ENVIRONMENTAL ASSESSMENT

FOR

THE CONSTRUCTION OF A VISITOR CONTROL CENTER

AT

MARINE CORPS BASE QUANTICO,
STAFFORD COUNTY, VIRGINIA

July 2020

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1.0 Introduction

This environmental assessment (EA) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969; regulations of the Council on Environmental Quality (CEQ) 40 C.F.R. parts 1500-1508; and Marine Corps Order (MCO) P5090.2 which documents the US Marine Corps'(USMC) internal operating instructions on how to implement NEPA. This EA is intended to meet NEPA requirements for the construction of an access control center (ACC) at Marine Corps Base Quantico (MCBQ).

CEQ regulations for implementing NEPA (40 C.F.R. part 1500) require documentation that succinctly describes the environment of the area or areas potentially affected by the alternatives being considered under the proposed action, and discusses the impacts in proportion to their significance.

This EA also satisfies 36 C.F.R. part 800.6(a) which states that a federal agency when presented with the potential of an adverse effect as a result of its undertaking must "develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties."

1.1 Background

MCBQ has experienced a significant increase of military, civilians and contractors that has caused increased security as well as screening concerns for the base. This issue was outlined in a Defense Threat Reduction Agency (DTRA) Joint Services Integrated Vulnerability Assessment (JSIVA) in March of 2008. In 2009, a Naval Criminal Investigative Services (NCIS) physical security visit further amplified those concerns. Currently, Public Works Branch (PWB) and MCBQ lacks a facility that addresses this issue. A Commercial Vehicle Inspection Facility (CVIF) would ensure that vehicles are adequately searched prior to entering the base. The CVIF and all associated infrastructures will comprise a Visitor Control Center (VCC) that is necessary to screen non-credentialed personnel entering MCBQ on a daily basis. The current VCC has been deemed inadequate and its current location is not optimal.

1.2 Location

The proposed VCC would be constructed on Russell Road, in the vicinity of the Ponderosa Y Gate and the Russell-Knox building. The proposed action location is near Marine Corps Base (MCB)-4 and within Training Area (TA)6A (See Figures 1.2.1 and 1.2.2).

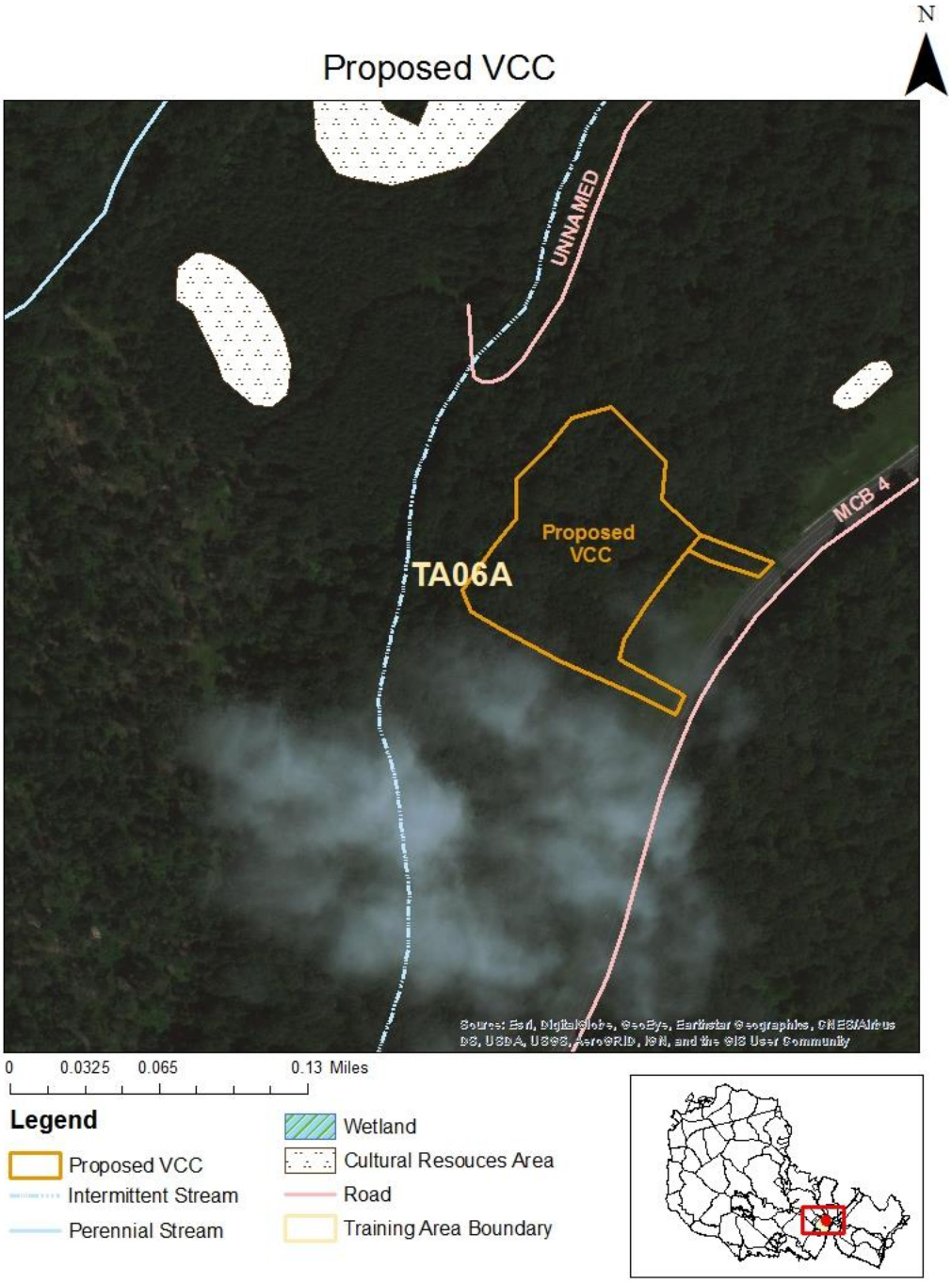

Proposed VCC
N
UNNAMED
MCB 4
Proposed VCC
TA06A
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
0 0.0325 0.065 0.13 Miles
Legend
Proposed VCC
Intermittent Stream
Perennial Stream
Wetland
Cultural Resouces Area
Road
Training Area Boundary

