NN0069 was initially recorded by VCRA in 1981 as a scatter of seventeenth and eighteenth century artifacts on the ground surface (Hazzard and Luccketti 1981b). The WMCAR survey in 1992 further documented seventeenth through nineteenth century artifacts within an area measuring approximately 350-x-650-ft (106.7-x-198.2-m) in size and recommended a Phase II evaluation (Higgins et al. 1992; Figure 4-5). The Virginia Company Foundation (VCF) undertook the Phase II evaluation of 44NN0069 in 1994 (Fesler and McCartney 1994). VCF divided the project area into 955 10-ft (3.28-m) squares for systematic surface collection (Figure 4-6), then excavated three 3-x-3-ft (0.9-x-0.9-m) test units along with 250 soil samples. Last, the investigation included stripping of the plowzone from select areas to reveal features. The stripping

identified a 16-x-27-ft (4.9-x-8.2-m) post building with multiple root cellars, three possible pit features, and a complex of root cellars. Based on these findings, VCF recommended 44NN0069 eligible for listing in the NRHP. It should be noted that the area of investigation in 1994 does not match the site boundary as depicted in V-CRIS (see Figures 4-2 and 4-6); it appears that the boundary in V-CRIS is rotated approximate 90 degrees east from the boundary as depicted in the 1994 report. One goal of the current investigation is to determine if 44NN0060 extends to the east as depicted in V-CRIS.

Site 44NN0278 is the location of Warwick Town, established in the late seventeenth century following the passage of legislation in 1680 and 1691, and which was occupied until the early nineteenth century; the site also includes a Civil War-era earthwork. The 1992 WMCAR survey initially identified the site as an eighteenth to nineteenth century domestic and military occupation covering approximately 6 acres (Higgins et al. 1992; Figure 4-7). WMCAR recommended the site potentially eligible for the NRHP. James River Institute for Archaeology (JRIA) conducted a Phase II evaluation of the site in 1993 (McSherry and McCartney 1993). This work included the excavation of 856 STPs at 20-ft intervals as well as 10 3-x-3-ft test units (Figure 4-8). The investigation identified archaeological deposits dating from the seventeenth through nineteenth centuries, including intact eighteenth-century features (e.g., cellar, midden), as well as a Late Woodland midden disturbed by the later historic occupations. JRIA recommended the site eligible for the NRHP. Additional work by JRAI occurred at the site in 1996 as plowzone sampling for a proposed gymnasium (McDonald and McCartney 1996). The work recovered a large number of artifacts from plow zone contexts and identified three features of unknown type or provenience.

New South Associates, Inc., conducted Phase III-level data recovery excavations at 44NN0278 in 2018 (Pope et al. 2020), including geophysical survey, stripping of 446 square m (4,800 square ft), and feature excavation (Figures 4-9 to 4-12). The current APE crosses through the edge of the eastern portion of the site as depicted in Pope et al. 2020, and the area of data recovery. These investigations identified occupations related to Warwicktowne, including Young's Ordinary, as well as occupation of the area during the Civil War by Confederate forces, specifically the 15th Regiment of Virginia Infantry between Fall 1861 and Spring 1862. The core area of Warwicktowne, however, was not identified, and it is thought to have been possibly destroyed by twentieth century construction, including that of the City prison. Numerous geophysical anomalies were not investigated, however, and it is possible that some of these anomalies represent additional elements of Warwicktowne, though some may also represent additional elements of the Confederate encampment.

Site 44NN0281 is a multi-component site first documented by the Higgens et al. (1992) survey (Figure 4-13). That investigation noted a variety of eighteenth and nineteenth century artifacts like salt-glazed Stoneware, Pearlware, wrought and cut nails, as well as handmade brick; there was also a scatter of quartz debitage (DHR 2020a). Higgens et al. (1992) recommended the site eligible for the National Register of Historic Places (NRHP). Cultural Resources, Inc. (CRI) conducted a Phase II evaluation of 44NN0281 in 1999 (McLearen 1999; Figure 4-14). This work, conducted for a proposed telecommunications tower, consisted of STP excavation and 10-ft square test unit at the center of the proposed tower pole. This investigation recovered Middle Woodland and Late Woodland pottery as well as fire-cracked rock and quartz and quartzite debitage. The investigation also yielded late seventeenth through twentieth century artifacts; it was suspected that the eighteenth-century artifacts related to Warwicktown (i.e., 44NN0278). No significant archaeological deposits were identified in the location for the proposed tower.

New South Associates, Inc., (NSA) conducted Phase III-level data recovery excavations at 44NN0281 in 2017 and 2018 (Pope et al. 2020), including geophysical survey, stripping of 3,790 square m (40,800 square ft), and feature excavation (Figures 4-9, 4-11, and 4-15). The APE crosses through the northeastern portion of the site as depicted in Pope et al. 2020. The area of data recovery, though, is to the south and west of the current APE. The data recovery investigation documented a notable Civil War Confederate encampment associated with the 5th Regiment of Louisiana Infantry from Fall 1861 to Spring 1862. Numerous geophysical anomalies were not investigated, however, and it is likely that these represent additional elements of the Confederate encampment.

AECOM has undertaken two surveys in support of the WIFIA-funded SWIFT improvements to the JRTP (Stewart and Seibel 2020a, b; Figures 4-1 and 4-16 to 4-18). The original survey focused on approximately 31.92-acre APE (Stewart and Seibel 2020a). The second survey covered approximately 3.19 acres for construction staging and a relocated access road (Stewart and Seibel 2020b).

AECOM redocumented the southwestern corner of 44NN0281 (Stewart and Seibel 2020a; Figure 4-16). The excavation of 30 STPs within this area resulted in 10 positive STPs containing a variety of glass, metal, and brick artifacts that all appeared to date to the twentieth century and interpreted to be related to the Newport News City Prison Farm. This portion of the site was recommended to not contribute to the NRHP eligibility of 44NN0281; DHR concurred with this assessment. The addendum survey did not document any evidence of 44NN0281 on the northwest side of Riverview Parkway.

These surveys also documented two new sites, 44NN0359 and 44NN0360; no evidence of previously recorded 44NN0282 and 44NN0283 was encountered, however (Figures 4-2 and 4-16). Site 44NN0359 is a small subsurface scatter of historic artifacts associated with a ca. 1940s house (DHR 121-0103), while 44NN0360 is two iron artifacts and a possible musket ball from two adjacent STPs. Both sites are recommended not eligible for the NRHP.

A number of other sites are located in close proximity to the project area. These include 44NN0157, 44NN0280, and 44NN0284 (Figure 4-2). Site 44NN0157 was documented by the Daughters of the American Revolution-Colonial Williamsburg Foundation (DAR-CWF) when the landowner uncovered remains of an eighteenth-century structure and artifacts under his house during foundation stabilization (DAR-CWF 1991). No work has occurred since recordation of the site in 1991. Site 44NN0280, documented in 1992 by WMCAR, included a variety of nineteenth century and twentieth century artifacts domestic artifacts; no associated structures were identified during the survey (Higgens et al. 1992; Figure 4-3). WMCAR recommended the site for Phase II evaluation. The recent NSA investigations included 44NN0280 (Pope et al. 2020; Figure 4-9). Geophysical survey revealed the site to be heavily disturbed, and NSA conducted no additional investigations. Site 44NN0284 is a Woodland period scatter of sand-tempered ceramic, quartzite bifaces, hammerstones and debitage recorded during the WMCAR survey (Higgens et al. 1992; Figure 4-5). The report recommended the site not eligible for the NRHP.

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Map of Previously Conducted Surveys

Source: V-CRIS 2021; VGIN 2020

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 4-1

Legend

- APE
- One Mile Buffer
- Previously Recorded Archaeology Site

N

0 1,000 2,000 Feet

0 200 400 600 Meters

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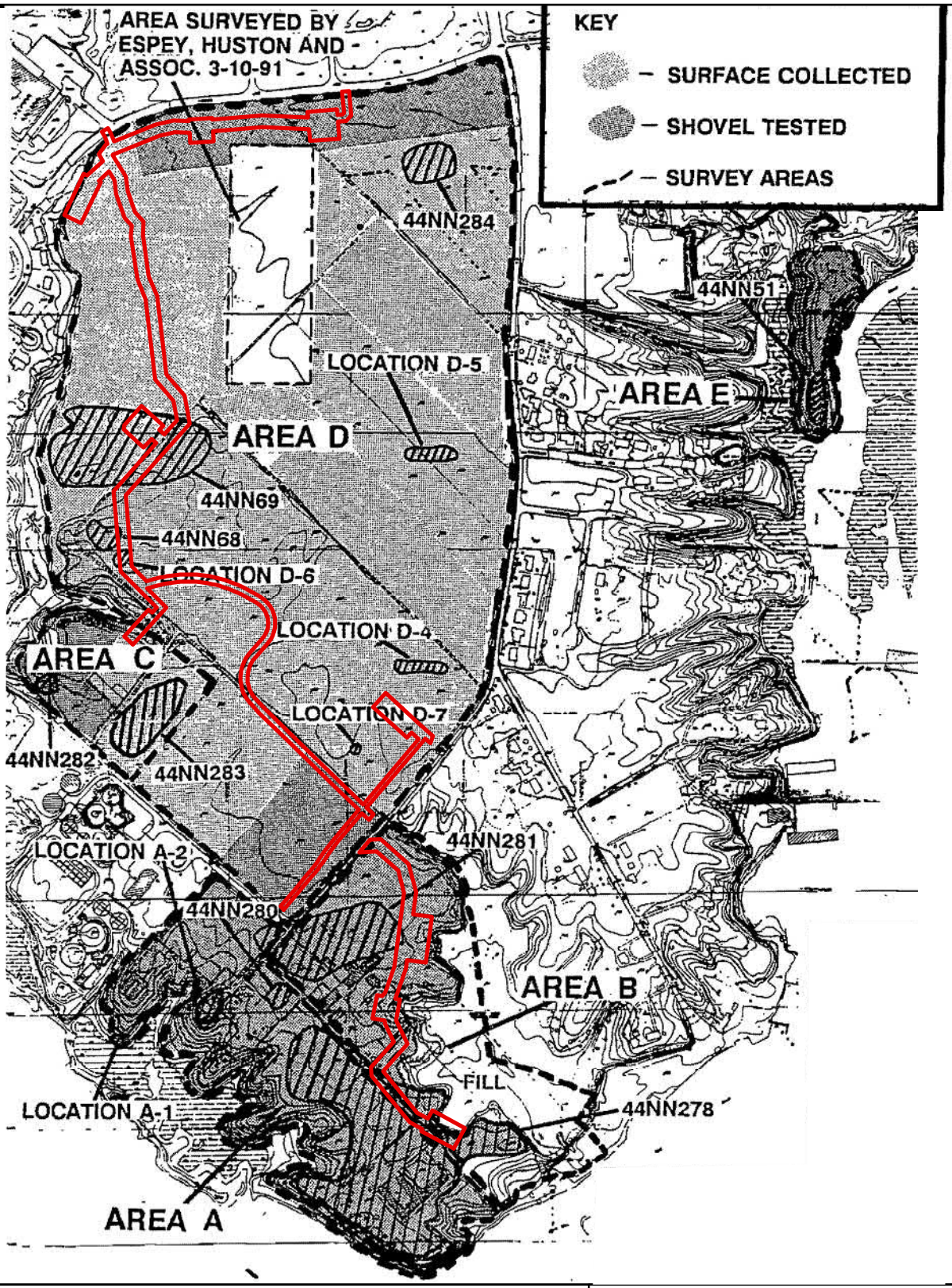
Map of Previously Conducted Surveys

Source: V-CRIS 2021; VGIN 2020

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 4-2



Legend

APE

N

0 500 1,000 Feet

0 100 200 300 Meters

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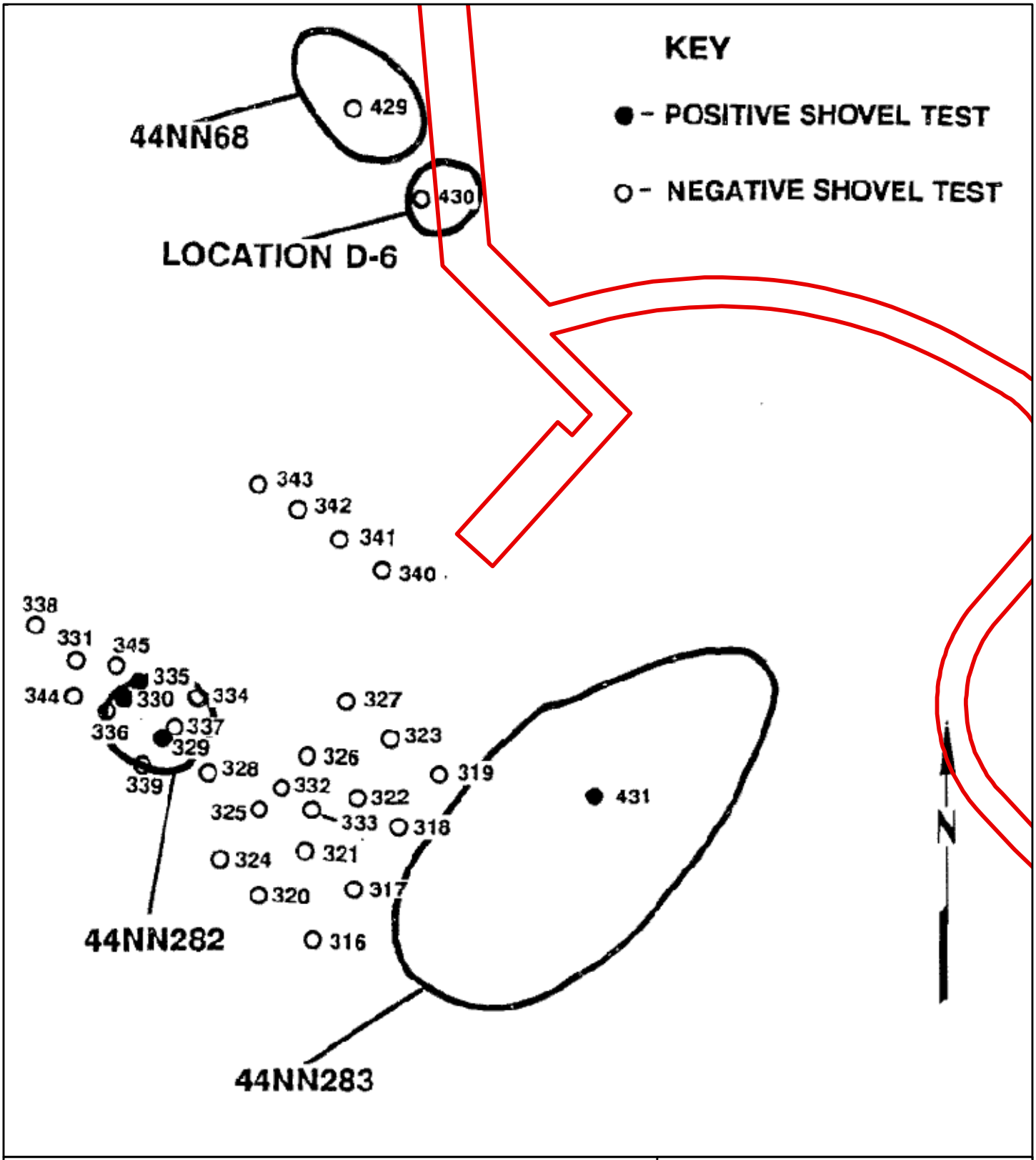
WMCAR Survey Area and Findings

Source: Higgins et al. 1992

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 4-3


KEY
● - POSITIVE SHOVEL TEST
○ - NEGATIVE SHOVEL TEST
44NN68
429
430
LOCATION D-6
343
342
341
340
338
331
345
335
344
330
334
327
336
337
323
329
326
328
319
339
332
322
431
325
333
318
324
321
320
317
44NN282
316
44NN283
N
Legend
APE
N
0 100 200 Feet
0 20 40 60 Meters
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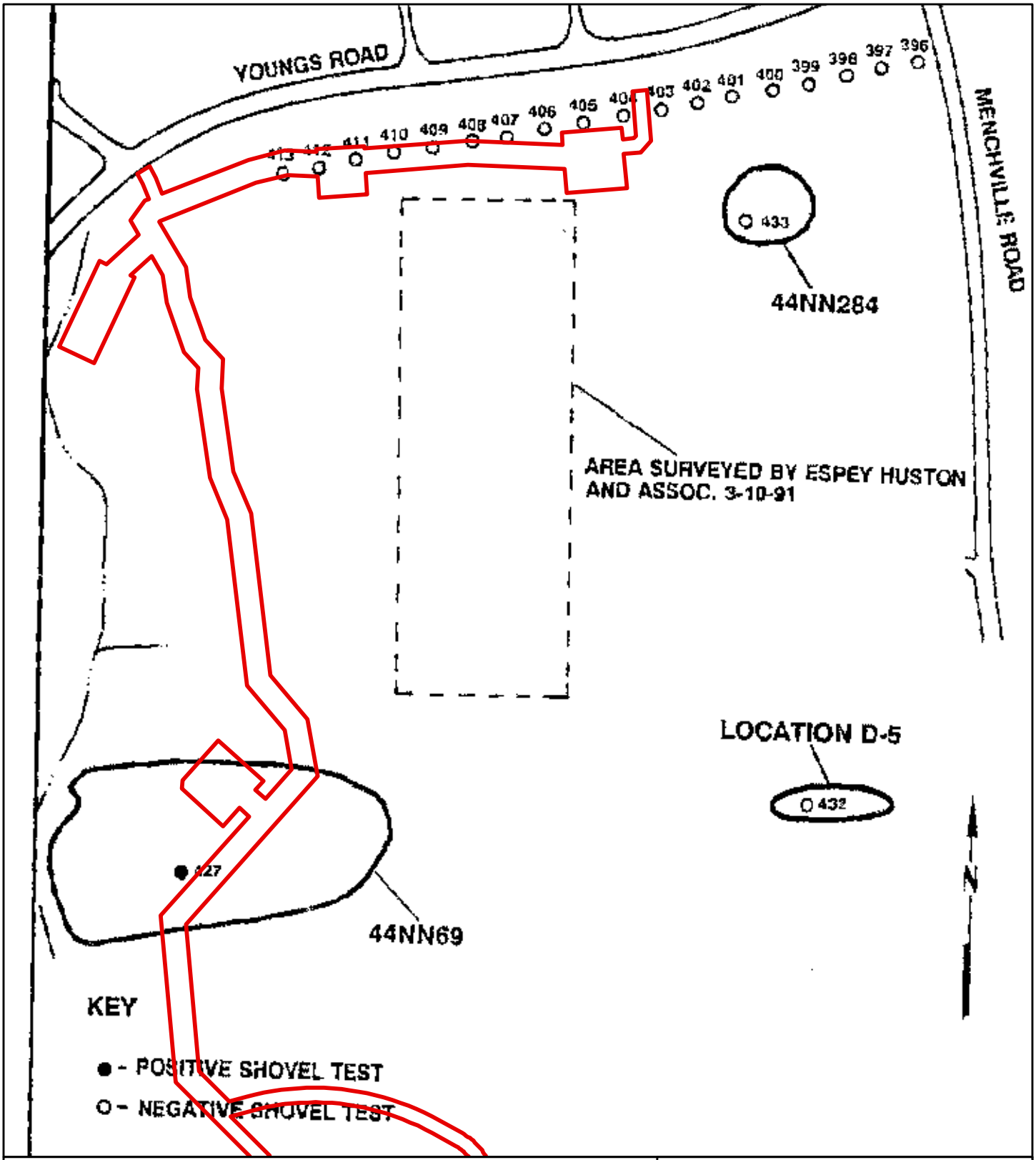
WMCAR Plan of 44NN0068, 44NN0282, and 44NN0283
Source: Higgins et al. 1992
Project No. 60635877
Prepared by KAF
Date 04/22/21
Figure 4-4



Legend

APE

N

0 100 200 300 Feet

0 50 100 Meters

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WMCAR Plan of 44NN0069 and 44NN0284

Source: Higgins et al. 1992

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 4-5

Legend

APE

N

0 50 100 Feet

0 10 20 30 Meters

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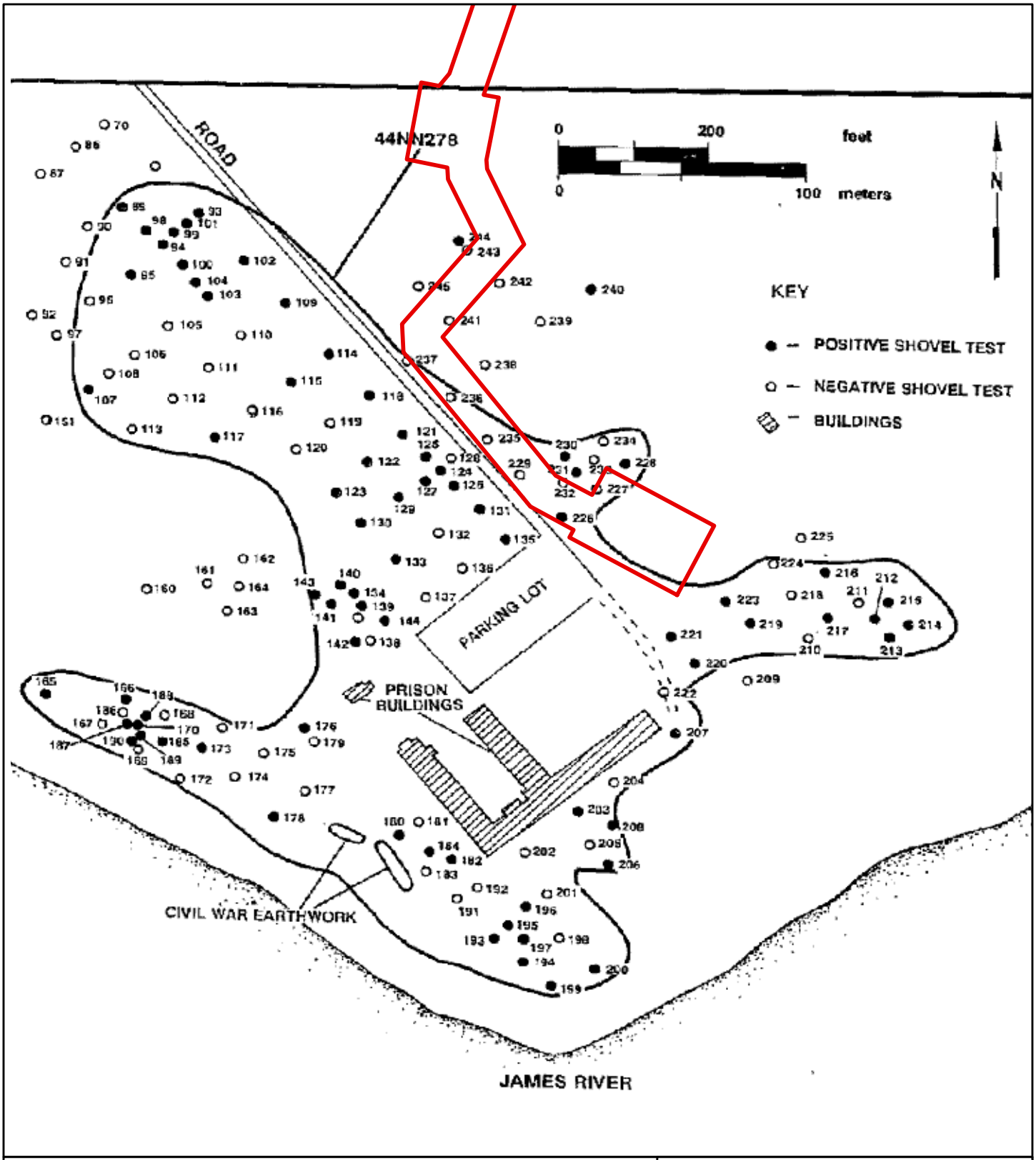
VCF Plan of Site 44NN0069

Source: Fesler and McCartney 1994

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 4-6



Legend

APE

N

0 100 200 Feet

0 20 40 60 Meters

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WMCAR Plan of 44NN0278

Source: Higgins et al. 1992

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 4-7

Legend

APE

N

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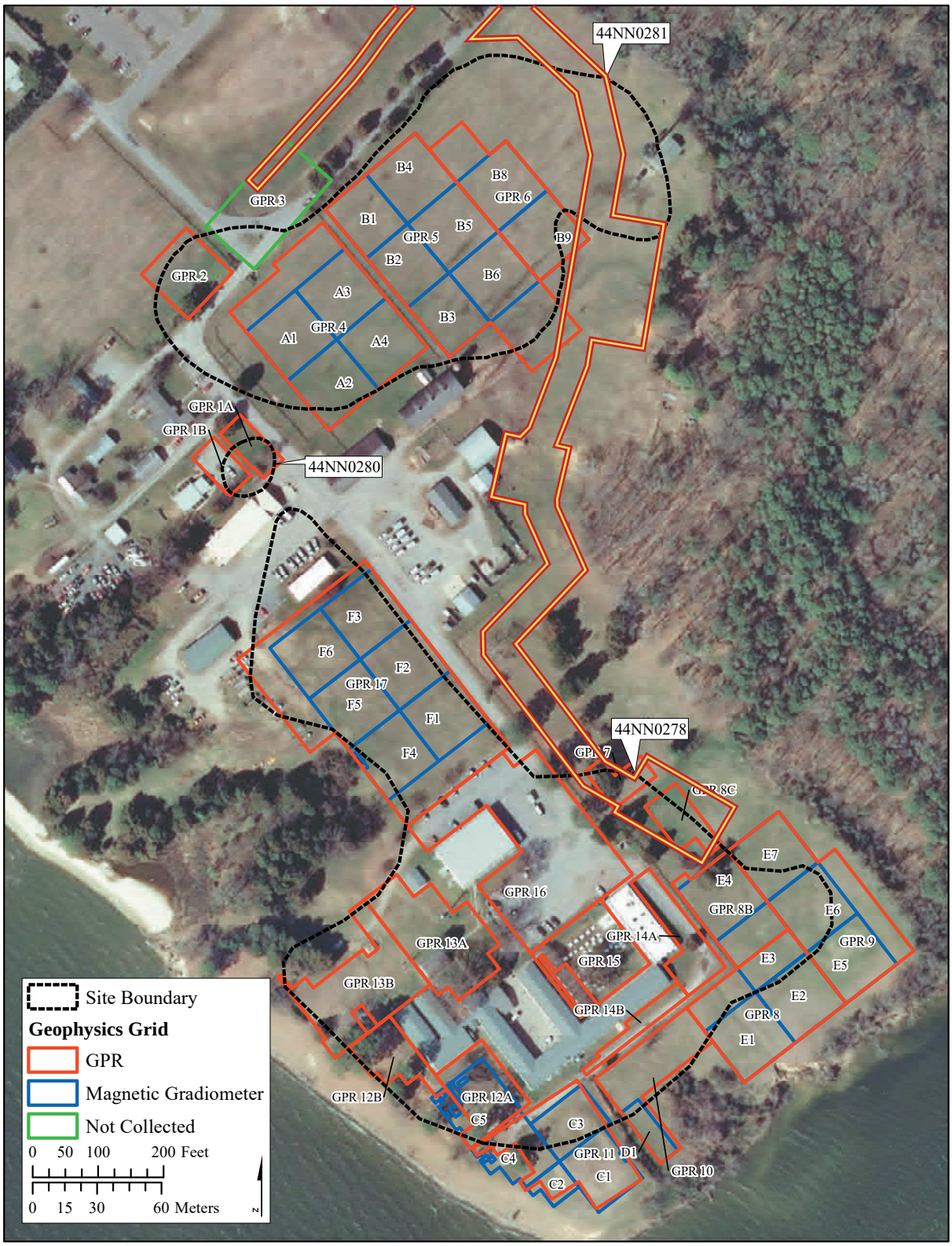
JRIA Plan of 44NN0278

Source: McSherry and McCartney 1993

Project No.	Prepared by	Date	Figure 4-8
60635877	KAF	04/30/21	



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N

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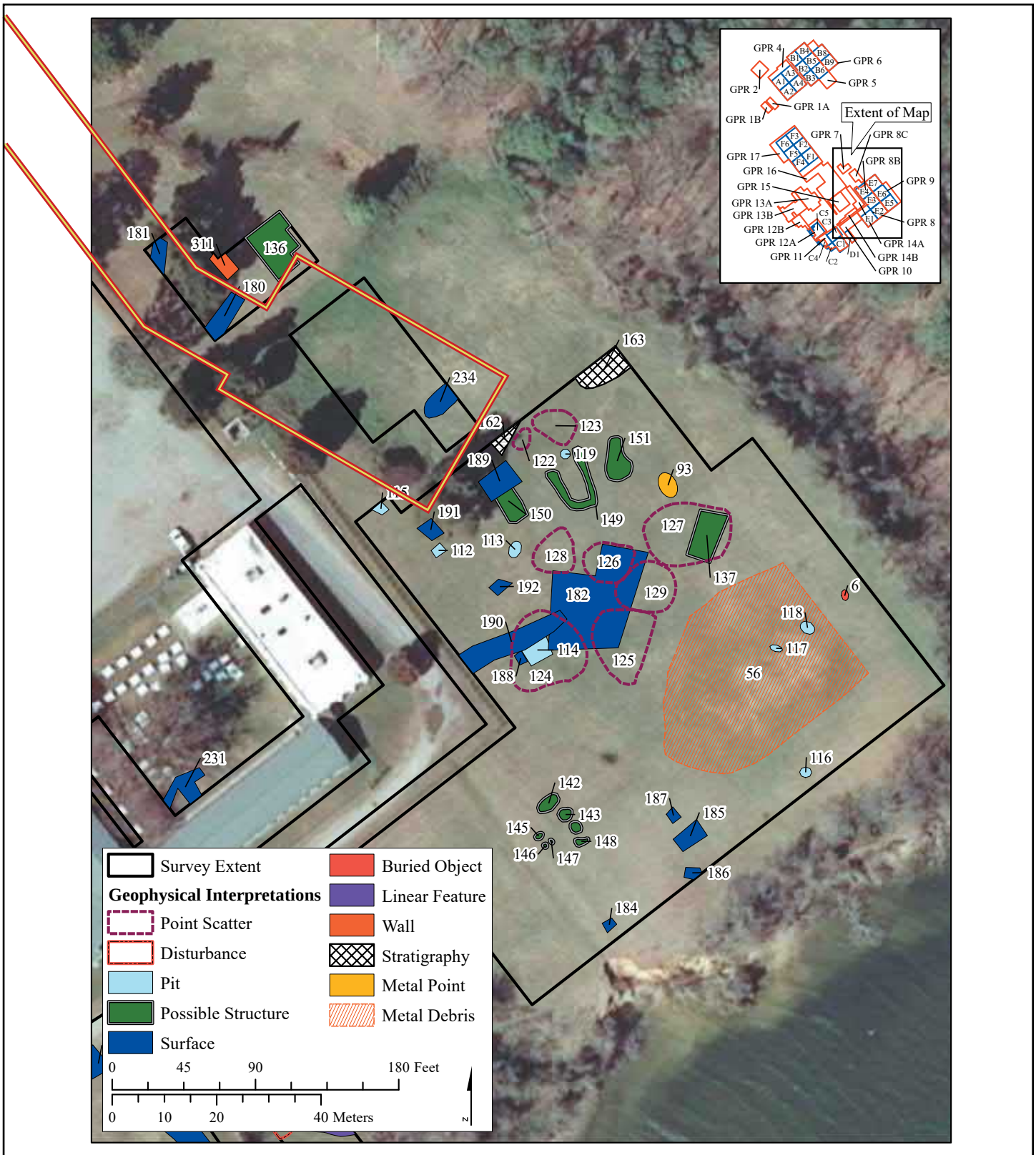
NSA GPR Grids at 44NN0278, 44NN0280, and 44NN0281

Source: Pope et al. 2020

Project No.	Prepared by	Date	Figure 4-9
60635877	KAF	04/30/21	



Legend

APE

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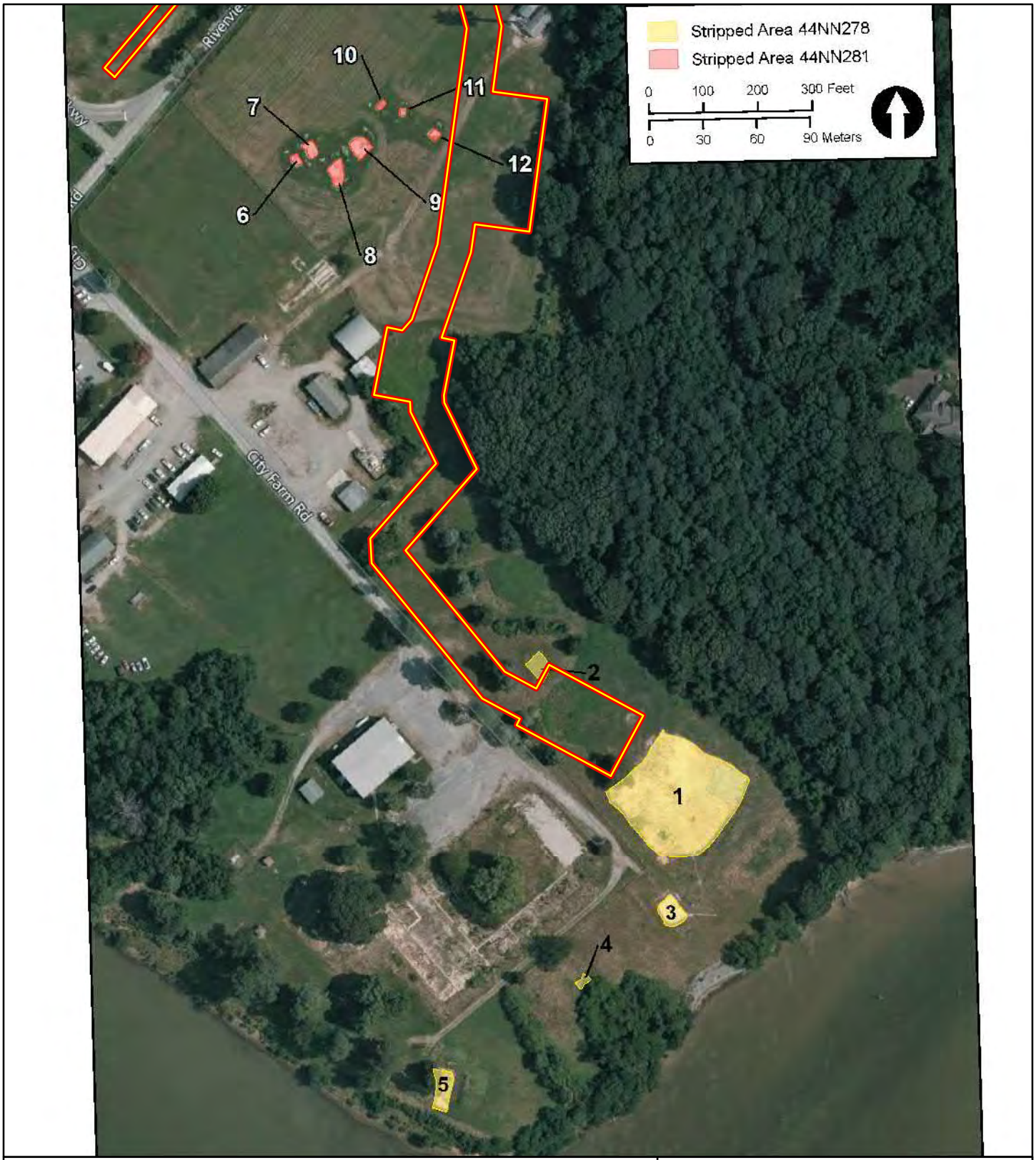
NSA GPR Findings at 44NN0278 in Proximity to Current APE

Source: Pope et al. 2020

Project No.	Prepared by	Date	Figure 4-10
60635877	KAF	04/30/21	



Legend

APE

N

0 100 200 Feet

0 20 40 60 Meters

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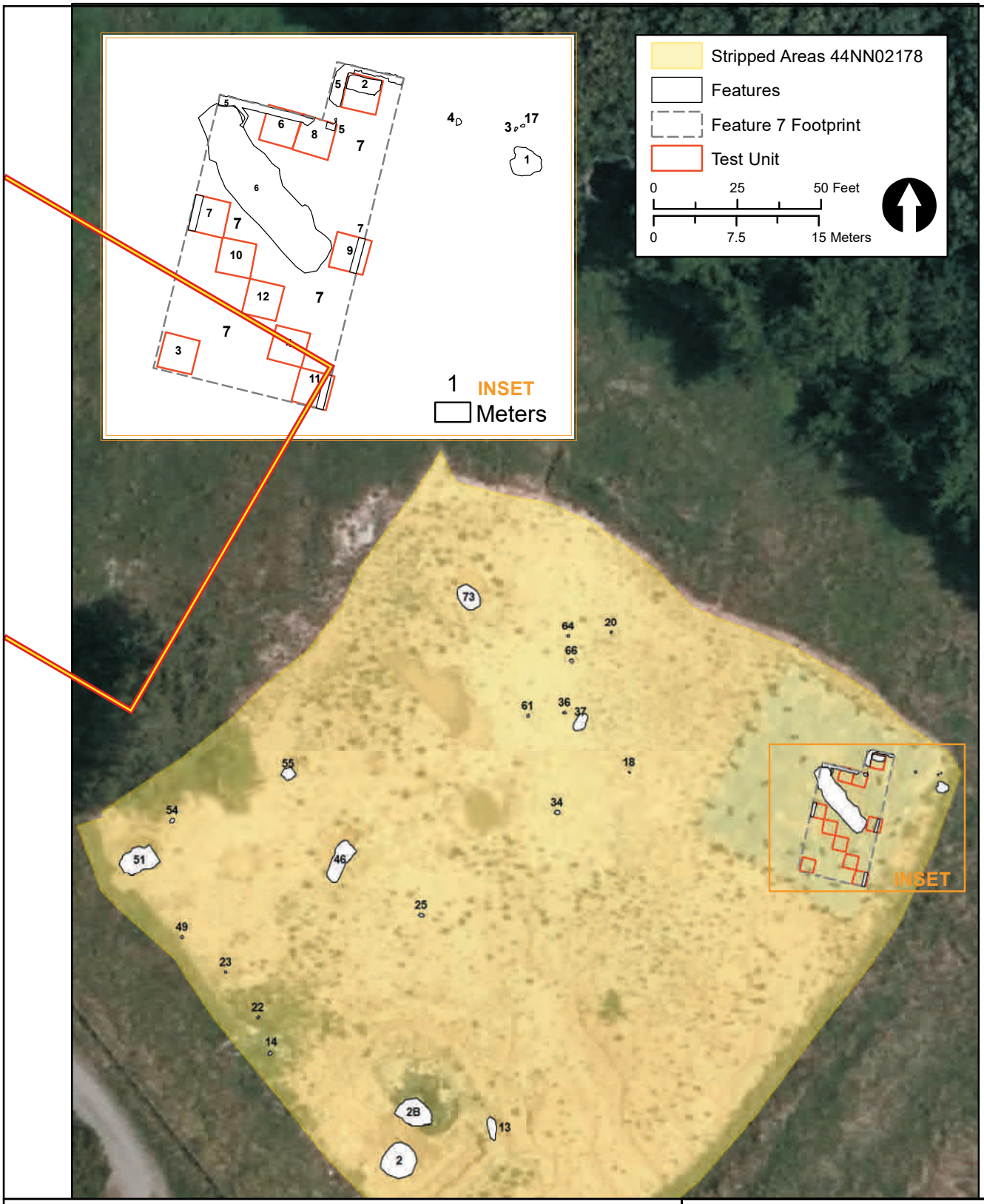
NSA Mechanical Stripping at 44NN0278 and 44NN0281

Source: Pope et al. 2020

Project No.	Prepared by	Date	
60635877	KAF	04/22/21	Figure 4-11



Legend

APE

N

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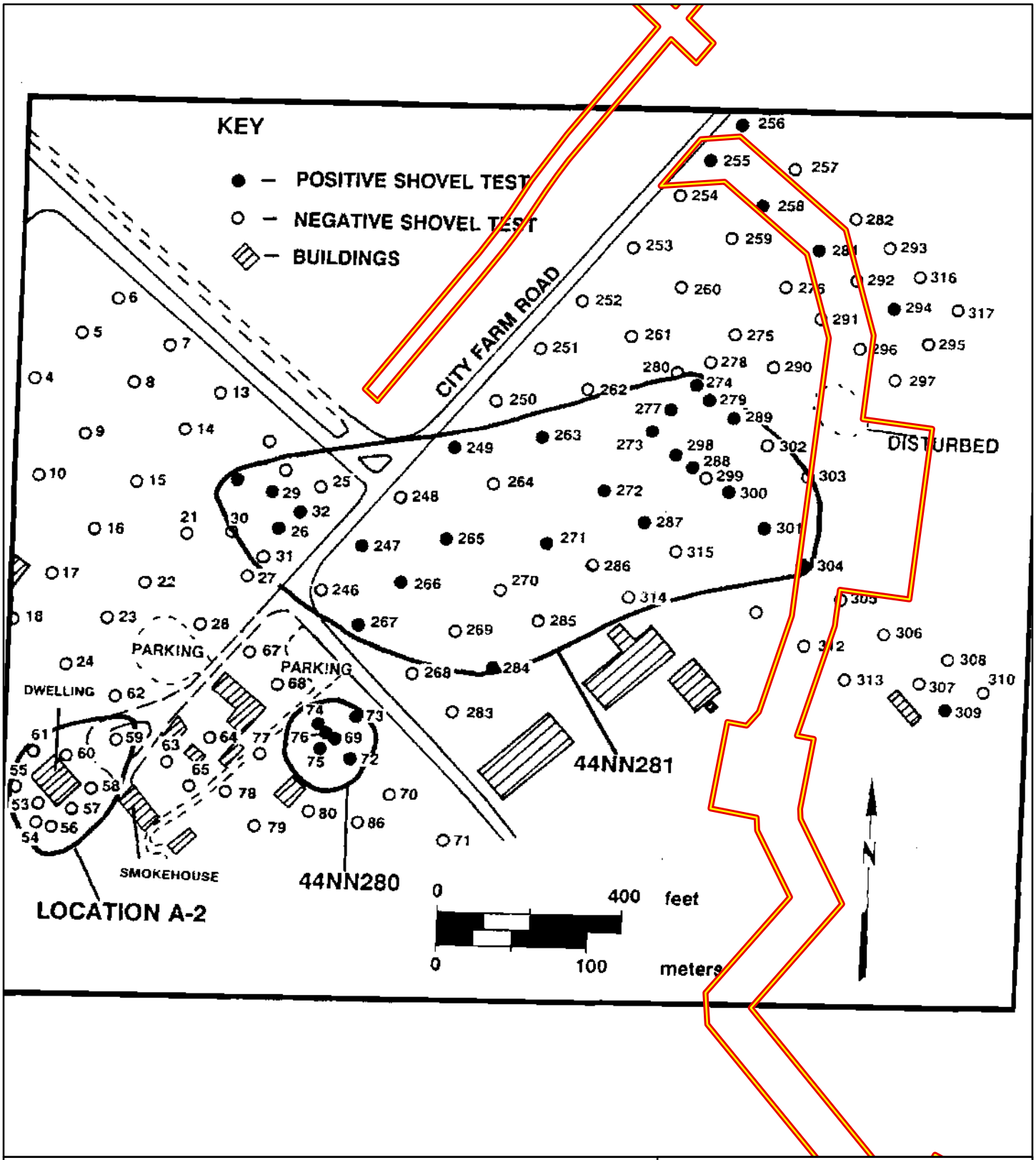
NSA Features in Area 1 at 44NN0278