Figure 1.2.1

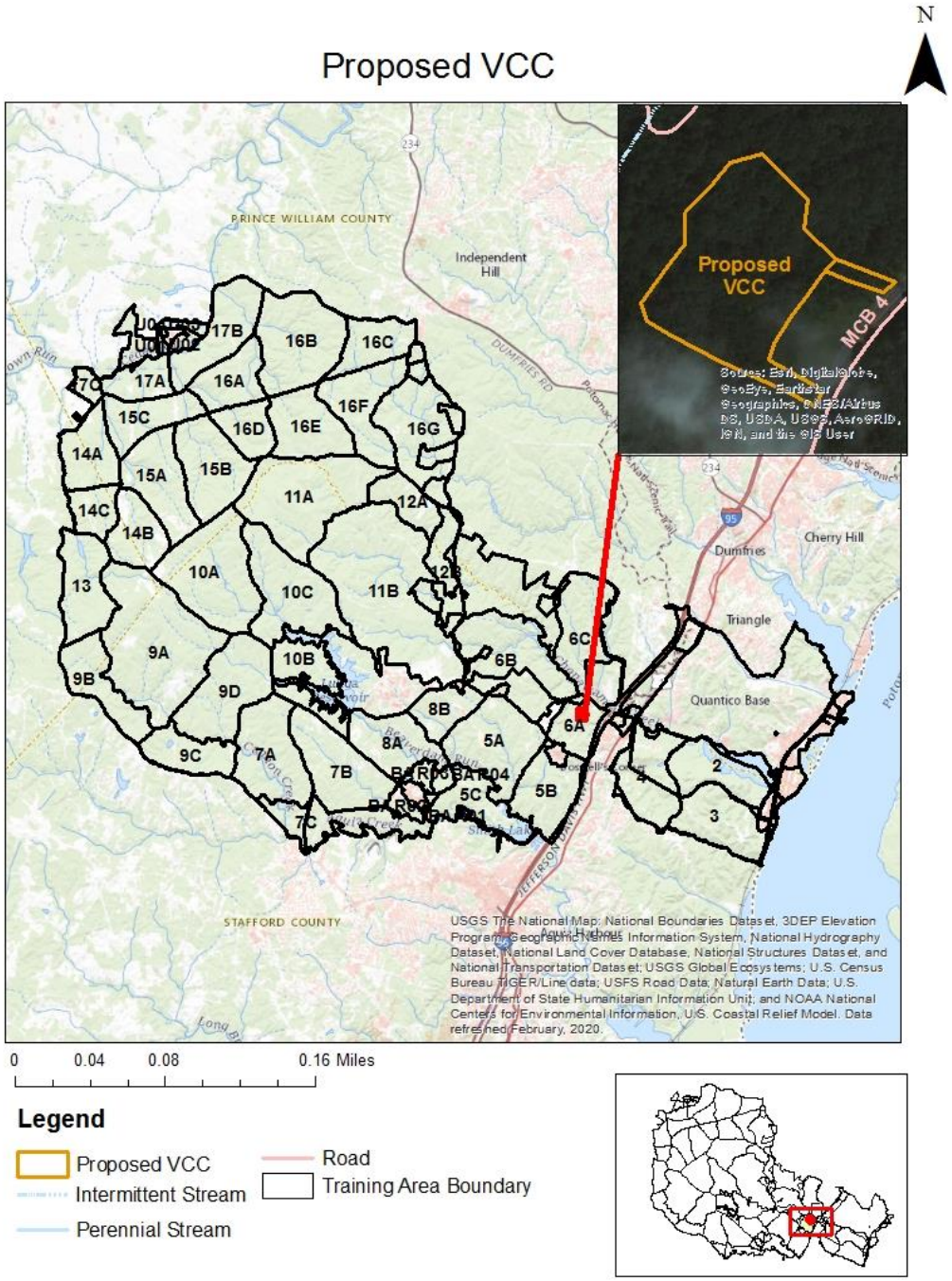


Figure 1.2.2

2.0 Purpose of and Need for the Proposed Action

MCBQ needs to construct a VCC to meet the requirements of Department of Defense (DoD) and Anti-Terrorism Force Protection Policies (ATFP) and directives. The VCC must meet the minimum requirements for all unescorted individuals to have their identity proofed and vetted. Additionally, the facility is necessary to confirm that all individuals entering the base either

possess or have been issued an authorized valid access credential. Due to growth occurring on the base, this facility is necessary to increase the safety and security of all military personnel, civilians as well as contractors.

2.1 Alternatives

2.1.1 Alternatives Carried Forward for Analysis

2.1.1.1 No Action Alternative – Alternative A

Under the No Action Alternative, the VCC would not be constructed. The location would remain a wooded landscape and current environmental conditions would remain the same.

2.1.1.2 Action Alternative – Alternative B - Construction of an Access Control Center

Under the action alternative, a low-rise masonry building would be constructed to serve as a VCC. The facility would include a 100 space parking lot as well as access roads and be 5.0 acres in total.

2.2 Alternatives Considered but Eliminated

Five other sites were considered for the new VCC but were eliminated. Alternative 1 considered constructing the VCC at the U.S. Highway 1 front gate near the Iwo Jima statue. This location was eliminated due to increased traffic at and the interruption of igress/egress flow on Fuller Rd., as well as not supporting the blast radius for necessary for Commercial Vehicle Inspection. Additionally, there were issues with topography and stormwater impacts to Little Creek. As a result, this option was dismissed. Alternative 2 that was considered was placing the facility in an existing Recreation Vehicle (RV) parking lot on Russell Rd. between Interstate 95 and U.S. Highway 1. This option would have likely resulted in the relocation of a wastewater treatment plant, significant increased traffic on ramps leading to the base, negative impacts to the Forest Green Golf Course and other outdoor gathering areas, plus other increased impacts as this location has the heaviest traffic during AM and PM rush hours. Town of Quantico residents and Virginia Railway Express customers would experience delays in reaching their destinations. Additionally, the blast radius at this location included the Interstate 95 ramps and the Quantico Corporate Center. As a result this alternative was not carried forward for further analysis. Alternative 3 considered expanding the existing facility was also considered; however this option was determined infeasible due to not supporting the blast radius, rerouting of mainside traffic, increased traffic congestion on Telegraph Rd. and negative impacts to the Town of Quantico as well as Virginia Railway Express customers. Alternative 4 evaluated constructing a Holding Area on Russell Rd. was also considered as an alternative however this location had the same issues as the RV parking lot site. Additionally, the Virginia Department of Transportation would likely not have supported an interchange at this location. As a result, this alternative was dismissed from consideration. Lastly, MCBQ also considered placing the VCC adjacent to the National Museum of the Marine Corps. This alternative was dismissed due to significant stormwater impacts to Little Creek, lack of compatibility with the blast radius, increase in traffic congestion at Fuller Road, topography limitations, this alternative would require an additions

VCC to be constructed near the south (back) gate. As a result, this alternative was dismissed from further consideration.

3.0 Environmental Impacts

This EA includes an analysis of potential environmental impacts associated with the action alternative and the No Action Alternative. The environmental resource areas analyzed in this EA include: air quality, water resources, geological resources, cultural resources, biological resources, land use, military training and airspace, noise, infrastructure, transportation and public health and safety.

3.1 Key Documents

- Natural Resources and Environmental Affairs Branch (NREA) 2015-2019 Integrated Natural Resources Management Plan for Marine Corps Base, Quantico, Virginia. Natural Resources and Environmental Affairs Branch, Marine Corps Base Quantico, VA

- Naval Facilities Engineering Command & Cardno Inc. (2019). Marine Corps Base Quantico Installation Master Plan Update. Washington D.C.

- Virginia Tech Conservation Management Institute (VTCMI) 2017. 2017 Bat Survey for U.S. Marine Corps Base Quantico, Virginia Blacksburg, Virginia.

3.2 Relevant Laws and Regulations

The USMC has prepared this EA based upon federal and state laws, statutes, regulations, and policies pertinent to the implementation of the Proposed Action, including the following:

- National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] sections 4321-4370h), which requires an environmental analysis for major federal actions that have the potential to significantly impact the quality of the human environment
- Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [C.F.R.] parts 1500-1508)
- Clean Air Act (42 U.S.C. section 7401 et seq.)
- Clean Water Act (33 U.S.C. section 1251 et seq.)
- Department of Defense Initiative (DODI)4715.14
- National Historic Preservation Act (54 U.S.C. section 306108 et seq.)
- Endangered Species Act (16 U.S.C. section 1531 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. sections 703-712)
- Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)
- Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.)
- Toxic Substances Control Act (15 U.S.C. sections 2601-2629)

- Executive Order (EO) 11988, Floodplain Management
- EO 11990, Protection of Wetlands
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 13693, Planning for Federal Sustainability in the Next Decade

A description of the Proposed Action's consistency with these laws, policies, and regulations, as well as the names of regulatory agencies responsible for their implementation, is presented in Chapter 5.0 (Table 5-1).

3.3 Public and Agency Participation and Intergovernmental Coordination

Regulations from the Council on Environmental Quality (CEQ) direct agencies to involve the public in preparing and implementing their NEPA procedures.

The Draft EA will be made available on the Marine Corps Base Quantico website at:

http://www.quantico.marines.mil/Offices-Staff/G-F-Installation-and-Environment/Natural-Resources-Environmental-Affairs/

The USMC has coordinated and consulted with the U.S. Fish and Wildlife Service (USFWS), Virginia Department of Environmental Quality (VDEQ) and Virginia Department of Game and Inland Fisheries on all related issues pertaining to the proposed action.

The USMC also consulted with the Virginia State Historic Preservation Officer (SHPO) on all related issues pertaining to the proposed action.

3.4 Affected Environment

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives.

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA, the CEQ, Department of the Navy (DoN), and USMC guidelines; the discussion of the affected environment (ie., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact. This section includes *air quality, water resources, geological resources, cultural resources, biological resources, land use, military training and airspace, noise, infrastructure and transportation.*

The potential impacts of the resources listed in figure 3.1 are considered to be negligible or non-existent and were not analyzed in detail in this EA:

Resource Area	Rationale for Not Analyzing in Detail
Visual Resources	The Quantico Marine Corps Base Historic District (QMCBHD) will not be impacted by the proposed action and there will be no impacts to viewsheds as a result. Additionally, although there will be 5 acres of timber removed, the proposed action would be occuring near an existing infrastructure.
Socioeconomics	The proposed action is located within the boundary of the base.
Environmental Justice	The proposed action will not alter environmental conditions that could effect low-income, minority or children. Proposed action will be occuring completely inside of the boundary of MCBQ where these activities are common.
Noise	Closest major noise generator is the Charlie Demolition Range (C-Demo) which is 2 miles away. However, the noise generated by these activities are associated with existing noise that occurs in this area and on the Westside of the base. Any additional noise generated by the proposed action would be temporary and associated with construction activities and timber removal activities.
Military Training and Airspace	The proposed action is located within TA6A which is within the the urban growith boundary of the base. Marines have not trained in this area in years due to the high presence of infrastructure. All other active military training at MCBQ occurs west of the urban growth boundary. As a result, no impacts to training will occur.

Figure 3.1

3.4.1 Air Quality

3.4.1.1 Regulatory Setting

3.4.1.1.1 National Ambient Air Quality Standards and Criteria Pollutants

The U.S. Environmental Protection Agency (EPA) defines ambient air as "that portion of the atmosphere, external to buildings, to which the general public has access" (40 C.F.R. part 50). In compliance with the Clean Air Act (CAA) (42 U.S.C. §7401 et seq.) the EPA promulgated the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), ozone, nitrogen dioxide (NO_X), and lead. States are required to develop a State Implementation Plan (SIP) to attain and maintain the NAAQS, with specific requirements for areas that do not meet the NAAQS, called nonattainment areas. Stafford County has been designated as being in attainment for 8-hour ozone NAAQS and $PM_{2.5.}$ NO_x and volatile organic compounds (VOCs) are precursors to ozone formation and are regulated to control ozone pollution.

3.4.1.1.2 General Conformity

To ensure that actions taken by federal agencies in a nonattainment area do not interfere with a state's plan for attainment of the NAAQS, EPA promulgated the General Conformity rule [CAA section 176(c)(4)]. The General Conformity rule requires federal actions, whose emissions exceed *de minimis* thresholds of criteria pollutants and their precursors, to undergo a Conformity Determination. A Conformity Determination is a detailed analysis the action's impact on regional air quality. *De minimis* levels in the DC region are:

- NO_X: 100 tons per year (tpy)
- VOC: 50 tpy
- $PM_{2.5}$: 100 tpy

An Applicability Analysis is the first step in the Conformity process, used to determine if a full Conformity Determination must support the action. Proposed actions may be exempt from a Conformity Determination by two means:

1. If EPA identifies the action in 40 C.F.R. part 93.153(c)(2) as resulting in no emissions increase or an increase that is clearly *de minimis*.
2. If emissions from the action, including construction and post construction activities, are calculated and determined to fall below the *de minimis* emission rates.

If the Conformity Analysis indicates that the action falls into one of the listed actions, or the emissions are below *de minimis* thresholds, no further action is necessary. For actions that exceed *de minimis* thresholds and are not exempt, a Conformity Determination is required.

A Conformity Determination requires detailed direct and indirect emissions estimates, dispersion modeling analysis, and mitigation of air quality impacts, and an opportunity for public comment prior to approval.

3.4.1.1.3 Permitting

New Source Review (Preconstruction Permit)

New Source Review (NSR) is a federally mandated program, implemented by the States, that requires construction or modification of regulated stationary sources undergo a preconstruction permitting process. NSR is used to define what equipment may be installed, pollution controls that may be required, operating parameters, and notification, recordkeeping, and reporting requirements.

The stringency of an NSR permit depends on the size of the stationary source and the region in which it is located. Permitting programs exist for both major and minor sources located in NAAQS attainment or nonattainment areas.

- Minor New Source Review (Minor NSR). Minor NSR permits are required when a source does not meet the definition of a major source, but is large enough to interfere with a state's plan for attaining or maintaining the NAAQS. Minor NSR permits may also be used to limit emissions from a project that would otherwise be subject to major source permitting.

- Prevention of Significant Deterioration (PSD). PSD permits are issued for new major sources of air pollution or major modifications to existing major sources of air pollution in a NAAQS *attainment* area. PSD permits require application of Best Available Control Technology (BACT), dispersion modeling, and public notification and comment periods.

- Nonattainment New Source Review (N-A NSR). N-A NSR permits are issued for new major sources of air pollution or major modifications to existing major sources of air pollution in a NAAQS *nonattainment* area. N-A NSR requires application of Lowest Achievable Emissions Rate (LAER) and public notification and comment periods. In addition, facilities are required to offset the potential increase in emissions with a greater reduction in actual emissions elsewhere in the region to ensure improvement of the local air quality.

A case-by-case review of each new stationary source or modification is required to determine which permitting program is applicable. Generally, NO_X from fuel combustion is the limiting pollutant at MCBQ. Since MCBQ is a major source of NO_X pollution in an ozone nonattainment area, any project that has a potential to emit (PTE) greater than 40 tpy of NO_X will be subject to N-A NSR permitting. A project with a PTE greater than 10 tpy but less than 40 tpy of NO_X will be subject to Minor NSR permitting. Projects with a PTE less than 10 tpy of NO_X are typically exempt from preconstruction permitting requirements (however, they may still be considered significant equipment in a Title V operating permit).

Title V (Operating Permit)

Generally, major sources of pollution are required to obtain federal operating permits issued under Title V of the CAA by either the EPA or the state regulatory agency. The primary purpose of a Title V permit is to improve compliance at a source by consolidating all requirements into a single document. Title V permits are reviewed and reissued on a 5 year cycle. While some changes to equipment may occur as "off-permit" changes and may be incorporated into the next permit renewal, most NSR permit actions require modification of the Title V permit within 12 months.

In the DC ozone nonattainment area, any source with a NO_X PTE greater than 100 tpy is a major source and must apply for a Title V Permit within 12 months of being designated such. The proposed project would occur entirely within Stafford County, Virginia which is an ozone attainment area.

The base's NO_X PTE is well above 100 tpy. The base currently operates under a Title V permit issued by the VDEQ on 2 September 2003. Renewal applications are pending.

3.4.1.1.4 Greenhouse Gases

Greenhouse Gas (GHG) reporting and permitting are the newest broad scale programs under the CAA. In 2009, the EPA determined that GHGs have a detrimental effect on human health and the environment and began developing regulatory programs to limit the emission of GHGs.

Greenhouse gases (GHG) are gas emissions that trap heat in the atmosphere (called the "greenhouse effect"). It is a natural phenomenon that can create a wide range of environmental concerns referred to as climate change. Climate change is associated with rising global temperatures, sea level rise, changing weather patterns, changes to local and regional ecosystems, including the potential loss of species, longer growing seasons, and shifts in plant and animal ranges. Most GHGs occur naturally within the atmosphere but scientific evidence indicates a trend of increasing global temperature over the past century due to a combination of natural occurrences and an increase in GHG emissions from human activities (Intergovernmental Panel on Climate Change, 2007). GHGs include carbon dioxide (CO_2), methane (CH_4), nitrogen oxide (NO_x), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers.

According to the Quadrennial Defense Review Report of February 2010, the DoD has recognized that climate change will affect the DoD operating environment, roles, and missions undertaken; furthermore, adjustments due to climate change impacts on facilities and military capabilities will be necessary. The DoD has made a commitment to foster efforts to assess, adapt to, and mitigate the impacts of climate change. Specifically, the DoD has leveraged the Strategic Environmental Research and Development Program, a joint effort among the DoD, the Department of Energy, and the EPA, to develop climate change assessment tools.

GHG Reporting

In October 2009, the EPA promulgated the GHG Reporting Rule in 40 C.F.R. part 98. The rule establishes mandatory reporting requirements for facilities that fit into any of three applicability classifications.

A facility may be required to report GHG emissions if it falls into an "all-in" source category defined in 40 C.F.R. part 98.2(a)(1). One of these categories is Municipal Solid Waste (MSW) Landfills that emit more than 25,000 metric tons of carbon dioxide equivalent (CO_2e) in a year and accepted waste after 1 January 1980. The base has three MSW landfills, two of which accepted waste after 1 January 1980.

A facility may also be required to report if it falls into a second set of defined source categories and emits more than 25,000 metric tons of CO_2e in a year. The second set of categories includes production facilities outlined in 40 C.F.R. part 98.2(a)(2). The base does not operate any of these facilities.

Finally, a facility may be required to report if it does not meet either of the first two requirements, but it does operate stationary fuel combustion equipment with an aggregate rated heat input capacity of at least 30 MMBtu/hr and the facility emits more than 25,000 metric tons of CO_2e in a year from these sources. The aggregate rated heat input capacity of MCBQ is well in excess of 30 MMBtu/hr.

The base's MSW landfills and stationary fuel combustion equipment emissions are evaluated annually to determine applicability of Part 98. The most recent calculations demonstrate that, based on 2013 data, Part 98 reporting requirements do not apply to the base. As of 2013, base-wide CO_2e emissions from stationary fuel combustion equipment totaled 18,658 tons.