Source: Pope et al. 2020

Project No.	Prepared by	Date	Figure 4-12
60635877	KAF	04/30/21	



Legend

APE

N

0 100 200 Feet

0 20 40 60 Meters

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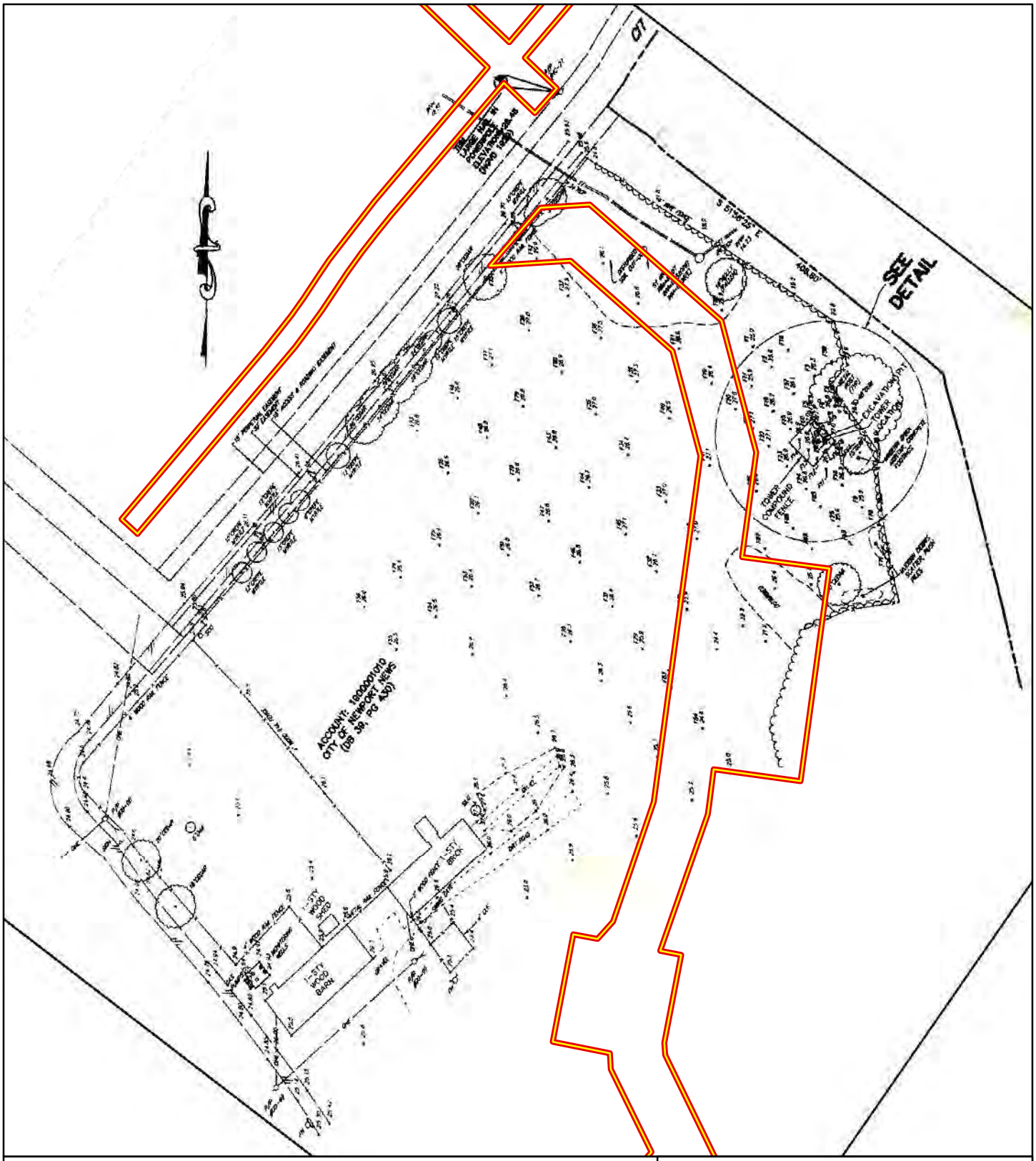
WMCAR Plan of 44NN0281

Source: Higgins et al. 1992

Project No.	Prepared by	Date	
60635877	KAF	04/23/21	Figure 4-13



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APE

N

0 100 200 Feet

0 20 40 60 Meters

AECOM

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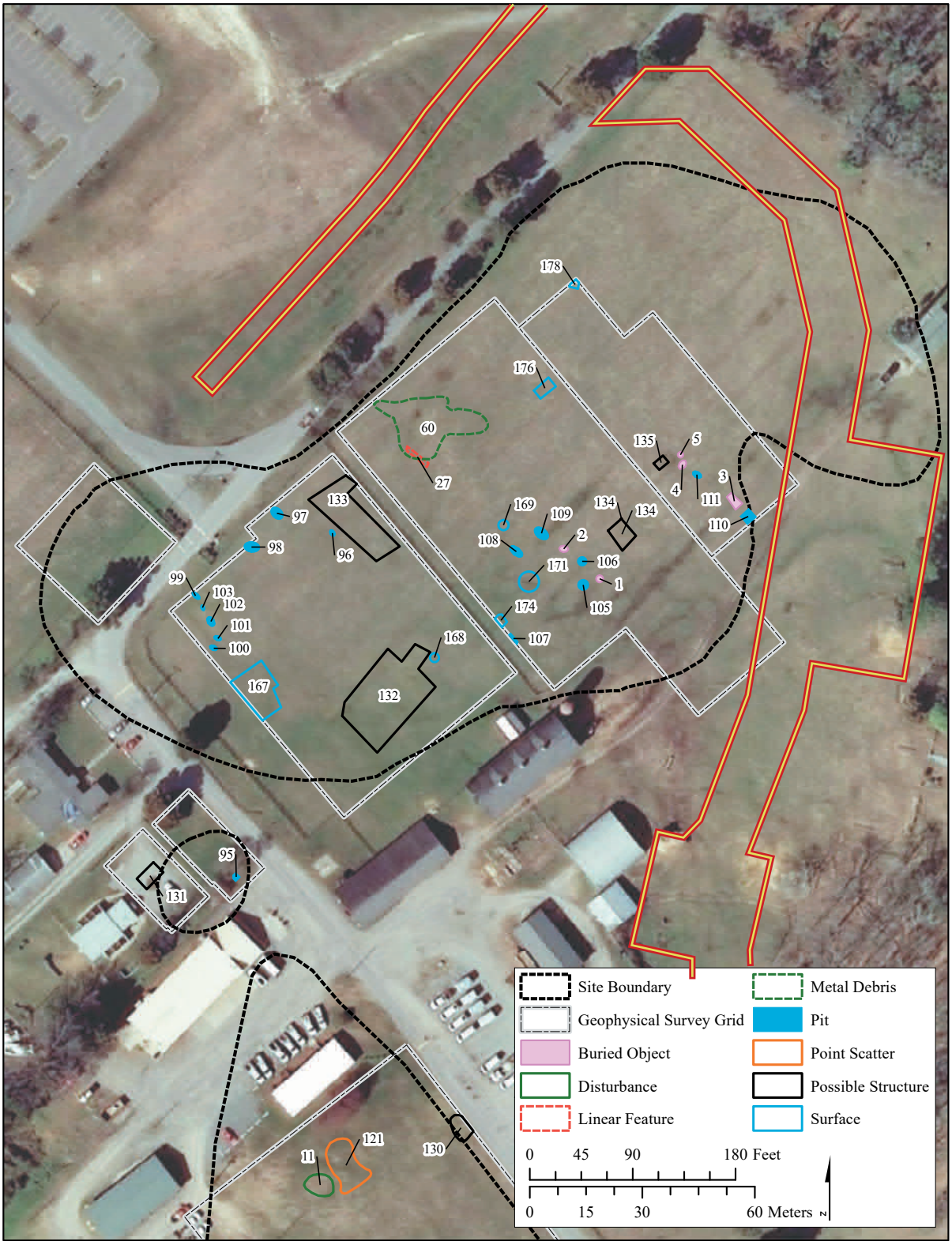
CRI Phase II Plan of 44NN0281

Source: McLearen 1999

Project No.	Prepared by	Date	
60635877	KAF	04/23/21	Figure 4-14



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APE

N

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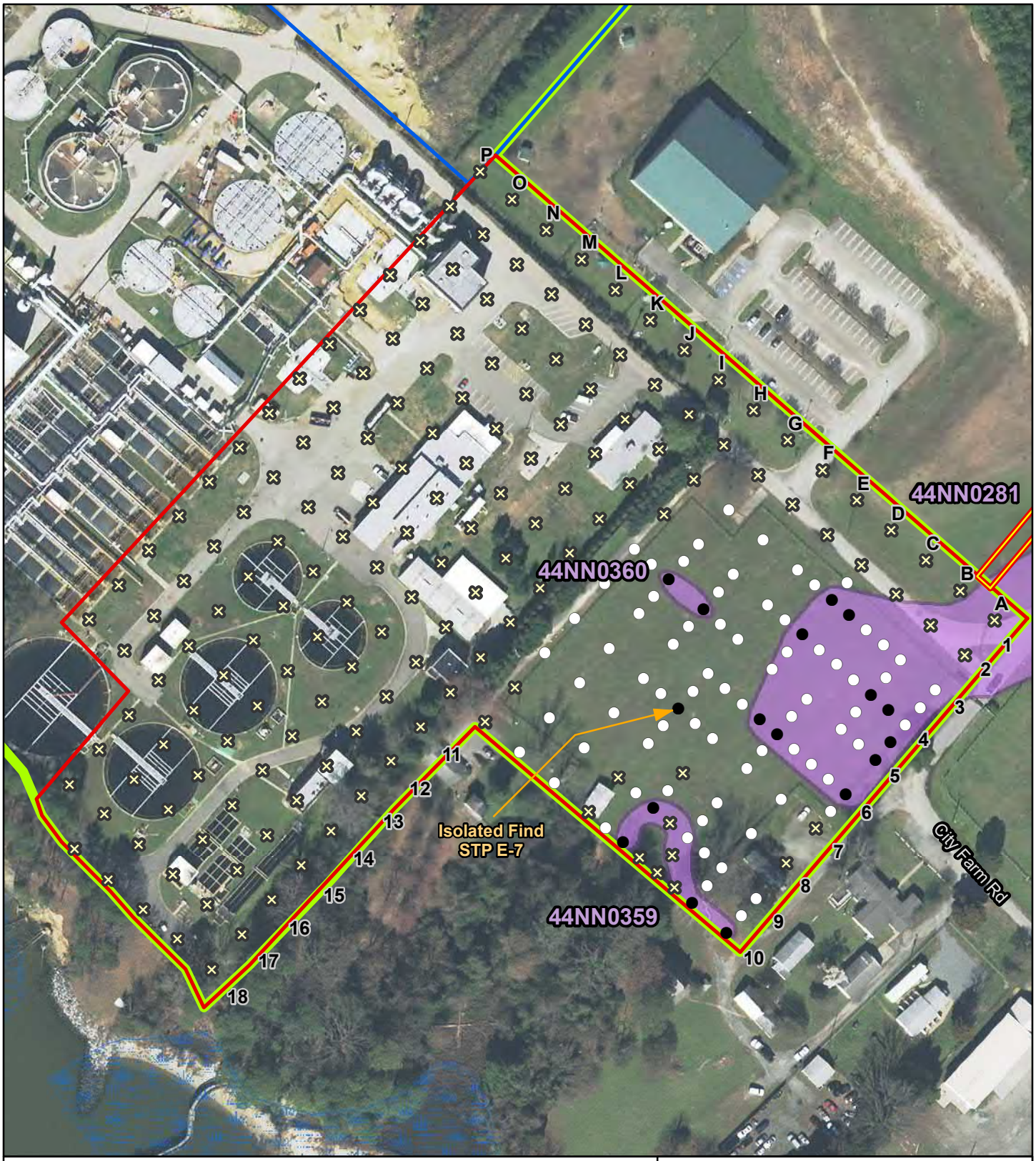
NSA Findings at 44NN0281

Source: Pope et al. 2020

Project No.	Prepared by	Date	Figure 4-15
60635877	KAF	04/30/21	



Legend

- APE
- Project Area

Direct APE

- Section 01
- Section 02
- Archaeology Site

STPs

- Positive STP
- Negative STP
- Not Dug

N

0 100 200 Feet

0 20 40 60 Meters

AECOM

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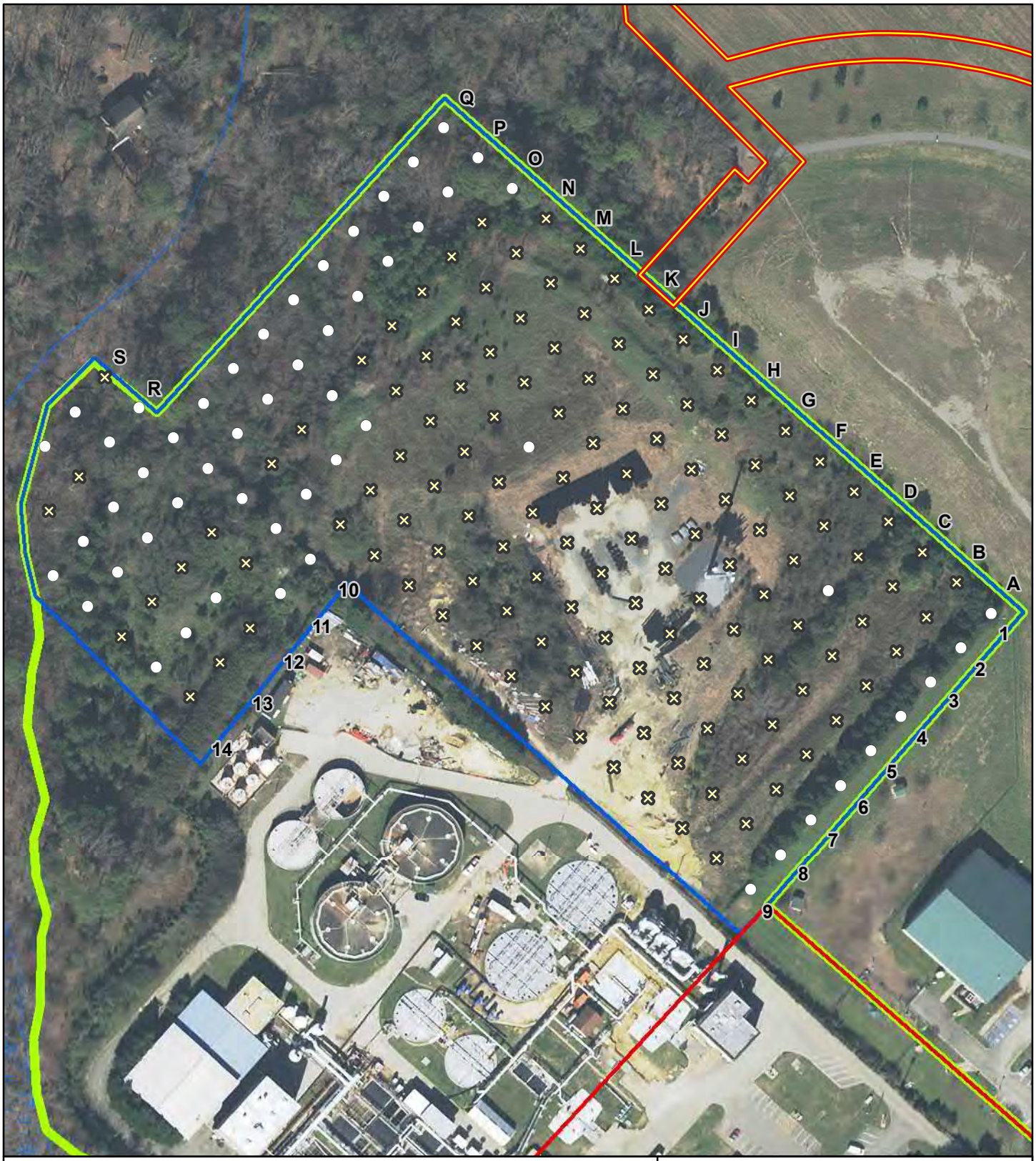
Section 1 Plan from AECOM
JRTP Survey

Source: Stewart and Seidel 2020a

Project No.	Prepared by	Date	
60617789	KAF	04/23/21	Figure 4-16



Legend

- APE
- Project Area

Direct APE

- Section 01
- Section 02
- Archaeology Site

STPs

- Positive STP
- Negative STP
- Not Dug

N

0 100 200 Feet

0 20 40 60 Meters

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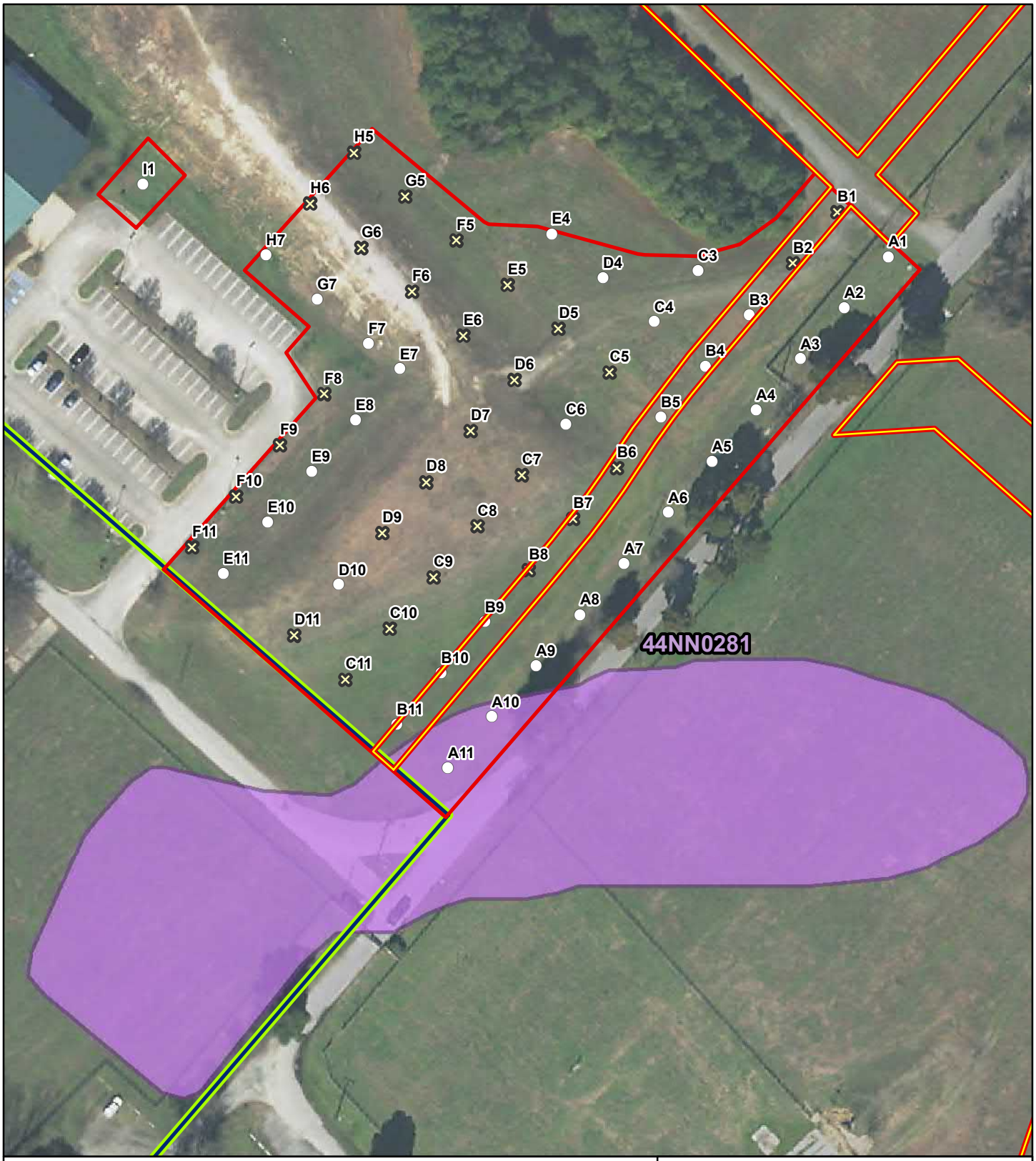
Section 2 Plan from AECOM
JRTP Survey

Source: Seidel and Stewart 2020a

Project No.	Prepared by	Date	
60617789	KAF	04/23/21	Figure 4-17



Legend

- APE
- Project Area

Direct APE

- Section 01
- Section 03
- Archaeology Site

STPs

- Negative STP
- Not Dug

N

0 100 200 Feet

0 20 40 60 Meters

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Section 2 Plan from AECOM
JRTP Survey

Source: VCRIS 2020; VGIN 2020

Project No.	Prepared by	Date	
60617789	KAF	04/23/21	Figure 4-18

There are an additional 15 archaeological sites located within a 1-mile radius of the project area, excluding 44NN0068, 44NN0069, 44NN0278, and 44NN0281. These are shown on Figure 4-2 and summarized in Table 4-1.

Table 4-1. Previously Recorded Archaeological Sites within 1.0 Mile of the Project Area

DHR_ID	SiteTypes	Time Periods	Evaluation Status
44NN0038	Denbigh Plantation Site (Matthews Manor), other	17th Century (1600 - 1699), 18th Century (1700 - 1799)	NRHP Listed, VLR Listed
44NN0041	Other	17th Century: 1st half (1600 - 1649)	Not Evaluated
44NN0042	Camp, temporary		Not Evaluated
44NN0043	First Denbigh Parish Church Archaeological Site, church	17th Century: 1st half (1600 - 1649)	NRHP Listed, VLR Listed
44NN0044	Mathews Manor, other	17th Century (1600 - 1699), 18th Century (1700 - 1799)	Not Evaluated
44NN0051	Military camp	19th Century: 3rd quarter (1850 - 1874)	Not Evaluated
44NN0065	Sunken Barges (Warwick River), Shipwreck	19th Century: 3rd quarter (1850 - 1874)	Not Evaluated
*44NN0068**	*Camp, temporary*		*Not Evaluated*
*44NN0069**	*Other*	*17th Century (1600 - 1699), 19th Century (1800 - 1899)*	*Not Evaluated*
44NN0074	Other, Shell midden	Historic/Unknown, Woodland (1200 B.C. - 1606 A.D.)	Not Evaluated
44NN0157	Dwelling, single	18th Century: 2nd/3rd quarter (1725 - 1774)	Not Evaluated
*44NN0278**	*Earthworks, other*	*18th Century (1700 - 1799), 19th Century (1800 - 1899)*	*Eligible*
44NN0280	Other	19th Century (1800 - 1899), 20th Century: 1st half (1900 - 1949)	Not Evaluated
*44NN0281**	*Artifact scatter, Other*	*Pre-Contact, Contact Period (1607 - 1750), Colony to Nation (1751 - 1789), Early National Period (1790 - 1829), Antebellum Period (1830 - 1860), Civil War (1861 - 1865), Reconstruction and Growth (1866 - 1916)*	*Potentially Eligible*
44NN0282	Camp	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Eligible
44NN0283	Camp, temporary	Prehistoric/Unknown (15000 B.C. - 1606 A.D.)	Not Eligible
44NN0284	Camp	Woodland (1200 B.C. - 1606 A.D.)	Not Evaluated
44NN0359	Artifact scatter	Early National Period (1790 - 1829), Antebellum Period (1830 - 1860), Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)	Not Eligible
44NN0360	Artifact scatter	Civil War (1861 - 1865), Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945)	Not Eligible

**Within the APE*

4.2 PREVIOUSLY RECORDED ABOVE-GROUND RESOURCES

Architectural resources in the immediate vicinity of the project area include the Newport News City Prison Farm (DHR 121-0104), which contains a prison barracks and several outbuildings as well as a ca. 1940 colonial revival farmhouse (DHR 121-0103) and the James River Treatment Plant (DHR 5463). Located west of the project area is the Mathews Manor House (Historic)/Denbigh Plantation (Current) (DHR 121-0008), which was built ca. 1630, and the First Denbigh Parish Church (DHR 121-0037). Across Deep Creek there is Deep Creek Pier, a historic wooden pier built in the 1930s that is strong enough to support the weight of a truck (DHR 121-5073). Associated with the pier on the mainland of the Peninsula is the Deep Creek Historic District (DHR 121-5074), a collection of 1920s houses, churches and piers that were owned and used by local oyster bed workers. The historic district continues along Deep Creek Road nearly a mile inland. A portion of the battle of Yorktown (DHR 099-5283) is mapped nearby going up the center of the Warwick River.

None of these resources are within the project area and are not expected to be affected by the undertaking.

Table 4-2. Previously Recorded Above-Ground Resources within 1.0 Mile of the Project Area:

DHR ID	Property Name	Evaluation Status
099-5283	Battle of Yorktown (Historic/Location)	Potentially Eligible
121-0008	Denbigh (Historic), Denbigh Plantation (Current), Mathews Manor (Historic)	NRHP Listed, VLR Listed
121-0037	First Denbigh Parish Church and Archaeological Site (Historic/Current)	NRHP Listed, VLR Listed
121-0048	Harris Store (site) (Historic/Current)	Not Eligible
121-0103	Farmstead, City Farm Road (Function/Location)	Not Evaluated
121-0104	Newport News City Prison Farm (Historic)	Not Evaluated
121-5073	Deep Creek Pier (Historic/Current), Pier, 700 Deep Creek Road (Function/Location)	Not Eligible
121-5074	Deep Creek Historic District (Current)	Not Eligible
121-5463	James River Treatment Plant - Hampton Roads Sanitation District (Current Name)	Not Evaluated

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5.0 RESEARCH DESIGN

5.1 OBJECTIVES

The objectives of the Phase I archeological survey were to identify archeological deposits within the areas of proposed disturbance, if any, determine if artifacts related to sites 44NN0069, 44NN0278, and 44NN0281 are present within the APE, define the size and approximate site boundaries of any archaeological sites encountered, and determine the NRHP eligibility status of any archaeological sites documented, if possible.

5.2 METHODS

5.2.1 Research

AECOM conducted background research utilizing V-CRIS for access to DHR records as well as other on-line repositories. The purpose of the research was to gather information on previously identified archaeological sites and NRHP-eligible or listed properties within a one-mile radius of the project area, to acquire all relevant cultural resources reports, and to obtain data for the historic context and aid in evaluating site significance. Historic maps and historic aerial photographs were collected from the Library of Congress (LOC) and USGS digital map collections, and electronic resources were utilized to compile historic context information to more thoroughly document the area's cultural background.

5.2.2 Field Survey

The focus of the field survey was on pedestrian inspection and subsurface testing via STP excavation. Prior to the field investigation, a prepopulated grid of alpha-numerically labeled STPs were plotted in 50-ft (15-m) intervals along transects aligned to an arbitrary project grid within the APE. If an STP was found to contain cultural materials, radial STPs were excavated at 25-ft (7.5-m) intervals from the initial STP. Radial STPs were not excavated between two positive STPs adjacent to one another on the 50-ft grid. Each STP was a circular excavation measuring approximately 12 inches (in) (30 centimeters [cm]) in diameter and excavated to the water table, 4 in (10 cm) into sterile subsoil, or to a maximum depth of 40 in (131 cm) below the current ground surface. All soils were screened through 0.25-inch (0.625-cm) hardware mesh to ensure uniform artifact recovery. All STPs were backfilled after being excavated.

Field data were recorded on standard field forms and in general field notes. The forms included Munsell soil color, soil texture, depth, artifacts recovered and discarded, excavator's initials and the date of excavation. The locations of STPs were noted on field maps. Select STPs, structural remains, and other fixed points were also recorded on a Trimble GeoExplorer CE GPS unit to facilitate subsequent geo-referencing of field maps. Artifacts collected from STPs were bagged in 4 mil plastic sealing bags, which had been punctured to prevent potentially damaging moisture retention. Each bag was labeled with the project name and area, STP number, depth and number finds, and transported to the AECOM archaeology laboratory in Gaithersburg, Maryland.

5.2.3 Laboratory Analysis

Following transportation to the AECOM archaeology laboratory in Gaithersburg, Maryland, artifacts were cleaned, cataloged, and analyzed according to the Secretary of the Interior's *Standards and Guidelines for Curation* (United States Department of the Interior 1991) and *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017). The objectives of

laboratory processing and analysis were to determine, to the extent possible, the date, function, cultural affiliation, and potential significance of artifacts, as well as to prepare the artifacts for curation. Artifacts were gently washed using tap water and a soft toothbrush. After drying, the artifacts were analyzed, cataloged, and rebagged according to provenience. Artifact data were entered into a relational database. The artifacts will be returned to the landowner.

Historic artifacts were classified using Orser's (1988) functional typology (Table 5-1), which provides a means for interpreting the function of specific historic artifact classes. Orser's typology was used as opposed to South's (1977) as it was specifically designed for post-Civil War assemblages, while South's is more applicable to earlier assemblages. Within Orser's system, historic artifacts were analyzed according to material type and function, when possible. One additional category, 6. Unknown, was added to the functional typology to better capture unidentified artifacts. An additional subcategory has been added to the labor category, 5c. Household, to capture artifacts used during household work, i.e., cleaning products, etc.

Table 5-1 Functional Typology (modified from Orser 1988).

1.	**Foodways**
a.	Procurement – Ammunition, fishhooks, fishing weights, etc.
b.	Preparation – Baking pans, cooking vessels, large knives, etc.
c.	Service – Fine earthenware, flatware, tableware, etc.
d.	Storage – Coarse earthenware, stoneware, glass bottles, canning jars, bottle stoppers, etc.
e.	General Foodways – Unidentified glass and ceramic containers
f.	Floral – Nut shells, seeds, fruit pits, phytoliths, pollen
g.	Faunal – Animal bones, antlers, horns, shells and other remains.
2.	**Clothing**
a.	Fasteners – Buttons, eyelets, snaps, hooks, eyes, etc.
b.	Manufacture – Needles, pins, scissors, thimbles, etc.
c.	Other – Shoe leather, metal shoe shanks, clothes hangers, etc.
3.	**Household/Structural**
a.	Architectural/Construction – Nails, flat glass, spikes, mortar, bricks, slate, etc.
b.	Hardware – Hinges, tacks, nuts, bolts, staples, hooks, brackets, etc.
c.	Furnishings/Accessories – Stove parts, furniture pieces, lamp parts, fasteners, etc.
4.	**Personal**
a.	Medicinal – Medicine bottles, droppers, etc.
b.	Cosmetic – Hairbrushes, hair combs, jars, etc.
c.	Recreational – Smoking pipes, toys, musical instruments, souvenirs, etc.
d.	Monetary – Coins, etc.
e.	Decorative – Jewelry, hairpins, hatpins, spectacles, etc.
f.	Other – Pocketknives, fountain pens, pencils, ink wells, etc.
5.	**Labor**
a.	Agricultural – Barbed wire, horse shoes, harness buckles, hoes, plow blades, scythe blades, etc.
b.	Industrial – Tools, etc.
c.	Household – Household cleaning products, Iron, etc.
6.	**Unknown**
a.	Miscellaneous artifacts

Many of the historic artifacts were identifiable as to material, form, and function, while others required research to determine their function and/or dates of manufacture. Numerous internet resources were helpful such as the Historic Bottle website (Lindsey 2015) and the Jefferson Patterson Park and Museum's website (2015). Most artifact dating and identification were based on the following sources: Lindsey (2015); Miller (2000); South (1977).

An attempt was made to classify all historic ceramics according to published pottery types. (e.g., whiteware, pearlware, stoneware). Those sherds not easily recognized were assigned a descriptive name based on surface treatment and paste. Diagnostic ceramic types and maker's marks, when present, were used to estimate dates for site activities.

The same attributes were recorded for all artifacts, including: count; material (i.e., the main material composition of the artifact); and form. The form was often difficult to determine given the fragmentary nature of artifacts. Identical, or nearly identical, artifacts within a provenience were grouped together under the same catalog number. (Note: The catalog number is the bag number followed by artifact number.) For example, all the window glass fragments within a single bag number (i.e., all from the same provenience) would be given the same artifact number. Whenever possible, mendable artifacts were grouped together.

5.2.4 Accessioning and Curation

All material remains and associated records were prepared for accessioning and curation following the *Regional Archaeological Curation Facility Collections Standards* in accordance with 36 CFR Part 79, *Curation of Federally Owned and Administered Archaeological Collection.* The collection will be returned to the landowner at the conclusion of the project.

During analysis artifacts were separated, within each unique catalog number, by material type (i.e. glass, metal, and shell) and subdivided, where possible, by attributes such as ware type, form and function. A unique artifact number was then assigned to each grouping and rebagged. Artifacts were bagged in appropriately sized, perforated 4-millimeter (mil) polyethylene zip-lock bags.

All diagnostic artifacts were labeled with the state site number, provenience, and their individual artifact number using a base coat of archivally safe sealant (such as Paraloid B-72), ink, and a final coat of sealant. Artifacts such as glass, nails, and brick were bagged together with their group within their individual provenience but do not require direct labeling. Bags were labeled with provenience information using permanent black ink; acid-free archival tags with the same information were placed in each bag or special container.

All artifacts were bagged according to catalog number, ordered sequentially, and placed in Hollinger-style archival boxes measuring 15-x-12-x-10 inches with lids and affixed with a temporary label and numbered according to the Regional Facility' specifications. An inventory for each box was placed inside detailing all artifacts/documents present within an individual box.

All original documentation and one stable, acid-free copy were submitted along with the artifacts. Acid-free secondary containers such as file folders were used to organize the records in a logical manner and are in permanent ink with the contents. Photographs and digital media were formatted according to current collections best standards and burned onto an archival disk; hard copies of digital photos are also included. An inventory describing all media submitted with an explanation of the information in the inventory of associated records, photographic documentation and artifacts were submitted with the collection.

5.3 EXPECTED RESULTS

Based on historic background information gathered for this project, it was expected that cultural materials deposited any time from the seventeenth century to the present-day could be encountered. It was also expected that prehistoric artifacts could be encountered due to the location of the project area along the James River and the adjacent unnamed tributaries and swamps. Specifically, it was expected that artifacts related to previously recorded sites 44NN0068, 44NN0069, 44NN0278, and 44NN0281.

6.0 RESULTS

The Phase I archaeological survey of the JRTP Recharge Wells included pedestrian inspection of the entire APE and shovel testing except in areas of prior development, steep slopes, or poorly drained soils. A total of 247 STPs were excavated from a total of 278 pre-plotted STPs during the survey. An additional 13 radial delineation STPs were also excavated. The remaining 31 pre-plotted STPs were not excavated due to prior development and disturbance. The survey resulted in the recovery of 64 artifacts from three positive STPs and six positive radial delineation STPs and resulted in the relocation of the northeast portion of 44NN0281 and the northeast portion of 44NN0278. No evidence of previously recorded 44NN0068 and44NN0069were encountered. To better manage the project, the APE was divided into two distinct areas, Area A on the east side of Riverview Parkway and Area B on the west side of Riverview Parkway. Areas A and B, the results of the investigation, and the location of the documented archaeological sites are depicted in Figure 6-1.

6.1 AREA A

Area A is located on the east side of Riverview Parkway and comprises approximately 2.49 acres of the 9.62-acre project area. Pedestrian inspection of Area A documented previous disturbance from the development of buildings and roads. The terrain in Area A was generally flat, with some areas of minor slope near drainages. The northern section of Area A, closest to Riverview Parkway, consisted of mowed open fields and disturbance from construction of the cell tower located within the APE. The southern section of Area A exhibited denser vegetation as well as disturbance from construction related to the Newport News City Prison Farm complex.

Of the 67 pre-plotted STPs in Area A, a total of 65 were excavated, along with an additional 13 radial delineation STPs. A total of two pre-plotted STPs were not excavated due to significant disturbance. A total of four pre-plotted STPs and six radial STPs were positive for historic material, resulting in the relocation of the northeast portion of 44NN0281 within the APE and the relocation of the northeast portion of 44NN278 outside of the APE.

The typical soil profile in Area A exhibited extensive erosion, consisting of compacted clay and heavily mottled soils mixed with gravel and asphalt. The A horizon (topsoil) and E horizon were often mixed with the underlying B horizon subsoil. STP E-51 consisted of two soil horizons (Stratums I and II), both of which exhibited some erosion and disturbance. Stratum I is an A horizon mixed with the underlying E and B horizons, consisting of a very dark grayish brown (10YR 3/2) mottled with yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) silt clay loam and extended to a depth of 23 cm (9.1 in) bgs. The underlying B horizon subsoil (Stratum II) consisted of a yellowish brown (10YR 5/6) silt clay loam. STP F-6 exhibited some erosion, resulting in a soil profile consisting of two strata (I and II). Stratum I consisted of a brown (10YR 5/3) silty clay A horizon that extended to a depth of 11 cm bgs. The underlying B horizon subsoil (Stratum II) consisted of a pale brown (10YR 6/3) clay. Figure 6-2 contains representative soil profiles from Area A.

Legend

APE

STPs

- Positive STP
- Negative STP
- Not Excavated

N

0 200 400 600 Feet

0 100 200 Meters

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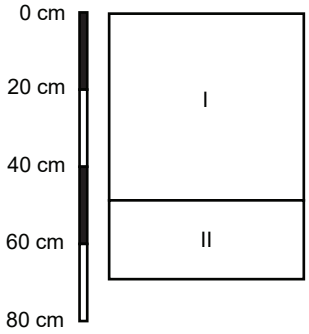
Survey Results

Source: VGIN 2020

Project No.	Prepared by	Date	
60635877	KAF	04/29/21	Figure 6-1

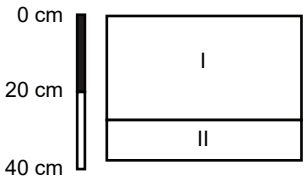
STP E-40
(44NN0281)



I Ap Horizon
Dark grayish brown (10YR 4/2) sandy loam

II B Horizon
Yellowish brown (10YR 5/6) sandy clay loam

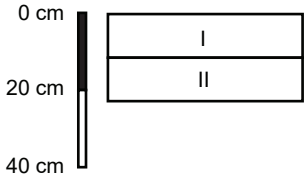
STP E-51



I A Horizon
Very dark grayish brown (10YR 3/2) mottled with yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) silty clay loam

II B Horizon
Yellowish brown (10YR 5/6) silty clay loam

STP F-6



I A Horizon
Brown (10YR 5/3) silty clay

II B Horizon
Pale brown (10YR 6/3) clay

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Area A Representative STP Profiles

Project No.	Prepared by	Date	
60635877	KAF	04/30/21	Figure 6-2

6.1.1 44NN0281

Site 44NN0281 was originally documented in 1992 (Higgins et al. 1992), and a portion of the site boundary as depicted on project plan maps and on V-CRIS extends into the APE. This portion of Area A within the APE is a manicured lawn consisting of mostly flat terrain (Figure 6-3 and Figure 6-4). A gravel path running east-west from the Newport News City Prison Farm to the cell tower are also present within the boundary of 44NN0281. A total of three pre-plotted STPs and six radial delineation STPs contained cultural materials. Two of the pre-plotted STPs (E-40 and E-42) and two of the radial STPs (E-42 West and E-42 South) were mapped within the current site boundary for 44NN0281. The remaining five STPs (E-46, E-46 North, E-46 South, E-46 East, E-46 West) are located approximately 20 m east of the current 44NN0281 boundary (Figure 6-5), resulting in the extension of the eastern boundary of 44NN0281.

STP E-40 contained a soil profile representative of that encountered in this area of the site. The STP documented an Ap horizon (Stratum I) consisting of a dark grayish brown (10YR 4/2) sandy loam and extended to a depth of 49 cm (19.3 in) bgs. The underlying B horizon subsoils consisted of a yellowish brown (10YR 5/6) sandy clay loam and was excavated to a depth of 69 cm (27.2 in) bgs.

A total of 61 historic artifacts were recovered from 44NN0281. Of those 61, 17 artifacts were recovered from the STPs within the current site boundaries (E-40, E-42, E-42 West, and E-42 South), while the remaining 44 were recovered from STPs E-46, E-46 North, E-46 South, E-46 East, E-46 West. All artifacts were recovered from the Ap horizon of these STPs (Table 6-1).

Table 6-1. Distribution of Artifacts at Site 44NN0281

STP	Stratum	Soil Horizon	Depth (cm bgs)	Group	Count
E-40	I	Ap	0-49	Foodways	1
E-42	I	Ap	0-18	Foodways	2
E-42 West	I	Ap	0-26	Foodways	3
E-42 South	I	Ap	0-30	Foodways	10
				Household/Structural	1
E-46	I	Ap	0-19	Foodways	1
E-46 East	I	Ap	0-29	Household/Structural	10
				Miscellaneous	3
E-46 North	I	Ap	0-20	Foodways	6
				Household/Structural	10
				Miscellaneous	7
E-46 South	I	Ap	0-28	Foodways	1
				Household/Structural	2
E-46 West	I	Ap	0-26	Foodways	1
				Household/Structural	1
				Miscellaneous	2
Grand Total					**61**

There was nearly an equal number of domestic (n=25) and architectural (n=24) materials represented at 44NN0281. The remaining 12 artifacts could not be attributed to a specific group and therefore are categorized as Miscellaneous. Most of the artifacts were concentrated near STP E-46 (n=44).

There was little variety among the architectural materials within the assemblage. Nearly 84 percent of the architectural materials are nails (n=20), 17 of which could be identified as extruded/wire wound. The remaining three nails could not be identified. A total of three window glass fragments

and one ceramic sewer pipe fragment are also represented within the assemblage. Domestic artifacts included items typically associated with food service or storage. Included among the domestic assemblage are container or bottle glass (n=19), one creamware sherd, one flow blue whiteware sherd, one undecorated whiteware sherd, and one yellowware sherd (Table 6-2). There were also three iron coil fragments and nine unidentifiable iron fragments included in the 44NN0281 assemblage.

Table 6-2. Artifacts from Site 44NN0281

Group	Material	Object	Date Range	Count
Foodways	Ceramic	Creamware Sherd, Undecorated	1762-1820	1
		Flow Blue Whiteware Sherd	1844-1920	1
		Whiteware Sherd, Undecorated	1820-Present	1
		Yellowware Sherd	1830-1940	3
	Glass	Bottle, Beer/Wine/Liquor, Dip Mold	1730s-1820s	1
		Unidentified Vessel Glass, Machined	1893-Present	6
		Bottle, Blown in Mold	-	8
		Unidentified Vessel Glass	-	4
Household/Structural	Ceramic	Sewer Pipe	-	1
	Glass	Window Glass	-	3
	Metal, Iron	Nail, Wire Wound	1890-Present	17
		Nail, Unidentified	-	3
Miscellaneous	Metal, Iron	Coil, Unidentified	-	3
		Unidentified	-	9
Grand Total				**61**

Most of the artifacts recovered from 44NN0281 within the APE date to the mid- to late nineteenth century (n=28), with a few dating to the early part of the nineteenth century (n=2). The creamware sherd and dip molded bottle glass may be remnants of the Warwick Towne settlement. The blown bottle glass (n=8), yellowware, and whiteware could be associated with the Confederate encampment located within the APE as depicted on the Worret 186(?) Military Map of a Part of the Penisula (Figure 3-2). All the recovered artifacts came from the historic plow zone, and no evidence of cultural features was noted during the current investigation.

The data recovery investigations of 44NN0281 by New South Associates, Inc. in 2017 and 2018 (Pope et al. 2020) focused on the potentially significant portions of the site, which are located to the west and southwest of the current APE. Therefore, the archaeological deposits within the APE do not have the potential to yield significant information about the nineteenth century occupation within the APE and do not contribute to the potential NRHP eligibility of 44NN0281 as a whole.

6.1.2 44NN0278

Site 44NN0278 was originally documented in 1992 (Higgins et al. 1992), and a small portion of the site boundary as depicted on project plan maps and on V-CRIS extended into the APE. This portion of Area A within the APE is a fenced pasture of tall grass.

STP F-29 contained a soil profile representative of that encountered in this area of the site. The STP documented an Ap horizon (Stratum I) consisting of a black (10YR 2/1) silt loam and extended to a depth of 10 cm (4 in) bgs. The underlying B horizon subsoils consisted of a yellowish brown (10YR 5/6) sandy clay loam and was excavated to a depth of 30 cm (11.8) bgs. STPs F-28 and F-29 documented asphalt at 5 cm (2 in) bgs.

A total of three historic artifacts were recovered approximately 32 m (105 ft) east of the boundary of 44NN0278 from STP E-56, resulting in the extension of the eastern boundary of 44NN0278. These artifacts included two twentieth century ceramic sewer pipe fragments and one possible iron handle fragment within the A/E horizon (Stratum I) between 0 and 11 cm (0 and 4.3 in) below ground surface (bgs). These artifacts are likely associated with the nearby brick and concrete structure **(**Figure 6-6 and Figure 6-7). This structure is documented on the 1950 and 1965 USGS Mulberry Island Quadrangles, but it is not present on the 1907 USGS Yorktown Quadrangle (Figure 3-5 and Figure 3-6). It was likely part of the Newport News City Prison Farm complex.

The archaeological deposits within the APE do not have the potential to yield significant information about the twentieth century occupation or Newport News City Prison Farm complex within the APE and do not contribute to the potential NRHP eligibility of 44NN0278 as a whole.

6.2 AREA B

Area B is located on the west side of Riverview Parkway and comprises approximately 7.14 acres of the 9.62-acre project area. Pedestrian inspection of Area B documented previous disturbance from the development of City Farm Park, buildings, roads, and walking trails. The terrain in Area B was generally flat, consisting of manicured lawns, walking paths, and soccer fields (Figure 6-8 and Figure 6-9).

Of the 210 pre-plotted STPs in Area B, a total of 181 were excavated. The remaining 29 were not excavated due to significant disturbance or utility lines. No evidence of previously recorded 44NN0068 and 44NN0069 were encountered. There were no artifacts recovered from Area B. It is postulated that the original mapping and orientation of 44NN0068 as depicted in Higgins et al. (1992) and V-CRIS is incorrect and that the orientation of the site as depicted in Fesler and McCartney (1994) is correct. The Fesler and McCartney (1994) work shows the site oriented along a general north-south axis, and the lack of artifacts in the APE in the V-CRIS mapped location of the site suggests that the original site boundaries were mapped incorrectly.

Area B exhibited significant disturbance, particularly in the manicured lawns of City Farm Park. The typical soil profile consisted of fill or mottled soils overlying B horizon subsoils. STP A-16 documented a heavily compacted light yellowish brown (10YR 6/4) sandy loam fill layer that reached a depth of 36 cm (14.2 in) bgs. The underlying B horizon subsoil was a yellowish brown (10YR 5/8) sandy clay loam and excavated to a depth of 56 cm (22 in) bgs.

Figure 6-3. 44NN0281 Overview, Facing North

Figure 6-4 44NN0281 Overview, Facing South

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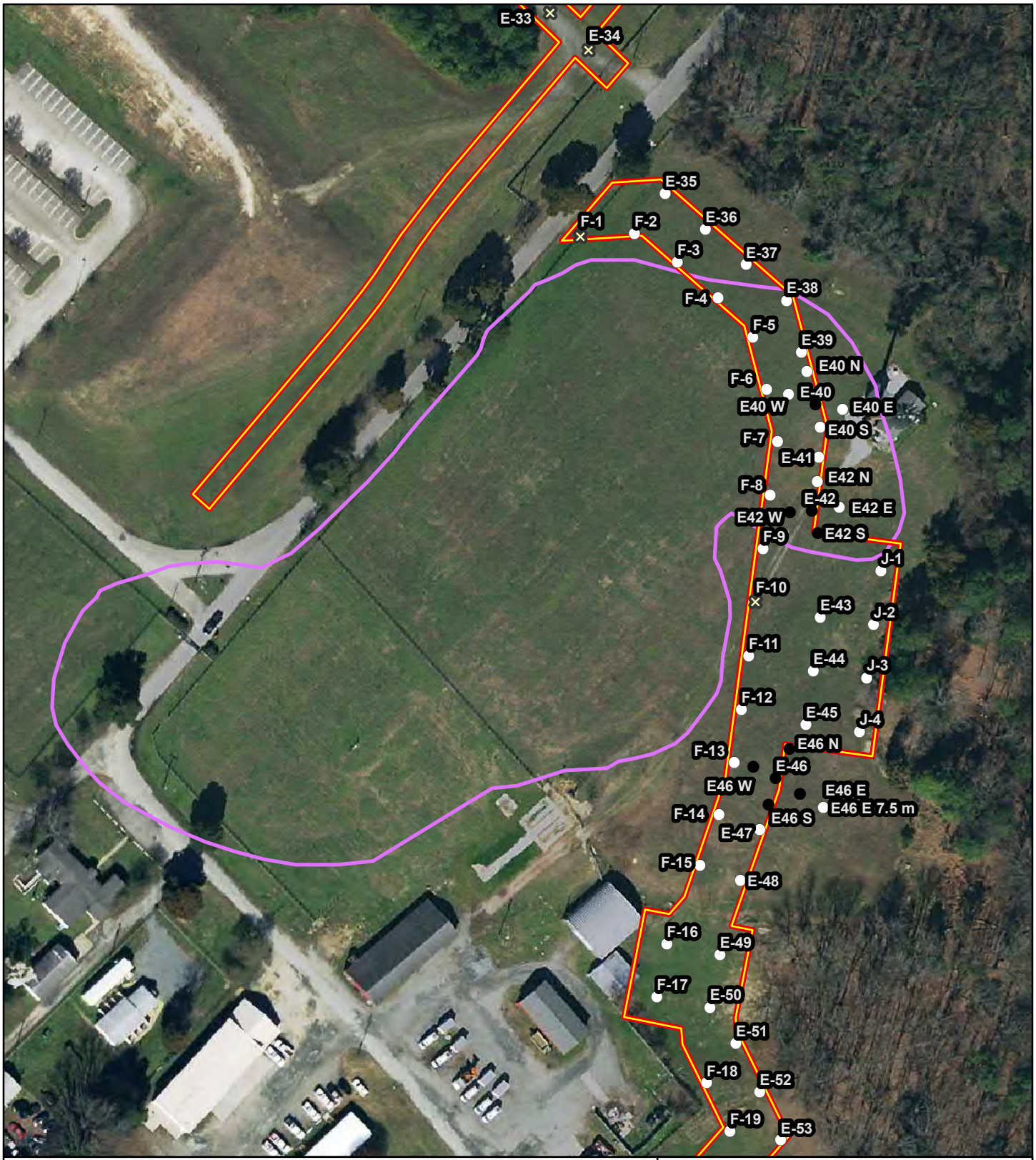
Project Photographs

Project No.	Prepared by	Date	Figures 6-3 and 6-4
60635877	KAF	04/30/21	



Legend

Site 44NN0281

STPs

- Positive STP
- Negative STP
- Not Excavated

N

0 100 200 Feet

0 20 40 60 Meters

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44NN0281 Results

Source: V-CRIS 2021; VGIN 2020

Project No.	Prepared by	Date	
60635877	KAF	04/29/21	Figure 6-5

Figure 6-6. Remains of Brick Structure from Newport News City Prison Farm, Facing North

Figure 6-7. Overview of Area East of Brick Structure, Facing North

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Project Photographs			
Project No. 60635877	Prepared by KAF	Date 04/30/21	Figures 6-6 and 6-7

Figure 6-8. Disturbance on Transect E in Area B, Facing South

Figure 6-9. Utility Near Transects A and B, Facing East

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Project Photographs			
Project No. 60635877	Prepared by KAF	Date 04/30/21	Figures 6-8 and 6-9

7.0 CONCLUSIONS AND RECOMMENDATIONS

AECOM conducted a Phase I archaeological survey for HRSD of areas of proposed ground disturbance (APE) for the JRTP monitoring and recharge wells in Newport News, Virginia, in support of the SWIFT program, funded in part by a loan financed through the EPA WIFIA program and permitted through the EPA Region 3 UIC program. Work was conducted pursuant to Section 106 of the NHPA of 1966, as amended, and the ACHP's "Protection of Historic and Cultural Properties" (36 CFR 800; U USDI 2004). The study also conformed to the DHR *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

The Phase I archaeological survey of the JRTP Recharge Wells APE resulted in the relocation of a portion of 44NN0281 and 44NN0278 within the APE. No evidence of previously recorded 44NN0068 or 44NN0069 was encountered.

The archaeological deposits associated with 44NN0281 consist of a subsurface scatter of mid- to late nineteenth century artifacts all found within the old plowzone that may be associated with the Civil War camp documented within the APE or a nineteenth century domestic occupation of the area. The data recovery investigations of 44NN0281 by New South Associates, Inc. in 2017 and 2018 (Pope et al. 2020) focused on the potentially significant portions of the site, which are located to the west and southwest of the current APE. Therefore, the archaeological deposits within the APE do not have the potential to yield significant information about the nineteenth century occupation within the APE and do not contribute to the potential NRHP eligibility of 44NN0281 as a whole.

The archaeological deposits associated with 44NN0278 consisted of a small, subsurface scatter of early to mid-twentieth century artifacts all found within the plowzone that may be associated with the Newport News City Prison Farm. The archaeological deposits associated with 44NN0278 within the APE do not have the potential to yield significant information about the twentieth century occupation of the Newport News City Prison Farm within APE and do not contribute to the potential NRHP eligibility of 44NN0278 as a whole.

It is recommended that the proposed JRTP Recharge Wells project be allowed to proceed without concern for impacts to significant archaeological sites. However, should project designs change to include un-surveyed portions of the property, additional archaeological investigations may be necessary. Additionally, adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

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Appendix A:
Artifact Catalog

HRSD James River Wells Phase I

44NN0278 STP: E56		Stratum: I	Depth: 0 to 11 cmbs					
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0004.0001	1	Household/Structural, Architectural/Construction	Coarse Earthenware	Sewer/Water Pipe, Fragment	Red Bodied			26.74
0004.0002	1	Household/Structural, Architectural/Construction	Coarse Earthenware	Sewer/Water Pipe, Fragment	Red Bodied		Wash; Brown	35.28
0004.0003	1	Miscellaneous, Unknown	Iron	Possible Handle, Fragment	Indeterminate			22.84
44NN0281 STP: E40		**Stratum: I**	**Depth: 0 to 49 cmbs**					
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0001.0001	1	Foodways, General Foodways	Refined Earthenware	Tableware/Toiletware, Unid., Fragment	Whiteware		Flow Blue; Blue, Dark	0.80
44NN0281 STP: E42		**Stratum: I**	**Depth: 0 to 18 cmbs**					
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0002.0001	1	Foodways, General Foodways	Refined Earthenware	Tableware/Toiletware, Unid., Fragment	Yellowware			0.61
0002.0002	1	Foodways, General Foodways	Glass, Unid. Type	Bottle, Unid., Fragment	Indeterminate	Olive Green		0.86
44NN0281 STP: E46		**Stratum: I**	**Depth: 0 to 19 cmbs**					
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0003.0001	1	Foodways, General Foodways	Glass, Unid. Type	Bottle, Panel, Base/Body Sherd	Blown, Unid.	Aqua Blue		18.64
44NN0281 STP: E46 North		**Stratum: I**	**Depth: 0 to 20 cmbs**					
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0005.0001	1	Household/Structural, Architectural/Construction	Coarse Earthenware	Sewer/Water Pipe, Fragment	Red Bodied		Wash; Brown	79.13
0005.0002	4	Foodways, General Foodways	Glass, Unid. Type	Bottle, Unid., Fragment	Machined	Amber		2.15
0005.0003	2	Foodways, General Foodways	Glass, Unid. Type	Container Glass, Fragment	Machined	Colorless		2.38
0005.0004	1	Household/Structural, Architectural/Construction	Glass, Unid. Type	Window Glass, Fragment	Indeterminate	Aqua, Light		0.66

44NN0281 STP: E46 North Stratum: I Depth: 0 to 20 cmbs								
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0005.0005	5	Household/Structural, Architectural/Construction	Iron	Nail, Fragment	Wire Wound			47.25
0005.0006	3	Household/Structural, Architectural/Construction	Iron	Nail, Fragment	Indeterminate			18.33
0005.0007	7	Miscellaneous, Unknown	Iron	Indeterminate, Fragment	Indeterminate			16.54
44NN0281 STP: E46 West Stratum: I Depth: 0 to 29 cmbs								
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0006.0001	1	Foodways, General Foodways	Refined Earthenware	Tableware/Toiletware, Unid., Fragment	Creamware			0.15
0006.0002	1	Household/Structural, Architectural/Construction	Glass, Unid. Type	Window Glass, Fragment	Indeterminate	Colorless		0.26
0006.0003	2	Miscellaneous, Unknown	Iron	Indeterminate, Fragment	Indeterminate			6.16
44NN0281 STP: E46 South Stratum: I Depth: 0 to 28 cmbs								
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0007.0001	1	Foodways, General Foodways	Refined Earthenware	Tableware/Toiletware, Unid., Fragment	Whiteware			0.33
0007.0002	2	Household/Structural, Architectural/Construction	Iron	Nail, Fragment	Wire Wound			22.93
44NN0281 STP: E46 East Stratum: I Depth: 0 to 29 cmbs								
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0008.0001	1	Household/Structural, Architectural/Construction	Iron	Nail, Complete/Mostly Complete	Wire Wound			23.08
0008.0002	4	Household/Structural, Architectural/Construction	Iron	Nail, Complete/Mostly Complete	Wire Wound			45.12
0008.0003	2	Household/Structural, Architectural/Construction	Iron	Nail, Complete/Mostly Complete	Wire Wound			19.96
0008.0004	1	Household/Structural, Architectural/Construction	Iron	Nail, Complete/Mostly Complete	Wire Wound			7.02
0008.0005	2	Household/Structural, Architectural/Construction	Iron	Nail, Complete/Mostly Complete	Wire Wound			5.19
0008.0006	3	Miscellaneous, Unknown	Iron	Coil, Fragment	Indeterminate			49.32

44NN0281 STP: E42 South Stratum: I Depth: 0 to 30 cmbs								
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0009.0001	2	Foodways, General Foodways	Refined Earthenware	Tableware/Toiletware, Unid., Fragment	Yellowware			2.24
0009.0002	1	Foodways, Storage	Glass, Unid. Type	Bottle, Beer/Wine/Liquor, Base Sherd	Dip Mold	Olive Green		63.54
0009.0003	2	Foodways, Storage	Glass, Unid. Type	Bottle, Beer/Wine/Liquor, Fragment	Blown, Unid.	Olive Green, Light		7.31
0009.0004	4	Foodways, Storage	Glass, Unid. Type	Bottle, Beer/Wine/Liquor, Fragment	Blown, Unid.	Olive Green		11.67
0009.0005	1	Foodways, General Foodways	Glass, Unid. Type	Bottle, Panel, Body Sherd	Blown, Unid.	Aqua Blue		0.94
0009.0006	1	Household/Structural, Architectural/Construction	Glass, Unid. Type	Window Glass, Fragment	Indeterminate	Colorless		0.52
44NN0281 STP: E42 West Stratum: I Depth: 0 to 26 cmbs								
Catalog #	**Count**	**Group**	**Material**	**Object/Part**	**Type/Technology**	**Object Color**	**Attributes/Decoration**	**Weight(g)**
0010.0001	3	Foodways, General Foodways	Glass, Unid. Type	Bottle, Unid., Fragment	Indeterminate	Olive Green		

Artifact Total: 64

HRSD James River Wells Ph I Artifact Catalog
Note: Additional attribute data recorded in electronic database

Friday, April 30, 2021

Appendix B:
Qualifications of Investigators

Kayla Marciniszyn, MA

Archaeologist

Areas of Expertise

Archaeology
Artifact Analysis
Curation Management
Laboratory Administration

Education

MA, Museum Studies, University of Oklahoma

BS, Archaeological Sciences, Penn State University

Years of Experience

With AECOM	2
With Other Firms	7

Professional Associations

Society for American Archaeology

Training and Certifications

Deaccessioning Archaeological Collections, Society for American Archaeology, Instructors: Jenna Domeischel and Terry S. Childs, 2019

Summary

Ms. Marciniszyn is an archaeologist with over seven years of experience in prehistoric and historic archaeological field work and lab work, particularly in the Mid-Atlantic region in the United States. Ms. Marciniszyn holds a Master of Arts degree in Museum Studies and meets the professional qualifications of the Secretary of the Interior standards. Her experience includes archaeological field work, laboratory task administration, artifact analysis, relational database management, and archival/curation management. She oversees the preparation of historic and prehistoric artifacts recovered during cultural resource investigations and their associated records for transfer to long term curation facilities in accordance with federal, state, and municipal standards. She has extensive knowledge of current professional curatorial and collection management practices and standards. As an Archaeologist and Archaeology Lab Director with AECOM, Ms. Marciniszyn directs and assists with field projects, provides GIS support, conducts artifact and data analysis, and assists with technical report writing.

Selected Recent AECOM Experience

Archaeologist and Lab Director, Carroll County Bureau of Resource Management, Phase I Archaeological Investigation for the Piney Run Watershed Study, Carroll County, MD, 2019. Performed Phase I survey tasks as assigned. Directed historic and prehistoic artifact processing, including washing, cataloging, database management, and curation

Archaeologist and Lab Director, City of Annapolis, Phase II Archaeological Evaluation, Annapolis, MD 2019. Assisted in identifying and recording historic features in downtown Annapolis for proposed stormwater mitigation project. Directed historic artifact processing and analysis.

Crew Chief and Lab Director, Dominion Energy, Prince George County, VA, 2019. Assisted in overseeing portions of a large-scale Phase I survey in advance of the development of a solar farm. Directed artifact processing, including washing, cataloging, database management, and curation.

Crew Chief and Lab Director, Maryland Department of Transportation State Highways Administration (MDOT SHA), Phase I Archaeological Survey of the Macomb Property, Prince George's County, MD, 2019. Assisted in overseeing portions of a Phase I survey

near Adelphi Park. Documented a late 18th to early 19th century house foundation. Directed artifact processing, including cataloging, and database management. Prepared artifacts for curation according to standards established by the Maryland Historical Trust.

Archaeologist, Dominion Energy, Monitoring for Offshore Wind Interconnection Facility, Virginia Beach, VA 2019. Monitored construction activities and excavations for proposed wind interconnection facilities at Camp Pendleton.

Archaeologist and Lab Director, MDOT SHA, Charles County, MD 2019. Wrote the technical report for a Phase I/II survey along MD Route 231. Analyzed and cataloged prehistoric artifacts dating to the Middle to Late Archaic periods and historic artifacts dating from the late-seventeenth century to late-eighteenth century. Prepared artifacts for curation according to standards established by the Maryland Historical Trust.

Lab Director, Private Developer, Data Recovery Excavation of 44PW1607, Prince William County, VA 2019. Directed artifact processing and analysis for 44PW1607, a mid-eighteenth to early-nineteenth century site likely associated with the Cockpit Point plantation and a late-nineteenth to mid-twentieth century domestic site associated with worker housing for the adjacent garbage reduction plant. Identified and cataloged historic artifacts dating from the mid-eighteenth century to the mid-twentieth century.

Project Archaeologist and Lab Director, City of Frederick, Frederick, MD 2019. Assisted with a combined Phase I/II investigation of 18FR309, a mid-eighteenth to early twentieth century domestic and industrial site. Directed historic artifact processing and analysis.

Field Director, Private Developer, Phase I Archaeological Survey of the Karagiannis Property, Loudoun County, VA, 2019. Directed a Phase I survey for proposed development in Loudoun County, Virginia.

Field Director, Private Developer, Phase I Archaeological Survey of Main Tree Farm, Loudoun County, VA, 2019. Directed a Phase I survey for proposed development in Loudoun County, Virginia.

Archaeologist and Lab Director, Virginia Department of Transportation (VDOT), Phase I Archaeological Survey of VA Tech Perimeter Road, Montgomery County, VA, 2018-2019. Large-scale Phase I survey on the Virginia Tech campus. Directed historic and prehistoric artifact processing and analysis.

Relevant Experience

Archaeology Assistant Collections Manager, Fairfax County Park Authority Archaeology and Collections Branch (FCPA ACB), 2016-2018. Assist collections manager with managing the archaeological collection of Fairfax County, VA. Duties include reconciling field and lab documentation with associated artifacts, identify and catalog prehistoric and historic artifacts, contribute to technical report writing, conduct historical background research, direct artifact processing, accession and deaccession artifacts, implement integrated pest management and

environmental monitoring of collections facility, manage and maintain artifact collections database, and participate in numerous outreach and public archaeology programs.

Collections Manager, Montpelier Mansion, Prince George's County Department of Parks and Recreation, Maryland-National Capital Park and Planning Commission, 2017. Managed the historic and archaeological collections at Montpelier Mansion Duties included revising and implementing collections management policy, research artifact and object history and provenance, manage PastPerfect collections database, oversee Collections Committee, implement and oversee IPM and housekeeping policies, research potential acquisitions, participate in strategic planning process, manage incoming and outgoing loans, and participate in educational programming and public outreach events.

Archaeology Assistant Lab Director, FCPA ACB, 2016-2018. Oversee the processing of archaeological material recovered from field projects. Duties include cataloging and analyzing historic and prehistoric materials, contribute to artifact database management, participate in public outreach events, coordinate with collections staff to accession recent archaeological projects into the permanent collection, contribute to the Branch's blog, provide training and support to volunteers and interns.

Archaeological Collections Manager, Santa Clara University, 2016. Assisted in the preservation and curation of archaeological materials pertaining to the history of Santa Clara Mission and Santa Clara University. Responsibilities included: update Collections Management Policy to comply with current museum professional standards, develop a working artifact catalog system and database, supervise volunteers and students, implement the use of archival material for the curation and storage of archaeological material, catalog archaeological artifacts dating to the California colonial period (1770s-1850) and the American Period (1850-Present), establish rehousing protocol for improperly housed archaeological materials, and assist in any ongoing archaeological excavations on the Santa Clara University site. Supervised archaeology camp at Mission Santa Cruz. Taught participants how to identify and properly handle archaeological artifacts and provided a class on proper curatorial methods for archaeological materials.

Collections Assistant, Northern Virginia Regional Park Authority, 2014-2016. Maintain and preserve the museum's permanent, archaeological, education, and archival collections by implementing policies outlined in the Museum Collections Policy. Assisted museum curator and site director with various museum collections projects such as collections data entry into Past Perfect and Excel, integrated pest management, collections inventory, condition assessments, artifact cataloging, artifact labeling, processing of loans and gifts, and digitization of archival material. Photographed, cataloged, and entered archaeological collection information into museum database. Rehoused artifacts utilizing National Park Service and American Alliance of Museum standards. Project included rehousing artifacts into archival safe boxes and bags with archival safe tags, cataloging the 3,000 artifacts within the collection.

Senior Field and Lab Technician, Fairfax County Park Authority Archaeology and Collections Branch, 2012-2015. Participate in Phase I, II, and III investigations using standard excavation techniques. Responsibilities include providing GIS support and assistance, identifying and cataloging historic and prehistoric artifacts, database management assistance, participation in outreach and public archaeology events, assist Archaeology Collections Manager with projects associated with American Alliance of Museums accreditation, and train and support volunteers and interns.

Scott K. Seibel, M.Sc., RPA

Principal Archaeologist

Areas of Expertise

Archaeology

Cultural Resource Management

US NHPA and NEPA Compliance

Education

M.Sc., Archaeomaterials, University of Sheffield, 1997

BA, Archaeological Studies, University of Texas, 1996

Licenses/Registrations

36 CFR 61 (Archaeology and History)

Registered Professional Archaeologist

Years of Experience

With AECOM	8
With Other Firms	14

Professional Associations

Society for American Archaeology

Training and Certifications

NEPA 101: An Introduction to the National Environmental Policy Act, Instructors: Brian Boose and Suzanne Richert, 2016

Introduction to Archaeological Damage Assessment, Society for American Archaeology, Instructor: Martin McAllister, 2014

Introduction to Archaeological Data Management, Society for American Archaeology, Instructor: Francis McManamon and Jode Reeves Flores, 2014

Environmental Review and Compliance for Natural Gas Facilities, Federal Energy Regulatory Commission, Multiple Instructors, 2013

Environmental and Historic Preservation Compliance Training, Communications and Broadcast

Summary

Mr. Seibel is a Registered Professional Archaeologist (RPA) with over 22 years of experience in cultural resources management who exceeds the Secretary of Interior Standards for archaeology and history. Mr. Seibel has extensive experience in the design, management, and technical execution of historical and archaeological investigations. He has managed reconnaissance and intensive investigations on prehistoric and historic sites throughout the southeastern United States, Mid-Atlantic, South, West, and Midwest. Mr. Seibel's experience includes Phase I archaeological surveys tens of thousands of acres, the Phase II archaeological testing of dozens of archaeological sites, and the Phase III data recovery of prehistoric and historic archaeological sites ranging from a deeply buried Early Archaic occupation to a 20th century tenant farm. He has experience in complying with federal, state, and local regulations and has successfully worked with State Historic Preservation Offices (SHPOs) to develop work plans and create Memoranda of Agreement (MOA) for cultural resources management.

Representative Experience

White Oak Technology Park, Henrico County Economic Development Agency, Principal Investigator, 2018-Present. Principal Investigator for the Phase II archaeological testing of three sites, the delineation of three historic cemeteries, and the exhumation and reburial of remains from two cemeteries in anticipation of the client selling development sites. The project included obtaining an anticipatory Archaeological Excavation of Human Remains permit from the Virginia Department of Historic Resources and extensive consultation with descendant family members.

Cultural Resources Investigations and Training in Support of NEPA, Newport, Rhode Island, Earle, New Jersey, and Chicago, Illinois, Naval Facilities Engineering Command Southeast, Project Manager, 2018-Present. Project Manager for three task orders including: Phase I and Phase II archaeological investigations at Naval Station Newport; character-defining features assessment at Naval Weapons Station Earle; and preparation of a public outreach plan and historic masonry training at Naval Station Great Lakes. Included submittal of monthly updates, Independent Technical Review of work products from Naval Station Newport, and preparation of an Abbreviated Accident Prevention Plan and Environmental Protection Plan for Naval Station Great Lakes work.

Training Area 1 Environmental Assessment, Joint Base Langley-Eustis (JBLE), Newport News, Virginia, Air Force Civil Engineer Center, Principal Archaeologist, 2017-Present. Principal Archaeologist for the preparation of an Environmental Assessment for

Towers, Federal Communications Commission, Multiple Instructors, 2013

Section 4(f) Workshop, Federal Highway Administration National Resource Center, Instructor: Dave Gamble, 2004

Section 106: Principles and Practice, SRI Foundation, Instructor: Lynne Sebastian, 2003

Indirect and Cumulative Impact Assessment, NC Department of Transportation, Instructors: Larry Pesesky and Scott Lane, 2003

Accounting for Cumulative Effects in the NEPA Process, Nicholas School of the Environment and Earth Science, Duke University, 2003

Section 106: An Introduction, National Preservation Institute, Instructor: Thomas F. King, 1999

shoreline erosion activities within Training Area 1 at Ft. Eustis, JBLE. Work includes consultation pursuant to Section 106 of the National Historic Preservation Act regarding the presence of an archaeological site determined eligible for listing in the National Register of Historic Places.

Statewide Cultural Resources Open-End Contract, Virginia Department of Transportation (VDOT), Principal Investigator, 2017-Present. Serving as a key Principal Investigator, Operations Manager, and Alternate Contact for a five-year open-end contract to supply cultural resources to VDOT, including preparing the majority of responses to Requests for Proposal.

Statewide Cultural Resources Open-End Contract, Maryland State Highway Administration (MD SHA), Principal Investigator and Project Manager, 2017-Present. Serving as a one of five key staff and the Secondary Liaison for a five-year open-end contract to supply cultural resources to MD SHA, including serving as Project Manager and/or Principal Investigator on Task Orders.

Atlantic Sunrise Project, Construction Monitoring Spreads 1-7, Wyoming, Luzerne, Lycoming, Clinton, Columbia, Northumberland, Schuykill, Lebanon, and Lancaster Counties, Pennsylvania, Williams Transco, Principal Archaeologist, 2017-2018. Serving as a Principal Archaeologist and back-up to the project Principal Investigator for the archaeological monitoring of construction activities, including review of archaeological monitoring reports, oversight of archaeological monitors, and assessment of and reporting on unanticipated discoveries.

1619 King Street, Documentary Study, Demolition Monitoring, and Phase I Archaeological Survey, Alexandria, Virginia, Magna Hospitality, Principal Investigator and Project Manager, 2017-2018. Serving as Principal Investigator and Project Manager for a Documentary Study for a parcel at 1711 King Street, archaeological monitoring of the demolition of buildings and parking lots for all parcels and 1619 and 1711 King Street, and the Phase I archaeological survey of all parcels following demolition, as well as consultation with Alexandria Archaeology.

Phase I Archaeological Survey, Phase II Evaluation, and Memorandum of Agreement, Powder Mill Sewer Interceptor, Baltimore County, Maryland, Washington Suburban Sanitary Commission, Principal Investigator, 2016-2018. Served as the Principal Investigator for the Phase I archaeological survey of the Area of Potential Effects for the proposed Powder Mill sewer interceptor and the Phase II evaluation of site 18BA139, the remains of a nineteenth century gunpowder mill, which was determined eligible for listing in the National Register of Historic Places. Work includes the preparation of a Memorandum of Agreement for adverse effects to the site by the project.

Hampton Roads Bridge Tunnel, Phase I Terrestrial and Underwater Archaeological Survey, Hampton and Norfolk, Virginia, Virginia Department of Transportation, Principal Archaeologist, 2017. Responsible for the preparation of the technical approach and costing as well as staffing support and the Internal Technical Review of the project deliverables for a Phase I terrestrial archaeological survey along I-64 at I-664 in Hampton to I-564 in Norfolk and underwater survey within the James River.

South Washington Street 12-inch Waterline Project, Phase I

Archaeological Survey and Archaeological Monitoring, Alexandria, Virginia, Virginia American Water, Principal Investigator and Project Manager, 2014-2017. Served as the Principal Investigator for a Phase I archaeological survey for a proposed water line to be placed adjacent to St. Mary's Cemetery in Alexandria, Virginia, to determine the depth or potential depth of unmarked burials within the proposed Limits of Disturbance in order to ascertain if the proposed project would impact unmarked burials. Also served as Principal Investigator for the archaeological monitoring of a pre-construction trench across South Washington Street between St. Mary's Cemetery and Freedmen's Cemetery.

Wallops Island Alternatives Analysis for Disposition of Wallops Flight Facility Coast Guard Station, Wallops Flight Facility, Accomack County, Virginia, National Aeronautical and Space Administration, Project Manager, 2015-2016. Project Manager for cultural resources support to Wallops Flight Facility for the disposition of the National Register of Historic Places eligible Coast Guard Station pursuant to a 2014 Programmatic Agreement. The project includes the preparation of a cost analysis, alternatives analysis, and materials for submittal to the Virginia Department of Historic Places as well as the production of a short documentary film about the Coast Guard Station.

Phase I Archaeological Survey, Phase II Archaeological Evaluation, and Erosion Study, Environmental Services at Installation Support Team EAST Region Installations, Ft. Eustis, Newport News, Virginia, and Tyndall Air Force Base, Bay County, Florida, Air Force Civil Engineer Center, Principal Investigator and Task Manager, 2014-2016. Served as the Task Manager for Phase II archaeological evaluation of six archaeological sites and an erosion study to assist with future cultural resource management planning at Fort Eustis and the Phase I archaeological survey of 2,368 acres and Phase II archaeological evaluation of two sites at Tyndall Air Force Base. Also served as the Principal Investigator of the aforementioned tasks at Ft. Eustis. The project is for AFCEC, contracted through the General Services Administration.

Phase I Archaeological Survey, Phase II Evaluation, and Boundary Delineation, Sites 7K-D-1 and 7K-D-151, Kent County, Delaware, U.S. Army Corps of Engineers, Omaha District, Principal Investigator, 2015-2016. Served as Principal Investigator for additional archaeological investigations at site 7K-D-1, combined with former site 7K-D-2, to complete delineation of its boundary on Dover Air Force Base and assess the potential of a 5.1-acre portion of the site on Dover Air Force Base to contain unmarked prehistoric burials as well as conduct a Phase I survey and Phase II evaluation of the former location of an historic farmstead in support of the proposed construction of a new school to replace the existing Dover Air Force Base Middle School/George S. Welch Elementary School. The report included the incorporation of all previous archaeological investigations at site 7K-D-1 on Dover Air Force Base.

Section 106 Consultation, Phase I Archaeological Survey, Phase II Archaeological Evaluation, Memorandum of Agreement, Perryville, Cecil County, Maryland, Maryland Transit Administration, Principal Investigator/Task Manager, 2013-2016. Serving as Principal Investigator and Task Manager for the Section 106 support of a proposed MARC railyard for the Maryland Transit Authority in Perryville,

Maryland. The investigations include a Phase I archaeological survey, Phase II archaeological evaluation of a late eighteenth to twentieth century farmstead, a survey and assessment of above-ground resources, and preparation of a Memorandum of Agreement.

Phase I and Phase II Terrestrial and Underwater Archaeological Investigations in the Duluth-Superior Harbor, St. Louis Estuary, St. Louis County, Minnesota, U.S. Army Corps of Engineers, Detroit District, Task Manager and Principal Archaeologist, 2015. Served as the Task Manager and Principal Archaeologist for the Phase I terrestrial survey of multiple survey areas covering 311 acres, the Phase IA underwater remote sensing survey of multiple survey areas covering 670 acres, and the Phase II underwater archaeological evaluation of eight submerged archaeological sites and shipwrecks in support of the Remedial Action Plan for the St. Louis River Area of Concern. The project included an aggressive schedule that required the completion some of the draft reports while field investigations were still on-going and all six reports within four months of Notice to Proceed. All project schedule milestones were met on time.

Phase II Archaeological Evaluation, MD 222, Cecil County, Maryland, Maryland State Highway Administration, Principal Investigator/Project Manager, 2014-2015. Serving as Principal Investigator and Project Manager for the Phase II National Register of Historic Places evaluation of site 18CE378 within the proposed Limits of Disturbance for the replacement of the MD 222 bridge over Rock Run in Port Deposit, Maryland.

Atlantic Sunrise Project, Virginia Replacements and Mainline Valves, Phase I Archaeological Survey and Above-Ground Effects Analysis, Prince William County, Virginia, Williams Transco, Principal Investigator and Task Manager, 2014-2015. Served as Principal Investigator and Task Manager for pipeline upgrades to a portion of the Transco Pipeline in Prince William County Virginia. Project includes Phase I archaeological survey of temporary work spaces and access roads outside of the existing right-of-way (ROW) and the locations of previously recorded archaeological sites within the ROW as well as an assessment of indirect effects from the construction of new mainline valves.

Environmental and Social Impact Assessment (ESIA), South Stream Natural Gas Pipeline, Trans-boundary Pipeline Crossing Black Sea: Anapa, Russia, Crossing Turkish EEZ and Landfall in Varna, Bulgaria, South Stream Pipeline Company, 2011-2014. Currently serving as the Task Manager for the marine cultural heritage portions of the ESIA for the marine crossing of the Black Sea by an over 900-kilometer long natural gas pipeline. Overseeing staff and institution of quality control for the trans-boundary UNESCO, IMF, EU, Russian, Turkish, and Bulgarian cultural heritage material laws, data analysis, and synthesis.

Phase I Archaeological Survey, Phase II Archaeological Evaluation, Co-Field Director, New Market Streetscapes, New Market, Frederick County, Maryland, Maryland State Highway Administration, 2013-2014. Served as Co-Field Director and Project Manager for a MD SHA-led archaeological investigation of two late eighteenth and early nineteenth century taverns in New Market, Maryland for as alternative mitigation for proposed streetscape improvements.

Battlefield Study, Cockpit Point, Prince William County, Virginia, Prince William County Planning Department, Principal Investigator, 2013-2014. Serving as Principal Investigator for the study of the Civil War-era Confederate Cockpit Point batteries along the Virginia shore of the Potomac River in support of an American Battlefield Protection Program-funded grant to Prince William County, Virginia.

Phase I Archaeological Survey, Quiggins Sinkhole, Hardin County, Kentucky, FEMA, Task Manager, 2012-2013. Task Manager for the Phase I archaeological survey of approximately 36 acres for proposed water retention ponds to alleviate flooding in and around the City of Radcliff in Hardin County, Kentucky, including managing an archaeological subconsultant for the field investigations. Conducted under HMTAP Task Order 8 for FEMA Region IV.

Phase I Archaeological Survey, Warrenton Training Center, Station D, Culpeper County, Virginia, Warrenton Training Center, Principal Investigator, 2012-2013. Served as Principal Investigator and Task Manager for an archaeological survey and metal detecting of 30 acres of Station D of the Warrenton Training Center (WTC) in Culpeper County, Virginia, which contains Civil War encampments related to the Battle of Brandy Station and the Mine Run Campaign. The work was conducted in support of both Section 106 and Section 110 compliance activities under contract to WTC.

Phase II Archaeological Testing, Archaeological Testing in the Lake Wister Archeological District, LeFlore County, Oklahoma, Tulsa District, U.S. Army Corps of Engineers, Principal Investigator, 2012-2013. Served as Principal Investigator for additional Phase II excavations at the Pee Wee/Bear Claw site along Fourche Maline Creek, which contains evidence of Middle Archaic through Historic period occupations, including the presence of two midden mounds and human burials. The site is located within the Lake Wister Archaeological District in LeFlore County, Oklahoma. All work was conducted in support of a task order with the Tulsa District of the U.S. Army Corps of Engineers.

Historic Documentary Research, Archaeological Potential Assessment, Phase I Archaeological Survey, Jefferson-Houston School, Alexandria, Virginia, Principal Investigator, 2012. Directed the documentary research and Phase I archaeological survey for proposed construction at the Jefferson-Houston School within a project area containing the former locations of an early 19th century ropewalk, a Civil War stockyard, mid-late 19th century residential occupations, and an early 20th century school, as well as the potential remains of a slaughterhouse. Additional Phase II testing and Phase III data recovery activities were conducted the site of a late 19th century slaughterhouse in 2012 and 2013.

Archaeological Geophysical Survey, Phase I Archaeological Survey, Geophysical and Phase I Archaeological Survey of the Federal Penitentiary and U.S. Arsenal at Fort McNair, Washington, D.C., Joint Base Myer-Henderson Hall, Principal Investigator/Task Manager, 2011-2012. Geophysical and archaeological investigation of the former locations of 19th century Federal Penitentiary and 18th-20th century U.S. Arsenal for Joint Base Myer-Henderson Hall conducted for the USACE Norfolk District.

Phase II Archaeological Testing, Testing of 40HA552 and Revised

Right-of-Way State Route 317 (Apison Pike) from State Route 321 to East Brainerd Road, Hamilton County, Tennessee, Tennessee Department of Transportation, Principal Investigator/Senior Project Manager, 2010-2011. Principal Investigator for archaeological investigations for this new location and roadway expansion project in Hamilton County, Tennessee, for the Tennessee Department of Transportation (TDOT) in 2010 and 2011, supporting TDOT in the identification of multiple archaeological sites as well as evaluation of NRHP eligibility pursuant to Section 106. Mr. Seibel also provided recommendations for site avoidance and possible mitigation plans.

Phase I Archaeological Survey, Enoree New Lands, Sumter National Forest, Newberry and Sumter Counties, South Carolina, U.S. Forest Service, Principal Investigator/Senior Project Manager, 2010-2011. Served as Principal Investigator for the Phase I archaeological survey of 1,357 acres of timber stands and 8.511 linear feet of logging roads in the Enoree Ranger District of the Sumter National Forest in Newberry and Sumter counties, South Carolina, for the U.S.D.A. Forest Service. Project resulted in the identification of 51 archaeological sites and 30 isolated finds, with nine of the sites recommended potentially eligible or eligible for listing in the National Register of Historic Places.

Phase III Archaeological Data Recovery, Cherokee Brick Sites, Bibb County, Georgia, Cherokee Brick and Tile Company, Principal Investigator/ Project Manager, 2007-2011. Principal Investigator for the data recovery of three prehistoric archaeological sites in the floodplain of the Ocmulgee River for the Cherokee Brick and Tile Company. The sites included a deeply stratified site containing Early Archaic and Late Archaic components, including a Late Archaic structure, a shallow site containing a Late Archaic component and a Mississippian farmstead, and an Early Archaic through Woodland period lithic reduction site.

Phase III Archaeological Data Recovery, Lower Cape Fear River: Data Recovery of the Southside Site (31NH802), New Hanover County, North Carolina, Cape Fear Public Utility Authority, Principal Investigator/Senior Project Manager, 2009-2010. Served as Principal Investigator for the Phase III archaeological data recovery of the Southside Site, a Late Archaic through Middle Woodland occupation along the Cape Fear River in New Hanover County, North Carolina, in support of the proposed expansion of a wastewater treatment plant for the Cape Fear Public Utility Authority. The investigation included the excavation of 162 1-x-1 meter excavation units and the recovery of 15,134 ceramic and lithic artifacts and 14 cultural features.

Phase III Archaeological Data Recovery, Windsor Site (31BR201/201), US 17 Windsor Bypass, Bertie County, North Carolina, North Carolina Department of Transportation, Principal Investigator/Senior Project Manager, 2006-2009.** Served as Principal Investigator for the Phase III archaeological data recovery of the Windsor Site, an over 90,000 square meter site containing Early Archaic through Woodland period and historic period occupations along the Cashie River in Bertie County, North Carolina, which was conducted as mitigation in advance of the construction of the US 17 Windsor Bypass by the North Carolina Department of Transportation. The investigations included the mechanical clearing of 4,451 square meters of plow zone and the excavation of 106 1-x-1 meter excavation units as well as a

geomorphic investigation, which resulted in the identification of 1,602 cultural features and 2,120 prehistoric and historic artifacts and the identification and dating of paelo-channels of the Cashie River associated with the prehistoric occupations. Data recovered from the site assisted in the identification of a new Middle Woodland ceramic type, the Middletown series.

Phase III Archaeological Data Recovery, Riversound Site (31CO167/167), Chowan County, North Carolina, Private Developer, Principal Investigator/Senior Project Manager, 2009.** Served as the Principal Investigator for the Phase III data recovery of the Middle Woodland component of the Riversound site, located along the Yeopim River in Chowan County, North Carolina, for Waterfront Group of NC, LLC, in advance of the construction of a residential development. The investigation included the excavation of 61 1-x-1 meter excavation units. Combined with the initial Phase I and Phase II investigations, a total of 11 cultural features were documented and a total of 42,638 artifacts were analyzed. Among the data recovered from the site was evidence of a new, previously hypothesized, Middle Woodland ceramic type, the Middletown series.

Phase I Archaeological Survey, Phase II Archaeological Testing, KOKOA Battlefield Assessment, The Battle of Black Mingo, Georgetown and Williamburg Counties, South Carolina, Francis Marion Trail Commission and Francis Marion University, Principal Investigator/Senior Project Manager, 2009. Conducted research and archaeological investigations to identify the boundaries of the Revolutionary War battlefield related to Francis Marion, the "Swamp Fox," using the NPS KOKOA principals.

Phase III Data Recovery, Edenmoor, Lancaster County, South Carolina, Principal Investigator and Project Manager, 2009. Phase III data recovery excavations of a late eighteenth to early nineteenth century farmstead occupied by Anglo-American settlers just outside the boundary of the Catawba Nation and containing evidence of the interactions between Anglo settlers and Native American communities. Conduct in support of a private client in advance of the construction of a residential development.

Phase I Archaeological Survey, Honey Hill Analysis Area Part II, Berkeley and Charleston Counties, South Carolina, USDA Forest Service, Principal Investigator/Senior Project Manager, 2007. Principal Investigator for the archaeological investigation of multiple forest compartments for the U.S. Department of Agriculture (USDA) Forest Service in the Francis Marion National Forest in Berkeley and Charleston Counties, South Carolina. This work, which was conducted in support of Section 106 compliance efforts, identified a wide range of archaeological sites and provided recommendations for preservation and avoidance.