GHG Permitting

The NSR and Title V permitting programs apply to GHGs if a facility is subject to those programs for other pollutants. While traditional permitting thresholds for NSR and Title V technically apply to GHGs, actual application of those thresholds has been found impractical to use as thresholds for GHGs. In response, EPA has used its discretion to increase the thresholds under those programs for GHGs so that excessive GHG regulation and controls is avoided. The current threshold for significant emissions increases of GHGs is 75,000 TPY of CO_2e or more, and the Title V threshold for GHGs is 100,000 TPY of CO_2e or more. If GHG emissions are included in any NSR permit issued to MCBQ, then BACT and other NSR requirements will apply and be reflected in the MCBQ Title V permit.

On 23 June 2014, the U.S. Supreme Court issued a decision that said EPA could not require a source to obtain a PSD or Title V permit on the basis of GHG emissions alone. However, sources that must obtain PSD or Title V permits based on regulated NSR pollutants may still be required to control GHG emissions by application of BACT.

Pending further court action, a new stationary source at MCBQ may be subject to BACT for GHGs if it causes a significant emissions increase of a regulated NSR pollutant and also an emissions increase of 75,000 CO_2e or more.

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. The region of influence (ROI) for assessing air quality impacts is the air basin in which the project is located,

Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations.

3.4.2 Impacts of Alternative A – No Action

Under the no-action alternative, air emissions would remain the same.

3.4.3 Impacts of Alternative B – Construction of a VCC

Alternative B would not significantly impact air quality at MCBQ; however the following guidance must be followed:

General Conformity under the Clean Air Act, Section 1.76, has not been evaluated for the proposed project because the project is located in an area of attainment of National Ambient Air Quality Standards. The project has been assessed under the National Environmental Policy Act. The impacts of the action are considered insignificant based on emission estimates meeting the de minimis definition as described in 40 CFR 93.153(b).

PAINTS, COATINGS, AND ADHESIVES

Paints, coating & adhesives are to conform to VOC requirements per Commonwealth of Virginia, State Air Pollution Control Board, Regulations for the Control and Abatement of Air Pollution, 9VAC5 Chapter 45, Consumer and Commercial Products, Part II Emission Standards, Article 5 Emission Standards for Architectural and Industrial Maintenance Coatings and Article 6 Emission Standards for Adhesives and Sealants.

The proposed action is subject to the following Virginia regulations:

• 9 VAC 5-45, Article 5 - Emission Standards for Architectural and Industrial Maintenance Coatings

Emission Standards for Architectural and Industrial Maintenance Coatings

Any architectural coating that is sold in a container larger than one quart must comply with the VOC emission limit in Table 45-5A.

ODOR

The proposed action is subject to the following Virginia regulations:

• 9 VAC 5-40, Article 2 - Odor

No owner or other person shall cause or permit to be discharged into the atmosphere from any affected facility any emissions which cause an odor objectionable to individuals of ordinary sensibility.

FUGITIVE DUST

The proposed action is subject to the following Virginia regulations:

• 9 VAC 5-40, Article 1 - Visible Emissions and Fugitive Dust/Emissions

No owner or other person shall cause or permit any materials or property to be handled, transported, stored, used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions may include, but are not limited to, the following:

1. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land.

2. Application of asphalt, water, or suitable chemicals on dirt roads, materials stockpiles and other surfaces which may create airborne dust; the paving of roadways and maintaining them in a clean condition.

3. Installation and use of hoods, fans and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.

4. Open equipment for conveying or transporting materials likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion.

5. The prompt removal of spilled or tracked dirt or other materials from paved streets and of dried sediments resulting from soil erosion.

CUTBACK ASPHALT

The proposed action is subject to these emission standards for asphalt paving operations:

Cutback asphalt (asphalt cement that has been liquefied by blending with petroleum solvents) is prohibited except under special circumstances. The MCBQ - NREA Air Program Manager must be consulted if the proposed action involves the use of cutback asphalt.

TRAFFIC MARKING

The VOC limit for paints used to mark traffic surfaces is 150 grams of VOC per liter of coating thinned to the manufacturer's maximum recommendation, excluding the volume of any water, exempt compounds, or colorant added to tint bases.

REFRIGERANT CONTAINING EQUIPMENT

Alternative B must follow the guidance below on refrigerant containing equipment:

All work involving refrigerant containing equipment must be performed by a technician certified to the necessary level and in accordance with the base's Refrigerant Management Plan and 40 CFR 82. Submit a copy of the technician's certificate to the prior to the start of work.

Recovery of existing refrigerant:

Recover all existing refrigerant and tag it as "refrigerant recovered" prior to disposal. All applicable hazardous waste disposal and shipping regulations must be complied with. Submit a completed copy of the Refrigerant Service Order Form to the Air Program Manager. A copy of the Refrigerant Service Order Form is attached.

Installation of new refrigerant containing equipment:

Submit a completed copy of the Refrigerant Equipment Reporting Form for the new refrigerant containing equipment to the Air Program Manager. A non-ODS refrigerant is recommended.

After coordinating with Public Works Branch to obtain inventory tracking numbers (PW numbers), and provide a list of these numbers to the Air Program Manager on the attached Refrigerant Equipment Reporting Form.

EMERGENCY GENERATOR PROCUREMENT/MAINTENANCE GUIDANCE FOR ALTERNATIVE B:

Prior to ordering an emergency generator, consult with the Air Program Manager (APM) MCBQ - NREA to discuss necessary generator specifications and emission standards. New generators must comply with all current emissions standards, including all aspects of 40 C.F.R Part 63 Subpart JJJJ. Potential emissions from emergency generators must be evaluated to determine if an air permit is required. Construction may not begin until an air permit applicability evaluation has been performed, and any necessary air permits have been issued by the Virginia Department of Environmental Quality (VDEQ). It may take VDEQ approximately 6 months to process the application. Provide the APM MCBQ - NREA with specifications on all equipment. The APM will estimate emissions from the project to determine if application is needed. If a permit is required, the application must be submitted to VDEQ along with a $3,300 (as of 2019) non-refundable application fee.

Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

The generator's engine must be certified by EPA to meet the emissions standards for new, nonroad, compression-ignition engines in 40 C.F.R. 60.4231, for all pollutants, for the same model year and maximum engine power. The engine certification and emissions test data must be provided to the APM and NEPA section of the MCBQ - NREA Branch for approval prior to entering into purchasing agreement.

The engine must be equipped with a non-resettable hour meter.

Total hours of operation, with maintenance hours separated, must be provided to MCBQ - NREA on a monthly basis after installation.

The engine and control device (if applicable) must be installed and maintained in accordance with manufacturer's written instructions.

To qualify as an emergency generator, the unit can only operate when there is an "emergency". In Virginia, "emergency" is defined as:

A condition that arises from sudden and reasonably unforeseeable events where the primary energy or power source is disrupted or disconnected due to conditions beyond the control of an owner or operator of a facility including:

a. A failure of the electrical grid,

b. On-site disaster or equipment failure,

c. Public service emergencies such as flood, fire, natural disaster, or severe weather conditions, or

d. An ISO-declared emergency, where an ISO emergency is:

i. An abnormal system condition requiring manual or automatic action to maintain system frequency, to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property,

ii. Capacity deficiency or capacity excess conditions,

iii. A fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel,

iv. Abnormal natural events or man-made threats that would require conservative operations to posture the system in a more reliable state, or

v. An abnormal event external to the ISO service territory that may require ISO action.

The total amount of hours an emergency generator can operate for is not more than 500 hours per year, including testing and maintenance.

"Emergency" also includes operating during brief maintenance and testing exercises. Runtime for maintenance and testing must not exceed 100 hours per calendar year. Consult the APM prior to operation for maintenance and testing purposes.

Generator Run Time

Emergency generators aboard MCBQ are limited to 500 hours of runtime. Of the 500 hour total, the emergency generator may be operated up to 100 hours per year for maintenance and testing purposes. The emergency generator should be operated as little as possible during projects due to these operating permit and regulatory requirements limiting their operation. The emergency generator should be run only to ensure proper functionality and completeness of repairs. Any additional or unnecessary runtime should be prevented.

MCBQ Environmental Standard Operating Procedures (ESOPs) 04 and 05 for emergency generator procurement and operation and maintenance should be followed at all times.

EXTERNAL COMBUSTION EQUIPMENT

Prior to construction, emissions from fuel oil or natural gas fired external combustion sources (boilers, hot water heaters, or other fuel burning equipment) must be evaluated to determine if an air permit is required. Construction may not begin until an air permit applicability evaluation has been performed, and any necessary air permits have been issued by the Virginia Department of Environmental Quality (VDEQ). It may take VDEQ approximately 6 months to process the application. Provide the APM-NREA with specifications on all equipment. The APM will estimate emissions from the project to determine if application is needed. If a permit is required, the application must be submitted to the Virginia Department of Environmental Quality (VDEQ) with a $3,300 (as of 2019) non-refundable application fee.

OTHER FUEL BURNING EQUIPMENT

Prior to construction, emissions from all fuel burning equipment must be evaluated to determine if an air permit is required. Construction may not begin until an air permit applicability evaluation has been performed, and any necessary air permits have been issued by the VDEQ. It may take VDEQ approximately 6 months to process the application. Provide the Air Program APM - NREA with specifications on all equipment. The APM will estimate emissions from the project to determine if application is needed. If a permit is required, the application must be submitted to the VDEQ)with a $3,300 (as of 2019) non-refundable application fee.

3.5 Water Resources

This discussion of water resources includes groundwater, surface water, wetlands, floodplains, and shorelines. This section also discusses the physical characteristics of groundwater, surface water, wetlands, floodplains, and shorelines. Wildlife and vegetation are addressed in Section 3.8, Biological Resources.

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Groundwater is used for water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition. Sole source aquifer designation provides limited protection of groundwater resources which serve as drinking water supplies.

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. A Total Maximum Daily Load (TMDL) is the maximum amount of a substance that can be assimilated by a water body without causing impairment. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards occur.

Wetlands are jointly defined by the United States Environmental Protection Agency (USEPA) and United States Army Corps of Engineers (USACE) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands generally include "swamps, marshes, bogs and similar areas."

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries are most often defined in terms of frequency of inundation, that is, the 100-year and 500-year flood. Floodplain delineation maps are produced by the Federal Emergency Management Agency (FEMA) and provide a basis for comparing the locale of the Proposed Action to the floodplains.

Shorelines can be located along marine (oceans), brackish (estuaries), or fresh (lakes) bodies of water. Physical dynamics of shorelines include tidal influences, channel movement and hydrological systems, flooding or storm surge areas, erosion and sedimentation, water quality and temperature, presence of nutrients and pathogens, and sites with potential for protection or restoration. Shoreline ecosystems are vital habitat for multiple life states of many fish, birds, reptiles, amphibians, and invertebrates. Different shore zones provide different kinds and levels of habitat, and when aggregated, can significantly influence life. Organic matter that is washed onto the shore, or "wrack," is an important component of shoreline ecosystems, providing habitat for invertebrates, soil and organic matter, and nutrients to both the upland terrestrial communities and aquatic ecosystems.

3.5.1 Regulatory Setting

Activities in surface waters (including streams) and wetlands are regulated under numerous federal laws, regulations, and policies. The proposed action would be bound by the following:

- The Clean Water Act (CWA), 33 U.S.C. §1344 (Section 404) requires a permit from the US Army Corps of Engineers for the discharge of dredged or fill material in to "waters of the US", a term that includes most streams, wetlands, and ponds.
- Executive Order (E.O.) 11990, *Protection of Wetlands*, requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.
- Department of the Navy "no net loss" policy, for implementing E.O. 11990.

The Commonwealth of Virginia also regulates streams and wetlands that are considered "waters of the state" through a number of laws and provisions. Any action that requires a federal Section 404 permit may also require a water quality certification per CWA 33 U.S.C. §1341 (Section 401) from the Virginia Department of Environmental Quality (VDEQ) and, under certain circumstances, the Virginia Marine Resources Commission.

In 1988, Virginia enacted the Chesapeake Bay Preservation Act (CBPA), Code of Virginia, Title 10.1-Conservation, Chapter 21. This Act established a cooperative program between state and local governments to improve water quality in the Bay by requiring resource management practices in the use and development of environmentally sensitive land features. As defined by the CBPA, Resource Protection Areas (RPA) are buffer zones that include all areas within 100 feet of a tidal wetland, contiguous non-tidal wetlands, or perennial streams. Other areas are designated as Resource Management Areas (RMA). The RMA includes the 100-year floodplain, highly erodible soils, highly permeable soils, and non-tidal wetlands that are not part of an RPA. The Department of Defense (DoD) is a signatory to an agreement supporting the CBPA and its associated regulations and will comply to the maximum extent possible consistent with the military mission and budget constraints.

3.5.2 Affected Environment

3.5.2.1 Groundwater

MCBQ lies within the Potomac Aquifer, which extends from New Jersey in the north, to North Carolina in the south, and eastward under the Chesapeake Bay. In this aquifer, water can be reached at depths between 200 and 350 feet. One of the largest surface recharge areas for the Potomac Aquifer exists in Stafford County, near Interstate 95. No comprehensive studies of groundwater resources have been conducted at MCBQ to date.

3.5.2.2 Surface Water

The proposed action is located within the Chopawamsic Creek watershed. This watershed occupies a total of 20,461 acres and occupies the central portion of the base. The Chopawamsic Creek watershed is a part of the Potomac River watershed which occupies a total of 9,388,800 acres across the states of Maryland, Pennsylvania, Virginia, and West Virginia. These watersheds are illustrated in Figures 3.2.1 – 3.2.2. An intermittent stream is located .026 miles to

the northwest of the proposed action footprint. Additionally, a perennial stream is located roughly .25 miles to the northwest of the proposed VCC. Both streams flow into Chopawamsic Creek however there are no streams located within the proposed VCC footprint.