Phase III Archaeological Data Recovery, Two Dogs Site (31PR92): A Prehistoric Dacite Quarry in Person County, North Carolina, Hodges, Harbin, Newberry and Tribble and Republic Services, Principal Investigator/ Project Manager, 2006. Conducted the Phase III data recovery of a Middle Archaic and Woodland period dacite quarry in advance of the expansion of a landfill. The project included integration with the North Carolina Lithic Sourcing project, which included the University of North Carolina at Chapel Hill, North Carolina State University, and the Cultural Resource Management Program at Fort

Bragg.

Baseline Assessment Surveys, Environmental Permitting, Eastern North Carolina Natural Gas Pipeline Project, North Carolina, Eastern North Carolina Natural Gas, Senior Archaeologist, 2002-2006. Served as Principal Investigator and Senior Archaeologist for the baseline investigations and cultural resources permitting for the siting and construction of over 500 miles of natural gas transmission and distribution pipelines in 16 counties in eastern North Carolina. In charge of consultation with governmental regulatory agencies and collection of baseline data through field surveys, including in both terrestrial and underwater environments, archaeological site significance testing, cemetery identification and delineation, and the preparation of permitting documents.

Underwater Archaeological Remote Sensing Survey, Underwater Archaeological Survey of the Preferred Corridor Crossing of the Tar River: US 17 Washington Bypass, Beaufort County, North Carolina, North Carolina Department of Transportation, Project Manager, 2005. Served as Project Manager for the underwater remote sensing survey and submerged cultural heritage assessment for a 400 hectare study area within the Tar River for the North Carolina Department of Transportation. The purpose of the investigation was to identify potentially significant submerged cultural heritage objects to ensure avoidance by construction activities.

Phase III Archaeological Data Recovery, Data Recovery Investigations of 41TV441, The Toyah Bluff Site, Travis County, Texas, Travis County, Project Archaeologist, 2001. Phase III data recovery excavations of a Late Woodland period archaeological site at a proposed park along US 71 for Travis County, Texas.

Phase II Archaeological Testing, Blocks 33 and 34: The Austin Convention Center Expansion Project, City of Austin, Field Director, 1999. Field Director for the Phase II testing of the north halves of two blocks in the City of Austin including large-scale mechanical trenching to confirm the structure placements and design of residential and commercial buildings as depicted on Sanborn Fire Insurance Maps.

Phase III Archaeological Data Recovery, Archaeological Excavations at Metaponto, Italy and Chersonesos, Crimea, Ukraine. The Institute of Classical Archaeology, Research Associate, 1995-1996. Research Associate with the Institute for Classical Archaeology for the analysis and reporting on archaeological excavations at Metaponto in Italy and Chersonesos in the Ukraine, which started as Greek colonies in the 5th Century B.C. Tasks included the preparation of digital site data and the review and compilation of project reports.

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PHASE I ARCHAEOLOGICAL SURVEY OF THE SUSTAINABLE WATER INITIATIVE FOR TOMORROW IMPROVEMENTS TO THE JAMES RIVER TREATMENT PLANT, SECTION 3 ADDITION

NEWPORT NEWS, VIRGINIA

ADDENDUM REPORT

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OCTOBER 2020

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ABSTRACT

Hampton Roads Sanitation District (HRSD) contracted AECOM Technical Services, Inc. (AECOM) to conduct a Phase I archaeological survey of areas of proposed ground disturbance for the James River Treatment Plant (JRTP) in Newport News, Virginia, in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program, funded in part by a loan financed through the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program. AECOM conducted a Phase I survey of the original 31.92 acre (ac) Area of Potential Effects (APE) in March 2020 (Stewart and Seibel 2020). The APE has been expanded by approximately 3.19 ac in size to accommodate a construction staging area and relocation of an access road. This report is an addendum to the Stewart and Seibel (2020) report.

Work was conducted pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Advisory Council on Historic Preservation's (ACHP's) "Protection of Historic and Cultural Properties" (36 CFR 800; U.S. Department of the Interior USDI 2004). The study also conformed to the Virginia Department of Historic Resources' (DHR) *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

Fieldwork conducted in October 2020 consisted of pedestrian inspection and shovel testing. The portion of 44NN0281 mapped within the expanded APE was not relocated, and no new archaeological resources were identified within the expanded APE.

It is recommended that the proposed development at the JRTP project be allowed to proceed without concern for impacts to significant archaeological sites. However, should project designs change to include un-surveyed portions of the property, additional archaeological investigations may be necessary. Additionally, adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

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Figure 3-7. Section 3 Representative STP Profiles 3-6

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1.0 INTRODUCTION

Hampton Roads Sanitation District (HRSD) contracted AECOM Technical Services, Inc. (AECOM) to conduct a Phase I archaeological survey of areas of proposed ground disturbance at the James River Treatment Plant (JRTP) in Newport News, Virginia, in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program, funded in part by a loan financed through the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program (Figure 1-1). AECOM conducted a Phase I survey of the original 31.92 acre (ac) Area of Potential Effects (APE) in March 2020 (Stewart and Seibel 2020). The APE has been expanded by approximately 3.19 ac in size to accommodate a construction staging area and relocation of an access road (Figure 1-2). The expanded APE is northwest of the intersection of Riverview Parkway and City Farm Parkway close to the Riverview Gymnastics Center.

Work was conducted pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Advisory Council on Historic Preservation's (ACHP's) "Protection of Historic and Cultural Properties" (36 CFR 800; U.S. Department of the Interior USDI 2004). The study also conformed to the Virginia Department of Historic Resources' (DHR) *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

Fieldwork was conducted in October 2020. Scott Seibel, Registered Professional Archaeologist (RPA) served as the Principal Investigator, and Kelsey Johnson served as the Field Director and Benjamin Stewart served as crew chief. Joseph Normandy and Luka Eglesia served as field technicians. All supervisory personnel meet the Secretary of the Interior's *Professional Qualification Standards* for Archaeology (36 CFR 61).

This report is an addendum to the Stewart and Seibel (2020) report, *Phase I Archaeological Survey of the Sustainable Water Initiative for Tomorrow Improvements to the James River Treatment Plant*, which contains the Cultural Context, Previous Investigations, and Research Design. Following this Introduction, this addendum report includes three sections of text: Environmental Setting, Results, and Conclusions and Recommendations. The References Cited completes the body of the report. Appendix A, containing the qualifications of investigators, follows the body of the report.

Legend

Project Area

N

0 1,000 2,000 Feet

0 200 400 600 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

Project Location

Source: Esri 2020

Project No.	Prepared by	Date	
60617789	NSP	10/29/2020	1-1

Legend

- Expanded APE
- Project Area
- Original APE

N

0 100 200 300 Feet

0 50 100 Meters

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

Area of Potential Effects

Source: ESRI 2020

Project No.	Prepared by	Date	
60617789	NSP	10/29/2020	Figure 1-2

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2.0 ENVIRONMENTAL SETTING

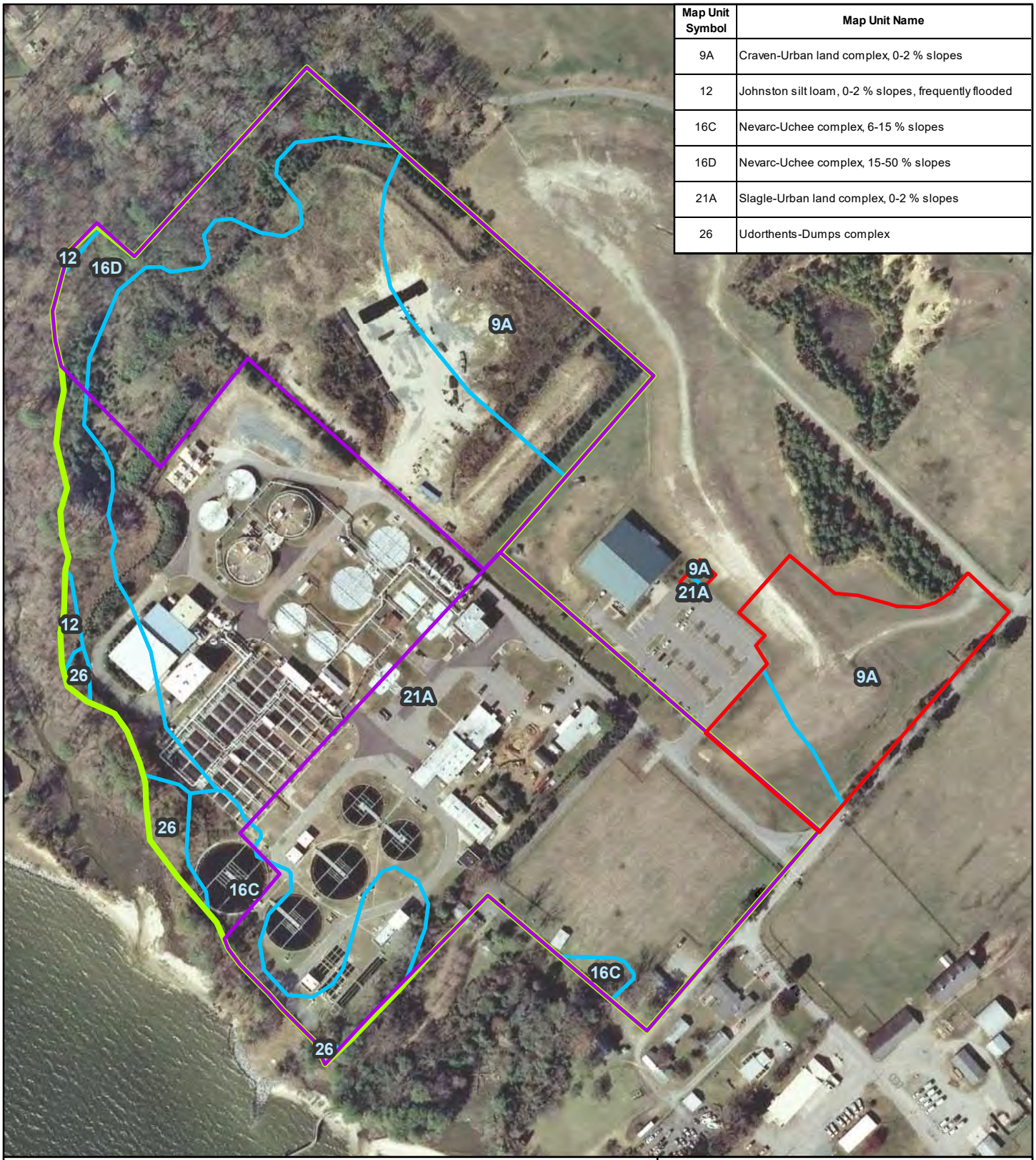
The geology, topography, and hydrology of the expanded APE is the same as for the original APE; as such, information about these environmental conditions can be found in the original Phase I report (Stewart and Seibel 2020).

2.1 SOILS

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service has mapped two soil complexes within the boundaries of the expanded APE (NRCS Web Soil Survey 2020a) (Figure 2-1). Both the Craven-Urban land complex and the Slagle-Urban land complex involve the Urban land series, indicating the entire area has been disturbed in the recent past. Urban lands are used to indicate areas that have been developed and which could contain utility trenches, fill, buildings, and paved surfaces. The Craven soil series generally consists of a 25 to 30 centimeter (cm; 9.8 to 11.8 inch [in]) thick loam A horizon deposited over a thick stratum of silty clay Bt horizon. This marine terrace sediment is moderately well drained allowing for agricultural use. Craven-Urban land complex occupies 2.5 ac of the 3.19 ac expanded APE (NRCS Web Soil Survey 2020b). The Slagle soil series consists of a 23 to 28 cm (9.1 to 11.0 in) thick sandy loam Ap horizon deposited over a clay loam Bt horizon that has gradually increasing clay content. The Slagel-Urban land complex occupies the remaining area, covering 0.69 acres (NRCS Web Soil Survey 2020c).

2.2 CURRENT LAND USE

Located just northwest of the intersection of Riverview Parkway and City Farm Road, the expanded APE is within a mowed field close to the Riverview Gymnastics Center. The project area is dominated by a deposit of fill covering over half of the property. The fill pile rises up to between 3 and 4 meters (m; 9.8 and 13.1 feet [ft]) above the graded surface and is about 20 to 25 m (65.6 to 82.0 ft) wide. This fill pile is likely composed of either tailings from the construction of the JRTP or from dredged sediment from either the James River or Warwick Creek. A dirt bike path traverses the fill pile and exits the area in the north. No structures are visible on the surface. A fire hydrant and storm drain are present in the southwestern portion of the expanded APE, near the parking lot. A fiberoptic cable is present parallel to Riverview Parkway in the eastern part of the expanded APE.



Map Unit Symbol	Map Unit Name
9A	Craven-Urban land complex, 0-2 % slopes
12	Johnston silt loam, 0-2 % slopes, frequently flooded
16C	Nevarc-Uchee complex, 6-15 % slopes
16D	Nevarc-Uchee complex, 15-50 % slopes
21A	Slagle-Urban land complex, 0-2 % slopes
26	Udorthents-Dumps complex

Legend

- Expanded APE
- Project Area
- Original APE
- Soil Unit Boundary

N

0 100 200 300 Feet

0 50 100 Meters

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Germantown, MD 20876

Project Soils

Source: USDA NRCS 2020; ESRI 2020

Project No.	Prepared by	Date	
60617789	NSP	10/29/2020	Figure 2-1

3.0 RESULTS

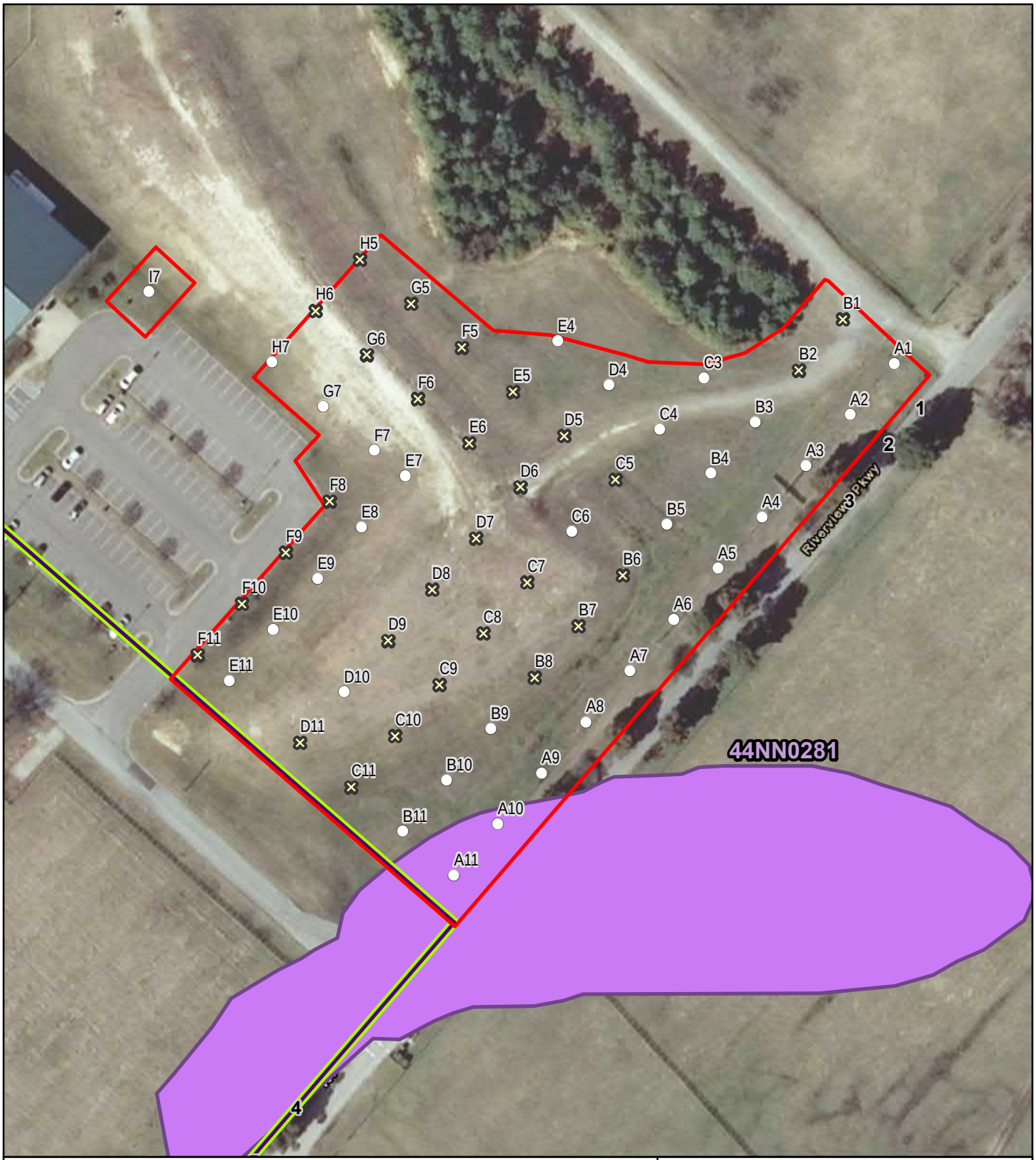
The Phase I archaeological survey of the 3.19 ac expanded APE at JRTP included pedestrian inspection of the entire expanded APE and shovel testing except in areas of prior development or steep slope. The expanded APE was labeled Section 3 following the naming convention of the previous survey (Stewart and Seibel 2020). A total of 61 shovel test pits (STPs) were pre-plotted across the expanded APE prior to the survey, but due to field conditions, only 32 were excavated. Figure 3-1. Section 3 shows a plan of the work in Section 3, and Figure 3-2 shows the location of the previously documented archaeological site 44NN0281 as mapped in the Virginia Cultural Resources Information System (VCRIS). The survey resulted in the recovery of no artifacts, and no evidence of previously recorded 44NN0281 was encountered within the expanded APE.

The eastern side of the expanded APE is flat and did not appear to be disturbed; the eastern-most margin of the fill pile is located just to the west of this area (Figure 3-3). Most of the central portion of the expanded APE was under the large fill pile, upon which runs a dirt path (Figure 3-4).

The 32 STPs excavated encountered nothing but fill sediments throughout the entire expanded APE. Two of the excavated STPs were judgmental excavations placed on top of the fill pile, while the other 30 were interval STPs placed within the flat portions of the expanded APE. Twenty-three of the 29 STPs locations not excavated were plotted on top of the large fill pile that dominates the center of the expanded APE. The other plotted STPs not excavated include four on a concrete curb (Figure 3-5), one within a gravel driveway, and one on a sloped surface. The single STP excavated next to the Riverview Gymnastics Center (Figure 3-6) showed evidence of construction activities, with brick and concrete debris being found and discarded.

STP A-10 is representative of the profiles encountered within the flat portions Section 3. This STP encountered a thin (5 cm; 2 in) thick landscaped sod cap (A horizon) consisting of dark brown (10YR 3/3) silty loam over a mixture of fill consisting of brownish yellow (10YR 6/8) silty clay, light gray (10YR 7/2) silty clay, and dark yellowish brown (10YR 4/6) silty clay loam. Although not present in STP A-10, in some STPs the fill deposit contained a small amount of gravel. After a depth between 40 to 50 cm (15.7 to 19.7 in) below the ground surface, the fill deposit became extremely compact, as if deposited and graded mechanically, preventing deeper testing. Every STP excavated encountered fill. The origin of the fill is indeterminate – the fill could originate from construction activities at the JRTP, the City Farm, or from dredging activities within the James River.

Two STPs were excavated on top of the fill pile, one at C-6 and another at D-10. Both consisted of a single layer of grayish brown (10YR 5/2), brownish yellow (10YR 6/6), and reddish yellow (7.5YR 6/6) mixed silty clay fill with 5 to 10 percent gravel inclusions. Figure 3-7 illustrates the profiles of STP A-10 and C-6.



Legend

- Project Area
- Archaeology Site

Direct APE

- Section 01
- Section 03

STPs

- Negative STP
- Not Dug

N

0 100 200 Feet

0 20 40 60 Meters

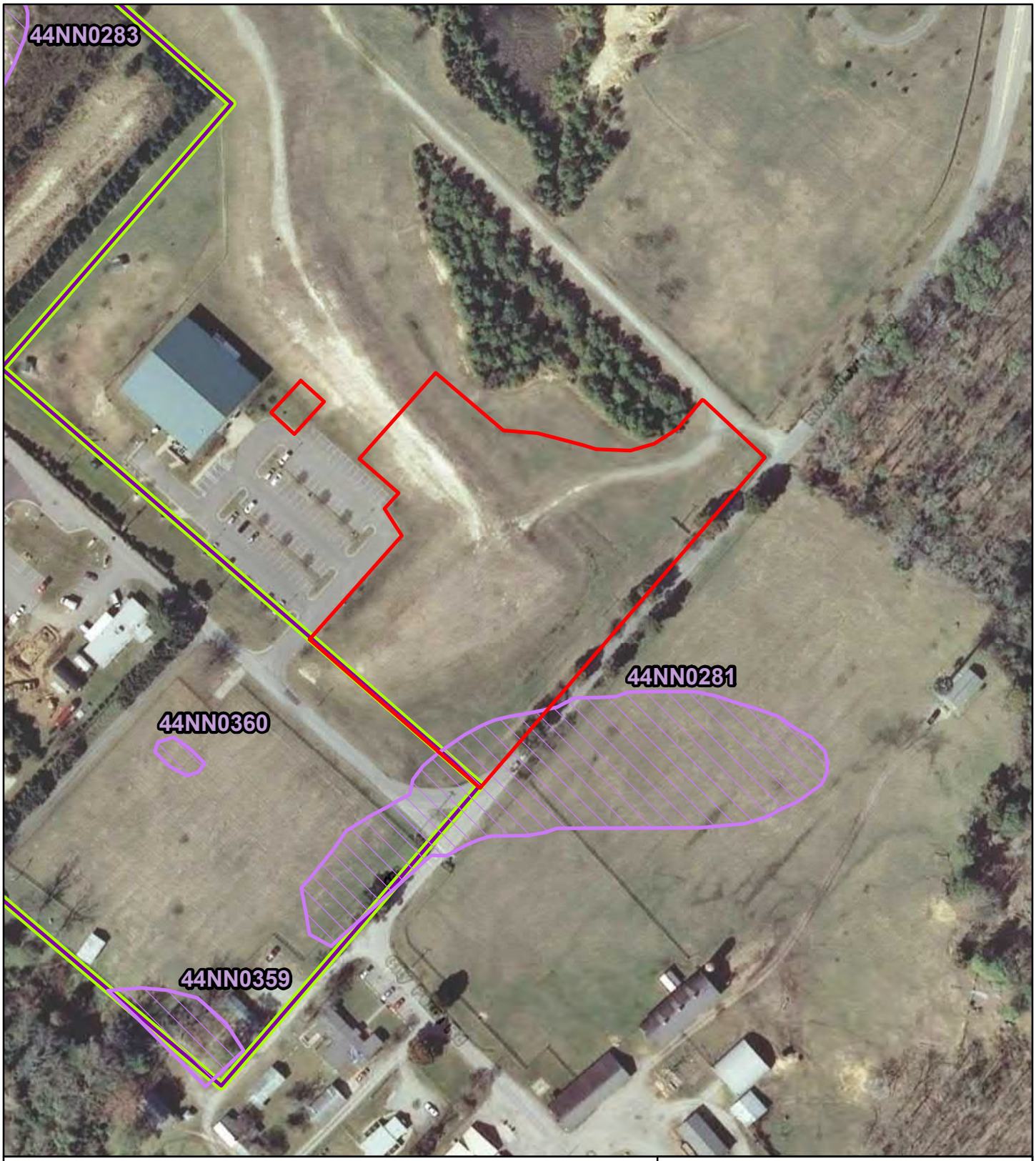
AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

Project Plan

Source: VCRIS 2020; ESRI 2020

Project No.	Prepared by	Date	
60617789	NSP	10/27/2020	Figure 3-1



Legend

- Expanded APE
- Project Area
- Original APE
- Archaeology Site

N

0 100 200 300 Feet

0 50 100 Meters

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Map of 44NN0281

Source: VCRIS 2020; ESRI 2020

Project No.	Prepared by	Date	
60617789	NSP	10/29/2020	Figure 3-2

Figure 3-3 View of East Side of Expanded APE, Facing Northeast

Figure 3-4 View of Central Portion of Expanded APE, Facing East

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Project Photographs

Project No.	Prepared by	Date	Figures 3-3 and 3-4
60635877	BMRS	10/21/20	

Figure 3-5 View of Expanded APE, Facing Southeast

Figure 3-6 View of Expanded APE, Facing West

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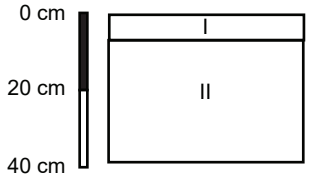
Project Photographs

Project No.	Prepared by	Date	Figures 3-5 and 3-6
60635877	BMRS	10/21/20	

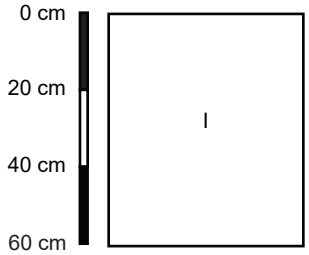
Section 3
A-10
(44NN0281)



I Ap Horizon
Dark brown (10YR 3/3) silty loam

II Fill
Brownish yellow (10YR 6/8) silty clay mixed with
Light gray (10YR 7/2) silty clay and dark yellowish
brown (10YR 4/6) silty clay loam

Section 3
C-6



I Fill
Grayish brown (10YR 5/2) mixed with brownish yellow (10YR 6/6)
and reddish yellow (7.5YR 6/6) silty clay with 10% angular gravel

AECOM 12420 Milestone Center Dr.
Germantown, MD 20876

Section 3 Representative STP Profiles

Project No.	Prepared by	Date	
60635877	BMRS	10/21/20	Figure 3-7

4.0 CONCLUSIONS AND RECOMMENDATIONS

AECOM conducted a Phase I archaeological survey for HRSD of areas of proposed ground disturbance (APE) covering approximately 31.92 ac for the JRTP in Newport News, Virginia, in support of the SWIFT program, funded in part by a loan financed through the EPA WIFIA program (Stewart and Seibel 2020). Work was conducted pursuant to Section 106 of the NHPA of 1966, as amended, and the ACHP's "Protection of Historic and Cultural Properties" (36 CFR 800; U USDI 2004). The study also conformed to the DHR *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017).

The APE has been expanded by approximately 3.19 ac in size to accommodate a construction staging area and relocation of an access road. AECOM conducted a Phase I archaeological survey of the expanded APE, which resulted in the location of no archaeological sites. Notably, the portion of 44NN0281 that extended into the APEas mapped in VCRIS was not relocated. It is recommended that the proposed development at the JRTP project be allowed to proceed without concern for impacts to significant archaeological sites. However, should project designs change to include un-surveyed portions of the property, additional archaeological investigations may be necessary. Additionally, adherence with the Code of Virginia (e.g., §18.2-126, 127) is required should unanticipated graves or human remains be encountered during construction activities.

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5.0 REFERENCES CITED

United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS)

2020a Web Soil Survey. Electronic resource, http://websoilsurvey.nrcs.usda.gov/app/, accessed October 20, 2020.

2020b Web Soil Survey. Electronic resource, http://websoilsurvey.nrcs.usda.gov/app/, accessed October 21, 2020.

2020c Official Soils Series Descriptions. Electronic resource, http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/home/?cid=nrcs142p2_053587, accessed October 21, 2020.

United States Geological Survey (USGS)

1971 *Mulberry Island, VA*. USGS 7.5-Minute Quadrangle. United States Geological Survey, Washington, D.C. 1971 Photo revision.

Stewart, Benjamin and Scott Seibel

2020 *Phase I Archaeological Survey of the Sustainable Water Initiative for Tomorrow Improvements to the James River Treatment Plant.* Prepared for HRSD by AECOM Technical Services, Inc., Germantown, Maryland.

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Appendix A:
Qualifications of Investigators

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Scott K. Seibel, M.Sc., RPA

Principal Investigator

Areas of Expertise

Archaeology

Cultural Resource Management

US NHPA and NEPA Compliance

Education

M.Sc., Archaeomaterials, University of Sheffield, 1997

BA, Archaeological Studies, University of Texas, 1996

Licenses/Registrations

36 CFR 61 (Archaeology and History)

Registered Professional Archaeologist

Years of Experience

With AECOM	8+
With Other Firms	14

Professional Associations

Society for American Archaeology

Training and Certifications

NEPA 101: An Introduction to the National Environmental Policy Act, Instructors: Brian Boose and Suzanne Richert, 2016

Introduction to Archaeological Damage Assessment, Society for American Archaeology, Instructor: Martin McAllister, 2014

Introduction to Archaeological Data Management, Society for American Archaeology, Instructor: Francis McManamon and Jode Reeves Flores, 2014

Environmental Review and Compliance for Natural Gas Facilities, Federal Energy Regulatory Commission, Multiple Instructors, 2013

Environmental and Historic Preservation Compliance Training, Communications and Broadcast

Summary

Mr. Seibel is a Registered Professional Archaeologist (RPA) with over 22 years of experience in cultural resources management who exceeds the Secretary of Interior Standards for archaeology and history. Mr. Seibel has extensive experience in the design, management, and technical execution of historical and archaeological investigations. He has managed reconnaissance and intensive investigations on prehistoric and historic sites throughout the southeastern United States, Mid-Atlantic, South, West, and Midwest. Mr. Seibel's experience includes Phase I archaeological surveys tens of thousands of acres, the Phase II archaeological testing of dozens of archaeological sites, and the Phase III data recovery of prehistoric and historic archaeological sites ranging from a deeply buried Early Archaic occupation to a 20th century tenant farm. He has experience in complying with federal, state, and local regulations and has successfully worked with State Historic Preservation Offices (SHPOs) to develop work plans and create Memoranda of Agreement (MOA) for cultural resources management.

Representative Experience

White Oak Technology Park, Henrico County Economic Development Agency, Principal Investigator, 2018-Present. Principal Investigator for the Phase II archaeological testing of three sites, the delineation of three historic cemeteries, and the exhumation and reburial of remains from two cemeteries in anticipation of the client selling development sites. The project included obtaining an anticipatory Archaeological Excavation of Human Remains permit from the Virginia Department of Historic Resources and extensive consultation with descendant family members.

Cultural Resources Investigations and Training in Support of NEPA, Newport, Rhode Island, Earle, New Jersey, and Chicago, Illinois, Naval Facilities Engineering Command Southeast, Project Manager, 2018-Present. Project Manager for three task orders including: Phase I and Phase II archaeological investigations at Naval Station Newport; character-defining features assessment at Naval Weapons Station Earle; and preparation of a public outreach plan and historic masonry training at Naval Station Great Lakes. Included submittal of monthly updates, Independent Technical Review of work products from Naval Station Newport, and preparation of an Abbreviated Accident Prevention Plan and Environmental Protection Plan for Naval Station Great Lakes work.

Training Area 1 Environmental Assessment, Joint Base Langley-Eustis (JBLE), Newport News, Virginia, Air Force Civil Engineer Center, Principal Archaeologist, 2017-Present. Principal Archaeologist for the preparation of an Environmental Assessment for

Towers, Federal Communications Commission, Multiple Instructors, 2013

Section 4(f) Workshop, Federal Highway Administration National Resource Center, Instructor: Dave Gamble, 2004

Section 106: Principles and Practice, SRI Foundation, Instructor: Lynne Sebastian, 2003

Indirect and Cumulative Impact Assessment, NC Department of Transportation, Instructors: Larry Pesesky and Scott Lane, 2003

Accounting for Cumulative Effects in the NEPA Process, Nicholas School of the Environment and Earth Science, Duke University, 2003

Section 106: An Introduction, National Preservation Institute, Instructor: Thomas F. King, 1999

shoreline erosion activities within Training Area 1 at Ft. Eustis, JBLE. Work includes consultation pursuant to Section 106 of the National Historic Preservation Act regarding the presence of an archaeological site determined eligible for listing in the National Register of Historic Places.

Statewide Cultural Resources Open-End Contract, Virginia Department of Transportation (VDOT), Principal Investigator, 2017-Present. Serving as a key Principal Investigator, Operations Manager, and Alternate Contact for a five-year open-end contract to supply cultural resources to VDOT, including preparing the majority of responses to Requests for Proposal.

Statewide Cultural Resources Open-End Contract, Maryland State Highway Administration (MD SHA), Principal Investigator and Project Manager, 2017-Present. Serving as a one of five key staff and the Secondary Liaison for a five-year open-end contract to supply cultural resources to MD SHA, including serving as Project Manager and/or Principal Investigator on Task Orders.

Atlantic Sunrise Project, Construction Monitoring Spreads 1-7, Wyoming, Luzerne, Lycoming, Clinton, Columbia, Northumberland, Schuykill, Lebanon, and Lancaster Counties, Pennsylvania, Williams Transco, Principal Archaeologist, 2017-2018. Serving as a Principal Archaeologist and back-up to the project Principal Investigator for the archaeological monitoring of construction activities, including review of archaeological monitoring reports, oversight of archaeological monitors, and assessment of and reporting on unanticipated discoveries.

1619 King Street, Documentary Study, Demolition Monitoring, and Phase I Archaeological Survey, Alexandria, Virginia, Magna Hospitality, Principal Investigator and Project Manager, 2017-2018. Serving as Principal Investigator and Project Manager for a Documentary Study for a parcel at 1711 King Street, archaeological monitoring of the demolition of buildings and parking lots for all parcels and 1619 and 1711 King Street, and the Phase I archaeological survey of all parcels following demolition, as well as consultation with Alexandria Archaeology.

Phase I Archaeological Survey, Phase II Evaluation, and Memorandum of Agreement, Powder Mill Sewer Interceptor, Baltimore County, Maryland, Washington Suburban Sanitary Commission, Principal Investigator, 2016-2018. Served as the Principal Investigator for the Phase I archaeological survey of the Area of Potential Effects for the proposed Powder Mill sewer interceptor and the Phase II evaluation of site 18BA139, the remains of a nineteenth century gunpowder mill, which was determined eligible for listing in the National Register of Historic Places. Work includes the preparation of a Memorandum of Agreement for adverse effects to the site by the project.

Hampton Roads Bridge Tunnel, Phase I Terrestrial and Underwater Archaeological Survey, Hampton and Norfolk, Virginia, Virginia Department of Transportation, Principal Archaeologist, 2017. Responsible for the preparation of the technical approach and costing as well as staffing support and the Internal Technical Review of the project deliverables for a Phase I terrestrial archaeological survey along I-64 at I-664 in Hampton to I-564 in Norfolk and underwater survey within the James River.

South Washington Street 12-inch Waterline Project, Phase I

Archaeological Survey and Archaeological Monitoring, Alexandria, Virginia, Virginia American Water, Principal Investigator and Project Manager, 2014-2017. Served as the Principal Investigator for a Phase I archaeological survey for a proposed water line to be placed adjacent to St. Mary's Cemetery in Alexandria, Virginia, to determine the depth or potential depth of unmarked burials within the proposed Limits of Disturbance in order to ascertain if the proposed project would impact unmarked burials. Also served as Principal Investigator for the archaeological monitoring of a pre-construction trench across South Washington Street between St. Mary's Cemetery and Freedmen's Cemetery.

Wallops Island Alternatives Analysis for Disposition of Wallops Flight Facility Coast Guard Station, Wallops Flight Facility, Accomack County, Virginia, National Aeronautical and Space Administration, Project Manager, 2015-2016. Project Manager for cultural resources support to Wallops Flight Facility for the disposition of the National Register of Historic Places eligible Coast Guard Station pursuant to a 2014 Programmatic Agreement. The project includes the preparation of a cost analysis, alternatives analysis, and materials for submittal to the Virginia Department of Historic Places as well as the production of a short documentary film about the Coast Guard Station.

Phase I Archaeological Survey, Phase II Archaeological Evaluation, and Erosion Study, Environmental Services at Installation Support Team EAST Region Installations, Ft. Eustis, Newport News, Virginia, and Tyndall Air Force Base, Bay County, Florida, Air Force Civil Engineer Center, Principal Investigator and Task Manager, 2014-2016. Served as the Task Manager for Phase II archaeological evaluation of six archaeological sites and an erosion study to assist with future cultural resource management planning at Fort Eustis and the Phase I archaeological survey of 2,368 acres and Phase II archaeological evaluation of two sites at Tyndall Air Force Base. Also served as the Principal Investigator of the aforementioned tasks at Ft. Eustis. The project is for AFCEC, contracted through the General Services Administration.

Phase I Archaeological Survey, Phase II Evaluation, and Boundary Delineation, Sites 7K-D-1 and 7K-D-151, Kent County, Delaware, U.S. Army Corps of Engineers, Omaha District, Principal Investigator, 2015-2016. Served as Principal Investigator for additional archaeological investigations at site 7K-D-1, combined with former site 7K-D-2, to complete delineation of its boundary on Dover Air Force Base and assess the potential of a 5.1-acre portion of the site on Dover Air Force Base to contain unmarked prehistoric burials as well as conduct a Phase I survey and Phase II evaluation of the former location of an historic farmstead in support of the proposed construction of a new school to replace the existing Dover Air Force Base Middle School/George S. Welch Elementary School. The report included the incorporation of all previous archaeological investigations at site 7K-D-1 on Dover Air Force Base.

Section 106 Consultation, Phase I Archaeological Survey, Phase II Archaeological Evaluation, Memorandum of Agreement, Perryville, Cecil County, Maryland, Maryland Transit Administration, Principal Investigator/Task Manager, 2013-2016. Serving as Principal Investigator and Task Manager for the Section 106 support of a proposed MARC railyard for the Maryland Transit Authority in Perryville,

Maryland. The investigations include a Phase I archaeological survey, Phase II archaeological evaluation of a late eighteenth to twentieth century farmstead, a survey and assessment of above-ground resources, and preparation of a Memorandum of Agreement.

Phase I and Phase II Terrestrial and Underwater Archaeological Investigations in the Duluth-Superior Harbor, St. Louis Estuary, St. Louis County, Minnesota, U.S. Army Corps of Engineers, Detroit District, Task Manager and Principal Archaeologist, 2015. Served as the Task Manager and Principal Archaeologist for the Phase I terrestrial survey of multiple survey areas covering 311 acres, the Phase IA underwater remote sensing survey of multiple survey areas covering 670 acres, and the Phase II underwater archaeological evaluation of eight submerged archaeological sites and shipwrecks in support of the Remedial Action Plan for the St. Louis River Area of Concern. The project included an aggressive schedule that required the completion some of the draft reports while field investigations were still on-going and all six reports within four months of Notice to Proceed. All project schedule milestones were met on time.

Phase II Archaeological Evaluation, MD 222, Cecil County, Maryland, Maryland State Highway Administration, Principal Investigator/Project Manager, 2014-2015. Serving as Principal Investigator and Project Manager for the Phase II National Register of Historic Places evaluation of site 18CE378 within the proposed Limits of Disturbance for the replacement of the MD 222 bridge over Rock Run in Port Deposit, Maryland.

Atlantic Sunrise Project, Virginia Replacements and Mainline Valves, Phase I Archaeological Survey and Above-Ground Effects Analysis, Prince William County, Virginia, Williams Transco, Principal Investigator and Task Manager, 2014-2015. Served as Principal Investigator and Task Manager for pipeline upgrades to a portion of the Transco Pipeline in Prince William County Virginia. Project includes Phase I archaeological survey of temporary work spaces and access roads outside of the existing right-of-way (ROW) and the locations of previously recorded archaeological sites within the ROW as well as an assessment of indirect effects from the construction of new mainline valves.

Environmental and Social Impact Assessment (ESIA), South Stream Natural Gas Pipeline, Trans-boundary Pipeline Crossing Black Sea: Anapa, Russia, Crossing Turkish EEZ and Landfall in Varna, Bulgaria, South Stream Pipeline Company, 2011-2014. Currently serving as the Task Manager for the marine cultural heritage portions of the ESIA for the marine crossing of the Black Sea by an over 900-kilometer long natural gas pipeline. Overseeing staff and institution of quality control for the trans-boundary UNESCO, IMF, EU, Russian, Turkish, and Bulgarian cultural heritage material laws, data analysis, and synthesis.

Phase I Archaeological Survey, Phase II Archaeological Evaluation, Co-Field Director, New Market Streetscapes, New Market, Frederick County, Maryland, Maryland State Highway Administration, 2013-2014. Served as Co-Field Director and Project Manager for a MD SHA-led archaeological investigation of two late eighteenth and early nineteenth century taverns in New Market, Maryland for as alternative mitigation for proposed streetscape improvements.

Battlefield Study, Cockpit Point, Prince William County, Virginia, Prince William County Planning Department, Principal Investigator, 2013-2014. Serving as Principal Investigator for the study of the Civil War-era Confederate Cockpit Point batteries along the Virginia shore of the Potomac River in support of an American Battlefield Protection Program-funded grant to Prince William County, Virginia.

Phase I Archaeological Survey, Quiggins Sinkhole, Hardin County, Kentucky, FEMA, Task Manager, 2012-2013. Task Manager for the Phase I archaeological survey of approximately 36 acres for proposed water retention ponds to alleviate flooding in and around the City of Radcliff in Hardin County, Kentucky, including managing an archaeological subconsultant for the field investigations. Conducted under HMTAP Task Order 8 for FEMA Region IV.

Phase I Archaeological Survey, Warrenton Training Center, Station D, Culpeper County, Virginia, Warrenton Training Center, Principal Investigator, 2012-2013. Served as Principal Investigator and Task Manager for an archaeological survey and metal detecting of 30 acres of Station D of the Warrenton Training Center (WTC) in Culpeper County, Virginia, which contains Civil War encampments related to the Battle of Brandy Station and the Mine Run Campaign. The work was conducted in support of both Section 106 and Section 110 compliance activities under contract to WTC.

Phase II Archaeological Testing, Archaeological Testing in the Lake Wister Archeological District, LeFlore County, Oklahoma, Tulsa District, U.S. Army Corps of Engineers, Principal Investigator, 2012-2013. Served as Principal Investigator for additional Phase II excavations at the Pee Wee/Bear Claw site along Fourche Maline Creek, which contains evidence of Middle Archaic through Historic period occupations, including the presence of two midden mounds and human burials. The site is located within the Lake Wister Archaeological District in LeFlore County, Oklahoma. All work was conducted in support of a task order with the Tulsa District of the U.S. Army Corps of Engineers.

Historic Documentary Research, Archaeological Potential Assessment, Phase I Archaeological Survey, Jefferson-Houston School, Alexandria, Virginia, Principal Investigator, 2012. Directed the documentary research and Phase I archaeological survey for proposed construction at the Jefferson-Houston School within a project area containing the former locations of an early 19th century ropewalk, a Civil War stockyard, mid-late 19th century residential occupations, and an early 20th century school, as well as the potential remains of a slaughterhouse. Additional Phase II testing and Phase III data recovery activities were conducted the site of a late 19th century slaughterhouse in 2012 and 2013.

Archaeological Geophysical Survey, Phase I Archaeological Survey, Geophysical and Phase I Archaeological Survey of the Federal Penitentiary and U.S. Arsenal at Fort McNair, Washington, D.C., Joint Base Myer-Henderson Hall, Principal Investigator/Task Manager, 2011-2012. Geophysical and archaeological investigation of the former locations of 19th century Federal Penitentiary and 18th-20th century U.S. Arsenal for Joint Base Myer-Henderson Hall conducted for the USACE Norfolk District.

Phase II Archaeological Testing, Testing of 40HA552 and Revised

Right-of-Way State Route 317 (Apison Pike) from State Route 321 to East Brainerd Road, Hamilton County, Tennessee, Tennessee Department of Transportation, Principal Investigator/Senior Project Manager, 2010-2011. Principal Investigator for archaeological investigations for this new location and roadway expansion project in Hamilton County, Tennessee, for the Tennessee Department of Transportation (TDOT) in 2010 and 2011, supporting TDOT in the identification of multiple archaeological sites as well as evaluation of NRHP eligibility pursuant to Section 106. Mr. Seibel also provided recommendations for site avoidance and possible mitigation plans.

Phase I Archaeological Survey, Enoree New Lands, Sumter National Forest, Newberry and Sumter Counties, South Carolina, U.S. Forest Service, Principal Investigator/Senior Project Manager, 2010-2011. Served as Principal Investigator for the Phase I archaeological survey of 1,357 acres of timber stands and 8.511 linear feet of logging roads in the Enoree Ranger District of the Sumter National Forest in Newberry and Sumter counties, South Carolina, for the U.S.D.A. Forest Service. Project resulted in the identification of 51 archaeological sites and 30 isolated finds, with nine of the sites recommended potentially eligible or eligible for listing in the National Register of Historic Places.

Phase III Archaeological Data Recovery, Cherokee Brick Sites, Bibb County, Georgia, Cherokee Brick and Tile Company, Principal Investigator/ Project Manager, 2007-2011. Principal Investigator for the data recovery of three prehistoric archaeological sites in the floodplain of the Ocmulgee River for the Cherokee Brick and Tile Company. The sites included a deeply stratified site containing Early Archaic and Late Archaic components, including a Late Archaic structure, a shallow site containing a Late Archaic component and a Mississippian farmstead, and an Early Archaic through Woodland period lithic reduction site.

Phase III Archaeological Data Recovery, Lower Cape Fear River: Data Recovery of the Southside Site (31NH802), New Hanover County, North Carolina, Cape Fear Public Utility Authority, Principal Investigator/Senior Project Manager, 2009-2010. Served as Principal Investigator for the Phase III archaeological data recovery of the Southside Site, a Late Archaic through Middle Woodland occupation along the Cape Fear River in New Hanover County, North Carolina, in support of the proposed expansion of a wastewater treatment plant for the Cape Fear Public Utility Authority. The investigation included the excavation of 162 1-x-1 meter excavation units and the recovery of 15,134 ceramic and lithic artifacts and 14 cultural features.

Phase III Archaeological Data Recovery, Windsor Site (31BR201/201), US 17 Windsor Bypass, Bertie County, North Carolina, North Carolina Department of Transportation, Principal Investigator/Senior Project Manager, 2006-2009.** Served as Principal Investigator for the Phase III archaeological data recovery of the Windsor Site, an over 90,000 square meter site containing Early Archaic through Woodland period and historic period occupations along the Cashie River in Bertie County, North Carolina, which was conducted as mitigation in advance of the construction of the US 17 Windsor Bypass by the North Carolina Department of Transportation. The investigations included the mechanical clearing of 4,451 square meters of plow zone and the excavation of 106 1-x-1 meter excavation units as well as a

geomorphic investigation, which resulted in the identification of 1,602 cultural features and 2,120 prehistoric and historic artifacts and the identification and dating of paelo-channels of the Cashie River associated with the prehistoric occupations. Data recovered from the site assisted in the identification of a new Middle Woodland ceramic type, the Middletown series.

Phase III Archaeological Data Recovery, Riversound Site (31CO167/167), Chowan County, North Carolina, Private Developer, Principal Investigator/Senior Project Manager, 2009.** Served as the Principal Investigator for the Phase III data recovery of the Middle Woodland component of the Riversound site, located along the Yeopim River in Chowan County, North Carolina, for Waterfront Group of NC, LLC, in advance of the construction of a residential development. The investigation included the excavation of 61 1-x-1 meter excavation units. Combined with the initial Phase I and Phase II investigations, a total of 11 cultural features were documented and a total of 42,638 artifacts were analyzed. Among the data recovered from the site was evidence of a new, previously hypothesized, Middle Woodland ceramic type, the Middletown series.

Phase I Archaeological Survey, Phase II Archaeological Testing, KOKOA Battlefield Assessment, The Battle of Black Mingo, Georgetown and Williamburg Counties, South Carolina, Francis Marion Trail Commission and Francis Marion University, Principal Investigator/Senior Project Manager, 2009. Conducted research and archaeological investigations to identify the boundaries of the Revolutionary War battlefield related to Francis Marion, the “Swamp Fox,” using the NPS KOKOA principals.

Phase III Data Recovery, Edenmoor, Lancaster County, South Carolina, Principal Investigator and Project Manager, 2009. Phase III data recovery excavations of a late eighteenth to early nineteenth century farmstead occupied by Anglo-American settlers just outside the boundary of the Catawba Nation and containing evidence of the interactions between Anglo settlers and Native American communities. Conduct in support of a private client in advance of the construction of a residential development.

Phase I Archaeological Survey, Honey Hill Analysis Area Part II, Berkeley and Charleston Counties, South Carolina, USDA Forest Service, Principal Investigator/Senior Project Manager, 2007. Principal Investigator for the archaeological investigation of multiple forest compartments for the U.S. Department of Agriculture (USDA) Forest Service in the Francis Marion National Forest in Berkeley and Charleston Counties, South Carolina. This work, which was conducted in support of Section 106 compliance efforts, identified a wide range of archaeological sites and provided recommendations for preservation and avoidance.

Phase III Archaeological Data Recovery, Two Dogs Site (31PR92): A Prehistoric Dacite Quarry in Person County, North Carolina, Hodges, Harbin, Newberry and Tribble and Republic Services, Principal Investigator/ Project Manager, 2006. Conducted the Phase III data recovery of a Middle Archaic and Woodland period dacite quarry in advance of the expansion of a landfill. The project included integration with the North Carolina Lithic Sourcing project, which included the University of North Carolina at Chapel Hill, North Carolina State University, and the Cultural Resource Management Program at Fort

Bragg.

Baseline Assessment Surveys, Environmental Permitting, Eastern North Carolina Natural Gas Pipeline Project, North Carolina, Eastern North Carolina Natural Gas, Senior Archaeologist, 2002-2006. Served as Principal Investigator and Senior Archaeologist for the baseline investigations and cultural resources permitting for the siting and construction of over 500 miles of natural gas transmission and distribution pipelines in 16 counties in eastern North Carolina. In charge of consultation with governmental regulatory agencies and collection of baseline data through field surveys, including in both terrestrial and underwater environments, archaeological site significance testing, cemetery identification and delineation, and the preparation of permitting documents.

Underwater Archaeological Remote Sensing Survey, Underwater Archaeological Survey of the Preferred Corridor Crossing of the Tar River: US 17 Washington Bypass, Beaufort County, North Carolina, North Carolina Department of Transportation, Project Manager, 2005. Served as Project Manager for the underwater remote sensing survey and submerged cultural heritage assessment for a 400 hectare study area within the Tar River for the North Carolina Department of Transportation. The purpose of the investigation was to identify potentially significant submerged cultural heritage objects to ensure avoidance by construction activities.

Phase III Archaeological Data Recovery, Data Recovery Investigations of 41TV441, The Toyah Bluff Site, Travis County, Texas, Travis County, Project Archaeologist, 2001. Phase III data recovery excavations of a Late Woodland period archaeological site at a proposed park along US 71 for Travis County, Texas.

Phase II Archaeological Testing, Blocks 33 and 34: The Austin Convention Center Expansion Project, City of Austin, Field Director, 1999. Field Director for the Phase II testing of the north halves of two blocks in the City of Austin including large-scale mechanical trenching to confirm the structure placements and design of residential and commercial buildings as depicted on Sanborn Fire Insurance Maps.

Phase III Archaeological Data Recovery, Archaeological Excavations at Metaponto, Italy and Chersonesos, Crimea, Ukraine. The Institute of Classical Archaeology, Research Associate, 1995-1996. Research Associate with the Institute for Classical Archaeology for the analysis and reporting on archaeological excavations at Metaponto in Italy and Chersonesos in the Ukraine, which started as Greek colonies in the 5th Century B.C. Tasks included the preparation of digital site data and the review and compilation of project reports.

Kelsey Johnson, MA

Archaeologist

Areas of Expertise

Archaeology

NEPA

Section 106

Education

MA, Anthropology, Louisiana State University

BA, Anthropology, University of California, Santa Barbara

Years of Experience

With AECOM	Newly hired
With Other Firms	3

Professional Associations

Register of Professional Archaeologists

Society for American Archaeology

Training and Certifications

Section 106: An Introduction, National Preservation Institute, 2020.

NEPA and Transportation Decisionmaking, National Highway Institute, 2018.

Summary

Ms. Johnson is an archaeologist with three years of experience in prehistoric and historic archaeological field work and lab work, particularly in the Southeast region in the United States. Ms. Johnson holds a Master of Arts degree in Anthropology and meets the professional qualifications of the Secretary of the Interior standards. Her experience includes archaeological field work, laboratory task administration, artifact analysis, National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA) compliance research and documentation, and Geographic Information Systems database management. She oversees cultural resource investigations and authors technical reports of these investigations. She has extensive knowledge of current state and federal field investigation and report standards. As an Archaeologist with AECOM, Ms. Johnson directs and assists with field projects, provides GIS support, and assists with technical report writing.

Selected Recent AECOM Experience

Archaeologist, Hampton Roads Sanitation District, Phase I Archaeological Investigation for the Nansemond Wastewater Treatment Plant, Suffolk, VA, 2020. Performed Phase I survey tasks as assigned, authored technical report, performed and assisted with GIS tasks.

Relevant Experience

Environmental Impact Specialist III, Louisiana Department of Transportation and Development (LADOTD) 2018-2020. Environmental compliance officer for LADOTD. Duties included ensuring project compliance with the National Environmental Policy Act (NEPA) as well with Section 106 of the National Historic Preservation Act; authoring NEPA class of action reports for submittal to the Federal Highway Administration; reviewing consultant reports; analyzing and documenting project impacts to cultural, environmental, and social resources; organizing fieldwork when necessary; performing research using existing environmental and cultural resource databases; documenting and arranging wetland mitigations and other NEPA commitments; participating and organizing public involvement; authoring Section 106 reports for submittal to the State Historic Preservation officer; communicating with project managers; ensuring project deadlines within the environmental department are met.

Field Director, TerraXplorations, Tuscaloosa, 2017-2018.
Supervisory project archaeologist for small firm in the Southeast. Duties included organizing and planning field work, including background research through existing databases before fieldwork, selecting the best survey method, selecting a field crew, organizing and providing lodging for field crew, teaching new crew members how to run transects, dig shovel tests pits and identify artifacts, assuring all survey methods are in compliance with state and federal regulations, organizing and maintaining accurate field records to be used in technical reports, communicating needs and the survey process to clients; authoring technical reports regarding potential impacts to Section 106 resources, submitting technical reports to the appropriate state agencies.

Field/Lab Technician, Coastal Environments, Inc., 2017.
Worked both in the field and in the lab as an archaeology technician. Duties included excavating historic sites, dry screening, drawing plan view and profile maps, keeping detailed documentation of the characteristics of each level and the artifacts each level yielded, inventory of artifacts, washing artifacts, processing artifacts, preparing artifacts for curation.

Archaeology Lab Manager, LSU Underwater Archaeology Lab, 2016-2017.
Supervised the LSU Underwater Archaeology Lab and served as an assistant to the Lab Director. Duties included conserving/preserving artifacts, preparing artifacts for curation, curating artifacts, keeping a detailed inventory of artifacts and data, preparing samples for analysis such as loss-on ignition or pH analysis, keeping the necessary lab supplies well stocked, organizing student worker schedules, instructing student workers on appropriate lab etiquette and tasks, helping student workers develop specific research goals and carry them out (including understanding the concept and importance of artifact conservation and how to best implement preservation techniques based on the type of artifacts and the conditions of the artifact itself and its surroundings, studying pre-historic trade routes through the use of portable x-ray fluorescence analysis, etc.), writing reports on lab research and methodology for various projects involving loss-on ignition, pXRF analysis, 3D imaging, photogrammetry, and pH analysis and keeping my supervisor informed of student worker progress.

AECOM

Attachment D:
NHPA Section 106
Consultation Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

November 20, 2020

Julie V. Langan
State Historic Preservation Officer
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

RE: Hampton Roads Sanitation District Sustainable Water Initiative for Tomorrow (SWIFT) Project
Addendum Archaeological Report and Architectural Survey of the SWIFT Improvements to the James River Treatment Plant, Newport News, Virginia
Initiation of Section 106 Consultation and Finding of No Historic Properties Affected
DHR Project No. 2020-4124

Dear Ms. Langan:

The Environmental Protection Agency (EPA) is providing partial financial assistance through a loan from the Water Infrastructure Finance and Innovation Act (WIFIA) program to the Hampton Roads Sanitation District (HRSD) to undertake a project at HRSD's James River Treatment Plant (JRTP), located at 111 City Farm Road, Newport News, Virginia. The Project involves improvements to the plant under the Sustainable Water Initiative for Tomorrow (SWIFT) program. Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 Code of Regulations [CFR] Part 800) "Protection of Historic Properties" (Section 106), this letter initiates the Section 106 consultation process for the Project and seeks concurrence from the Virginia State Historic Preservation Officer/Department of Historic Resources (DHR) for EPA's finding of no historic properties affected.

Project Background

The HRSD is a municipal wastewater treatment service, founded in 1940 as a political subdivision of the Commonwealth of Virginia. HRSD services 18 counties and cities, serving 1.7 million people. HRSD operates nine plants in the Hampton Roads/Virginia Beach region and four smaller plants located in the Middle Peninsula with the capacity to treat 249 million gallons of wastewater a day.

HRSD intends to start a multi-phase effort to improve the water quality of the Chesapeake Bay under its SWIFT program initiative. The SWIFT program will add advanced water treatment processes, thereby producing highly treated water meeting drinking water standards. The SWIFT project is needed to aid in recharging the Potomac Aquifer by adding 100 million gallons of SWIFT water per day, of which 16 million will be provided by the JRTP. The goal of the SWIFT program is to:

- provide a sustainable source of groundwater to the Potomac Aquifer;
- increase the hydrostatic pressure within the aquifer to prevent saltwater contamination;
- slow, stop, or reverse land subsidence related to aquifer withdrawals in coastal Virginia;
- reduce future capital investment needs in wastewater treatment plant upgrades.

Description of the Undertaking

The proposed Undertaking will occur at HRSD's JRTP facility (Attachment #1) in two parts; each part has been submitted to EPA under separate WIFIA applications. As both parts are located at the JRTP, EPA is evaluating them as a single undertaking for the purposes of Section 106. The Undertaking includes:

1. The Project's first part involves the design and construction of additional facilities to further treat the water in order to pass drinking water quality standards consistent with the water in the Potomac Aquifer. This additional facility is expected to process 16 million gallons per day (MGD). Additionally, the Advanced Nutrient Reduction Improvements includes the redesign of and new construction for the secondary treatment process. The work will include equalization of the primary clarifier effluent, modifications to the Integrated Fixed Film Activated Sludge (IFAS) system, increase IFAS media fill, demolition of the existing (round) secondary clarifiers and replacement with new rectangular secondary clarifiers, construction of a post-denitrification moving bed bio-reactor (MBBR) and chemical storage and feed systems, in addition to the pumping, piping, instrumentation, and associated site work required for these improvements. The current power distribution and electrical system will also be significantly upgraded. Lastly, the first project part includes the construction of three recharge wells and the associated monitoring wells, in addition to the development, testing, and conditioning of the wells. The wells will be housed in well houses, approximately the size of a small residential house, with the architecture compatible with the existing plant. The wells will be spaced about 1,000 feet apart from each other in order to recharge the Potomac Aquifer most efficiently. Six additional recharge wells will be installed on adjacent parcels, these six wells are funded separately, and no federal monies will be involved in their construction. These wells will be constructed on parcels acquired from the City of Newport News. Please note that this part of the Undertaking was described in EPA's initial submission.

2. The Project's second part will involve the acquisition of a ten-acre parcel of land adjacent to the existing James River treatment plant, which is currently owned by the City of Newport News as part of the city's park system. Approximately four acres of the ten-acre parcel will be developed as part of the project while the remaining six acres, which include undeveloped forested lands and the Warwick River shoreline southwest of the project area, will be placed in a conservation easement to protect the waterfront from future development. The James River Advanced Nutrient Reduction Improvements (ANRI) portion of the project involves construction of an administration building and a maintenance building, chemical storage facilities, and expansion of parking lots, driveways, security gates, and fencing associated with the adjacent ANRI facilities at the existing treatment plant. The ANRI portion of the project also includes improvements to an additional parcel associated with the neighboring gymnastics center (built ca. 1994), totaling 3.5 acres in size. The recharge well portion of the project involves construction of one SWIFT recharge well, housed inside a well house similar to the design and spacing to part one of the project's well houses.

Area of Potential Effects

The area of potential effects (APE), as defined in 36 CFR Part 800.16(d), is "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking."

EPA previously defined an APE for archaeological resources within the footprint of proposed plant improvements and associated ground disturbance. DHR concurred with this APE, and the results of a Phase I archaeological survey of the SWIFT improvements at the JRTP, in a letter dated August 28, 2020 (DHR Project #2020-4124; Attachment #2). Due to the addition of a construction laydown area and relocated road to access the Riverview Gymnastics Center, the APE for archaeological resources was expanded and subjected to a Phase I archaeological survey, the results of which are detailed in an addendum report provided as Attachment #3 to this letter.

The above-ground APE consists of the area where the proposed undertaking has the potential to cause direct and/or indirect (primarily visual) effects on above-ground historic properties, and has been delineated to reflect the nature, scale, and location of the Project. The above-ground APE is depicted in Attachment #4 (Above-Ground Area of Potential Effects Map).

Identification of Historic Properties

To identify archaeological historic properties in the APE, HRSD's consultants, who exceed the Secretary of the Interior's Professional Qualification Standards, conducted a Phase I archaeological survey pursuant to DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (DHR 2017). DHR reviewed the results of the initial Phase I survey, *Phase I Archaeological Survey of the Sustainable Water Initiative for Tomorrow Improvements to the James River Treatment Plant, Newport News, Virginia* (2020) by Benjamin Stewart and Scott Seibel as noted in a letter dated August 28, 2020 (DHR Project #2020-4124). A Phase I archaeological survey of the proposed construction laydown area and access road to the Riverview Gymnastics Center was conducted in October 2020, the results of which are detailed in an addendum report provided as Attachment #3 to this letter.

To identify above-ground historic properties in the APE, HRSD's consultants, who exceed the Secretary of the Interior's Professional Qualification Standards, conducted a review of available information, including data sourced from HRSD; National Register of Historic Places (NRHP) listings; historic maps and images (historic aerial photographs, historic topographic maps, etc.); and online research at various agencies, historical societies, and other sources. The records search also included review of the site-specific records from the DHR's online database VCRIS.

The search identified two previously recorded above-ground resources within the APE: a mid-twentieth century farmstead (DHR ID# 121-0103) and the former Newport News City Prison Farm (City Prison Farm) (DHR ID# 121-0104), depicted in Attachment #4. As a result of archival research and on-site fieldwork conducted on October 6, 2020, HRSD also identified the previously unrecorded James River Treatment Plant (DHR ID# 121-5463), depicted in Attachment #5.

1. The unnamed farmstead (DHR ID# 121-0103) (Photograph #1) consists of a two-story brick dwelling constructed circa 1940 according to the VCRIS record and confirmed by the October 2020 field visit, and a well of unknown date. The farmstead is located on a portion of Riverview Farm Park near the banks of the Warwick River.

Photograph 1: Looking to the West-southwest at the Northeast Elevation of the Unnamed Farmstead and Well House (AECOM 2020).

The unnamed farmstead is not eligible for listing in the NRHP. Archival research did not indicate this property was associated with a significant event, pattern of events important to history, or person(s) of historical importance and is not eligible under Criterion A or B. Although the dwelling embodies certain characteristics of a mid-twentieth century, Colonial Revival-style building, it is not an exceptional example of this style. Alterations to the property, such as the replacement of materials (doors, windows and roofing) and the removal of first-story windows later filled-in with plywood have impacted its integrity of design, materials, and workmanship. Abandoned at an unknown date, the vacant dwelling further lacks integrity of feeling and association. The property retains its integrity of location and setting.

2. The Newport News City Prison Farm (DHR ID# 121-0104) (Photograph #2) was constructed between 1918-1937 and consisted of historic-age barracks and a dairy barn, as well as later, non-historic buildings surrounded by cultivated fields. The barracks and dairy barn were demolished between 2015-2017. Today the remaining buildings, consisting of various non-historic frame barns, masonry government buildings, a Quonset hut, a frame shelter, and a mobile home/trailer serve as a maintenance facility for the Newport News Sheriff's Office and Police Department.

Photograph 2: View of the Remaining Structures at the Former City Prison Farm, View Southeast.

As a demolished resource, the City Prison Farm is not eligible for the NRHP due to lack of integrity. Demolition of the barracks and dairy barn resulted in a lack of integrity of materials, workmanship, design, feeling, and association; furthermore, the land is no longer used for agricultural purposes and has lost its integrity of association.

3. The James River Treatment Plant (DHR ID# 121-5463) (Photographs #3-7) was constructed in three phases beginning in 1967 and continuing into the 1980s (Attachment #5, JRTP Facilities Map with Surveyed Resources). The JRTP resources built in 1967 include:
   - Administration Building 1
   - Primary Clarifier 1 & 2
   - Digester 1 & 2
   - Grit Tanks 1 & 2
   - Integrated Fixed Film Activated Sludge (IFAS) system tanks 1-3
   - Secondary Clarifier 1 & 2

Photograph 3: View of the East and South Elevations of Administrative Building #1 (AECOM 2020).

Photograph 4: View of the Digester #1, Looking Northwest (AECOM 2020).

Photograph 5: View of IFAS Tanks 1-9, Looking West (AECOM 2020).

Photograph 6: View of Primary Clarifier #4, Looking West (AECOM 2020).

Photograph 7: View of the Secondary Clarifier #2, Looking South (AECOM 2020).

The initial building phase at JRTP was completed in 1967 with two subsequent building phases constructed between 1970-1982 and 1982-1994. Additionally, a few small minor structures were added between 1994-2002.

The JRTP buildings from the 1967 building campaign were evaluated for NRHP eligibility both on an individual basis and as a potential historic district. None of the 1967 buildings is individually significant for its association with an event or person (Criterion A and B), nor is any an exceptional example of architecture or craftsmanship (Criterion C). Although the small collection of 1967 resources at JRTP are significant as comprising the original HRSD plant at this site, they are not eligible as a historic district. The subsequent post-1967 building phases have occurred throughout the JRTP property so that non-historic resources now far outnumber the original JRTP buildings and prevent defining a discrete district without non-historic intrusions.

For additional information on the three surveyed resources within the Project APE, see Attachment 6 – VCRIS Survey Forms with Photographs. These resources have also been entered into VCRIS.

Assessment of Effects and Request for Section 106 Concurrence

In accordance with 36 CFR 800.4(d)(1), EPA has determined that there are no historic properties present in the APE. EPA seeks the concurrence of your office with the definition of the Project APE for archaeological and above-ground resources, the findings of the Phase I addendum report, and the NRHP eligibility determinations for the three properties within the APE. EPA further seeks concurrence with the finding of no historic properties affected, pursuant to 36 CFR §800.11(d). In the event your office disagrees, please notify us within 30 days.

If you have questions or wish to discuss this undertaking, please contact me at (202) 564-6996 or mccurdy.alaina@epa.gov.

Sincerely,

Alaina McCurdy, Environmental Scientist
WIFIA Management Division
Office of Wastewater Management

Enclosures:

Attachment 1 – Project Location Maps
Attachment 2 – August 2020 DHR Letter
Attachment 3 – Phase I Addendum Report
Attachment 4 – Area of Potential Effects Maps
Attachment 5 – JRTP Facilities Map with Surveyed Resources
Attachment 6 – VCRIS Survey Forms with Photographs

cc: Mr. Erin Girardi, PMP - HRSD Capital Program Manager
1434 Air Rail Avenue, Virginia Beach, VA 23455
Office: 757.460.7026
egirardi@hrsd.com

Attachment 1 – Project Location Maps

USGS Topo Map - Mulberry Island, VA - 1980

CLIENT	Hampton Roads Sanitation District (HRSD)
PROJ	James River Treatment Plant - SWIFT Improvements
SCALE	1:24,000
SOURCE	VCRIS 2020; HRSD 2020; ESRI 2020

N

TITLE

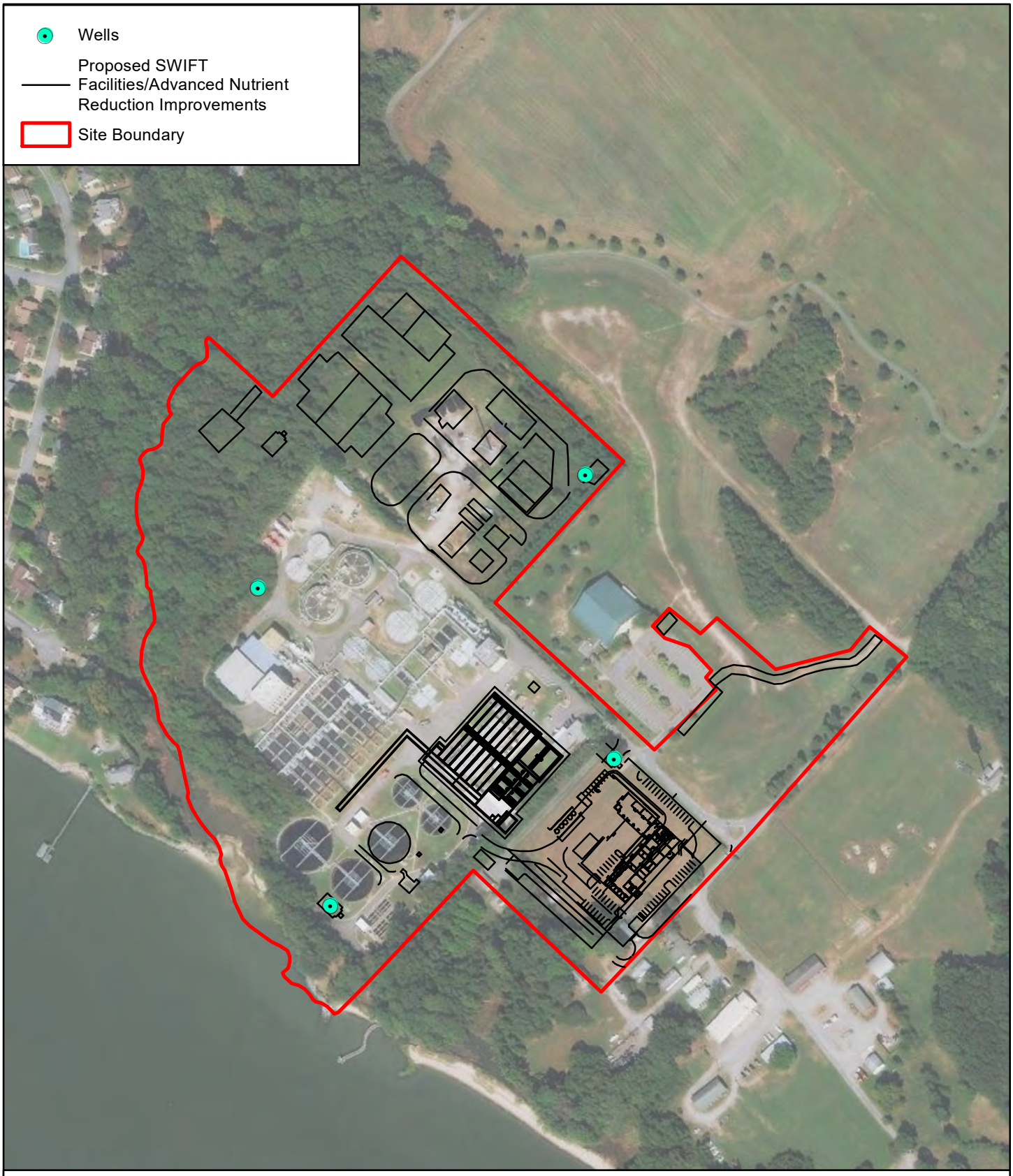
Attachment 1 - Project Location Map

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60617789

FIGURE



CLIENT	Hampton Roads Sanitation District (HRSD)
PROJ	James River Treatment Plant - SWIFT Improvements
SCALE	1:4,837
SOURCE	VCRIS 2020; HRSD 2020; ESRI 2020

N

TITLE

Attachment 1 - Project Location Map

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60617789

FIGURE

Attachment 2 – August 2020 DHR Letter
(See Attachment E of WIFIA submittal)

Attachment 3 – Phase I Addendum Report
*Bound separately
(See Attachment C of WIFIA submittal)

Attachment 4 – Above-Ground Area of Potential Effects Maps

CLIENT	Hampton Roads Sanitation District (HRSD)
PROJ	James River Treatment Plant - SWIFT Improvements
SCALE	1:6,500
SOURCE	VCRIS 2020; HRSD 2020; ESRI 2020

N

TITLE

Attachment 4a - Area of Potential Effects Map

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60617789

FIGURE

Wells

Proposed SWIFT Facilities/Advanced Nutrient Reduction Improvements

Above-ground APE

James River Treatment Plant Tranche 1 Project Boundary

James River Treatment Plant Tranche 2 Project Boundary

Previously Surveyed Resources

Farmstead (121-0103)

Newport News City Prison Farm (121-0104)

0 375 750 1,500 Feet

USGS Topo Map - Mulberry Island, VA - 1980

CLIENT	Hampton Roads Sanitation District (HRSD)
PROJ	James River Treatment Plant - SWIFT Improvements
SCALE	1:8,000
SOURCE	VCRIS 2020; HRSD 2020; ESRI 2020

N

TITLE

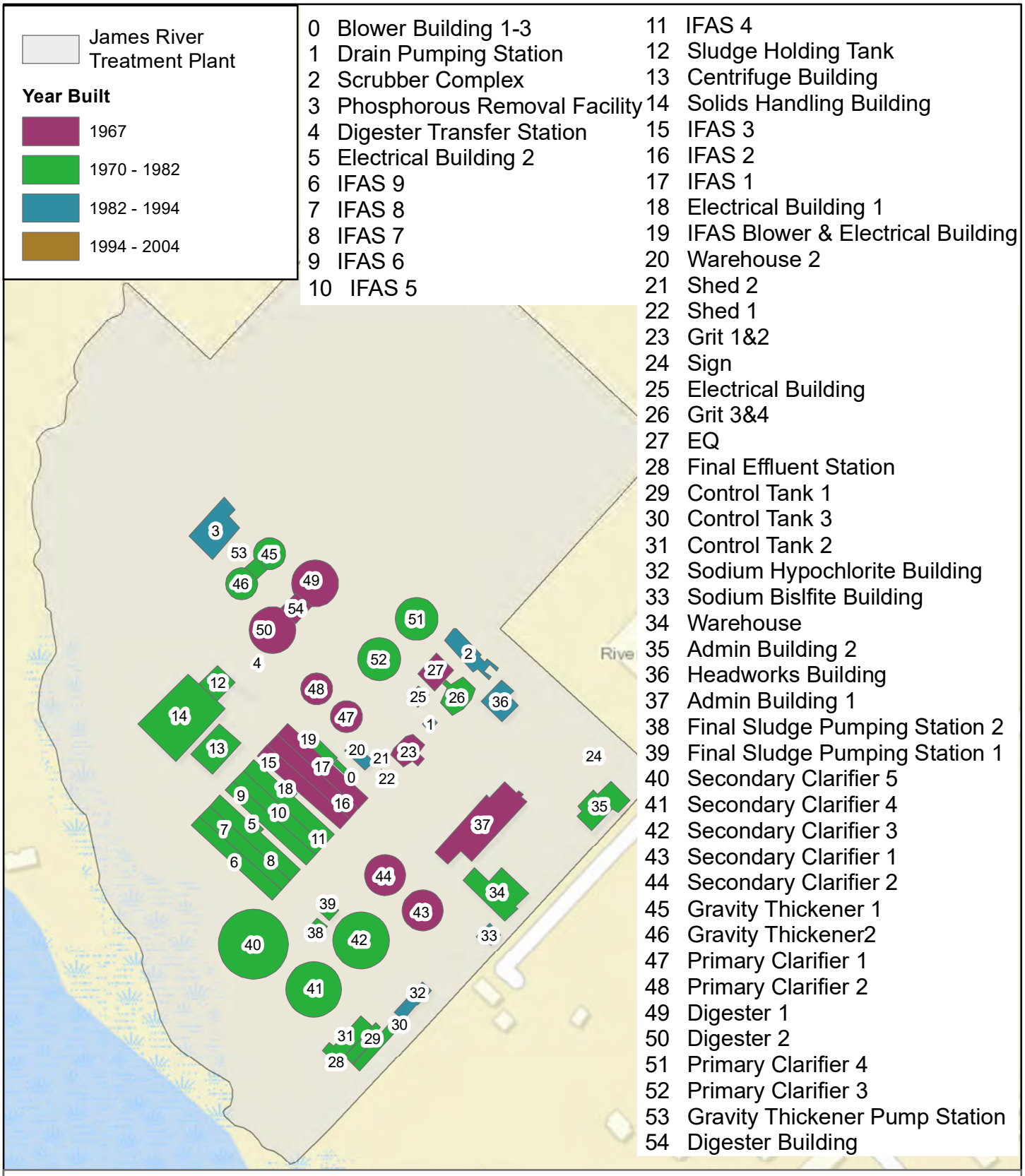
Attachment 4b - Area of Potential Effects Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60617789

FIGURE

Attachment 5 – JRTP Facilities Map with Surveyed Resources



CLIENT	Hampton Roads Santiation District (HRSD)
PROJ	James River Treatment Plant SWIFT Improvements
SCALE	1:3,750
SOURCE	ESRI 2020

TITLE: Attachment 4 – JRTP Facilities Map with Surveyed Resources

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60635877

FIGURE

Attachment 6 – VCRIS Survey Forms with Photographs
(photographs provided via hard copy)

Property Information

Property Names

Name Explanation	Name
Function/Location	Farmstead, City Farm Road

Property Evaluation Status

Property Addresses

Current - City Farm Road

County/Independent City(s): Newport News (Ind. City)
Incorporated Town(s): *No Data*
Zip Code(s): 23602
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): MULBERRY ISLAND

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*
Site Description:

October 2020: The unnamed farmstead is part of a larger park, known as Riverview Farm Park, which is approximately 258.69 acres. The remaining two extant structures of the farmstead are situated south of the park (over City Farm Road) near the banks of the Warwick River, at the end of a paved/gravel driveway and is fenced. The immediate area consists of a rural setting, with open pasture and trees. Adjacent to and east of the farmstead are the remaining structures of the old City Prison Farm. To the west is the James River Wastewater Treatment Plant, owned by the Hampton Roads Sanitation District (HRSD). Also, to the west is the Riverview Farm Park Visitor Center and a trail leading to the Riverview Farm Pier and Beach. Access to the farmstead is restricted via a gate, as it shares access with the old City Prison Farm, still in use by the Newport News Police.

Surveyor Assessment:

"typical early 20th century Colonial Revival farmhouse."

October 2020: The unnamed Farmstead is not eligible for the National Register for Historic Places (NRHP). Archival research did not indicate this property was associated with a significant event, pattern of events important to history, or person of historical importance and is not eligible under Criterion A or B. Although the dwelling embodies certain characteristics of a mid-twentieth century, Colonial Revival-style building, it is not an exceptional example of this style. Alterations to the property, such as the replacement of materials (doors, windows and roofing) and the removal of first-story windows later filled-in with plywood have impacted its integrity of design, materials, and workmanship. Abandoned at an unknown date, the vacant dwelling further lacks integrity of feeling and association. The property retains its integrity of location and setting.

Surveyor Recommendation: Recommended Not Eligible

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: ca 1940
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Colonial Revival
Form: Rectangular
Number of Stories: 2.0
Condition: Good
Interior Plan: Central Passage, Double Pile
Threats to Resource: *No Data*
Architectural Description:

June 1992: "Colonial Revival trim, six-over-six sash, no arches over the windows . . .gable end returns, boxed cornice."

October 2020: The two-story, three-bay, rectangular, Colonial Revival-style dwelling features a wood frame structural system with brick veneer (brick bond not visible) and is capped with a steeply-pitched, side-gable roof clad with asphalt shingles. Two exterior-end brick chimneys are located on each gable end. There are four evenly spaced second-story windows with six-over-six, double-hung sash (unknown frame material) and green-painted shutters. The two windows on the first-story have been removed and/or covered with plywood. There is a single-leaf door with a fanlight and a non-original screen door. Surrounding the door are two pilasters and a decorative broken pediment. Flanking the door are two wall-mounted light fixtures. The entrance is accessible by brick steps. The other elevations are not visible.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Frame	Wood	Other
Windows	Sash, Double-Hung	*No Data*	6/6
Roof	Gable, Side	Asphalt	Shingle
Chimneys	Exterior End	Brick	Cap, Corbeled
Windows	Sash, Double-Hung	*No Data*	6/6, Paired

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Well/Well House
NR Resource Type: Building
Date of Construction: *No Data*
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Number of Stories: 1.0
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

Architecture Summary: Circular brick well with pyramidally roofed shelter built over it. No walls, just four bracketed posts.

June 1992

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Christina Sabol
Organization/Company: AECOM Germantown
Photographic Media: Digital
Survey Date: 10/6/2020

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Project Staff: Christina Sabol, Rebecca McGovern, Geoffery Henry

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Hudlow, Scott M.
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 6/5/1992
Dhr Library Report Number: *No Data*
Project Staff/Notes:

No Data

Bibliographic Information

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Property Notes:

October 2020: According to the City of Newport News property assessment search, the City of Newport News acquired the property in 1918 (City of Newport News 2020). Historic Aerials for this area only date back to the 1970s.

Property Information

Property Names

Name Explanation	Name
Historic	Newport News City Prison Farm

Property Evaluation Status

Property Addresses

Current - City Farm Road

County/Independent City(s): Newport News (Ind. City)
Incorporated Town(s): *No Data*
Zip Code(s): 23602
Magisterial District(s): *No Data*
Tax Parcel(s): 190000101
USGS Quad(s): MULBERRY ISLAND

Additional Property Information

Architecture Setting: Rural
Acreage: 258.69

Site Description:

October 2020: The 258-acre former Newport News City Prison Farm site is located in a rural coastal setting along the Warwick River. To its east is a thickly wooded area, and to the south lies the confluence of Deep Creek and the Warwick River. To the west is the Warwick River and to the north is a small farmstead, Hampton Roads Wastewater Treatment Plant, and Riverview Farm Park.

PROPERTY HISTORY
The Newport News City Prison Farm (nicknamed City Farm) land was purchased by the City of Newport News in 1918. The Newport News Daily Press stated on December 6, 1917, that land for the new city prison farm would cost $45,000 but was deemed necessary as the existing city jail was considered “a relic of barbarism.” Prison farms such as the proposed City Prison Farm were a proven method to deal with an overcrowded prison system (Daily Press 1917). Despite community support, it took an official order on October 27, 2018, by Judge T.J. Barham of the Corporation Court to build the new facility (Daily Press 1918).

Typically, prisoners tried to break out of prison, however, according to a Daily Press article on December 11, 1949, the opposite was true of City Farm. Prisoners often had a strong desire to remain at the farm even after serving their sentence, with some former inmates obtaining new and often fake charges in order to be sent back. In one instance an inmate obtained 39 charges over six years to ensure his stay (Dienes 1949).

According to n May 6, 1963 article, work at the farm was “plentiful,” consisting of milking cows, slaughtering cattle and hogs, and crop production, all performed by male inmates; female inmates were tasked with washing, mending, meal preparation, and canning extra food produced on the farm. The farm was almost self-sustaining and only 17 employees were needed to run the farm of about 130 prisoners. (O’Brien 1963).

In its later years the facility, re-classified as a minimum-security correctional facility, housed 262 inmates. Inmates were eligible to perform community service, such as road construction, graffiti removal, and mowing city property and right-of-way areas (Newport News 2014).

A 2014 study found that $8.2 million was needed to bring the prison up to modern code. The city decided to close the prison, and transfer inmates to either the Newport News City Jail or the Hampton Roads City Jail (Dujardin 2015).

In 2015, the Barracks were vacated and demolished, along with the former dairy barn. The site is still used (2020) as a maintenance facility for Newport News’ correctional equipment with only a few historically associated buildings remaining.

Surveyor Assessment:

1992: "early 20th-century prison complex."

October 2020: As a demolished resource, the City Prison Farm is not eligible for the NRHP due to lack of integrity. Demolition of the barracks and dairy barn resulted in a lack of integrity of materials, workmanship, design, feeling, and association; furthermore, the land is no longer used for agricultural purposes and has lost its integrity of association.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Local Govt	*No Data*

Primary Resource Information

Resource Category: Government
Resource Type: Prison
NR Resource Type: Building
Date of Construction: 1937
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: U-Plan
Number of Stories: 1.0
Condition: Demolished
Threats to Resource: *No Data*
Architectural Description:

May 1992: "U-shaped prison barracks, bars on windows, sixteen pane windows, brick stack for boiler room, slight parapets in corners."

October 2020: The prison barracks have been demolished and nothing has been constructed in its place. Secondary buildings ranging from 1937 to 2010 are still scattered around the property. Most of the buildings and structures are located within the vicinity of the unnamed farmstead (DHR #121-0103) and along the tree-lined coast.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Masonry	Concrete	Block
Roof	Side Gable	Asphalt	Other
Windows	Single-hung	Metal	Other

Secondary Resource Information

Secondary Resource #1

Resource Category: Other
Resource Type: Other
NR Resource Type: Other
Date of Construction: *No Data*
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Number of Stories: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

Architecture Summary: Small frame storage (?) building with weatherboard, single leaf door.

May 1992

Secondary Resource #2

Resource Category: Agriculture/Subsistence
Resource Type: Barn
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: 1938

Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: Other
Form: Rectangular
Number of Stories: 2.0
Condition: Demolished
Threats to Resource: *No Data*
Architectural Description:

May 1992: American bond brick barn with front gable roof--roof is a curved/Gothic gable--with a projecting pulley support at front.