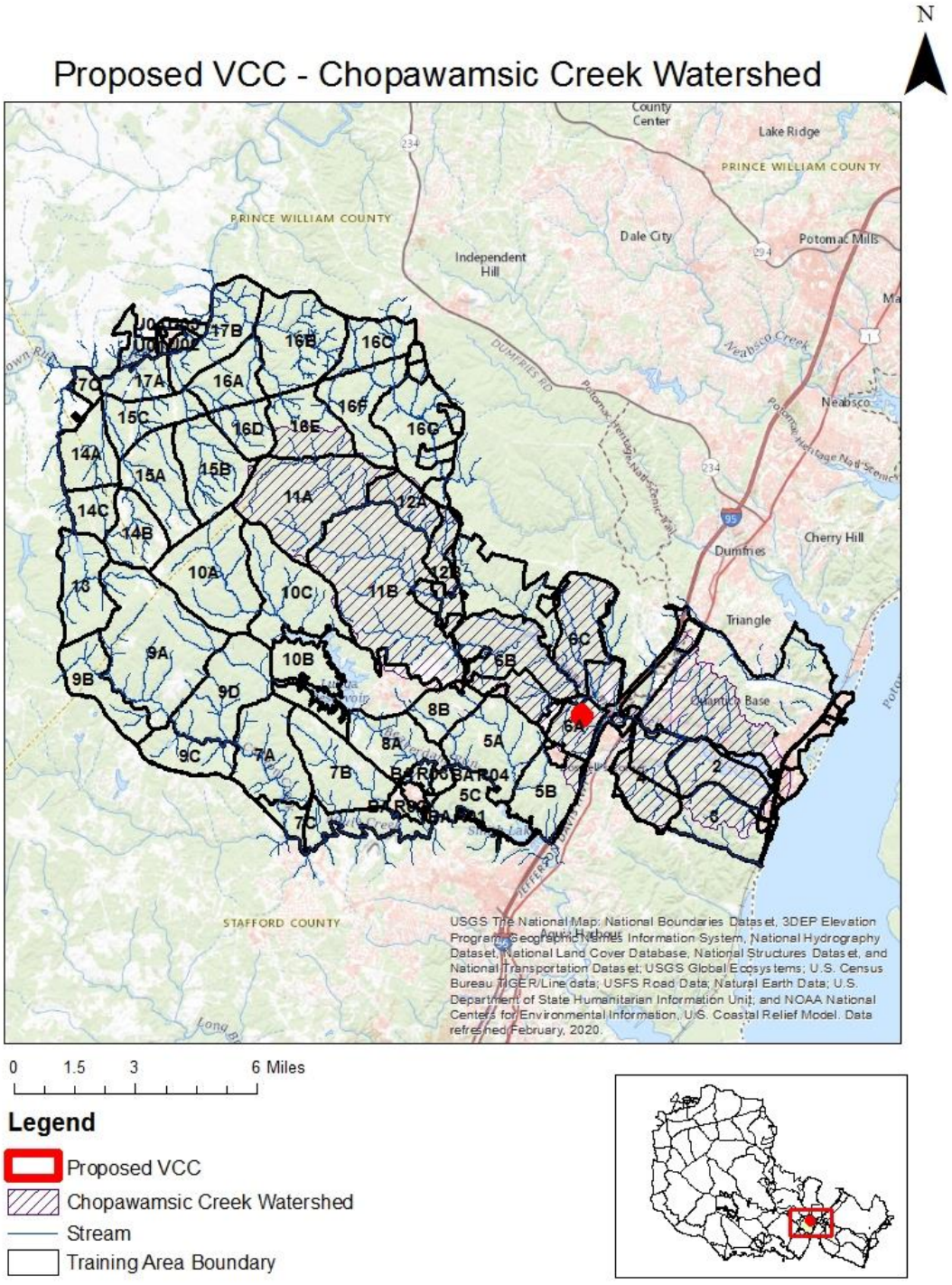


Figure 3.5.1

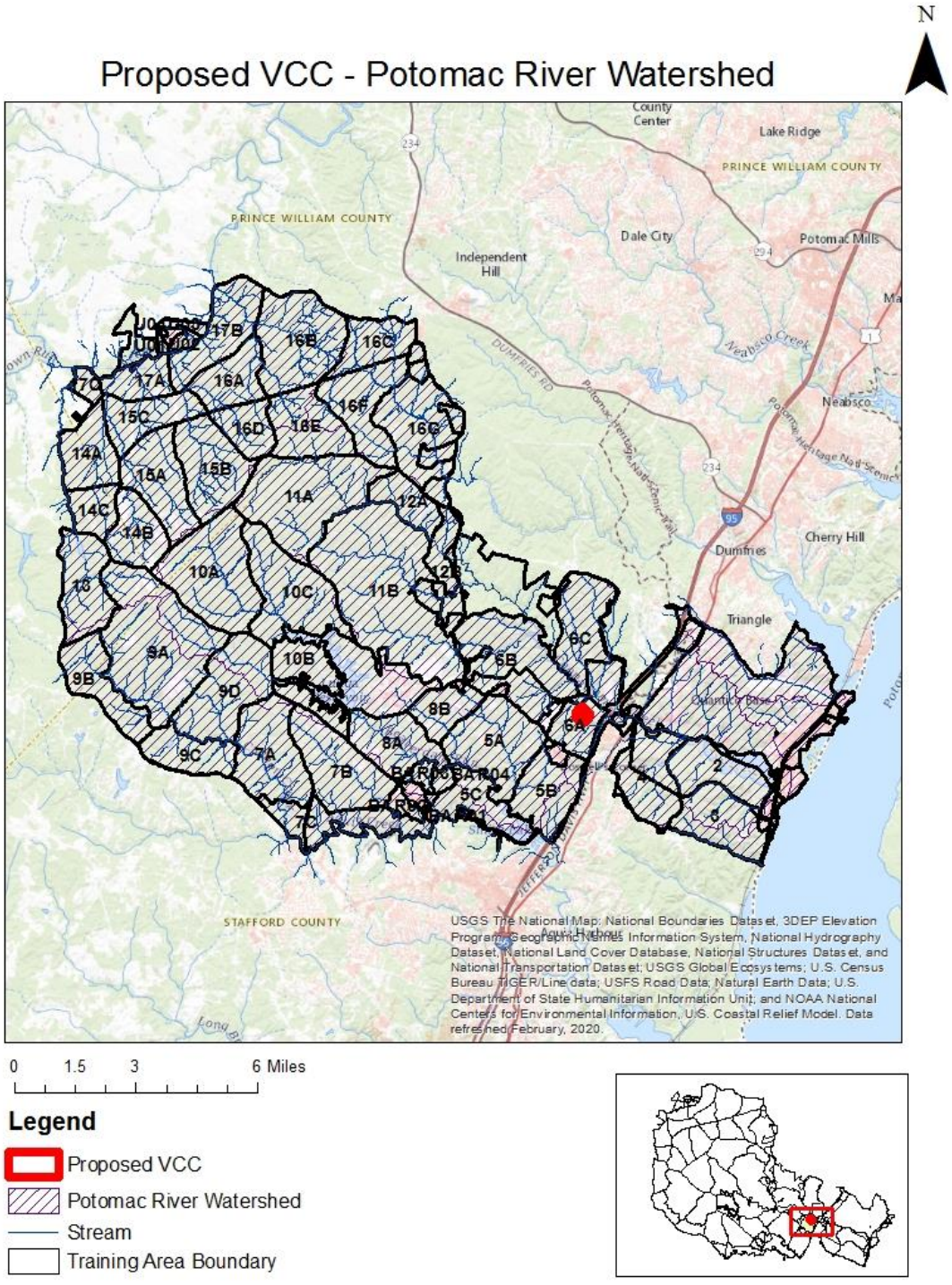

Proposed VCC - Potomac River Watershed
N
PRINCE WILLIAM COUNTY
Lake Ridge
Dale City
Potomac Mills
Independent Hill
Neabsco
Dumfries
Cherry Hill
Triangle
STAFFORD COUNTY
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed February, 2020.
0 1.5 3 6 Miles
Legend
Proposed VCC
Potomac River Watershed
Stream
Training Area Boundary

Figure 3.5.2

3.5.2.3 Wetlands

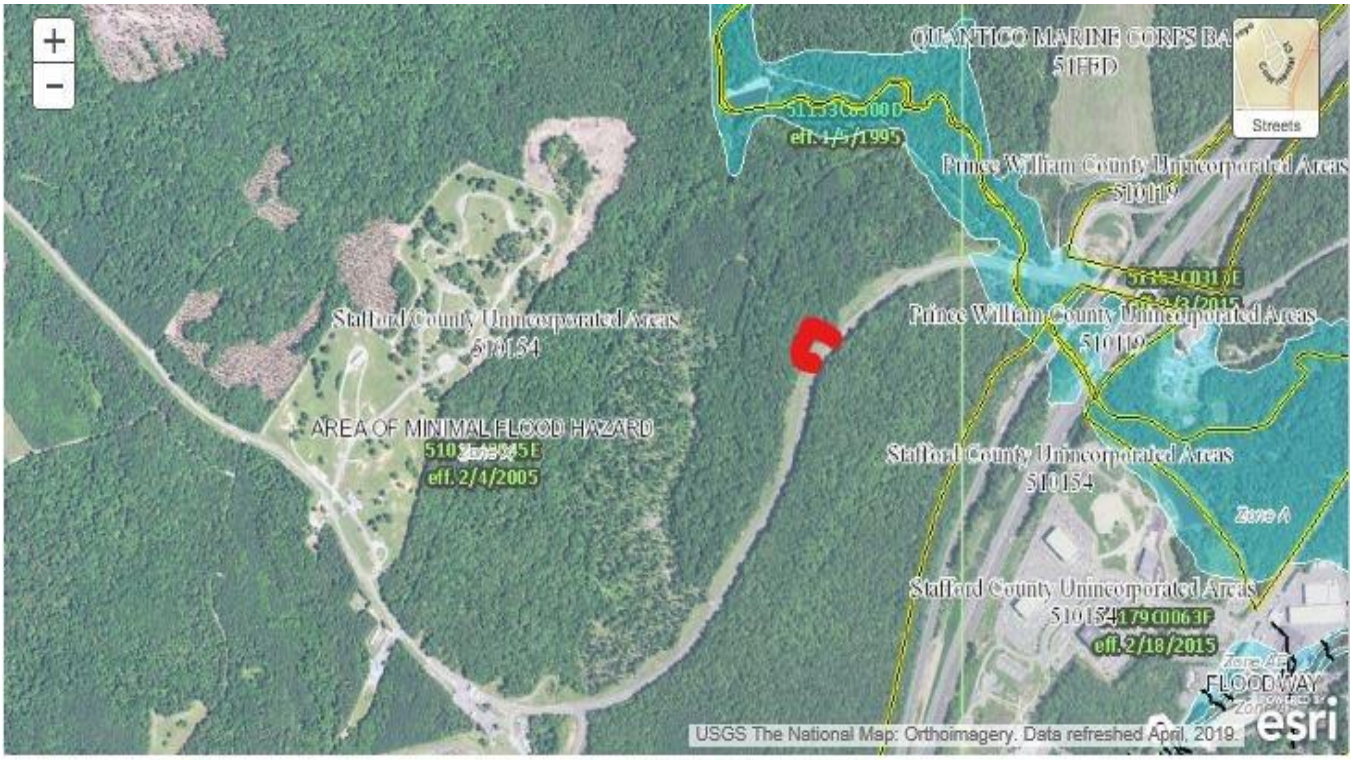
There are wetlands located adjacent to Chopawamsic Creek; however the creek lies well outside the proposed action location. There are no wetlands within the proposed action footprint.