October 2020: The barn was demolished in 2017.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Other	Asphalt	*No Data*
Structural System and Exterior Treatment	Masonry	Brick	American/Common Bond

Secondary Resource #3

Resource Category: Defense
Resource Type: Quonset Hut
NR Resource Type: Building
Date of Construction: ca 2003
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Square
Number of Stories: 1.0
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The Quonset hut is a one-story, half-cylindrical frame building covered with corrugated metal. It is square in plan and is orientated on the northeast-southwest directional line. It is one bay wide by one bay long.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Other	Metal	*No Data*
Structural System and Exterior Treatment	Unknown	Metal	Other

Secondary Resource #4

Resource Category: Agriculture/Subsistence
Resource Type: Barn
NR Resource Type: Building
Date of Construction: pre 1953
Date Source: Map
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Other
Form: Rectangular
Number of Stories: 1.0
Condition: Fair

Threats to Resource: *No Data*

Architectural Description:

The barn is a one-story wood frame barn with vertical siding. It has a broken saltbox roof covered with asphalt shingles. There are no openings on the northwest elevation, one small square window in the gable-end of the northeast elevation. The other elevations were not observed.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Roof	Saltbox	Asphalt	*No Data*

Secondary Resource #5

Resource Category: Agriculture/Subsistence
Resource Type: Barn
NR Resource Type: Building
Date of Construction: pre 1953
Date Source: Map
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Other
Form: Rectangular
Number of Stories: 1.0
Condition: Fair
Threats to Resource: *No Data*

Architectural Description:

This one-story wood frame barn has vertical siding and a gable roof covered in asphalt shingles. Centered on the northwest gable-end is a pair of hinged alley doors. Flanking these doors is one single-leaf door. The other elevations were not observed.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Front Gable	Asphalt	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board

Secondary Resource #6

Resource Category: Domestic
Resource Type: Mobile Home/Trailer
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: pre 2002
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): *No Data*
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: Rectangular
Number of Stories: 1.0
Condition: Fair
Threats to Resource: *No Data*

Architectural Description:

The trailer is a one-story frame structure with vinyl siding and a gable roof covered in metal sheeting. The trailer is two bays wide by five bays long. The northeast elevation fenestration is door, window. The northwest elevation fenestration is window, door, window, window, door, window. (Snider 2015a-b)

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and	Unknown	Vinyl	Siding

Exterior Treatment			
Roof	Side Gable	Metal	*No Data*

Secondary Resource #7

Resource Category: Social/Recreational
Resource Type: Shelter
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: pre 2002
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: Rectangular
Number of Stories: 1.0
Condition: Fair
Threats to Resource: *No Data*
Architectural Description:

The following is described from a 2015 aerial photograph (Snider 2015a-b), since access was restricted. The shelter is a one-story frame structure with no siding and a gable roof, covered in asphalt shingles. It is one bay wide by seven bays long.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Other	Other
Roof	Side Gable	Asphalt	*No Data*

Secondary Resource #8

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: pre 2002
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: Rectangular
Number of Stories: 1.0
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

The following is described from a 2015 aerial photograph (Snider 2015a-b), since access was restricted. The structure is a one-story frame structure with a gable roof. The structure is five bays long by one bay wide.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Unknown	Not Visible
Roof	Side Gable	Asphalt	*No Data*

Secondary Resource #9

Resource Category: Government
Resource Type: Government Office
NR Resource Type: Building

Not Observed: This resource was not observed during the last survey.
Date of Construction: pre 2002
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: Rectangular
Number of Stories: 2.0
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

The following is described from a 2015 aerial photograph (Snider 2015a-b), since access was restricted. The structure is a two-story building with a gable roof.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Side Gable	Asphalt	*No Data*
Structural System and Exterior Treatment	Unknown	Unknown	Not Visible

Secondary Resource #10

Resource Category: Government
Resource Type: Government Office
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: pre 2002
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: Rectangular
Number of Stories: 1.0
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

The following is described from a 2015 aerial photograph (Snider 2015a-b), since access was restricted. The structure is a one-story building with a gable roof.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Side Gable	Asphalt	*No Data*

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Christina Sabol
Organization/Company: AECOM Germantown
Photographic Media: Digital
Survey Date: 10/6/2020
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Project Staff: Christina Sabol, Rebecca McGovern, Geoffery Henry

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Hudlow, Scott M.
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 5/6/1992
Dhr Library Report Number: *No Data*
Project Staff/Notes:
No Data

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2015b"An aerial view of Deep Creek, City Farm and water treatment facility." Daily Press. July 8, 2015. Accessed October 23, 2020. https://www.dailypress.com/resizer/CLIBMMINQqPh_Lm1czAuTYXH_oU=/fit-in/800x533/smart/filters:fill(black)/arc-anglerfish-arc2-prod-tronc.s3.amazonaws.com/public/X24KZTBL5VFTBDTATLXFTAXBLM.jpg

Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Current Name	James River Treatment Plant - Hampton Roads Sanitation District

Property Evaluation Status

Property Addresses

Current - 101 City Farm Road

County/Independent City(s): Newport News (Ind. City)
Incorporated Town(s): *No Data*
Zip Code(s): 23602
Magisterial District(s): *No Data*
Tax Parcel(s): 190000114
USGS Quad(s): MULBERRY ISLAND

Additional Property Information

Architecture Setting: Rural
Acreage: 22.14

Site Description:

The 22.14-acre James River Wastewater Treatment Plant site is located in a suburban coastal setting along the Warwick River. To the east of the facility is Riverview Farm Park, to the south is a small farmstead and the old City Prison Farm, and the confluence of Deep Creek and the Warwick River. To the west is the Warwick River and to the north is a wooded area and a suburban development.

HISTORICAL CONTEXT
The Hampton Roads Sanitation District (HRSD) operates nine treatment plants in Hampton Roads and four smaller plants on the Middle Peninsula with a combined capacity of 249 million gallons per day (MGD). Wastewater flows from municipal piped systems to HRSD's interceptor system of pipes and pump stations to their treatment plants. Each of HRSD's treatment plants is unique, with varying sizes and layouts of pumps, pipelines, and tanks. Wastewater typically is treated in two basic stages: primary and secondary treatment. In some cases, advanced treatment is required. During primary treatment, solids are screened and settled out of the wastewater. In secondary treatment, bacteria and other small organisms consume the waste and help clean the water (HRSD n.d. 2).

Concern for the treatment of human and animal waste in Virginia's rivers and the Chesapeake Bay traces its early beginnings to the mid-18th century, when the seafood industry, specifically oysters, began to develop in the Tidewater area of Virginia. The practice throughout the nineteenth and early twentieth centuries was to release untreated raw sewage directly in the area's creeks and rivers. By 1925, the Virginia Department of Health had condemned a large oyster-producing area in Hampton Roads. In 1927, the Virginia General Assembly created a commission to investigate and survey the effects of pollution on Virginia's seafood industry. The commission's studies recommended a public body to construct and operate a sewage system in the Hampton Roads area (HRSD n.d. 1).

In 1934, the General Assembly created the Hampton Roads Sanitation Disposal Commission (HRSDC) to plan for the elimination of pollution in Hampton Roads. The commission's goal was to raise money to construct six disposal treatment plants: three in Norfolk, two in Portsmouth, and one in Newport News. Funds would be secured under the Public Works Administration (PWA). Their report was completed in 1936 and concluded that the proper care of raw sewage and construction of sewage systems were a necessity and that over 25 million gallons a day of sewage was being discharges into Hampton Roads' waters (HRSD n.d. 1).

Under the Sanitation Districts Bill of 1938, the Hampton Roads Sanitation District was formed. HRSD began operations on July 1, 1946, on facilities acquired from the United States government. The first treatment plant, the Army Base Plant in Norfolk, began operation on October 14, 1947. By 1950, there were three operating sewage disposal plants: Army Base Plant (1947), Lambers Point Plant (1948), and Boat Harbor Plant (1948), 68 miles of trunk lines, and 32 pumping stations serving 60,000 customers, with a revenue of approximately $1.5 billion (HRSD n.d. 1).

In 1960, HRSD commissioned the New York consulting firm Buck, Seifert & Jost to prepare a new Master Plan. It envisioned six new plants, or "systems:" Washington Plant (1962), Deep Creek Plant (1962), Western Branch Plant (1964), Chesapeake-Elizabeth Plant (1965-1969), James River Plant (1967), and Williamsburg Plant (1970) to handle the expected increase of almost 625,000 new residents over the next 40 years. In 1972, Congress passed the Clean Water Act that created national guidelines and standards for water quality and established funding for sewage treatment plants. By the mid-1970s, HRSD owned and operated nine treatment plants, 57 pumping stations, and 259 miles of pipelines. In 1976, HRSD was awarded $48 million for three new plants: Nansemond Plant (1979), York River Plant (1984), and Atlantic Plant 1983) (HRSD n.d. 1).

The 1980s was an era of expansion and initiative for HRSD. The James River Plant and the Chesapeake-Elizabeth Plant were both expanded to 20 MGD and 30 MGD. The capacity of HRSD's first treatment plant, Army Base, was expanded to 18 MGD in 1981. The following year, improvements completed at the Boat Harbor Plant expanded its capacity to 25 MGD. Construction of a 40 MGD facility to accommodate flows from the Pinners Point and Lamberts Point service areas began in 1987. The new plant would provide secondary treatment with biological nutrient removal, a major added benefit for the environment not required by federal or state regulations. HRSD phased out the Lamberts Point identity, naming the expanded facility the Virginia Initiative Plant as a tribute to the process that placed HRSD at the forefront of efforts to reduce nutrient discharges to the Bay (HRSD n.d. 1).

By 1990, HRSD had ten operating plants, with eight plants upgraded from primary to secondary treatment. In 1992, the Williamsburg Plant was expanded to 22 MGD and in 1998, the Nansemond Plant was expanded to 30 MGD. By 2000, HRSD was continuing to innovate sustainable solutions within the wastewater industry. Construction to expand the Atlantic Treatment Plant from 36 to 54 MGD began in 2006. The $173 million endeavor made this HRSD's largest plant. Today, facilities continue to expand and undergo upgrades serving a population just over 1.7 million (HRSD n.d. 1).

PROPERTY HISTORY
The James River Plant was the top priority of the HRSD in October 1961, so much so that the commissioners approved a building program for the plant to open in 1964 at a cost of $13.5 million. The plant was expected to cost $5.9 million and would be able to process five MGD. The James River Plant was designed to grow along with the community through two additional building phases and would be able to expand to process 15 MGD. This plant was designed to help the Boat Harbor plant handle an increasing population of up to 400,000 people. The City of Newport News and HRSD agreed on the plant location and price in late February 1962; the HRSD thereafter acquired 22 acres of the City Prison Farm for $38,200. Local fishermen and other community members strongly opposed the building of a wastewater plant near the Warwick River, as it would impact the oyster and fishing businesses. For two years the Virginia Watermen's Association protested and threatened legal action to prevent the plant from being constructed. Despite their protest and objections, the plant was scheduled to open by late April 1964. The plant was dedicated on June 7, 1967, as the HRSD's fourth plant and the first to have secondary treatment measures. (HRSD n.d. 3)

Surveyor Assessment:

The initial building phase at JRTP was completed in 1967 with two subsequent building phases constructed between 1970-1982 and 1982-1994. Additionally, a few small minor structures were added between 1994-2002. The JRTP buildings from the 1967 building campaign were evaluated for NRHP eligibility on an individual basis and as a potential historic district. None of the 1967 buildings is individually significant for its association with an event or person (Criterion A and B), nor is any an exceptional example of architecture or craftsmanship (Criterion C). Although the collection of 1967 resources at JRTP are significant as comprising the original HRSD plant at this site, they are not eligible as a historic district. The subsequent post-1967 building phases have occurred throughout the JRTP property so that non-historic resources now far outnumber the original JRTP buildings and prevent defining a discrete district without non-historic intrusions.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Local Govt	*No Data*

Primary Resource Information

Resource Category: Government
Resource Type: Government Office
NR Resource Type: Building
Date of Construction: 1967
Date Source: Written Data
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: 2.0
Condition: Good
Threats to Resource: Demolition

Architectural Description:

The primary resource on the James River plant property is the administration building, four bays wide by eleven bays long; the first six bays are one story tall being one-story in height with the last five bays being of two-stories in height. The building is partially of frame construction and partly masonry in construction with a running bond brick veneer around the entire building. The north elevation has two metal casement windows, followed by a metal single-leaf door with a light, followed by another casement window and a metal-framed glass door. Subsequently is a fixed metal window with corrugated plastic covering the window and a wooden single-leaf door with a light. The ninth bay has a metal vent and a metal single-leaf door with a light. The next three bays have a metal garage door. The east elevation/façade is one story in height and has one casement window with a corrugated plastic covering, a metal-framed glass entry door with a flat roof portico covering the entrance, followed by two more casement windows with corrugated plastic coverings. The south elevation has a metal-framed glass door, a ribbon of fixed glass windows with corrugated plastic, a single leaf metal door with a light, followed by seven fixed two-story floor-to-ceiling windows. The west elevation has a double leaf metal door with lights and a single leaf metal door with no lights.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Flat	Unknown	*No Data*
Windows	Casement	Metal	*No Data*
Structural System and Exterior Treatment	Masonry	Brick	Stretcher Bond
Foundation	Solid/Continuous	Concrete	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Government
Resource Type: Government Office
NR Resource Type: Building
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: 1.0
Condition: Good
Threats to Resource: *No Data*

Architectural Description:

The second administration building is one-story tall and has a wood frame structural system with a brick stretcher bond veneer treatment and a solid concrete foundation. The roof is flat and covered with unknown materials. The façade (north elevation) has a projecting bay with a single leaf metal-framed glass door and a fixed window with a corrugated plastic cover. On the non-projecting bay, there is a sliding window with a corrugated plastic cover. Under the flat awning is a double-leaf metal-framed glass set of doors, to the west lies a larger set of the double-leaf metal-framed glass doors and a transom light. There are no openings on the east or west elevations of the building. The south elevation has a window with a corrugated plastic cover and a double-leaf solid metal door on the east side of the south elevation projection.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Masonry	Brick	Stretcher Bond
Roof	Flat	Unknown	*No Data*
Foundation	Solid/Continuous	Concrete	*No Data*
Windows	Boarded Up/Covered	Plastic	*No Data*

Secondary Resource #2

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1994
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: L-Plan
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*

Architectural Description:

The headworks building is two-stories tall and is covered with stucco, therefore. The roof is flat with unknown materials covering it. On the north elevation, there are two groups of windows. These groups contain three rectangular fixed metal-framed windows with 18 lights. The east elevation has one group of three rectangular fixed metal-framed windows with 16 lights in each and a single flight of stairs attached to the side of the building and leading up to the windows and electrical box. On the recessed wall of the east elevation, there is a double-leaf metal door with louvers on one leaf. The south elevation has one grouping of the three windows and a recessed loading dock with a double-leaf metal door and a single-leaf metal door perpendicular to the other door. The west elevation has a double leaf metal door and one leaf has louvers, a garage door, and a group of three windows with 18 lights.

Secondary Resource #3

Resource Category: Government
Resource Type: Sewer/Water Works

NR Resource Type: Structure
Date of Construction: pre 1994
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

A rectangular metal drain surrounded by concrete. Next to the drain is a staircase underground. Above ground on the opposite side of the guardrail is an emergency alarm red pipe with an emergency shower attached.

Secondary Resource #4

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The electrical building is one-story high, and one bay wide by three bays long. The building is a frame building with vinyl siding and an end-gable roof covered in a standing seam metal. The fenestration on the south elevation is window, door, window. The two windows are double-hung, 1/1, metal windows, with a corrugated plastic cover. The door is a double-leaf metal door with a light. The other elevations were not observed.

Secondary Resource #5

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: 1967
Date Source: Written Data
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The digester building is one story high and one bay wide by one bay long. The building is attached to the digester tanks and is a masonry structure with a layer of stucco or concrete on the exterior. The roof is flat, and the south elevation has one door. From the map of the plant, it is known that the building does have a basement. There are no windows. The other elevations were not observed.

Secondary Resource #6

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The gravity thickener pump station building is one story high and one bay wide by one bay long. The building is attached to the gravity thickener tanks and is a masonry structure with a layer of stucco or concrete on the exterior. The roof is flat and acts as a walkway for workers to inspect the tanks. The north elevation has a single leaf metal door without lights. To the west of the door is a flight of stairs to access the top of the tanks and a vent.

Secondary Resource #7

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1994
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The phosphorus removal building is one story high by one bay wide and two bays long. The building has a running bond brick veneer with a concrete parapet roof. On the east elevation, there is a double-leaf metal door with one light in the northern most door. There are no openings on the south elevation. The other elevations were not observed.

Secondary Resource #8

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 2004
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The digester transfer station building is one story high by one bay wide and two bays long. The building is a prefabricated building with a metal frame and a faux brick (running bond) veneer. The south and west elevations of the building do not have any openings. The other elevations

were not observed.

Secondary Resource #9

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1994
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

Warehouse #2 is a prefabricated metal-framed building with metal sheet siding and a shallow pitch end-gable roof, covered with metal. The warehouse is one story high by one bay wide and six bays long. The north elevation has a garage door centered under the gable. The west elevation has a single leaf metal door with no lights. The other elevations were not observed.

Secondary Resource #10

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Not Observed: This resource was not observed during the last survey.
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Architectural Description:

Not accessible for survey.

Secondary Resource #11

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*

Architectural Description:

The centrifuge building is three stories high by two bays wide and five bays long. It is a masonry building with cinderblocks having a rib-rock texture and a flat roof with an unknown covering. On the east side of the building, the first floor has a drive-through bay to allow for trucks to pick up or make deliveries. The second bay has a smooth concrete base before turning into the textured cinderblocks. This elevation has one door with five perpendicular steps. The second and third stories have rectangular windows. On the south elevation, the first floor has a drive-through bay with concrete pillars to support the second and third stories. The second story has square fixed metal-framed windows. The third story has a rectangular opening with corrugated metal infill.

Secondary Resource #12

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*

Architectural Description:

The IFAS blower building is one story high and two bays wide by two bays long. It is a masonry building with decorative brickwork. The bricks are in a running bond pattern and have a pattern of 15 courses of red bricks, followed by one course of yellow bricks, followed by one course of red bricks, followed by three courses of yellow bricks, before repeating the pattern. The north elevation has a single leaf metal door with a light and a vent. The east elevation has no openings. The other two elevations were not observed due to obstructions.

Secondary Resource #13

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*

Architectural Description:

The electrical building #1 is one story high and one bay wide by two bays long. It is a masonry building with decorative brickwork. The bricks are in a running bond pattern and have a pattern of 15 courses of red bricks, followed by one course of yellow bricks, followed by one course of red bricks, followed by three courses of yellow bricks, before repeating the pattern. The south elevation has a single leaf metal door with a light and a vent. The other elevations were not observed due to obstructions to the view.

Secondary Resource #14

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political

Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The electrical building #2 is one story high and one bay wide by two bays long. It is a masonry building with decorative brickwork. The bricks are in a running bond pattern and have a pattern of 15 courses of red bricks, followed by one course of yellow bricks, followed by one course of red bricks, followed by three courses of yellow bricks, before repeating the pattern. The south elevation has a single leaf metal door with a light and a vent. The other elevations were not observed due to obstructions to the view.

Secondary Resource #15

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The blower building #1 is a square building one-story high with a flat roof and is one bay wide by one bay long. There are no openings on the north or west elevations. On the east elevation, there is a hole for the pipe to enter the building. On the south elevation of the building, there is a metal door with no lights.

Secondary Resource #16

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The blower building #2 is a square building one-story high with a flat roof and is one bay wide by one bay long. There are no openings on the south or west elevations. On the east elevation, there is a hole for the pipe to enter the building. On the north elevation of the building, there is a metal door with no lights.

Secondary Resource #17

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982

Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The blower building #3 is a square building one-story high with a flat roof and is one bay wide by one bay long. There are no openings on the north or west elevations. On the east elevation, there is a hole for the pipe to enter the building. On the south elevation of the building, there is a metal door with no lights.

Secondary Resource #18

Resource Category: Government
Resource Type: Shed
NR Resource Type: Building
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Square
Number of Stories: 1.0
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The shed is a one-story prefabricated metal frame building resting on a solid concrete slab base. It is one bay wide by one bay long with a gambrel like roof. The entire shed is cladded with metal sheeting. The west elevation has a one-bay metal garage door. The other elevations do not have any openings.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Steel Frame	Metal	Panels
Roof	Gambrel	Metal	*No Data*

Secondary Resource #19

Resource Category: Government
Resource Type: Shed
NR Resource Type: Building
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Square
Number of Stories: 1.0
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

Shed #2 is a one-story prefabricated metal frame building resting on a solid concrete slab base. It is one bay wide by one bay long with a gambrel like roof. The entire shed is cladded with metal sheeting. The west elevation has a one-bay metal garage door. The other elevations do not have any openings.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Steel Frame	Metal	Panels
Roof	Gambrel	Metal	*No Data*

Secondary Resource #20

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

Warehouse #1 is one-story tall with a gable-end roof resting on a slab foundation. The structure is two bays long by three bays wide with metal siding. The north and south elevations do not have any openings. The east elevation was not observed. The west elevation has a single leaf metal door with a light centered on the elevation flanked by a metal garage door.

Secondary Resource #21

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The final sludge pumping station building #1 is a one-story tall masonry structure with a flat roof. The building is two bays wide by two bays long. The north elevation has a metal door with no lights and a ribbon of windows. The windows are fixed, and metal framed. The east and west elevations have no openings; however, the west elevation has a ladder to access the roof. The south elevation has a metal door with no lights and a vent.

Secondary Resource #22

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style

Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The final sludge pumping station building #2 is a one-story tall masonry structure with a flat roof. The building is two bays wide by two bays long. The north elevation has a floor to ceiling, fixed ribbon window. The east elevation has no openings, but it does have a metal vent and an external ladder. The south elevation has a single leaf metal door with no lights and the west elevation has a double leaf metal door with no lights.

Secondary Resource #23

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1994
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The sodium hypochlorite building is a two-story tall masonry structure with a flat roof. The building is two bays wide by three bays long with a sheltered two bay by two bay addition. The building's north elevation has two single-leaf metal doors with a light on the first floor. The second floor has no windows, instead it has three large vents. The east elevation was obscured by the tanks holding the sodium hypochlorite. The south elevation was not observed. The west elevation has an enclosed ladder. The addition is metal framed and has a flat roof. There is no siding.

Secondary Resource #24

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1994
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The sodium bisulfite building is a two-story tall masonry structure with a flat roof. The building is two bays wide by two bays long with a smaller half bay addition to the west for entering and exiting the building. On the north elevation, there is one vent in the center of the building, to the east is a chemical washing station/eye washing station in the event of chemical contamination. To the west are two single-leaf metal entrance doors with a light. The other elevations have no openings.

Secondary Resource #25

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map

Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: Rectangular
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The control tank building is a one-story tall masonry structure with a flat roof. The building is two bays wide by two bays long. The north elevation has a double-leaf metal door with no lights and an enclosed ladder to access the roof. The east elevation has two metal-framed windows each 2/2 with the top panes being fixed and the bottom panes being awning windows. The south elevation was not observed. The west elevation has no opening, instead, there is a water turned wheel beneath the structure.

Secondary Resource #26

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: 1967
Date Source: Written Data
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: Other
Form: *No Data*
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The digesters are large concrete cylinders with a domed concrete roof. There are stairs on the outside to access the walkway around the roof. There are no openings, except in the parapet.

Secondary Resource #27

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: pre 1982
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: Other
Form: *No Data*
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The final effluent tank is a small concrete cylinder with a concrete roof. There are no stairs or openings.

Secondary Resource #28

Resource Category: Government
Resource Type: Sewer/Water Works
NR Resource Type: Structure
Date of Construction: 1967

Date Source: Written Data
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Architecture/Community Planning, Government/Law/Political
Other ID Number: *No Data*
Architectural Style: Other
Form: *No Data*
Number of Stories: *No Data*
Condition: Good
Threats to Resource: *No Data*
Architectural Description:

The secondary clarifying tanks are medium-sized concrete cylinders set in the ground with no roof, therefore a safety fence is located around the outside of the tank above the ground level.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Christina Sabol
Organization/Company: AECOM Germantown
Photographic Media: Digital
Survey Date: 10/6/2020
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Project Staff: Christina Sabol, Rebecca McGovern, Geoffery Henry

Bibliographic Information

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1994Historic aerial photograph. Electronic document, https://netronline.com/, accessed October 19, 2020.

2002Historic aerial photograph. Electronic document, https://netronline.com/, accessed October 19, 2020.

Property Notes:

No Data

AECOM

Attachment E:
VDHR Section 106 Concurrence Letters

COMMONWEALTH of VIRGINIA

Matthew Strickler
Secretary of Natural Resources

Department of Historic Resources
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Julie V. Langan
Director

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June 8, 2021

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: *Phase I Archaeological Survey of the Sustainable Water Initiative for Tomorrow James River Treatment Plant Recharge wells*
Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

We received for review the report referenced above on May 10, 2021, prepared by AECOM, on behalf of the Hampton Roads Sanitation District (HRSD). The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the SWIFT program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program.

The report documents an archaeological survey for the HRSD areas of proposed ground disturbance for the JRTP monitoring and recharge wells. The survey resulted in the relocation of a portion of 44NN0281 and 44NN0278 within the APE. No evidence of previously recorded 44NN0068 or 44NN0069 was encountered.

44NN0281 consists of a subsurface scatter of mid- to late nineteenth century artifacts all found within the former plow zone. AECOM recommends that the portions of the site identified within the APE do not contribute to the eligibility for listing in the National Register of Historic Places (NRHP). 44NN0278 consists of a small, subsurface scatter of early to mid-twentieth century artifacts all found within the former plowzone that may be associated with the Newport News City Prison Farm. AECOM recommends that the archaeological deposits associated with 44NN0278 within the APE do not have the potential to yield significant information. No additional work is recommended at this time. Based on the submitted information, *DHR concurs with theses recommendation*. **Please send a hard copy of the report for our records.**

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962 Kime Lane
Salem, VA 24153
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Fax: (540) 387-5446

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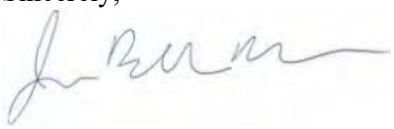
If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

COMMONWEALTH of VIRGINIA

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February 19, 2021

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: The SWIFT Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

This letter in response to updated project information and a conference call on February 9, 2021. The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the Sustainable Water Initiative for Tomorrow (SWIFT) program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program. Additionally, two monitoring wells and 10 recharge wells will be installed as part of the SWIFT project, to be permitted by EPA Region 3 Underground Injection Control (UIC) program. These actions are considered one undertaking.

Previously, an archaeological report (AECOM 2020) documenting the survey of 32 acres was submitted to DHR. In a letter dated, August 28, 2020, DHR concurred that sites 44NN0359 and 44NN0360 were *not eligible* for listing in the National Register of Historic Places (NRHP). Sites 44NN0282 and 44NN0283 were not re-located. DHR concurred with the recommendation that the portions of 44NN0281 located within the surveyed area did not retain integrity, however the portions of the site that extended outside of the survey boundaries should be considered *potentially eligible*. DHR requested additional information about architectural resources that may affected by undertaking.

On November 17th, 2020 DHR received project plans related to the proposed well installations, permitted by the UIC program.

In a letter dated December 30, 2020, DHR concurred that the following architectural resources are *not eligible* for listing in the National Register of Historic Places (NRHP): DHR ID Nos. 121-0103, 121-0104, and 121-5463. At that time DHR, requested information about the proposed well location and how they related to the SWIFT program construction at the JRTP.

On January 7, 2021, DHR received an updated site map showing the locations of the proposed well locations, previous survey boundaries, and VCRIS archival data. In addition to the AECOM 2020 survey area, the proposed well locations are within the boundaries of a 1992 survey conducted by WMCAR, *A*

Phase I Cultural Resource Survey of The Proposed Riverview Farm Park Property City of Newport News, Virginia. Unfortunately, much of that survey area (WMCAR 1992) was not subjected to shovel testing and does not meet DHR's current *Guidelines for Conducting Historic Resources Survey in Virginia* (2017).

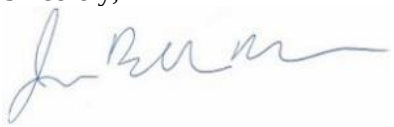
A conference call was then held on February 9, 2021, to discuss the project information. During this call DHR stated that additional survey for the wells within the AECOM 2020 survey area would not be needed, but that the wells located outside the recent survey boundaries may require archaeological survey. Based on the recently submitted information, six recharge wells and one monitoring well are located outside of the AECOM 2020 survey boundaries.

In order to identify historic properties that may be affected by this undertaking, DHR recommends that a Phase I archaeological study be conducted within remaining well locations. This survey must be conducted by qualified professionals in accordance to the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-42) and DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (2017). One bound copy and one digital copy of the resulting report should be submitted to our office for review.

Given the relatively small footprint of these wells, a small survey area (approximately 1 sq. acre) around the proposed well location(s) should suffice. If intact archeological deposits are identified, DHR recommends that the EPA consider avoidance. The archaeological survey should be be utilized as a planning tool to avoid impacts to cultural resources.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

c.
Barb Okorn, EPA
Ashley Longrie, EPA
Mark Nelson, EPA

COMMONWEALTH of VIRGINIA

Matthew Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
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December 30, 2020

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: Addendum Archaeology Report and Architectural Survey of the SWIFT Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

We received for review the addendum report referenced above on November 30, 2020, prepared by AECOM, on behalf of the Hampton Roads Sanitation District (HRSD). The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the SWIFT program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program.

Based on the submitted information, DHR concurs that the following architectural resources are *not eligible* for listing in the National Register of Historic Places (NRHP): DHR ID Nos. 121-0103, 121-0104, and 121-5463.

On November 17th, DHR received project plans for an Underground Injection Control program permit as part the larger SWIFT undertaking. The project plans included in the November 17th submission include recharge wells (JR_MAR_05 and JR_MAR_06) that appear to be located close to or within the boundaries of archaeological sites 44NN0278 and 44NN0281.

In order to continue our review, DHR needs clarification on locations of all wells associated with this undertaking.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

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August 28, 2020

Alaina McCurdy
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: Hampton Roads Sanitation District (HRSD) SWIFT (Sustainable Water Initiative for Tomorrow) Project
Phase I Archaeological Survey of the Sustainable Water Initiative For Tomorrow (SWIFT) Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. McCurdy:

We have received for review the report referenced above, prepared by AECOM, on behalf of the Hampton Roads Sanitation District (HRSD). The undertaking consists of new construction at the James River Treatment Plant (JRTP) in support of the SWIFT program, funded in part by a loan financed the U.S. Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) program. We are pleased to inform you that this survey and report generally meet the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-42) and DHR's *Survey Guidelines* (rev. 2017). **Please send a bound copy of the report to our office for archival purposes**.

The report documents an archaeological survey of the proposed undertaking's direct footprint, approximately 32 acres. During the course of the survey, one previously identified archaeological site (44NN0281) was re-located, two new archaeological sites were identified (44NN0359-44NN0360), and two previously recorded sites were not re-located (44NN0282-44NN0283).

Site 44NN0359 consists of a subsurface scatter of late nineteenth and twentieth century artifacts. Site 44NN0360 consists of two fragments of sheet metal and a cast iron/lead alloy sphere resembling a musket ball. AECOM recommends **44NN0359** and **44NN0360** as *not eligible* for listing in the National Register of Historic Places. *DHR concurs with these recommendations*.

The portion of 44NN0281 located within the current surveyed area consists of artifacts dating to the 20th century and likely associated with the Newport News City Farm Prison. AECOM recommends that the archaeological deposits located within the footprint of the proposed undertaking do not have the potential to yield significant information, and do not contribute to the overall eligibility of 44NN0281. *DHR concurs with this recommendation*. Please note, however, that portions of the site located immediately outside of

the current survey's boundary have been investigated recently as part of an examination of the former Warwicktowne (*History in Two Acts: Archaeological Examination of Warwicktowne and a Confederate Encampment on the Former City Farm*; Pope et al 2020). Overall **44NN0281** remains *Potentially Eligible.* If the proposed undertaking changes, additional archaeological investigation may be needed.

While the report addresses the potential effects to archaeological sites located within the direct footprint of the proposed project area, the submission does not include a discussion of potential indirect effects that the undertaking may have on nearby historic resources.

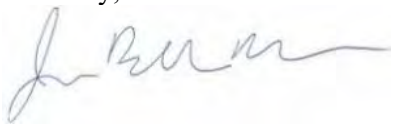
Given the proximity to previously recorded resources (DHR ID No. 121-0103 and 121-0104) and the age of the existing treatment plant, we recommend that a Phase I architectural survey be conducted to identify historic properties that may be located within the area of potential effects (APE). The survey should update existing information for previously recorded resources, document current conditions, evaluate eligibility and discuss impacts the undertaking may have (if any) on historic properties. The survey must be conducted by a qualified professional in accordance the *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-42) and DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (2017). One bound copy and one digital copy of the resulting report should be submitted to our office for review and approval prior to proceeding with the proposed activities.

Additionally, in order to provide meaningful comments regarding the effects to historic properties, please provide the following information:

- Project plans/drawings.
- Detailed description of proposed activities
- Maps highlighting the locations of the proposed activities.
- Photos of the project area and surrounding setting.
- Locations of laydown yards/off site workspaces
- Plans for avoiding impacts to 44NN0281 and other sites outside of the project area footprint (e.g. temporary construction fencing)

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

James River Tranche 2 Projects
Final Agency Approvals

FEDERAL CROSS-CUTTING AUTHORITIES REVIEW MEMORANDUM

From: Alaina McCurdy and Ashley Longrie, WIFIA Program
To: Record
Subject: Federal Cross-Cutting Authorities Review for Hampton Roads Sanitation District Sustainable Water Initiative for Tomorrow (SWIFT) Project 2 (19152VA)
Date: August 31, 2021

This memorandum summarizes the WIFIA Engineering Team's evaluation of the applicability of federal environmental cross-cutting authorities, the impacts from the project, the results of coordination and consultations with other agencies, and documents the review process.

PROJECT DESCRIPTION:

The Hampton Roads Sanitation District (HRSD) Sustainable Water Initiative for Tomorrow (SWIFT) Project 2 includes two main groups of project components:

- The Boat Harbor/ Nansemond SWIFT Project
- The James River Projects

Both groups of projects includes design and construction of new facilities that will apply advanced water treatment to already highly treated wastewater effluent from several existing treatment plants. The treated water would subsequently be used to recharge the Potomac Aquifer via recharge wells.

SWIFT PROJECT COMPONENT	DESCRIPTION	LOCATION
Boat Harbor Treatment Plant Pump Station Conversion	The Boat Harbor Treatment Plant will be converted to a pumping station, including equalization and headworks facilities while remaining in operation for wastewater treatment during conversion.	300 Terminal AVE, Newport News, VA This project, with the exception of the potential pump station site, is within the existing facility boundary
Boat Harbor Treatment Plant Transmission Force Main Section 1	The project consists of the subaqueous crossing of the James River to convey flow to the Nansemond Treatment Plant.	James River crossing between City of Newport News and City of Suffolk.

Boat Harbor Treatment Plant Transmission Force Main Section 2	The project consists of the on-land connection of Section 1 to the Nansemond Treatment Plant. This project is generally a standard Interceptor Force Main (IFM) utilizing open cut and a Horizontal Direction Drill (HDD) crossing of I-664.	Suffolk, VA
Nansemond Advanced Nutrient Reduction Improvements Phase I	This project will involve the preliminary engineering necessary to begin design and construction of improvements to Nansemond Treatment Plant to support reliable treatment of raw, screened wastewater from the Boat Harbor Treatment Plant service area and raw influent from the Nansemond Treatment Plant service area.	Suffolk, VA
Nansemond Advanced Nutrient Reduction Improvements Phase II	This project is for the design and construction of improvements to Nansemond Treatment Plant to support reliable treatment of raw, screened wastewater from the Boat Harbor Treatment Plant service area and raw influent from the Nansemond Treatment Plant service area.	Suffolk, VA
Nansemond SWIFT Facility	Nansemond SWIFT will include advanced water treatment facilities needed to produce SWIFT water at the Nansemond Treatment Plant. The scope includes advanced water treatment facilities, conveyance of SWIFT water to the recharge wells, and modifications to the non-potable water system. The scope does not include land acquisition, modifications to the existing outfall system, or improvements to the existing wastewater treatment process to improve the quality of the secondary effluent to meet the influent requirements of the SWIFT treatment facilities. The scope does not include drilling of the recharge and monitoring wells.	Suffolk, VA
Boat Harbor Treatment Plant Pump Station Conversion Land Acquisition	This project will fund the purchase of land that is needed for the pump station.	Newport News, VA

Boat Harbor Transmission Force Main Land Acquisition	Seven recharge wells and one monitoring well are planned to be located on the west side of I-664 across from Nansemond TP. This project will fund the purchase of land that is needed for these eight well sites.	Suffolk, VA
James River Recharge Wells	This project includes the construction of seven recharge wells and eight monitoring wells associated with the recharge wells. The recharge wells will be housed inside well house facilities. Also includes the site development, installation of mechanical equipment, and piping associated with the conveyance of SWIFT water to the recharge wells. Total of 10 recharge wells and 8 new monitoring wells between Project 1 and 2.	The grassy parcels immediately easy and northeast of the James River Treatment Plant at 101 City Farm Rd, Newport News, VA
James River Advanced Nutrient Reduction Improvements (ANRI)	The project involves construction of an administrative/maintenance building, chemical storage facilities, and expanded parking lots, driveways, security gates and fencing associated with the adjacent ANRI facilities at the existing treatment plant.	101 City Farm Rd, Newport News, VA
James River SWIFT Land Acquisition	The James River Land Acquisition Project will provide for the purchase of land from the City of Newport News (City) to accommodate the construction of infrastructure. This land acquisition includes approximately 10 acres of property adjacent to the James River Treatment Plant for plant expansion. Approximately 4 acres of the 10-acre parcel will be developed and the remaining 6 acres, which includes the undeveloped forested lands and Warwick River shoreline southwest of the Project area, will be placed in a conservation easement protecting the waterfront from future development.	Newport News, VA

1. ENVIRONMENTAL JUSTICE EXECUTIVE ORDER NOS.12898 AND 14008

	PEOPLE OF COLOR POPULATION (%)	LOW INCOME POPULATION (%)	COMMUNITIES WITH EJ CONCERNS (Y/N)
County: Newport News City	57	36	
County: Suffolk City	51	25	
State: Virginia	38	25	
Blockgroup: 517000320023 (James River Projects)	23	18	N
Blockgroup: 517000301002 (Boat Harbor)	100	100	Y
Blockgroup: 518000751024 (Nansemond)	30	8	N

Boat Harbor/Nansemond Projects

The USEPA's EJScreen online mapping tool was utilized to gather demographic data to identify communities with Environmental Justice (EJ) concerns. No communities with environmental justice concerns occur within the vicinity of the Nansemond Project were identified. One community with environmental justice concerns was identified in the vicinity of the Boar Harbor Project, which contains 100 percent low-income and people of color. Although a community with environmental justice concerns was identified, the project is unlikely to affect this community/ blockgroup. The blockgroup has a population of ten people and the only residences are located approximately 1 mile north of the project site and are separated by Interstate 664.

Temporary impacts such as noise, traffic, and air emissions are expected to occur during construction. Due to the implementation of standard construction best management practices (BMPs) to reduce noise and air impacts, and the distance between the project location and the community, impacts to identified communities with environmental justice concerns are not expected to be disproportionate.

None of the project locations appear to be in or impact Indian country.

James River Projects

According to a review of the USEPA's EJScreen online mapping tool, no communities with environmental justice concerns occur within the vicinity of the project. The project is not expected to have a significant adverse impact on per capita income, unemployment rate, poverty rate, local population size, or projected population growth. The project is intended to have an overall beneficial effect on the environment and local population by providing improved water quality and mitigating potential water

scarcity. Impacts due to the project would occur during construction and would be temporary, such as construction noise, air emissions from construction vehicles, erosion from disturbed surfaces and construction vehicle traffic, and/or traffic detours. Impacts to communities from construction would not be expected to be disproportionate to any identified communities with environmental justice concerns with the implementation of identified best management practices.
None of the project locations appear to be in or impact Indian country.

Supporting Documentation:

Attachment A: EJSCREEN Reports, April 19, 2021

Attachment B: James River Projects PEA Questionnaire, August 2021

2. ENDANGERED SPECIES ACT (16 U.S.C. §§ 1531–1599)

Boat Harbor/Nansemond National Marine Fisheries Service (NMFS)

Two NMFS Endangered Species Act (ESA) listed species of fish (Atlantic and shortnose sturgeon) and four listed species of sea turtles (leatherback, loggerhead, Kemp's ridley, and green) potentially could occur in the action area. One critical habitat for the Atlantic sturgeon has been identified within or near the study area. On May 11, 2021, EPA initiated information consultation with NMFS with a "may affect, not likely to adversely affect" determination for all identified species. On June 9, 2021, NMFS concurred with EPA's conclusion that the proposed action is not likely to adversely affect any NMFS ESA listed species. NMFS also concurred with the determination that effects to designated Atlantic sturgeon critical habitat, including increased turbidity and habitat modification, will be temporary and minimized by deployment of sediment curtains. NMFS also stated that the effects of the action on Atlantic sturgeon critical habitat will be too small to be meaningfully measured or detected and are insignificant, and that no further Section 7 consultation is required.

Boat Harbor/Nansemond U.S. Fish and Wildlife Service (USFWS)

On March 12, 2021, the USFWS Information for Planning and Consultation (IPaC) online system identified two federally listed species as having the potential to occur in the Project vicinity: the threatened northern long-eared bat (NLEB) (Myotis septentrionalis) and the threatened red-cockaded woodpecker (Picoides borealis). In May, June, August, and October 2020, AECOM performed site reconnaissance of the project study area to field-verify areas identified via desktop analyses as potentially suitable or marginal habitats for threatened or endangered species. An on-site, reconnaissance-level, habitat assessment was performed for the red-cockaded woodpecker and NLEB. Neither species was observed within the project study area.

On April 27, 2021, EPA initiated informal consultation with USFWS with a no effect determination for the red-cockaded woodpecker, as well as a no effect to the West Indian manatee. EPA's letter also included

the USFWS self-certification letter for the Northern long-eared bat nothing a may affect, not likely to adversely affect. Prior to commencement of the project, coordination with USFWS would be conducted regarding the limits and timing of vegetation removal related to the north long-eared bat to ensure compliance with the ESA. After 60 days, no objection was received from USFWS.

James River Projects

EPA prepared the official endangered species list using IPaC on April 20, 2021, for the James River Projects which identified 1 threatened species with the potential to occur in the project area, the Northern Long-eared Bat. The official endangered species list identified that there are no critical habitats within the project area.

According to the Virginia Department of Game and Inland Fisheries NLEB Winter Habitat and Roost Tree Application, the nearest known maternity roost for the NLEB is approximately 35 miles southeast of the proposed project area. There are no documented maternity roosts or hibernacula within 150 feet and 0.25 miles of the Project area, respectively. On April 21, 2021, a verification letter under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions was generated. Therefore, incidental take from tree removal is not prohibited. The project activities will comply with the USFWS NLEB 4(d) rule, and voluntary conservation measures, such as a time of year restrictions on tree removal (June 1 – July 31) and minimizing light pollution through downward adjusted light angles, will be implemented where practical.

No NMFS listed species occur within the project area.

Supporting Documentation:

Attachment B: James River Projects PEA Questionnaire, August 2021

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

Attachment D: James River IPaC Species List and NLEB Verification Letter, April and August 2021

Attachment E: Boat Harbor/Nansemond NMFS correspondences

Attachment F: Boat Harbor/Nansemond FWS correspondence and IPaC list

3. BALD AND GOLDEN EAGLE PROTECTION ACT (16 U.S.C. §§ 668-668C)

Boat Harbor/Nansemond Project

No bald eagles were observed flying over the Project study area, and no in-use bald eagle nests were observed in the vicinity of the study area during the onsite investigations. However, the Center for Conservation Biology Mapping Portal identified one nest, SU2003, within the northeastern portion of the study area on the Suffolk side of the James River (Watts and Byrd 2013). The USFWS Virginia Field Office's Bald Eagle Map Tool identified the nearest bald eagle concentration area approximately 4.2

miles northwest of the study area (USFWS 2020b). The project study area does not intersect with any bald eagle concentration areas identified by the USFWS Virginia Field Office's Bald Eagle Map Tool. Due to the distance from the Project construction activities (i.e., greater than 660 feet from the documented nest and inland from the shoreline), impacts to the bald eagle concentration area or bald eagle nests are not anticipated.

James River Project

The southern portion of the peninsula separating the James and Warwick rivers near the mouth of the Warwick River has been documented as containing bald eagle nests that are historic, and nests that may currently be in use. The project area is located beyond the restricted radius of the documented bald eagle nests. No nests in use by a bald eagle have been observed within the project vicinity, and no bald eagles were observed flying over, or in the vicinity of, the project area during the onsite investigations. The Center for Conservation Biology Mapping Portal identified the nearest documented bald eagle nest approximately 1,950 feet southeast of the project area boundary. The USFWS Virginia Field Office's Bald Eagle Map Tool identified one bald eagle concentration area intersecting the project area along the southwestern edge. Due to the distance from the project construction activities (greater than 660 feet from the documented nest and inland from the shoreline), impacts to the bald eagle concentration area or bald eagle nests are not anticipated.

Supporting Documentation:

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

Attachment B: James River Projects PEA Questionnaire, August 2021

4. FISH AND WILDLIFE COORDINATION ACT (16 U.S.C. § 661 ET SEQ.)

The Project would not control or modify surface waters; therefore, the requirements and regulations of this act do not apply.

5. MARINE MAMMAL PROTECTION ACT (16 U.S.C. §§ 1361-1407)

Boat Harbor/Nansemond Project

According to mapping of marine mammal distributions by NMFS, marine mammals with the potential to occur in the waters of the James River estuary near the proposed pipeline alignment are the bottlenose dolphin and West Indian manatee. The West Indian manatee (Trichechus manatus latirostris) is federally listed as threatened and is under the jurisdiction of the USFWS. EPA included this species in the endangered species act coordination with USFWS discussed above.