3.5.2.4 Floodplains

Executive Order 11988 (1977), Floodplain Management, requires federal agencies to take action to minimize occupancy and modification of floodplains. The order specifically prohibits federal agencies from funding construction in the 100-year floodplain unless no practicable alternative exists.

The area of the proposed action is depicted on the FEMA Flood Insurance Rate Map (FIRM) number 5101540045E, panel 45 of 280. The FIRM shows the proposed action outside of Flood Zone A which is an area inside of the 100-year floodplain. This is illustrated in Figure 3.5.3.

FEMA Flood Hazards



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross-sections and interpolated between cross-sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be used for regulatory purposes. Ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description and/or location information for National Geodetic Survey (NGS) benchmarks shown on this map, please contact the Information Services Branch of the NGS at **(301) 713-3242**, or visit their website at www.ngs.noaa.gov. To obtain current elevation, description and/or location information for Stafford County bench marks, please visit their website at www.co.stafford.va.us/gis.

Base map information shown on this FIRM was provided in digital format by County of Stafford GIS Office. This information was photogrammetrically compiled at a scale of 1:2,400 from aerial photography dated 2001. RAMS Marine Corps Base Quantico, major roads and drainage were derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

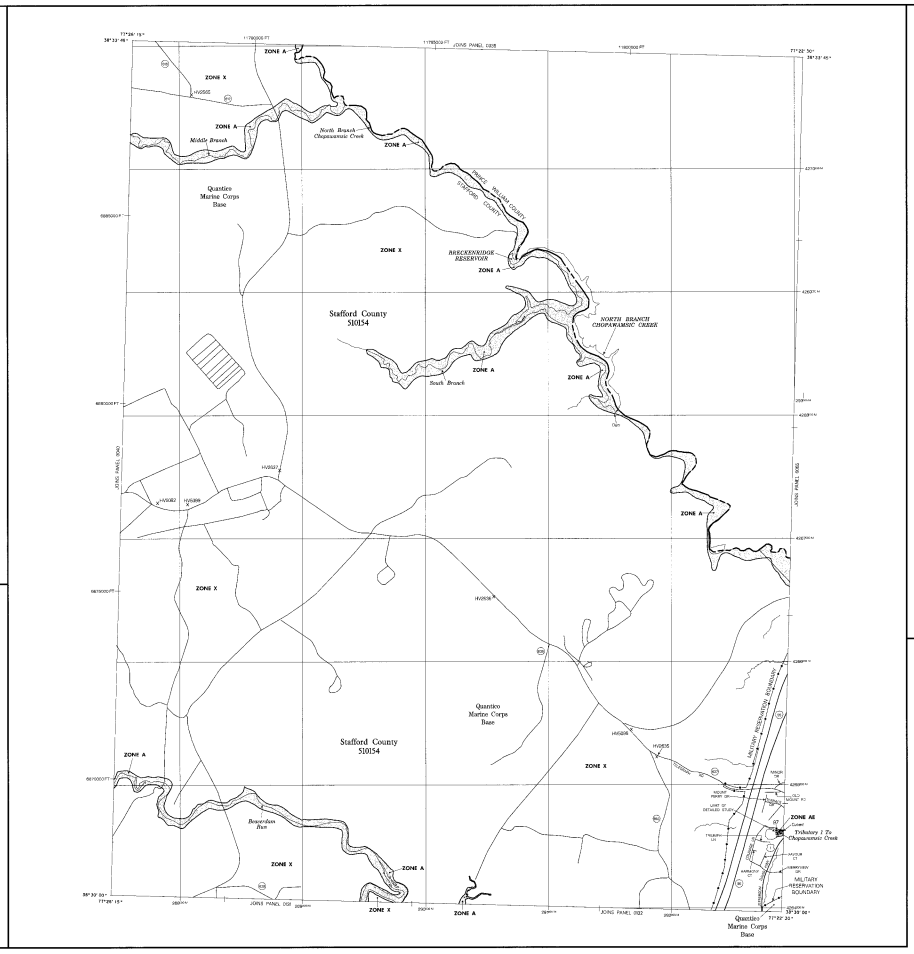
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for Potomac Creek, Rappahannock River, Rappahannock River Left Channel, Tributary 1 to Chopawamsic Creek and Tributary 1 to Rappahannock River in the Flood Insurance Study report may reflect stream distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, A1-A30, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- (EL 987) Base Flood Elevation line and value; elevation in feet*
- (EL. 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4239000 mN 1000-meter Universal Transverse Mercator grid values, zone 18
- 6000 FT 5000-foot grid ticks: Virginia State Plane coordinate system, North zone (FIPSZONE 4501), Lambert Conformal Conic projection
- DX5510 National Geodetic Survey (NGS) bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORY

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

June 17, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

March 3, 2003 - to add Base Flood Elevations, to change Special Flood Hazard Areas, to change zone designations and to reflect updated topographic information.

February 4, 2005 - to change Base Flood Elevations, to change Special Flood Hazard Areas, to incorporate previously issued Letters of Map Revision and to reflect updated topographic information.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

PANEL 0045E

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

STAFFORD COUNTY, VIRGINIA

PANEL 45 OF 280

(See MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
STAFFORD COUNTY	510154	0045	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51051C0045E

MAP REVISED
FEBRUARY 4, 2005

Federal Emergency Management Agency

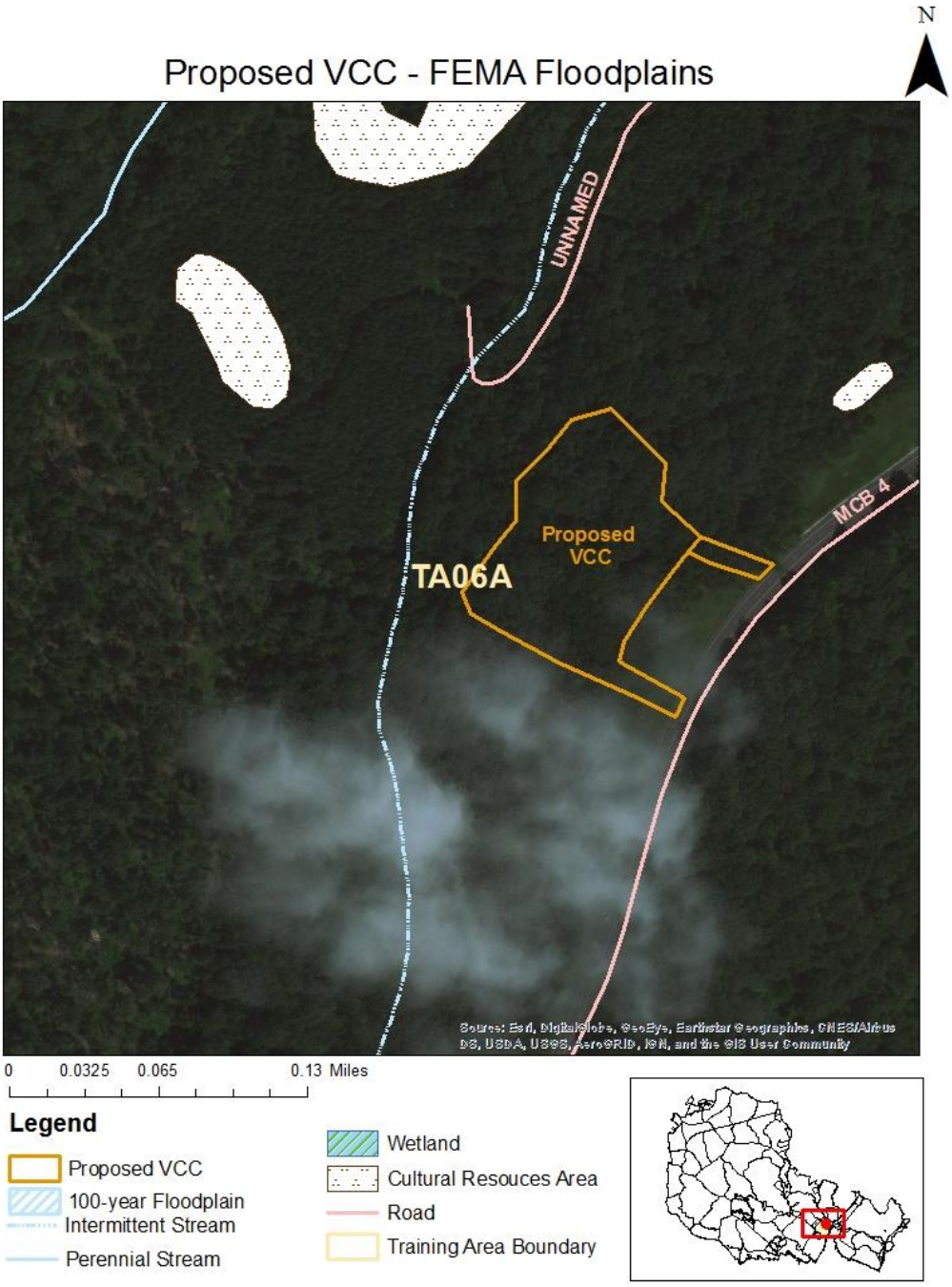


Figure 3.5.3

3.5.3 Impacts of Alternative A – No Action

It is expected that impacts to water resources would remain the same if no action is taken.