The bottlenose dolphin (Tursiops truncatus) occurs in Virginia waters throughout the year; however, their presence increases substantially in spring and summer months. Significant bottlenose dolphin presence in the Chesapeake Bay and coastal waters of Virginia typically begins in April or May and

appears to be strongly correlated with water temperatures. Southward migration typically begins in August or September, with dolphin presence significantly reduced by October or November (Costidis et al. 2017).

Proposed project activities within the James River, associated with the installation of a 22,900-feet pipeline beneath the riverbed, may impact marine mammals (i.e., the bottlenose dolphin) during the construction period. However, potential occurrences of bottlenose dolphins in the project area are infrequent and seasonal. Any impacts during construction would be temporary and prevented or minimized through the use of BMPs, such as sediment curtains and protected species observers. The pipeline installation for the proposed project would be located in the estuary near the mouth of the James River. HDD would be used to install at a minimum of 4,400 feet of the pipeline beneath the main river channel, precluding in-water work in the main channel. This would allow bottlenose dolphins a zone of passage to swim up and down river during the two-year construction period. In addition, dolphins are highly mobile and able to avoid areas of construction activity and noise.

Trenching for installation of the other 18,500 feet of pipeline would directly damage the benthic community of an approximately 50-foot-wide corridor within the alignment, affecting an area of approximately 21 acres. It could cause temporary impacts in adjacent areas due to increased turbidity and sediment deposition. If it is assumed that suspended sediment would settle within 1,000 feet of the trench, the additional area affected may include approximately 400 acres. These impacts would temporarily reduce populations of fish and benthic invertebrates on which bottlenose dolphins may feed, but the area affected would be small compared to the extensive habitats where they could forage in nearby areas of the James River and Chesapeake Bay. Long term operation of the proposed Project would not affect bottlenose dolphins or other marine mammals. Overall, the proposed project has only a minimal potential to affect bottlenose dolphins, and any effects would be discountable; therefore, no consultation under this act is required.

James River Project

The Project will not affect marine mammals; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

Attachment B: James River Projects PEA Questionnaire, August 2021

6. NATIONAL HISTORIC PRESERVATION ACT (NHPA) AS AMENDED (54 U.S.C. § 300101 ET SEQ.: HISTORIC PRESERVATION) AND ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT, AS AMENDED (54 U.S.C. §§ 312501-312508: PRESERVATION OF HISTORICAL AND ARCHEOLOGICAL DATA)

Boat Harbor/Nansemond Project

On April 24, 2021, EPA initiated consultation with the State Historic Preservation Office (SHPO) and made a "no historic properties affected" determination for the project. EPA also recommended that two archaeological sites were not eligible for the National Register of Historic Places, and on May 28, 2021, the Virginia Department of Historic Resources (DHR) concurred with this recommendation. In this correspondence, DHR also concurred with the recommendation that underwater cultural resources did not require additional investigations. Additional comments were provided by SHPO in a subsequent letter on July 9, 2021. In the July letter, SHPO concurred with all of EPA's findings including that all architectural resources were not eligible for listing as well as summarized the concurrences in the May letter, which concluded the Section 106 consultation.

James River Project

Reviews of the Virginia Cultural Resources Information System maintained by the Virginia Department of Historic Resources (DHR), the Virginia Archaeological Site Survey Records, the Virginia Historic Inventory Property Forms, and the National Register of Historic Places were conducted as part of a cultural resources desktop survey of the project area. AECOM conducted a Phase I Archaeological Survey in April 2020 of areas of proposed ground disturbance at the existing James River Treatment Plant/SWIFT site and the Acquisition Parcel. In October 2020, AECOM expanded the Phase I Archaeological Survey to include the two northeastern parcels near the gymnastics center. In March 2021, AECOM conducted a Phase I Archaeological Survey of the recharge wells and easement area. AECOM also conducted a Phase I Architectural History Survey in October 2020 of the entire project area.

EPA initiated consultation with DHR for the project on November 20, 2020, as a part of an already ongoing consultation process for the James River SWIFT Project 1, with the determination of "no historic properties affected." Throughout the consultation process, various concurrence response letters have been received from DHR and to date, all portions of the undertaking have been reviewed, as well as all eligibility and findings related to the undertaking. A summary letter was sent to DHR on July 22, 2021, outlining the various reports submitted and correspondence during the Section 106 process for the James River SWIFT Projects 1 and 2. A final concurrence letter was received from DHR with the determination of "no adverse effect" on August 19, 2021.

Supporting Documentation:

Attachment G: Boat Harbor/Nansemond SHPO correspondences

Attachment H: Boat Harbor/Nansemond Phase 1 Archaeological Survey Report

Attachment I: Boat Harbor/Nansemond Marine Report Archaeological Report

Attachment J: James River SHPO correspondence

Attachment K: Phase 1 Archaeological Survey of the Sustainable Water Initiative for Tomorrow Improvements to the James River Treatment Plant Reports, May and October 2020, May 2021

7. ARCHAEOLOGICAL RESOURCES PROTECTION ACT (16 U.S.C. §§ 470AA-MM)

Neither Project is not located on federal or Indian lands; therefore, the regulations and requirements of this act do not apply. (*See* EPA's EnviroMapper, EPA Tribal Areas (lower 48 states) data layer at https://enviro.epa.gov/enviro/em4ef.home).

8. NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (25 U.S.C. § 3001 ET SEQ.)

Neither Project is not located on Indian or Native Hawaiian lands where Native American human remains, funerary objects, sacred objects, and cultural items may be present; therefore, the regulations and requirements of this act do not apply. (*See* EPA's EnviroMapper, EPA Tribal Areas (lower 48 states) data layer at https://enviro.epa.gov/enviro/em4ef.home).

9. CLEAN WATER ACT (SECTION 404), RIVERS AND HARBORS ACT (SECTION 10) AND PROTECTION OF WETLANDS (EXECUTIVE ORDER NO. 11990 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12608 (1997))

Boat Harbor/Nansemond

This project includes the installation of a new 36-inch diameter transmission force main beneath the James River. The transmission force main will be approximately 23,000 linear feet and roughly parallel the Monitor-Merrimac Bridge-Tunnel, within one of two potential underwater routes. A combination of HDD and marine trench installation of the 36-inch steel or HDPE force main is anticipated.

A wetlands delineation was conducted by AECOM environmental scientists in May, June, August, and October 2020 to determine the extent of jurisdictional waters of the United States within the project study area (AECOM 2020a and 2020b). Portions of the study area were not available for field surveys due to lack of access permissions.

The wetland field investigations identified several jurisdictional features within the project study area: 12 non-tidal wetlands, one tidal wetland, one tidal stream, and three tidal waterbodies. Potential jurisdictional features identified within the project study area include one ditch, one pond, and four stormwater basins, all regularly maintained, totaling 0.18 acres on the Newport News side and 37.70 acres on the Suffolk side, which includes approximately 21 acres of the James River. A jurisdictional determination from the U.S. Army Corps of Engineers (USACE) has not yet occurred. Appropriate federal, state, and local wetland permits would be secured prior to commencement of the Project.

Practicable mitigation measures include use of erosion and sediment control measures and BMPs, compliance with permit requirements, effective site selection and design, consistency with Executive Order 11990 and the Clean Water Act Section 404(b)(1) guidelines, water efficiency, coordination with regional utilities, and planning for extreme weather. Minimization and avoidance of impacts to jurisdictional waters of the United States would occur during site design. Erosion and sediment control

measures, including sediment curtains for in-water work and standard erosion control devices for terrestrial work, would be implemented during construction to protect surface waters from sediment and nutrient transport and deposition. Treatment processes would be identified to ensure protection of groundwater resources and water quality. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the United States result from the project.

James River Projects

A wetlands delineation was conducted in January 2020 to determine the extent of jurisdictional waters of the United States within and adjacent to the Project area. In May 2020, AECOM conducted further wetlands investigations to confirm and expand upon the May 2020 findings. The wetland investigations identified six very small, isolated wetlands and three drainage ditches within the project boundary that fall under Virginia Department of Environmental Quality (VDEQ) jurisdiction. No waters of the United States (wetlands or streams) nor any tidal waterbodies occur within the project area. As the project components are still in early design, HRSD will be responsible to notify and obtain any necessary permits from responsible agencies of the project, including USACE. HRSD shall conduct regulatory permitting and if required, mitigate impacts to any jurisdictional waters and wetlands.

Supporting Documentation:

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

Attachment L: Boat Harbor/Nansemond Wetland Delineation Report

Attachment M: USFWS's National Wetland Inventory data, accessed through NEPAssist, April 19 and 21, 2021

Attachment B: James River Projects PEA Questionnaire, March 2021

10. FLOOD PLAIN MANAGEMENT (EXECUTIVE ORDER NO. 11988 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12148 (1979))

Boat Harbor/Nansemond

According to the most recent Federal Emergency Management Agency Flood Insurance Rate Map, the proposed project facilities and improvements are located partially within the 100-year and 500-year floodplain associated with the James River and Streeter Creek. Much of the project on the Boat Harbor portion of the project (on the Newport News side) is located within the 100-year flood zone, and portions of force main would cross both 100-year flood zones and 500-year flood zones. However, the project is designed to reduce flood risk and several of the Boat Harbor Treatment Plant facilities located within the 100- year flood zone will be demolished; thereby increasing flood capacity. The locations of the proposed recharge wells largely avoid disturbance to the 100-year floodplain. Project design would

be coordinated with the local floodplain administrators and compensatory flood storage mitigation would be included as part of the project design, as necessary.

James River Project

The James River Projects are located outside the 100- and 500-year floodplain boundary. Floodplains of the James and Warwick Rivers to the south occur close to the project boundary; however, the floodplain does not encroach on the project area and the proposed site layout avoids disturbance to the floodplain.

Supporting Documentation:

Attachment M: FEMA National Flood Hazard Layer, accessed through NEPAssist, April 19 and 21, 2021

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

Attachment B: James River Projects PEA Questionnaire, August 2021

11. SAFE DRINKING WATER ACT (42 U.S.C. §§ 300F-300J-26)

No sole source aquifers exist at or near either Project location; therefore, the regulations and requirements of this act do not apply.

Attachment M: Data.gov's Sole Source Aquifer Layer, accessed through NEPAssist, April 19 and 21, 2021

12. FARMLAND PROTECTION POLICY ACT (7 U.S.C. §§ 4201-4209)

Boat Harbor/Nansemond

Several of the mapped soils in the Boat Harbor/Nansemond Project study area have been identified by the Natural Resources Conservation Service as Prime Farmland soils. However, the project study area is heavily developed and previously disturbed and is not suitable for future farming uses. The areas proposed for project facilities are denoted as "Industrial" and "Mixed Use Core District on future land use planning mapping. HRSD will coordinate with the local NRCS office to complete the Farmland Conversion Impact Rating form if required. Submission is pending design development. The project study area is already zoned for industrial/mixed uses and no significant impact on land use is anticipated. Portions of the site would be converted from predominantly open space to industrial and utility uses; other portions of the site are already used for these purposes.

James River Project

The James River Project is not located within qualifying farmland and is located within previously developed land. Therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment M: U.S. Geological Survey's National Land Cover Database layer accessed through

NEPAssist, April 19 and 21, 2021

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

13. COASTAL ZONE MANAGEMENT ACT (16 U.S.C. §§ 1451-1466)

The Virginia coastal zone includes the state's 29 coastal counties, 17 cities, and 42 incorporated towns. Suffolk County and Newport News both occur within the Virginia Coastal Zone boundary; therefore, the regulations and requirements of this act apply. (*See* National Oceanic and Atmospheric Administration, https://coast.noaa.gov/czm/mystate/#virginia).

Boat Harbor/Nansemond Project

On August 2, 2021, EPA submitted a federal consistency determination to the VDEQ. EPA determined that the project was consistent with Virginia's coastal zone management (CZM) program. On August 25, 2021, VDEQ responded to EPA's determination. VDEQ stated that the proposed activity is consistent with the Virginia CZM Program, provided all applicable permits or approvals listed under "Enforceable Policies of Virginia's Coastal Zone Management Program" are received prior to implementation of the project. VDEQ also encouraged the consideration of potential project impacts to the advisory policies of the Virginia CZM Program.

James River Project

On July 23, 2021, EPA submitted a federal consistency determination to the VDEQ. EPA determined that the project was consistent with Virginia's (CZM) program. On August 17, 2021, VDEQ stated that the CZM review would be completed and returned to EPA by August 31. Currently the CZM response has not been received, but VDEQ has committed to providing it prior to the WIFIA loan closing for this loan, which is planned for September 9. In the event, that VDEQ is unable to meet their commitment, WIFIA has added a Conditions Precedent to Disbursement in Section 11 of the WIFIA Loan Agreement. This addition prevents the disbursement of WIFIA funds until the CZM federal consistency review is completed.

Supporting Documentation:

Attachment N: Boat Harbor/Nansemond Project CZMA Letters and response, August 2021

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

Attachment O: James River Project CZMA Letters, July, August 2021

14. COASTAL BARRIERS RESOURCES ACT (16 U.S.C. §§ 3501-3510)

Neither Project occurs within a coastal barrier zone; therefore, the regulations and requirements of this act do not apply. (*See* Coastal Barrier Resources System (CBRS) Mappers, https://www.fws.gov/CBRA/Maps/Mapper.html).

15. WILD AND SCENIC RIVERS ACT (16 U.S.C. §§ 1271-1287)

No Wild and Scenic Rivers or waterways listed on the National Rivers Inventory are impacted by this project; therefore, the regulations and requirements of this act do not apply. (See National Wild and Scenic Rivers System, https://www.rivers.gov/california.php).

16. ESSENTIAL FISH HABITAT CONSULTATION PROCESS UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (16 U.S.C. §§ 1801-1891)

Boat Harbor/Nansemond Project

On May 5, 2021, EPA initiated information consultation with NMFS regarding essential fish habitat and marine mammals. According to the NOAA essential fish habitat (EFH) Mapper, EFH for one or more life stages of 12 federally managed fish species has been designated in the waters in the vicinity of the project area. No mapped areas of submerged aquatic vegetation would be disturbed. The proposed alignment would cross public and private oyster grounds off the south shoreline. Assuming the width of the corridor in which oyster beds may be directly impacted by trenching would be 50 feet, the total area of oyster ground leases potentially affected would be approximately 9 acres.

Direct and minor impacts on EFH from sediment disturbance, turbidity, and sedimentation may occur during the construction period associated with the installation of the proposed pipeline beneath the James River. However, impacts would be temporary and prevented or minimized through the use of BMPs, such as sediment curtains. Long term operation of the proposed project would not affect EFH. Potential adverse effects of the proposed project on EFH would be minimal and short-term, and the overall effects on EFH would be less than significant.

On May 18, 2021, NMFS provided comments on EPA's evaluation on EFH and requested additional information. When available EPA will provide additional sediment sampling data and sediment transport modeling in response to the NMFS comments.

As consultation will not be completed until after the WIFIA loan closes, the loan agreement contains a Conditions Precedent to the first disbursement so that a disbursement cannot be made until obligations under the MSA have been met. The loan agreement contains the following language:

As a condition to the first disbursement of the WIFIA Loan in respect to eligible costs related to i) Boat Harbor Transmission Force Main Land Acquisition, ii) Boat Harbor Treatment Plant Transmission Force Main Section 1, and iii) Boat Harbor Treatment Plant Transmission Force Main Section 2, the Borrower shall have demonstrated to the WIFIA Lender's satisfaction that all Governmental Approvals necessary as of the time of such disbursement for the development, construction, operation and maintenance of the Project have been issued and are in full force and effect (and are not subject to any notice of violation, breach or revocation), *including that Borrower is prepared to implement/has implemented the EFH conservation recommendations that EPA has adopted under the Magnuson-Stevens Fishery Conservation and Management Act.*

James River Project

The Project area is not located in or nearby EFH. The Project will not adversely affect EFH, including direct or indirect physical, chemical, or biological alterations. (*See* EFH Mapper, https://www.habitat.noaa.gov/protection/efh/efhmapper/).

Supporting Documentation:

Attachment P: Boat Harbor/Nansemond EFH Correspondences, May 2021

17. MIGRATORY BIRD TREATY ACT (16 U.S.C. §§ 703-712)

Neither project involves the taking, killing, possession, transportation, or importation of migratory birds, their eggs, parts, or nests. Compliance with the MBTA is being addressed through compliance with the ESA; therefore, neither project would be in conflict with this act.

18. CLEAN AIR ACT CONFORMITY (42 U.S.C. § 7506(C))

The Project is not located in a nonattainment or maintenance area for any relevant pollutants; therefore, the Project is not subject to a conformity determination.

The Boat Harbor/Nansemond project requires air permits (Prevention of Significant Deterioration, New Source Review, Title V) from VDEQ Air division. Permit submission will be pending design development.

Some proposed James River facility improvements would result in reduced air emissions and would lead to positive benefits to air quality, including reduced greenhouse gas emissions through the use of more modern and efficient equipment and technologies. No significant impacts to air quality during construction or operation are anticipated. Effects could include generation of construction dust and emissions, and generation of operational emissions, such as criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic; however, practicable mitigation measures that would be employed include odor-minimizing facility design, use of energy-efficient designs and technologies, and use of dust suppression techniques.

Supporting Documentation:

Attachment M: EPA's Air Nonattainment Layers, accessed through NEPAssist April 19 and 21, 2021

Attachment C: Boat Harbor/Nansemond Project PEA Questionnaire, March 2021

Attachment B: James River Projects PEA Questionnaire, August 2021

19. WILDERNESS ACT (16 U.S.C. § 1131 ET SEQ.)

The Project is not located in or near any Wilderness areas; therefore, the regulations and requirements of this act do not apply. (*See* Wilderness Maps, http://www.wilderness.net/map.cfm).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

WIFIA PROGRAMMATIC ENVIRONMENTAL ASSESSMENT ADEQUACY MEMORANDUM

In accordance with the Council of Environmental Quality's (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (40 CFR Part 1500), and the U.S. Environmental Protection Agency's (EPA) procedures for implementing the National Environmental Policy Act (NEPA) (40 CFR Part 6), EPA has completed an environmental review of the following proposed action:

Issuance of Water Infrastructure Finance and Innovation Act (WIFIA) Program Credit Assistance to Hampton Roads Sanitation District Sustainable Water Initiative for Tomorrow Project 2

EPA developed a Programmatic Environmental Assessment (PEA) to analyze the potential environmental impacts related to the issuance of credit assistance under the WIFIA program. The proposed federal action under consideration in the PEA was the approval or denial of WIFIA applications by either providing or not providing WIFIA credit assistance. The PEA evaluated the effects of design, construction, operation, and maintenance for a range of types of water and wastewater infrastructure projects that are eligible for WIFIA credit assistance. EPA has determined that the above referenced project falls under one of the project types assessed in the PEA.

The prospective borrower has completed the WIFIA Programmatic Environmental Assessment's (PEA) Environmental Questionnaire and provided supplemental information to the WIFIA program about the project and its potential environmental effects. In carrying out its responsibilities under NEPA, EPA has taken the following actions:

- Reviewed the PEA Environmental Questionnaire and supplemental information submitted by the prospective borrower or directly obtained by EPA;
- Determined the adequacy of the information available for completing the environmental review under NEPA and cross-cutting authorities;
- Assessed site-specific environmental impacts of the above referenced WIFIA project;
- Determined that the reasonably foreseeable environmental effects are within the scope or context of the PEA.

EPA has determined that no significant environmental impacts are anticipated from the issuance of WIFIA credit assistance to the applicant, and the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, making the preparation of an Environmental Impact Statement (EIS) unnecessary. Based on the review documented above, I conclude that this proposal conforms to the WIFIA PEA and associated finding of no significant impact (FONSI), and that the documentation fully covers the proposed action, and constitutes EPA's compliance with the requirements of the NEPA.

8/31/21

Jorianne Jernberg, Director
WIFIA Management Division
Office of Wastewater Management

Date

Enclosures
Completed PEA Environmental Questionnaire (and supporting documentation)
Completed Applicant Verification Memorandum (and supporting documentation)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 26 2018

OFFICE OF WATER

PRELIMINARY FINDING OF NO SIGNIFICANT IMPACT (FONSI)

To all interested government agencies, public groups, and individuals:

In accordance with the Council of Environmental Quality's (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (40 CFR Part 1500), and the U.S. Environmental Protection Agency's (EPA) procedures for implementing the National Environmental Policy Act (NEPA) (40 CFR Part 6), EPA has completed an environmental review of the following proposed action:

Issuance of Credit Assistance to Water and Waste Water Infrastructure Projects Under the Water Infrastructure Finance and Innovation Act Program

The Environmental Protection Agency is evaluating the issuance of credit assistance to water and waste water infrastructure programs under the Water Infrastructure Finance and Innovation Act (WIFIA) program. The environmental review process, which is documented by the enclosed Programmatic Environmental Assessment (PEA), indicates that no potential significant adverse environmental impacts are anticipated from the proposed action. The PEA analyzes the potential adverse and beneficial environmental impacts associated with providing WIFIA credit assistance to eligible water infrastructure projects in compliance with NEPA. Projects receiving WIFIA credit assistance must also comply with applicable federal laws and regulations and Executive Orders (EO) and other state and local environmental reviews.

Based on the environmental impact analysis in the PEA, EPA has determined that no significant environmental impacts are anticipated from the issuance of WIFIA credit assistance and the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, making the preparation of an Environmental Impact Statement (EIS) unnecessary. Therefore, I am issuing this preliminary Finding of No Significant Impact (FONSI) to document this determination.

Copies of the PEA are available by request or by accessing it through the Federal eRulemaking Portal at http://www.regulations.gov/ under Docket ID No. EPA-HQ-OW-2018-0079. An electronic copy of this document is available for download from EPA's NEPA Compliance Database at https://cdxnodengn.epa.gov/cdx-enepa-public/action/nepa/search and the WIFIA program website at https://www.epa.gov/wifia.

Comments regarding my preliminary decision may be submitted for consideration at http://www.regulations.gov under the above Docket ID. Questions on my preliminary decision can be directed to Mr. Alejandro Escobar by email at wifia@epa.gov.

After evaluating any comments received, the EPA will make a final decision. The preliminary decision and finding will then become final after the 30-day comment period expires if no new significant information is provided to alter this finding.

Andrew D. Sawyers, Director
Office of Wastewater Management

Enclosure

Programmatic Environmental Assessment for the WIFIA Program, April 2018

Andrew D. Sawyers, Director
Office of Wastewater Management

4/26/18
Date

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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September 7, 2021

Ms. Ashley Longie
Environmental Engineer, Technical Support Branch
WIFIA Management Division, Office of Wastewater Management
U.S. Environmental Protection Agency
William Jefferson Clinton Bldg., Mail Code: 4204M
1200 Pennsylvania Avenue, N. W.
Washington, DC 20460
Via email: longrie.ashley@epa.gov

RE: Federal Consistency Review, Sustainable Water Initiative for Tomorrow (SWIFT) Project, EPA Water Infrastructure Finance and Innovation Act Funding, City of Newport News, DEQ #4294

Dear Ms. Longie:

On behalf of the Commonwealth, the Department of Environmental Quality (DEQ) is responsible for reviewing and responding to federal consistency documentation submitted in accordance with the Intergovernmental Review of Federal Programs (E.O. 12372) and federal consistency regulations for the review of federal financial assistance to state and local governments (15 CFR, Subpart F, §930.90 *et seq*.). Pursuant to the Coastal Zone Management Act of 1972, as amended, because the above-referenced project will be federally funded, it must be constructed and operated in a manner that is consistent with the Virginia Coastal Zone Management (CZM) Program.

PROJECT DESCRIPTION

According to your July 23, 2021 letter, the Hampton Roads Sanitation District (HRSD or applicant) proposes to implement the Sustainable Water Initiative for Tomorrow (SWIFT) James River Land Acquisition, Advanced Nutrient Reduction Improvements, and Recharge Wells Project in Newport News, Virginia. HRSD is seeking funds from the Water Infrastructure Finance and Innovation Act (WIFIA) program to assist in financing the Project. The U.S. Environmental Protection Agency (EPA) administers the WIFIA Program and is the federal lead agency for the Project.

The project is located adjacent to HRSD's James River Treatment Plant (JRTP) at 111 City Farm Road. The project area footprint is approximately 17 acres. It is bordered by a forested buffer along the shorelines of the James and Warwick Rivers to the south and west and is surrounded by the City's Riverview Farm Park to the east and north.

HRSD proposes to design and construct new facilities to improve water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP) and improving the quality of effluent from the treatment facility. A prior phase of the SWIFT project included design, construction, and commissioning of new facilities at the existing JRTP that will apply advanced water treatment to highly treated wastewater from the JRTP. The prior phase was reviewed by the Office of Environmental Impact Review and, in a letter dated August 11, 2020 (DEQ #4169). The current Project includes three components aimed at further developing the SWIFT facilities, as detailed in the following sections:

1) Land Acquisition - Acquisition of a 10-acre parcel of land adjacent to the JRTP from the City of Newport News. HRSD will develop approximately 4 acres of the 10-acre parcel for SWIFT facilities. The remaining 6 acres, which includes the undeveloped forested lands and Warwick River shoreline southwest of the Project area, will be placed in a conservation easement protecting the waterfront from future development.

2) Advanced Nutrient Reduction Improvements (ANRI) - Includes the design, construction, and commissioning of improvements to the secondary treatment process at the JRTP. These advanced secondary treatment improvements, including nutrient reduction measures, will be required to provide stable source water quality that meets the influent requirements of the Full-Scale SWIFT Facility at the JRTP. This project includes the design, supply, construction, and commissioning of the following new elements:

- Administration Building
- Maintenance Building
- Generator and Fuel Storage Facilities
- Wastewater Chemical Storage Facilities
- Mechanical, Electrical, and Plumbing
- Site Work including Stormwater Management
- Expanded Parking Lots, Driveways, Security Gates and Fencing
- Relocated Parking and Rubbish Disposal at Adjacent Facilities.

3) Recharge and Monitoring Well Services - Includes the construction and development of seven recharge wells and eight monitoring wells. Installation of the recharge wells includes site development, installation of mechanical equipment, and piping associated with the conveyance of SWIFT water to the recharge wells along easements within City of Newport News-owned property. Each of the recharge wells will be housed inside a well house facility similar in scale to a small residential home and the facilities would be designed to complement existing architecture in the vicinity. The recharge wells would

be sited at a minimum of approximately 800 feet apart from one another to recharge the Potomac Aquifer most efficiently.

FEDERAL CONSISTENCY

The project described in your letter is consistent with the Virginia CZM Program, provided all applicable permits or approvals listed under the enforceable policies are received prior to construction. If any of the enforceable policies are applicable, please contact the relevant agencies to obtain applicable permits or approvals. The applicant must obtain any permits and approvals listed under the enforceable policies of the Virginia CZM Program that may be applicable. The DEQ Tidewater Regional Office (TRO) administers the enforceable programs listed under DEQ's jurisdiction. Please contact DEQ-TRO at (757) 518-2000) for assistance in meeting the requirements of applicable DEQ programs.

Please note that on October 2, 2020, the National Oceanic and Atmospheric Administration (NOAA) approved an update of the Commonwealth's enforceable policies. Future project submissions must include an analysis or project impacts on the approved policies: https://www.deq.virginia.gov/permits-regulations/environmental-impact-review/federal-consistency

The following discussion is provided as a guide to the enforceable policies administered by DEQ and other agencies of the Commonwealth which could apply to the project. In addition, DEQ encourages the applicant to consider potential project impacts to the advisory policies of the Virginia CZM Program as found in DEQ's Federal Consistency Information Manual. Final determination concerning potential impacts on these programs rests with DEQ-TRO or the appropriate state agency. It is the applicant's responsibility to coordinate development with appropriate state agencies.

1. Tidal and Non-Tidal Wetlands. Federal and state governments regulate impacts to streams and wetlands. The Virginia Marine Resources Commission serves as the clearinghouse for the Joint Permit Application (JPA) used by the:

1. U.S. Army Corps of Engineers, for issuing permits pursuant to section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act;
2. Department of Environmental Quality, for issuance of Virginia Water Protection Permits pursuant to section 401 of the Clean Water Act, Virginia Code sections 62. 1-44.2 et seq., Virginia Code section 62. 1-44. 15:20 and Virginia Administrative Code 9 VAC 25-210-10 et seq.;
3. Virginia Marine Resources Commission, for permits to encroach on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code sections 28.2-1200 through 1400; and
4. Local wetlands board, for impacts to wetlands.

You indicate that wetland delineations were conducted in January and May 2020 to determine the extent of jurisdictional waters of the U.S. within and adjacent to the

project area. No waters of the U.S. nor any tidal waterbodies occur within the Project area, but six very small isolated wetlands and three drainage ditches were identified within the Project boundary.

The applicant must contact VMRC at 757-247-2200 to obtain a JPA for streams and wetlands that would be impacted by construction. VMRC will distribute the application to the appropriate agencies. Each agency will conduct its review and respond. Additional information on water resources permitting is available DEQ-TRO Water Division (Jeffrey Hannah, 757-518-2146, jeffrey.hannah@deq.virginia.gov).

2. Subaqueous Lands and Marine Fisheries. The Virginia Marine Resources Commission (VMRC) regulates encroachments in, on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code §28.2-1200 through 1400. For nontidal waterways, VMRC states that it has been the policy of the Habitat Management Division to exert jurisdiction only over the beds of perennial streams where the upstream drainage area is 5 square miles or greater. The beds of such waterways are considered public below the ordinary high water line. The applicant must contact VMRC at 757-247-2200 to obtain a JPA for state subaqueous lands that would be impacted by construction.

3. Chesapeake Bay Preservation Areas. Pursuant to the Chesapeake Bay Preservation Act (Virginia Code § 62.1-44.15:67 *et seq.)* and the Regulations for the Designation and Management of Chesapeake Bay Preservation Areas (9VAC25-830-10 *et seq.),* localities within the state's coastal zone have enacted programs designed to improve water quality in the Chesapeake Bay through the mitigation of the impacts of development and redevelopment on sensitive environmental features such as streams, wetlands, floodplains, highly erodible and highly permeable soils. Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) have been designated in each locality; these areas consist of groupings of sensitive environmental features. RPA features (tidal wetlands, certain non-tidal wetlands, tidal shores, and buffer areas) are the most sensitive; in general, only water-dependent uses may be constructed in an RPA. RMA features (highly erodible soils, highly permeable soils, and certain non-tidal wetlands) are less sensitive than RPA features, but no less important. Development in an RMA requires that activities meet certain performance criteria designed to mitigate negative environmental impacts.

The applicant must coordinate with the appropriate locality officials for review and approval of the project pursuant to the local Chesapeake Bay Preservation Area program as applicable. Additional guidance may be obtained from DEQ's Office of Watersheds and Local Government Assistance Programs, Daniel Moore at (804) 698-4520 or daniel.moore@deq.virginia.gov.

4. Point Source Air Pollution. The City of Newport News is located in an ozone (O_3) attainment area and an emission control area for volatile organic compounds (VOCs) and oxides of nitrogen (NOx). DEQ recommends that precautionary measures be employed during demolition to reduce ground-level ozone concentrations, especially

during ozone alert days. This can be done by minimizing the generation of ozone precursors such as volatile organic compounds and nitrogen oxides during operation of construction equipment and vehicles. Construction activities should avoid or minimize traffic congestion and/or unnecessary localized vehicular idling. Although no adverse impacts to air quality are anticipated, during construction, fugitive dust must be kept to a minimum. This requires, but is not limited to, measures such as application of water to suppress dust, and washing down construction vehicles and paved roadways immediately adjacent to project areas (9 VAC 5-50-60 et *seq.).* For information on air pollution control and possible air pollution permitting, contact DEQ-TRO (John Brandt, Air Compliance Manager, john.brandt@deq.virginia.gov or 757-518- 2010).

5. Point Source Water Pollution. The point source program is administered by the State Water Control Board pursuant to Virginia Code §62.1-44.15. Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to §402 of the federal Clean Water Act and administered in Virginia as the VPDES permit program. The Water Quality Certification requirements of §401 of the Clean Water Act of 1972 is administered under the Virginia Water Protection Permit program. The applicant should coordinate with the DEQ Tidewater Regional Office (Jeff Hannah, 757-518-2146, email Jeffrey.Hannah@deq.virginia.gov).

6. Nonpoint Source Water Pollution. The DEQ Office of Stormwater Management (OSWM) administers the nonpoint source water pollution enforceable policy through the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R) and Virginia Stormwater Management Law and Regulations (VSWML&R). In addition, DEQ is responsible for the issuance, denial, revocation, termination and enforcement of the Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities related to municipal separate storm sewer systems (MS4s) and construction activities for the control of stormwater discharges from MS4s and land-disturbing activities under the Virginia Stormwater Management Program.

6(a) Requirements.

6(a)(i) Erosion and Sediment Control Plan. The applicant is responsible for submitting a project-specific erosion and sediment control (ESC) plan to the appropriate locality for review and approval pursuant to the local ESC requirements, should the project involve a land-disturbing activity equal to or greater than 10,000 square feet (2,500 square feet in a Chesapeake Bay Preservation Area). Depending on local requirements, the area of land disturbance requiring an ESC plan may be less. The ESC plan must be approved prior to any land-disturbing activity at the project site. All regulated land-disturbing activities associated with the project, including on- and off-site access roads, staging areas, borrow areas, stockpiles, and soil intentionally transported from the project, must be covered by the project specific ESC plan. Local ESC program requirements must be requested through the city offices.

6(a)(ii) Stormwater Management Plan. Dependent on local requirements, a stormwater management (SWM) plan may be required. Local SWM program requirements must be requested through the locality (Reference: Virginia Stormwater Management Act §62.1-44.15 *et seq*.; Virginia Stormwater Management (VSMP) Permit Regulations 9VAC25-870-10 *et seq*.).

6(a)(iii) General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities (VAR 10). The owner or operator of projects involving land-disturbing activities of equal to or greater than 1 acre is required to apply for registration coverage under the General Permit for Discharges of Stormwater from Construction Activities. General information and registration forms for the General Permit are available at https://www.deq.virginia.gov/permits-regulations/permits/water/stormwater-construction.

Additional guidance may be obtained from DEQ's Office of Stormwater Management, Larry Gavan at (804) 698-4040 or larry.gavan@deq.virginia.gov.

7. Wildlife and Inland Fisheries. The Department of Wildlife Resources (DWR) (formerly the Department of Game and Inland Fisheries), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects (*Virginia Code* Title 29.1). DWR is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 *et seq*.), and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DWR determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts. For more information, contact Amy Martin at (804) 367-2211 or amy.martin@dwr.virginia.gov.

ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

In addition to the enforceable policies of the CZM Program, the project must comply with all other applicable federal, state and local laws and regulations. In general, to the extent practicable, construction must incorporate features that prevent significant adverse impacts on ambient air quality, water quality, wetlands, historic structures, fish and wildlife, and species of plants, animals, or insects listed by state or federal agencies as rare, threatened, or endangered.

The following discussion is provided as a guideline of programs administered by DEQ and other agencies of the commonwealth, which could be applicable. Final determinations concerning potential impacts on these programs rest with the DEQ TRO (757-518-2000) and the appropriate agency administering each program. It is the responsibility of the applicant (i.e., the City) to coordinate with these agencies.

1. Solid and Hazardous Waste Management. DEQ administers the Virginia Solid Waste Management Regulations (9 VAC 20-81) and the Virginia Hazardous Waste Management Regulations (9 VAC 20-60).

1(a) Agency Recommendations. DEQ encourages all projects and facilities to implement pollution prevention principles, including:

- the reduction, reuse and recycling of all solid wastes generated; and
- the minimization and proper handling of generated hazardous wastes.

1(b) Requirements.

(i) Contaminated Waste. Any wastes that are generated must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations.

(ii) Asbestos-Containing Materials and Lead-Based Paint. All structures being demolished or renovated should be checked for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to construction activities. If ACM or LBP are found, in addition to federal waste-related regulations, state regulations 9 VAC 20-80-620 for ACM and 9 VAC 20-60-261 for LBP must be followed.

Contact DEQ-TRO, Melinda Woodruff at (757) 518-2174 or melinda.woodruff@deq.virginia.gov, concerning the location and availability of waste management facilities in the project area. For questions about ACM contact the Department of Labor and Industry, Ronald L. Graham at (804) 371-0444, for additional information. For LBP contact the Department of Professional and Occupational Regulation at 804-367-8500.

2. Pollution Prevention. DEQ advocates that principles of pollution prevention and sustainability be used in all construction projects as well as in facility operations. Effective siting, planning, and on-site Best Management Practices (BMPs) will help to ensure that environmental impacts are minimized. However, pollution prevention and sustainability techniques also include decisions related to construction materials, design, and operational procedures that will facilitate the reduction of wastes at the source.

DEQ's Office of Pollution Prevention provides information and technical assistance relating to pollution prevention techniques. For more information, contact DEQ's Office of Pollution Prevention (Meghann Quinn, (804-698-4021).

3. Public Water Supply. The Virginia Department of Health (VDH), Office of Drinking Water (ODW) reviews projects for the potential to impact public drinking water sources (groundwater wells and surface water intakes). VDH administers both federal and state laws governing waterworks operation. Potential impacts to public water distribution systems or sanitary sewage collection systems should be verified by the local utility. Contact VDH, Arlene Fields Warren, with questions (804-864-7781).

4. Natural Heritage Resources. The Department of Conservation and Recreation's Division of Natural Heritage (DNH) maintains a Biotics Data System (Biotics) for occurrences of natural heritage resources in identified project areas. Natural heritage resources are defined as the habitat of rare, threatened, or endangered animal and plant species, unique or exemplary natural communities, and significant geologic communities.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Department of Conservation and Recreation (DCR), DCR has the authority to report for VDACS on state-listed plant and insect species. Contact DCR-DNH, Rene Hypes at (804) 371-2708 or rene.hypes@dcr.virginia.gov, to secure information on natural heritage resources.

5. Historic and Archaeological Resources. Section 106 of the National Historic and Preservation Act of 1966, as amended, requires that proponents of activities that receive federal funding must consider effects to properties that are listed, or eligible for listing, on the National Register of Historic Places. The Department of Historic Resources (DHR) conducts reviews of projects to determine their effect on historic structures or cultural resources. To ensure compliance with Section 106 or in the event that archaeological resources are encountered during construction activities, contact DHR, Roger Kirchen at (804) 482-6091 or roger.kirchen@dhr.virginia.gov.

Thank you for your inquiry. We appreciate your interest in complying with Virginia's environmental regulations. If you have any further questions, please call me at (804) 698-4339.

Sincerely,

John Fisher, EIR Coordinator
Office of Environmental Impact Review

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

July 23, 2021

Electronic Submittal

Ms. Valerie Fulcher, Environmental Program Specialist
Virginia Department of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, Virginia 23218

Re: Federal Consistency Determination for the Hampton Roads Sanitation District's SWIFT – James River Land Acquisition, ANRI and Recharge Wells Project

Dear Ms. Fulcher:

This document provides the Commonwealth of Virginia with the Environmental Protection Agency's (EPA) Consistency Determination under CZMA section 307(c)(1) [or (2)] and 15 CFR Part 930, subpart C, for the issuance of financing under the Water Infrastructure Finance and Innovation Act (WIFIA) to the Hampton Roads Sanitation District (HRSD) for the SWIFT (Sustainable Water Initiative for Tomorrow) James River Land Acquisition, Advanced Nutrient Reduction Improvements (ANRI), and Recharge Wells project ("the Project").

WIFIA was signed into law in 2014 and authorized the WIFIA program to be managed by EPA Headquarters. WIFIA was amended by section 1445 of the Fixing America's Surface Transportation Act of 2015 and section 5008 of the Water Infrastructure Improvements for the Nation Act of 2016. WIFIA is a federal credit program for eligible water and wastewater infrastructure projects. EPA selected HRSD to submit an application for credit assistance for the Project.

The information in this Consistency Determination is provided pursuant to 15 CFR §930.39. This activity includes:

HRSD proposes to design and construct new facilities to improve water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP) and improving the quality of effluent from the treatment facility. A prior phase of the SWIFT project included design, construction, and commissioning of new facilities at the existing JRTP that will apply advanced water treatment to highly treated wastewater from the JRTP (Figures 1A and 1B). The prior phase was reviewed by the Office of Environmental Impact Review and, in a letter dated August 11, 2020, determined to be consistent with the Virginia CZM program. The current Project includes three components aimed at further developing the SWIFT facilities, as detailed in the following sections:

1) James River SWIFT Land Acquisition - The James River SWIFT Land Acquisition project will fund HRSD's acquisition of a 10-acre parcel of land adjacent to the existing James River Treatment Plant from the City of Newport News. HRSD will develop approximately 4 acres of the 10-acre parcel (Figure 2) for SWIFT facilities. The remaining 6 acres, which includes the undeveloped forested lands and Warwick River shoreline southwest of the Project area, will be placed in a conservation easement protecting the waterfront from future development.

2) Advanced Nutrient Reduction Improvements- The Advanced Nutrient Reduction Improvements project includes the design, construction, and commissioning of improvements to the secondary treatment process at the JRTP. These advanced secondary treatment improvements, including nutrient reduction measures, will be required to provide stable source water quality that meets the influent requirements of the Full-Scale SWIFT Facility at the JRTP. This project includes the design, supply, construction, and commissioning of the following new elements:

- Administration Building
- Maintenance Building
- Generator and Fuel Storage Facilities
- Wastewater Chemical Storage Facilities
- Mechanical, Electrical, and Plumbing
- Site Work including Stormwater Management
- Expanded Parking Lots, Driveways, Security Gates and Fencing
- Relocated Parking and Rubbish Disposal at Adjacent Facilities.

3) SWIFT Recharge and Monitoring Well Services- This project includes the construction and development of seven recharge wells and eight monitoring wells. Installation of the recharge wells includes site development, installation of mechanical equipment, and piping associated with the conveyance of SWIFT water to the recharge wells along easements within City of Newport News-owned property. Each of the recharge wells will be housed inside a well house facility similar in scale to a small residential home and the facilities would be designed to complement existing architecture in the vicinity. The recharge wells would be sited at a minimum of approximately 800 feet apart from one another to recharge the Potomac Aquifer most efficiently.

The project is located adjacent to HRSD's JRTP, which is at 111 City Farm Road in the City of Newport News, Virginia. The coordinates of the JRTP are 37°05'07.1"N 76°32'00.1"W. The project area footprint is approximately 17 acres. It is bordered by a forested buffer along the shorelines of the James and Warwick Rivers to the south and west and is surrounded by the City's Riverview Farm Park to the east and north. Access to the project area is via City Farm Road. The proposed facility layout and proposed recharge well locations are depicted in Figure 3.

The EPA has evaluated the activity's effects to the land or water uses or natural resources of Virginia, including public access, recreation, fishing, historic or cultural preservation, development, energy infrastructure and use, hazards management, marinas, floodplain management, scenic and aesthetic enjoyment, and resource creation or restoration. EPA also considered coastal resources including biological or physical resources that are found within the coastal zone on a regular or cyclical basis, as well as biological and physical resources including, but not limited to, air, tidal and non-tidal wetlands, ocean waters, estuaries, rivers, streams, lakes, aquifers, submerged aquatic vegetation, land, plants, trees, minerals, fish, shellfish, invertebrates, amphibians, birds, mammals, and reptiles, etc.

The Virginia Coastal Zone Management Program contains the following applicable enforceable policies:

Fisheries Management, Subaqueous Lands Management, Wetlands Management, Dunes Management, Shoreline Sanitation, Air Pollution Control, Non-point Source Pollution Control, Point Source Pollution Control, and Coastal Lands Management.

Based upon the following information, data, and analysis, the EPA finds that the SWIFT Project is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Zone Management Program.

Subaqueous Lands Management, Wetlands Management, Non-point Source Pollution Control, Point Source Pollution Control- Wetland delineations were conducted in January and May 2020 to determine the extent of jurisdictional waters of the U.S. within and adjacent to the project area. No waters of the U.S. nor any tidal waterbodies occur within the Project area. Six very small isolated wetlands and three drainage ditches were identified within the Project boundary. All are located in previously disturbed areas. Appropriate federal, state, and local wetland permits would be secured prior to commencement of the project.

The project would not result in a violation of the existing NPDES permit or degrade water quality, nor is any in water work proposed. Effects could include ground and soil-disturbing activities, direct impacts to surface water or wetlands, new or expanded outfalls and discharges of effluent to water resources. Practicable mitigation measures include use of erosion and sediment control measures and BMPs, compliance with permit requirements, effective site selection and design, consistency with Executive Order 11990 and the Clean Water Act Section 404(b)(1) guidelines, water efficiency, coordination with Regional utilities, and planning for extreme weather. Minimization and avoidance of impacts to jurisdictional waters of the U.S. would occur during site design. Erosion and sediment control measures would be implemented during construction to protect surface waters from sediment and nutrient transport and deposition. Treatment processes would be identified to ensure protection of groundwater resources and water quality. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the U.S. result from the project.

Air Pollution Control- The Project area is within an area designated as in attainment for most criteria pollutants except for the ozone (8-hr 1997) criteria for which the area is designated as non-attainment/maintenance for federal standards. No significant impacts to air quality during construction or operation are anticipated. Temporary effects could include generation of construction dust and emissions, and generation of operational emissions (including criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic); however,

practicable mitigation measures that would be employed include odor-minimizing facility design, use of energy-efficient designs and technologies, and use of dust suppression techniques

Pursuant to 15 CFR Section 930.41, the Virginia Coastal Zone Management Program has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR section 930.41(b). Virginia's concurrence will be presumed if its response is not received by the EPA on the 60th day from receipt of this determination. The State's response can be submitted to the EPA contact for this project. The EPA contact is Ms. Ashley Longrie at Longrie.ashley@epa.gov or 202-564-1935. Thank you for your coordination on this project.

Sincerely,

Ashley Longrie
Environmental Engineer
WIFIA Management Division
Office of Wastewater Management

Enclosures (2)

1. Figures 1-3
2. Previous CZMA Consistency Determination, August 2020

COMMONWEALTH of VIRGINIA

Matthew Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.virginia.gov

August 18, 2021

Ashley Longrie
Environmental Protection Agency
1200 Pennsylvania AVE, NW
Washington, DC 20460

Re: The SWIFT Improvements to the James River Treatment Plant, Newport News, Virginia
DHR Project No. 2020-4124

Dear Ms. Longrie:

This letter in response to updated project information (dated July 22, 2021). The HRSD is seeking funds from EPA's Water Infrastructure Finance and Innovation Act (WIFIA) Program to assist in financing the SWIFT Project. EPA's UIC Program is also involved in a portion of the undertaking related to the permitting of the underground injection control (UIC) wells included in the project. T

Consistent with our previous correspondence (dated August 28, 2020, December 30, 2020, and June 8, 2021), we concur that the Hampton Roads Sanitation District (HRSD) SWIFT (Sustainable Water Initiative for Tomorrow) Project (2020-4124) will result in no adverse effect to historic properties.

Implementation of the undertaking in accordance with the finding of **No Adverse Effects** as documented fulfills the Federal agency's responsibilities under Section 106 of the National Historic Preservation Act. If for any reason the undertaking is not or cannot be conducted as proposed in the finding, consultation under Section 106 must be reopened.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

From:	Notestine, Molly
To:	kimberly.butler@deq.virginia.gov; michael.crocker@deq.virginia.gov; Keith.Tignor@vdacs.virginia.gov; Robbie.Rhur@dcr.virginia.gov; terry.lasher@dof.virginia.gov; Amy.Ewing@dgif.virginia.gov; ProjectReview@dgif.virginia.gov; Odwreview-VDH@cov.virginia.gov; Roger.Kirchen@dhr.virginia.gov; David.Spears@dmme.virginia.gov; eahein@vims.edu; Tony.Watkinson@mrc.virginia.gov; tiffany.birge@mrc.virginia.gov; pat.geer@mrc.virginia.gov; adam.kenyon@mrc.virginia.gov; Heather.Williams@VDOT.virginia.gov; eir.coordination@vdot.virginia.gov
Cc:	Zuravnsky, Lauren; Holloway, Dan; Mitchell, Jamie; Bodniewicz, Bohdan; Rice, Shannon; Hurley, Bobbie; Klages, Jennifer; Rice, Shannon
Subject:	Notice of Agency Review Period for Hampton Roads Sanitation District's James River SWIFT Projects – James River SWIFT, JRTP Advanced Nutrient Reduction Improvements, Land Acquisition, and Recharge Wells Projects
Date:	Thursday, September 16, 2021 5:04:00 PM
Attachments:	JR Graphic Overview Project Summary.pdf VDEQ CWFAP COVER LETTER 09082021.pdf

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Greetings,

The Hampton Roads Sanitation District (HRSD) has applied for Virginia Clean Water Revolving Loan Fund funding in support of the HRSD Sustainable Water Initiative for Tomorrow (SWIFT) Projects. In compliance with Section 7 of the Virginia Clean Water Revolving Loan Fund's *Procedural Guidelines,* HRSD is providing regulatory agencies of the Commonwealth of Virginia with the enclosed streamlined Environmental Assessment documents, prepared by HRSD on behalf of the U.S. Environmental Protection Agency's Water Infrastructure Finance and Innovation Act (WIFIA) loan program. Notice is hereby given to the recipients of this email of a 30-day agency review and comment period of the attached and linked documents.

Attached, please find a cover letter and overview graphic summarizing the Projects; the associated attachments and supporting documentation can be accessed at the dropbox link below. Note PDFs are organized by bookmark to aid in navigation.
https://www.dropbox.com/sh/uheca9jkm0mshsi/AAAUZjT3YdDmPIz0DJ9Mn7-Fa?dl=0

Please don't hesitate to contact me with any questions. Thanks very much for your review.

Thanks again
Molly

Molly Notestine
Senior Ecologist, PWS
Environment
Impact Assessment & Permitting (IAP)
M +1-510-210-4213
molly.notestine@aecom.com

AECOM
aecom.com
Built to deliver a better world
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September 9, 2021

Electronic Submittal

Kimberly S. Butler, P.E.
Virginia DEQ Clean Water Financing and Assistance Program
Regional Project Manager
5636 Southern Blvd.
Virginia Beach, VA 23462

Re: Notice of Agency Review Period for Hampton Roads Sanitation District's James River SWIFT Projects – James River SWIFT, JRTP Advanced Nutrient Reduction Improvements, Land Acquisition, and Recharge Wells Projects

Dear Ms. Butler:

In compliance with Section 7 of the Virginia Clean Water Revolving Loan Fund's *Procedural Guidelines,* Hampton Roads Sanitation District (HRSD) is providing the Commonwealth of Virginia with the enclosed streamlined Environmental Assessment documents (i.e. Environmental Questionnaires), prepared by HRSD on behalf of the U.S. Environmental Protection Agency (EPA) as part of their obligations under the National Environmental Policy Act of 1969 for the issuance of financing under the Water Infrastructure Finance and Innovation Act (WIFIA) to HRSD for the James River Sustainable Water Initiative for Tomorrow (SWIFT) Facility (GN016360), James River Treatment Plant Advanced Nutrient Reduction Improvements (JR013400), James River Land Acquisition (GN016343), James River Recharge Wells (three onsite) (GN016361) and James River Recharge Wells (six offsite, one onsite, monitoring well clusters) (GN016362) projects. EPA developed a Programmatic Environmental Assessment (PEA) to analyze potential environmental impacts of projects under the WIFIA program, for which a Finding of No Significant Impact (FONSI) was finalized on April 27, 2018. The PEA and supplemental Environmental Questionnaires provides a streamlined NEPA compliance path for WIFIA applicants. Notice is hereby given to the recipients of this letter of a 30-day agency review and comment period of the enclosed documents.

WIFIA was signed into law in 2014 and authorized the WIFIA program to be managed by EPA Headquarters. WIFIA was amended by section 1445 of the Fixing America's Surface Transportation Act of 2015 and section 5008 of the Water Infrastructure Improvements for the Nation Act of 2016. WIFIA is a federal credit program for eligible water and wastewater infrastructure projects. EPA selected HRSD to submit an application for credit assistance for the SWIFT Program, which includes these projects.

HRSD has also applied and been approved for state funding via the Virginia Clean Water Revolving Loan Fund (Fund), which was established as a renewing source of low-interest loan funding for improvements to publicly owned wastewater systems. The Fund is separate, permanent, and perpetual with all principal and interest repaid into the Fund used to finance other projects. The State Water Control Board (SWCB) is responsible for developing the policies and procedures for the Fund, determining who will receive funds, at

what interest rates and terms, and for ensuring that administration of the Fund complies with applicable federal and state policies, statutes, and regulations. The SWCB has delegated responsibility for management of the day-to-day operations of the Fund to the Clean Water Financing and Assistance Program (CWFAP) of the Virginia Department of Environmental Quality (DEQ).

HRSD proposes to design, construct, and commission new facilities to improve water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP), in the City of Newport News, Virginia, and improving the quality of effluent from the treatment facility. The projects associated with implementing SWIFT at the JRTP have been divided into two funding tranches; therefore, two Environmental Questionnaire documents have been prepared. Both tranches have already been reviewed and approved by EPA. The first tranche included the James River SWIFT Facility (GN016360) project, a significant portion of the JRTP Advanced Nutrient Reduction Improvements (JR013400) project, and a significant portion of the James River Recharge Wells (three onsite) (GN016361) project. The second tranche includes the remainder of the JRTP Advanced Nutrient Reduction Improvements (JR013400) project, James River Recharge Wells (six offsite and one onsite) (GN016362) project, and acquisition of a 10-acre parcel of land adjacent to the existing James River Treatment Plant from the City of Newport News (GN016343). Enclosed is a graphical overview of the proposed set of projects. As depicted on the graphic, the majority of the proposed projects lie within the existing footprint of the James River Treatment Plant and adjacent previously disturbed areas. The Environmental Questionnaires for Tranche 1 and Tranche 2, providing project details and an evaluation of potential impacts, are included in the enclosed documents.

Pursuant to Section 7 of the Virginia Clean Water Revolving Loan Fund's *Procedural Guidelines*, the agencies to which this letter is addressed and copied have 30 days from the receipt of this letter in which to comment on the proposed set of projects. Agency concurrence will be presumed if its response is not received 30th day from receipt of this determination. Responses should be sent electronically to our Program Permitting Specialist Molly Notestine, at molly.notestine@aecom.com. Thank you for your coordination on this project.

Sincerely,

Ted Henifin

Ted Henifin, P.E.
General Manager

Enclosures:
- James River Project Summary Graphical Overview Figure
- Environmental Questionnaire – James River SWIFT, JRTP ANRI, and Recharge Wells Project (Tranche 1), Attachments, and Agency Correspondence
- Environmental Questionnaire – James River Land Acquisition, JRTP ANRI, and Recharge Wells Project (Tranche 2), Attachments, and Agency Correspondence

CC:
Department of Agriculture & Consumer Services
Mr. Keith Tignor
Keith.Tignor@vdacs.virginia.gov
Office of Plant & Pest Services
1100 Bank Street
Richmond, VA 23219

Department of Conservation & Recreation
Ms. Robbie Rhur
Robbie.Rhur@dcr.virginia.gov
DCR-Div. of Recreation Planning
600 East Main Street, Room 1708-J
Richmond, VA 23219

Department of Forestry
Mr. Terry Lasher
terry.lasher@dof.virginia.gov
Assistant State Forester
Virginia Department of Forestry
900 Natural Resources Drive, Suite 800
Charlottesville, VA 22903

Department of Wildlife Resources
Ms. Amy Martin Ewing (reviewer)
Amy.Ewing@dgif.virginia.gov
Send projects to: ProjectReview@dgif.virginia.gov
P.O. Box 90778 (7870 Villa Park Dr #400)
Henrico, VA 23228

Department of Health
Odwreview-VDH@cov.virginia.gov
VDH, Office of Drinking Water
James Madison Building
109 Governor St, Room 628
Richmond, VA 23219

Department of Historic Resources
Mr. Roger Kirchen
Roger.Kirchen@dhr.virginia.gov
2801 Kensington Avenue
Richmond, VA 23221

Department of Mines, Minerals & Energy
Mr. David Spears
David.Spears@dmme.virginia.gov
Division of Geology and Mineral Resources
Fontaine Research Park
900 Natural Resources Drive, Suite 500
Charlottesville, VA 22903-0667

Virginia Institute of Marine Science
Ms. Emily A. Hein
eahein@vims.edu
Virginia Institute of Marine Science
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1375 Greate Road, P.O. Box 1346
Gloucester Point, VA 23062-1346

Virginia Marine Resources Commission
Mr. Tony Watkinson
Tony.Watkinson@mrc.virginia.gov
Send Project To: tiffany.birge@mrc.virginia.gov
2600 Washington Avenue
Newport News, VA 23607

Fisheries Management:
Mr. Pat Geer, Deputy Chief
pat.geer@mrc.virginia.gov
Deputy Chief Adam Kenyon
adam.kenyon@mrc.virginia.gov

Virginia Department of Transportation
Ms. Heather Williams
Heather.Williams@VDOT.virginia.gov
Send projects/comments to:
eir.coordination@vdot.virginia.gov
Environmental Division
1401 East Broad Street
Richmond, VA 23219

HRSD James River Project Summary

September 8, 2021

SWIFT FACILITY PIPELINES*
(GN016360)
Conveys water to 6 offsite wells and 2 monitoring well locations

RECHARGE WELLS
(GN016362)
Includes **1 onsite well** on the newly purchased 10-acre site, **6 offsite wells,** and **2 monitoring well locations**

SWIFT FACILITY*
(GN016360)

ADVANCED NUTRIENT REDUCTION IMPROVEMENTS*
(JR013400)

RECHARGE WELLS
(GN016361)
Includes **3 onsite wells** within HRSD existing property

Agency Consultations

- USEPA NEPA Review and Approval, Federal Cross-Cutting Authorities Review Memorandum, 9/22/2020
- VDHR NHPA Section 106 Consultation Concurrence Letters, 8/28/2020, 12/30/2020, and 6/8/2021
- Cultural Resources Tribal Consultation Meeting, 6/3/2021
- CZMA Consistency Letter and Intergovernmental Review, 8/11/2020
- USFWS Self-Certification and Consistency Letters for NLEB, 7/8/2020 and 8/12/2020
- Wetlands Delineation conducted by AECOM, Hazen & Sawyer, and HDR
- The pipelines associated with the SWIFT Facility project (GN016360) were not included in the initial (July 2020) WIFIA Environmental Questionnaire and agency consultations, but were included in the subsequent WIFIA Environmental Questionnaire (July 2021)

Legend

- Well onsite
- Well outside original property
- Monitoring well location
- Property boundary
- New property boundary

* The color coding reflects predominant project locations. Please note there are shared infrastructure elements between the ANRI and SWIFT projects.

N

0 250 500 1,000 Feet

From: ProjectReview (DGIF), rr
To: Notestine, Molly
Subject: [EXTERNAL] I am out of the office and cannot access my computer or email. Re: Notice of Agency Review Period for Hampton Roads Sanitation District's James River SWIFT Projects – James River SWIFT, JRTP Advanced Nutrient Reduction Improvements, Land Acq...
Date: Thursday, September 16, 2021 5:04:38 PM

Thank you for your email. We are experiencing temporary staffing issues and will only be addressing our highest priorities until further notice. If you do not receive a response from DWR staff within agreed-upon timeframes, please document such in your project files and proceed.

If you have specific questions about a project, please contact Amy Martin at 804-367-2211 or Amy.Ewing@dwr.virginia.gov. Amy will respond to you as quickly as she can.

If you are contacting DWR to report an *emergency SPILL or fish kill*
please notify DWR DISPATCH at Dispatch@dwr.virginia.gov ON ALL RELATED CORRESPONDENCE.
If you have questions about DWR-Environmental Services Section programs or its project review process, please see our website: https://dwr.virginia.gov/environmental-programs/environmental-services-section/

If you need immediate assistance and cannot get in touch with Amy, please contact Frances Greenway at 804-367-4335.

Ernie Aschenbach
Environmental Services Biologist
P 804.367.2733
Email: Ernie.Aschenbach@dwr.virginia gov
Virginia Department of Wildlife Resources
CONSERVE. CONNECT. PROTECT.
A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228-0778
www.dwr.virginia.gov

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Please note the Department of Wildlife Resources (DWR) new email addresses end in @dwr.virginia gov

Ernie Aschenbach
Environmental Services Biologist
P 804.367.2733
Email: Ernie.Aschenbach@dwr.virginia gov
Virginia Department of Wildlife Resources
CONSERVE. CONNECT. PROTECT.
A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228-0778
www.dwr.virginia.gov

From: Rhur, Roberta
To: Notestine, Molly
Subject: [EXTERNAL] Re: Notice of Agency Review Period for Hampton Roads Sanitation District's James River SWIFT Projects – James River SWIFT, JRTP Advanced Nutrient Reduction Improvements, Land Acquisition, and Recharge Wells Projects
Date: Tuesday, September 21, 2021 3:48:35 PM

HI Molly;

Please submit this project directly to the Division of Natural Heritage, information Services for their review, https://www.dcr.virginia.gov/natural-heritage/infoservices

Thank you

On Thu, Sep 16, 2021 at 5:22 PM Notestine, Molly <Molly.Notestine@aecom.com> wrote:

> Greetings,
>
> The Hampton Roads Sanitation District (HRSD) has applied for Virginia Clean Water Revolving Loan Fund funding in support of the HRSD Sustainable Water Initiative for Tomorrow (SWIFT) Projects. In compliance with Section 7 of the Virginia Clean Water Revolving Loan Fund's *Procedural Guidelines,* HRSD is providing regulatory agencies of the Commonwealth of Virginia with the enclosed streamlined Environmental Assessment documents, prepared by HRSD on behalf of the U.S. Environmental Protection Agency's Water Infrastructure Finance and Innovation Act (WIFIA) loan program. Notice is hereby given to the recipients of this email of a 30-day agency review and comment period of the attached and linked documents.
>
> Attached, please find a cover letter and overview graphic summarizing the Projects; the associated attachments and supporting documentation can be accessed at the dropbox link below. Note PDFs are organized by bookmark to aid in navigation.
> https://www.dropbox.com/sh/uheca9jkm0mshsi/AAAUZjT3YdDmPIz0DJ9Mn7-Fa?dl=0
>
> Please don't hesitate to contact me with any questions. Thanks very much for your review.
>
> Thanks again
>
> Molly
>
> **Molly Notestine**
> Senior Ecologist, PWS
>
> Environment

Impact Assessment & Permitting (IAP)

M +1-510-210-4213

molly.notestine@aecom.com

AECOM
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--
Robbie Rhur
DCR VOP Project Planner and Environmental Review Coordinator
600 East Main Street
Richmond VA 23219
804-371-2594

Thank you for submitting your request. Upon review of this project, DCR-Natural Heritage will provide comments via email within 30 calendar days. Project reference ID is **21092214554894**.

COMMONWEALTH of VIRGINIA

Marine Resources Commission
380 Fenwick Road
Bldg 96
Fort Monroe, VA 23651-1064

Ann F. Jennings
Secretary of Natural and Historic Resources

Steven G. Bowman
Commissioner

October 15, 2021

Hampton Roads Sanitation District
Attn: Ted Henifin
1434 Air Rail Avenue
Virginia Beach, VA 23455

Re: Hampton Roads Sanitation District's James River SWIFT

Dear Mr. Henifin,

This will respond to the request for comments regarding the James River SWIFT projects, prepared by Hampton Roads Sanitation District (HRSD). Specifically, HRSD has proposed to construct new facilities to reduce surface water discharges and improve the quality of effluent from the James River Treatment Plant in the City of Newport News, Virginia.

We reviewed the provided project documents and found the proposed project is outside the jurisdictional areas of the Virginia Marine Resources Commission (VMRC) and will not require a permit from this agency.

Please be advised that the VMRC pursuant to Chapters 12, 13 and 14 of Title 28.2 of the Code of Virginia, administers permits required for submerged lands, tidal wetlands, and beaches and dunes. Any jurisdictional impacts will be reviewed by the VMRC during the Joint Permit Application process. Should the proposed project change, a new review by this agency may be required relative to these jurisdictional areas.

Please contact me at (757) 247-8027 or by email at Ben.nettleton@mrc.virginia.gov if you have questions. Thank you for the opportunity to comment.

Sincerely,

Ben Nettleton

BN/cg
HM

Ann Jennings
Secretary of Natural and Historic Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Nathan Burrell
Deputy Director of Government and Community Relations

Darryl M. Glover
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

October 23, 2021

Bohdan Bodniewicz
AECOM
440 Monticello Avenue, #1500
Norfolk, VA 23510

Re: Hampton Roads Sanitation District's James River SWIFT Projects

Dear Mr. Bodniewsicz:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100 foot buffer. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. In addition, the project boundary does not intersect any of the predictive models identifying potential habitat for natural heritage resources.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of $90.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader

Tyler Meader
Natural Heritage Locality Liaison

WIFIA PROGRAM

ENVIRONMENTAL REVIEW VERIFICATION

From: Alaina McCurdy, Environmental Scientist WIFIA Program
To: Edward G. Henifin, P.E., General Manager, Hampton Roads Sanitation District
Cc: Bo Bodniewicz, AECOM; Erin Girardi, Hampton Roads Sanitation District
Subject: NEPA finding and Federal Cross-Cutting Authorities Review for Sustainable Water Initiative for Tomorrow (SWIFT) (19105VA)
Date: 09/11/2020

Each proposed WIFIA project must be assessed for its impact on the environment under the guidelines set forth by the National Environmental Policy Act of 1969 (NEPA). EPA will not issue a term sheet or obligate funds for a project until a final agency decision has been issued, such as a Categorical Exclusion (CATEX), Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI), or an Environmental Impact Statement (EIS) and a Record of Decision (ROD). Additionally, EPA must consider the impacts that individual actions may have on particular cross-cutter resources and such considerations should be documented as part of the agency's decision-making process.

The prospective borrower has provided information to the WIFIA program about the project and its potential environmental effects. In carrying out its responsibilities, EPA has conducted the NEPA and cross-cutter review and taken the following actions:

- Reviewed the information submitted by the prospective borrower or directly obtained by EPA.
- Determined the adequacy of the information available for making a decision on the appropriate level of environmental review under NEPA and cross-cutting authorities.
- Completed the NEPA process through preparation of the appropriate decision-making document such as a CATEX determination, FONSI, or ROD.
- Documented compliance with cross-cutters in a Federal Cross-Cutting Authorities Review Memorandum.

The enclosed attachments to this memorandum document EPA's NEPA and cross-cutter review. EPA seeks verification on the completeness and correctness of the information provided. After reviewing the attached documents to verify that the information provided is accurate and complete, please sign and return this form to McCurdy.Alaina@epa.gov. The signatory on this form must match the signatory in the WIFIA application.

I hereby verify that the information contained in the attached documents is accurate and complete to the best of my knowledge, and that the documents describe the complete project to be funded by the WIFIA loan. I understand that EPA is relying on the attached documents to support its decision.

Signature: _____ *Name of signee:* Edward G. Henifin, PE

Position and Agency/Organization: HRSD General Manager *Date:* 9/21/20

Attached Documentation:

- Draft Federal Cross-Cutting Authorities Review Memorandum (and supporting documentation)
- Draft NEPA decision-making document (and supporting documentation)

FEDERAL CROSS-CUTTING AUTHORITIES REVIEW MEMORANDUM

From: Alaina McCurdy, WIFIA Program, with support from Jacobs
To: Record
Subject: Federal Cross-Cutting Authorities Review for Hampton Road's SWIFT Program (WIFIA ID 19105VA)
Date: September 22, 2020

This memorandum summarizes the WIFIA Engineering Team's evaluation of the applicability of federal environmental cross-cutting authorities, the impacts from the project, the results of coordination and consultations with other agencies, and documents the review process.

PROJECT DESCRIPTION:

The Hampton Roads Sanitation District (HRSD) proposes to design and construct new facilities to improve water quality of the Chesapeake Bay by reducing surface water discharges from the James River Treatment Plant (JRTP) and improving the quality of effluent from the treatment facility. To achieve this, the project includes four separate components detailed in the following sections:

1) James River Sustainable Water Initiative for Tomorrow (SWIFT) Facility (GN016360) - The project includes design, construction, and commissioning of new facilities that will apply advanced water treatment to highly treated wastewater from the JRTP. The resulting SWIFT water will meet drinking water quality standards and be compatible with the Potomac Aquifer. The proposed facility is expected to have an advanced treatment capacity of 16 million gallons per day (MGD). The location of the proposed SWIFT Facility is currently in use as a storage area and includes a Supervisory Control and Data Acquisition (SCADA) communications tower. This project includes the design, supply, construction, and commissioning of the following major new elements:
    - SWIFT Influent Equalization Tank and Pumping Station
    - Rapid-Mix/Flocculation/Sedimentation Facilities
    - Solids Handling Equipment and Piping
    - Ozone Generation Equipment and Reactor Facilities
    - Biologically Active Filter Facilities
    - Intermediate Pump Station
    - Granular Activated Carbon Contactor Facilities
    - Ultraviolet Disinfection System Facilities
    - SWIFT Water Pumping Station
    - SWIFT Chemical Storage and Feed Equipment Facilities
    - SWIFT Power Distribution Equipment and Facilities
    - SWIFT Distributed Control System (DCS) Programming and Equipment

- SWIFT Water and Well Backflush Pipelines
- Site Work including Stormwater Management
- Recharge and Monitoring Well Equipment and Facilities

2) Advanced Nutrient Reduction Improvements (JR013400) - The JRTP Advanced Nutrient Reduction Improvements project includes the design, construction, and commissioning of improvements to the secondary treatment process at the JRTP. These advanced secondary treatment improvements, including nutrient reduction measures, will be required to provide stable source water quality that meets the influent requirements of the Full Scale SWIFT Facility at the JRTP. This project includes the design, supply, construction, and commissioning of the following major new elements:
   - Administration Building
   - Maintenance Building
   - Electrical Building
   - Main Power Distribution Equipment and Facilities
   - Generator and Fuel Storage Facilities
   - Wastewater Chemical Storage and Feed Equipment Facilities
   - Integrated Fixed Film Activated Sludge (IFAS) Effluent Channel
   - Secondary Clarifier Equipment and Facilities
   - Moving Bed Bioreactor Equipment and Facilities
   - Equalization of Well Backflush Water
   - Hydraulic Connection to Existing Chlorine Contact Facilities
   - Main DCS Programming and Equipment
   - Mechanical, Electrical, and Plumbing
   - Site Work including Stormwater Management
3) The project may include demolition of the following existing facilities as needed to complete the work:
   - Main Administration Building including Incoming Power Distribution
   - Bisulfite Storage Building
   - Warehouse Building
   - Portions of Secondary Clarifier Facilities
4) SWIFT Recharge and Monitoring Well Services (GN016361) - This project includes the construction and development of three recharge wells and one on-site monitoring well within the boundaries of the JRTP site. Each of the recharge wells will be housed inside a well house facility similar in scale to a small residential home and the facilities would be designed to complement existing architecture in the vicinity. The recharge wells would be sited at a

minimum of approximately 800 feet apart from one another to recharge the Potomac Aquifer most efficiently.

5) Program Management of SWIFT Full Scale Implementation (GN016320) - The SWIFT Facility Implementation Program Management team will manage the delivery of the advanced water treatment facilities. The Program Management team will also manage the delivery of the recharge wells, monitoring wells, and associated pumping and piping systems to support groundwater augmentation. The Program Management team may also deliver the wastewater treatment plant improvements and outfall modifications needed to ensure successful SWIFT implementation at proposed facilites. The Program Management team will implement the processes, procedures, and systems needed to design, procure, construct, permit, manage, and integrate the new SWIFT related assets into HRSD's existing systems. The Program Management team will also manage the transition of the new SWIFT assets to HRSD operations and life cycle asset management.

PROJECT LOCATION:

The project is located at HRSD's JRTP, which is at 111 City Farm Road in the City of Newport News, Virginia. The coordinates of the JRTP are 37°05'07.1"N 76°32'00.1"W. The JRTP site footprint is approximately 32 acres. It is bordered by the James and Warwick Rivers to the south and west, and is bounded by the City's Riverview Farm Park to the east and north. The access road to the JRTP project site is City Farm Road.

The proposed treatment improvements and four recharge wells are planned entirely within the existing JRTP site, and some improvements will be made in existing buildings. Demolition and improvements will be made to existing facilites at the JRTP.

1. ENVIRONMENTAL JUSTICE EXECUTIVE ORDER NO. 12898

The site is within two Census Block Groups - Census Block Group 517000320012 and Census Block Group 517000320023). Census Block Group 517000320012 has a minority population of 20 percent and Census Block Group 517000320023 has a minority population of 15 percent. Both of these percentages are less than the 37 percent minority population in Virginia and the 56 percent population in the County. In addition, Census Block Group 517000320012 has a low income population of 12 percent and Census Block Group 517000320023 has a low income population of 20 percent. Both of which are less than the 26 percent low income population in Virginia and the 36 percent population in the County. EPA has determined that environmental justice communities are not present.

Most of the potentially adverse effects associated with the project would occur during construction and would be temporary, such as construction noise, air emissions from construction vehicles, erosion from disturbed surfaces and construction vehicle traffic or traffic detours. Impacts to communities from construction would not be expected to be disproportionate to any identified environmental justice populations with the implementation of identified best management practices (BMPs) and as required by Executive Order 12898. The project is intended to have an overall beneficial effect on the environment and local population by providing improved water quality and mitigate potential water scarcity.

Supporting Documentation:

Attachment A: EPA EJScreen data and report (June 3, 2020)

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

2. ENDANGERED SPECIES ACT (16 U.S.C. §§ 1531-1599)

One federally listed species was identified using the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) to generate the official species list, the northern long-eared bat (*Myotis septentrionalis*) (threatened). The effects determination for the project was completed using the Northern Long-eared Bat key within IPaC. On August 12, 2020, a verification letter under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions was generated.

Supporting Documentation:

Attachemnt B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment C: IPaC Species list (July 8, 2020) and NLEB Verification letter (August 12, 2020)

3. BALD AND GOLDEN EAGLE PROTECTION ACT (16 U.S.C. §§ 668-668C)

The southern portion of the peninsula separating the James and Warwick rivers near the mouth of the Warwick River has been documented as containing bald eagle nests that are historic, and nests that may currently be in use. The project area is located beyond the restricted radius of the documented bald eagle nests. The proposed activity does not involve capture, transport, exhibition, collection, control or distrubance of eagles or eagle parts, nests or eggs. Additionally, no construction is expected to occur in close proximity to eagle nests; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

4. FISH AND WILDLIFE COORDINATION ACT (16 U.S.C. § 661 ET SEQ.)

The Project would not control or modify surface waters; therefore, the requirements and regulations of this act do not apply.

5. MARINE MAMMAL PROTECTION ACT (16 U.S.C. §§ 1361-1407)

The Project is not expected to affect marine mammals; therefore, the regulations and requirements of this act do not apply.

6. NATIONAL HISTORIC PRESERVATION ACT (NHPA) AS AMENDED (54 U.S.C. § 300101 ET SEQ.: HISTORIC PRESERVATION) AND ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT, AS AMENDED (54 U.S.C. §§ 312501-312508: PRESERVATION OF HISTORICAL AND ARCHEOLOGICAL DATA)

A review of the Virginia Cultural Resources Information System (VCRIS) maintained by the Virginia Department of Historic Resources (VDHR), the Virginia Archaeological Site Survey Records, the Virginia Historic Inventory Property Forms, and the National Register of Historic Places (NRHP) was conducted as part of a cultural resources desktop survey of the project area. Immediately to the southeast of the James River Water Treatment Plant, along the bank of the Warwick River, is the location of the Colonial settlement of Warwicktowne, which served as the county seat of Warwick County (now the City of Newport News). The project area, therefore, is located in an area of high archaeological potential.

VCRIS shows three previously conducted cultural resource surveys in the project area, dating from 1976 to 1992, of both aboveground and below ground resources. There are three previously identified aboveground properties close to the Limit of Disturbance (LOD) – the Battle of Yorktown (VDHR ID #099-5283), Farmstead (VDHR ID #121-0103), and Newport News City Farm (VDHR ID #121-0104). None of these resources are within the project area and are not expected to be affected by the undertaking (AECOM, 2020)

There are nine previously identified archaeological sites close to the LOD, and two that fall within the LOD (Gray and Pape 2020). A Phase I archaeological survey was performed for those project areas proposed for ground disturbance. The Area of Potential Effects (APE) for the proposed project improvements is approximately 31.92 acres in size. The Phase I archaeological survey resulted in the recovery of 67 artifacts and the relocation of one shovel test pit (44NN0281) and the documentation of two new archaeological sites within the APE (44NN0359 and 44NN0360) consisting of subsurface scatter of late nineteenth and twentieth century artifacts. However, the archaeological deposits encountered during the survey do not have the potential to yield significant information about the historic occupation of the APE, and do not contribute to the potential NRHP eligibility of the site.

The recommendation of the Phase I survey is for the proposed JRTP project to be allowed to proceed since it is not likely to affect archaeological resources. Adherence to the Virginia's regulations regarding the treatment of human remains (Code of Virginia Section 18.2-126, 127) is required and it is recommended that an unanticipated discovery plan be established.

On July 29, 2020, EPA submitted a Section 106 consultation application to the Virginia State Historic Preservation Officer (SHPO) via the SHPO's Electronic Project Information Exchange with the determination of no effect to historic properties. On August 28, 2020, SHPO concurred with EPA's eligibility determinations and recommended that a Phase I architectural survey be conducted. On September 10, 2020, EPA provided an update to SHPO regarding the recommended Phase I survey. The survey is expected to be completed within the near future, and that a report would be expected within a few months. Updates on the progress of the survey will be provided to SHPO, as needed. As the survey will not be completed until after the WIFIA loan closes, the loan agreement contains the following language:

Condition Precedent to First Disbursement: The Borrower shall have demonstrated to the WIFIA Lender's satisfaction that all Governmental Approvals necessary as of the time of such disbursement for the development, construction, operation and maintenance of the Project have been issued and are in full force and effect (and are not subject to any notice of violation, breach or revocation), including final concurrence from the relevant Government Authorities with respect to the portions of the Project subject to the National Historic Preservation Act.

Supporting Documentation:

Attachment D: U.S. Department of the Interior National Park Service's National Register of Historic Places, data accessed through NEPAssist, June 25, 2020.

Attachment E: Phase I Archaeological Survey of the Sustainable Water Initiative for Tomorrow Improvements, 2020.

Attachment F: EPA and SHPO correspondences, July 29, August 28, September 10, 2020.

7. ARCHAEOLOGICAL RESOURCES PROTECTION ACT (16 U.S.C. §§ 470AA-MM)

The project is not located on federal or Indian lands; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment D: EPA Tribal Areas (lower 48 states) data layer, accessed through NEPAssist on July 25, 2020.

8. NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (25 U.S.C. § 3001 ET SEQ.)

The project is not located on federal or Indian lands; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment D: EPA Tribal Areas (lower 48 states) data layer, accessed through NEPAssist on June 25, 2020.

9. CLEAN WATER ACT (SECTION 404) AND RIVERS AND HARBORS ACT (SECTION 10)

Wetland delineations were conducted in January and May 2020 to determine the extent of jurisdictional waters of the U.S. within and adjacent to the project area. Seven forested, non-tidal wetlands were identified during the surveys of which five were located within the proposed project area. One stream was delineated along the northwest edge of the project area and was identified as non-tidal. Minimization and avoidance of impacts to jurisdictional waters of the U.S. would occur during site design. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the U.S. result from the project.

The project does not involve the construction of any structure in or over any navigable waters of the United States under Section 10 of the Rivers and Harbors Act.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment G: Wetlands and Waters Delineation Report Prepared for the James River HRSD SWIFT Project.

10. PROTECTION OF WETLANDS (EXECUTIVE ORDER NO. 11990 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12608 (1997))

Wetland delineations were conducted in January and May 2020 to determine the extent of jurisdictional waters of the U.S. within and adjacent to the project area. Seven forested, non-tidal wetlands were identified during the surveys of which five were located within the proposed project area. One stream was delineated along the northwest edge of the project area and was identified as non-tidal. Minimization and avoidance of impacts to jurisdictional waters of the U.S. would occur during site

design. Compensatory mitigation would be secured, if needed, to ensure no more than minimal impacts to jurisdictional waters of the U.S. result from the project.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment G: Wetlands and Waters Delineation Report Prepared for the James River HRSD SWIFT Project.

11. FLOOD PLAIN MANAGEMENT (EXECUTIVE ORDER NO. 11988 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12148 (1979))

According to the most recent Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the proposed project improvements are located outside the 100-year and 500-year floodplains, as depicted on Figure 7 of the Environmental Questionairre for WIFIA Credit Assistance Projects prepared for the project. Floodplains to the south and southwest do occur within the project boundary; however, the proposed site layout avoids encroachment into or disturbance of the floodplain. The nearby floodplains are associated with the James River, Warwick River, and the unnamed tributary to the Warwick River located along the western parcel boundary of the treatment plant.

The project would have an overall long-term benefit on flood risk, aquifers, and the groundwater supply by reducing aquifer-related land subsidence in coastal Virginia and allowing additional time to adapt to sea level rise and protect valuable coastal wetlands for decades longer than currently projected. Therefore, the project is in accord with the executive order.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

12. SAFE DRINKING WATER ACT (42 U.S.C. §§ 300F-300J-26)

The project site is not underlain by or within 0.25 mile of a designated sole source aquifer. The most significant change to water resources proposed by the project would be the pumping of large volumes of water into the deepwater Potomac Aquifer. However, the project's net impact would be beneficial, as the recharged water would be treated to drinking water standards prior to being returned to the aquifer.

It is anticipated that higher quality discharge waters would result in improvements in downstream waters and aquatic habitats. The project would utilize advanced water treatment (AWT) processes to treat secondary wastewater treatment plant effluent to drinking water standards. The SWIFT water would subsequently be used to recharge the Potomac Aquifer system to counter depleting aquifer levels and provide additional environment benefits (HRSD 2019). Analytical groundwater flow and geochemical modeling using various treatment and recharge techniques have been conducted to determine the optimal treatment and recharge methods (HRSD 2019). The modeling represented the Virginia Department of Environmental Quality's (VDEQ) preferred metric for determining the beneficial impacts of proposed pumping/recharge on the Potomac Aquifer. The AWT is expected to improve drinking water sources, i.e., the Potomac Aquifer, by treating and reducing contamination and removing disease-causing agents (HRSD 2019). The project would provide a sustainable source of groundwater to the Potomac Aquifer, increase the hydrostatic pressure within the aquifer, prevent saltwater intrusion

into the aquifer, and slow land subsidence related to aquifer withdrawals. The project is intended to have an overall beneficial effect on water resources.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment D: Data.gov Sole Source Aquifer data accessed through NEPAssist, accessed June 25, 2020.

13. FARMLAND PROTECTION POLICY ACT (7 U.S.C. §§ 4201-4209)

As detailed in Table 2 in the Environmental Questionnaire, none of the mapped soils in the project area have been identified by the Natural Resources Conservation Service (NRCS) as Prime or Unique Farmland; however, very small pockets of a Farmland of Statewide Importance (Nevarc-Uchee complex, 6 to 15 percent slopes) occur along the southern boundary of the project area (NRCS 2020) (Figure 5). However, the site is mapped within an urbanized areas as identified by the U.S. Census Bureau and, therefore, the Farmland Protection Policy Act's regulations and requirements do not apply.

Supporting Documentation:

Attachment B: Environmental Questionnaire for WIFIA Credit Assistance Projects

Attachment D: Urbanized Area data, accessed through NEPAssist, June 25, 2020.

14. COASTAL ZONE MANAGEMENT ACT (16 U.S.C. §§ 1451-1466)

The site is located along the James River, a tidal tributary to Chesapeake Bay. The project is located within areas regulated by Virginia's Coastal Zone Management Program. Virginia has designated eight coastal planning districts to implement the state's Coastal Zone Management policies. The project is located within the Hampton Roads Planning District. On July 13, 2020, EPA submitted a federal consistency determination to the VDEQ. EPA determined that the project was consistent with Virginia's coastal zone management (CZM) program. On August 11, 2020, VDEQ responded to EPA's determination. VDEQ stated that the proposed activity is consistent with the Virginia CZM Program, since it will have no effect on the enforceable policies of the Program based on the information provided. In addition, VDEQ found that the proposal will have no effect on the advisory policies of the Virginia CZM Program.

Attachment H: VA DEQ Coastal Zone Correspondences, July 13 and August 11, 2020

15. COASTAL BARRIERS RESOURCES ACT (16 U.S.C. §§ 3501-3510)

According to the United States Fish and Wildlife Servce (USFWS) Official Coastal Barrier Resources System Maps, there are no coastal barrier units within or near the project area. Therefore, the project would not conflict with the Coastal Barrier Resources Act. (See https://www.fws.gov/CBRA/Maps/Mapper.html).

16. WILD AND SCENIC RIVERS ACT (16 U.S.C. §§ 1271-1287)

There are no Wild and Scenic Riviers within the project area; therefore, the regulations and requirements of this act do not apply. (See https://www.rivers.gov/virginia.php).

17. ESSENTIAL FISH HABITAT CONSULTATION PROCESS UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (16 U.S.C. §§ 1801-1891)

The James River, which is located adjacent to the project area, is designated by the National Marine Fisheries Service as an essential fish habitat. The project would not result in a violation of the existing National Polluntant Elimination System (NPDES) permit or degrade water quality, nor is any in water work proposed, and would therefore not significantly affect essential fish habitat. In addition, no significant impacts to biological resources would be expected to result from the proposed SWIFT project. Practicable mitigation measures include implementation of avoidance and minimization measures and BMPs, implementation of recommendations from relevant governmental wildlife agencies, and the prevention of spills and leaks from vehicles and equipment. During the design phase, protective measures would be identified in coordination with the National Marine Fisheries Service, as applicable, to protect federally threatened or endangered species that may inhabit or otherwise utilize the project area. Protective measures may include time-of-year restrictions and/or design modifications, among others. (See https://www.habitat.noaa.gov/application/efhmapper).

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

18. MIGRATORY BIRD TREATY ACT (16 U.S.C. §§ 703-712)

The proposed project will require the removal of trees on the site; however, no significant impacts to biological resources would be expected to result from the proposed SWIFT project. Potential effects could include reduced vegetative cover, habitat fragmentation, introduction of invasive species, changes in water availability, and disturbance from construction noise and dust. Practicable mitigation measures include implementation of avoidance and minimization measures and BMPs and implementation of recommendations from relevant governmental wildlife agencies. During the design phase and once a contractor team has been selected, the project footprint and vicinity would be evaluated for the potential presence of federally protected species and their respective habitat requirements. Protective measures would be identified in coordination with the U.S. Fish and Wildlife Service to protect federally protected species that may inhabit or otherwise utilize the project area. Protective measures may include time-of-year restrictions, population relocations, and/or design modifications, among others.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

19. CLEAN AIR ACT CONFORMITY (42 U.S.C. § 7506(C))

The JRTP is within an area designated as in attainment for most criteria pollutants except for the ozone (8-hr 1997) criteria for which the area is designated as non-attainment/maintenance for federal standards.

No significant impacts to air quality during construction or operation are anticipated. Effects could include generation of construction dust and emissions, and generation of operational emissions (including criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic) and are expected to be minor and short-term; however, practicable mitigation measures that would be employed include odor-minimizing facility design, use of energy-efficient designs and technologies, and use of dust suppression techniques.

Supporting Documentation:

Attachment B: Environmental Questionairre for WIFIA Credit Assistance Projects

Attachment D: U.S. EPA Non-Attainment Area data accessed through NEPAssist, accessed June 25, 2020

20. WILDERNESS ACT (16 U.S.C. § 1131 ET SEQ.)

Project is not located within a National Wilderness Area, therefore the Wilderness Act's regulations and requirements do not apply. (See http://www.wilderness.net/map.cfm).