3.5.4 Impacts of Alternative B – Construction of the VCC

No wetlands or surface waters will be directly impacted by the proposed action. Potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices (BMPs) per the Virginia BMP Field Guide (2009), the Virginia BMPs For Water Quality Technical Manual (2011) and the Virginia Erosion and Sediment Control Handbook (1992).

The proposed action alternative would require no fill within the 100-year floodplain, which is considered an RMA under the CBPA.

3.6 Geological Resources

This discussion of geological resources includes topography, geology, and soils.

3.6.1 Regulatory Setting

Consideration of geologic resources extends to prime or unique farmlands. The Farmland Protection Policy Act (FPPA) was enacted in 1981 to minimize the loss of prime or unique farmland due to federal actions. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

3.6.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under geological resources at MCBQ.

3.6.2.1 Topography

The terrain of the proposed range location consists of a forested landscape and is characterized by a mostly low gradient. The highest elevation of the footprint is in the western section at roughly 180 ft. The gradient does become steeper moving towards MCB-4. The elevation decreases very gradually by roughly 10 ft. to the north with the lowest elevation being 150 ft. (See Figure 3.6.1).

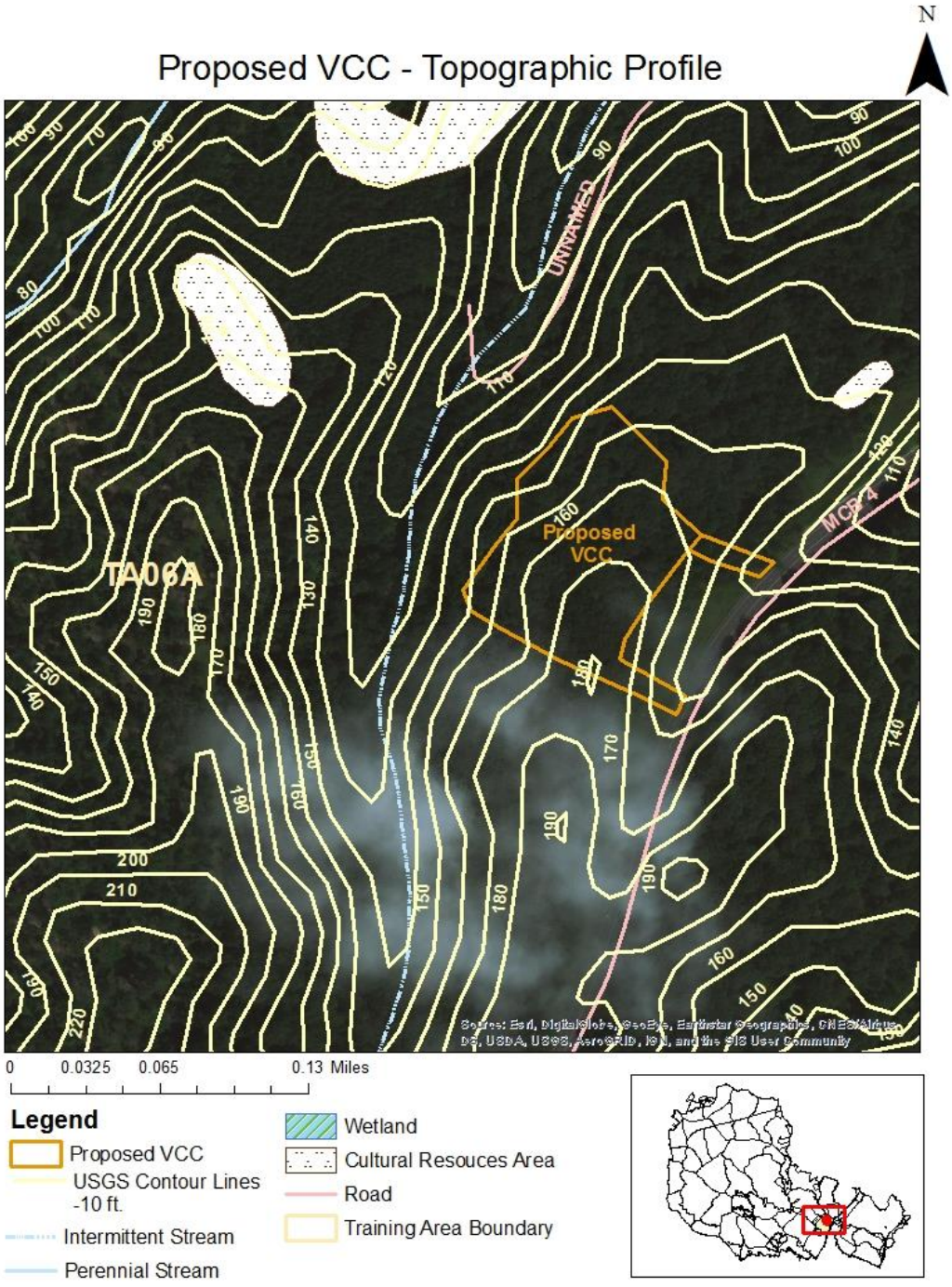


Figure 3.6.1

3.6.2.2 Geology

The proposed action would occur within the Mainside/Westside portion of the base, which lies in the Coastal Plain geologic region. The region consists of Mesozoic and Cenozoic marine sediments, some consolidated into sandstone and marl. The project area is specifically within the

Patapsco formation, which dates to the Cretaceous Period at the end of the Mesozoic Era. It is comprised of sand and clay from shallow aquatic deposits, which cover Pre-Cambrian crystalline rock with a thickness of approximately 150 feet. These deposits are generally unconsolidated.

3.6.2.3 Soils

The soil type dominant within the proposed action area is the Aura Gravelly Fine Sandy Loam (AvB). This soil type represents 54.5% of the soils that are found in the footprint and is most commonly associated with marine terraces. The profile of AvB consists of a gravelly sandy fine sandy loam at the top, gravelly sandy clay loam, and gravelly sandy loam. The soil is well-drained and has a low probability to create runoff. The second most common soil type located within the proposed action footprint is the Aura Gravelly Fine Sandy Loam 18-35% Slopes Eroded (AvE2). The soil type represents 36.5% of the soils located within the footprint and is commonly associated with marine terraces. The soil is found in the northwestern and central portions of the footprint. The soil's profile consists of a gravelly fine sandy loam at the top, gravelly sandy clay loam and a gravelly loam. AvE2 is a well-drained soil with a moderate capacity to create runoff. The third most common soil in the footprint is the Watt Silt Loam, gray surface variant 15-35% slopes (WgE). The soil type comprises 6.9% of the proposed action footprint is located in the far northwestern portion of the footprint. It is most commonly associated with hillsides and its profile consists of a silt loam at the top, very channery silt loam and bedrock. The soil has a very high probability to create runoff however it does drain well. Aura Gravelly Fine Sandy Loam (AvD2), 10-18% eroded, represents 2.2% of the soils found in the proposed action location and is the least common soil found. AvD2 is almost entirely located within the far southeastern corner of the footprint and is most commonly associated with marine terraces. The soil's profile is characterized by a gravelly fine sandy loam at the top layer, a gravelly clay loam, and a gravelly sandy loam. AvD2 is very well-drained with a low probability to create runoff.

It is important to note that land clearing activities have occurred in this area and the conditions of the soils in this location have been effected by these activities. A map and summary of the soil survey of the proposed action location is found in Appendix B.

3.6.3 Impacts of Alternative A – No Action

Under the No Action Alternative, Alternative B would not occur and there would be no change to baseline geology, topography, or soils. Therefore, no significant impacts to geological resources would occur with implementation of the No Action Alternative.

3.6.4 Impacts of Alternative B – Construction of the VCC

The study area encompasses the proposed project area related to the preferred alternative.

3.6.4.1 Potential Impacts

Approximately 5.0 acres of timber would be cleared as a result of the proposed action. A paved parking lot and short access roads would be constructed with implementation of proper E&SC

measures, the action alternative is not expected to significantly impact on-site soils. The VCC project will require an erosion and sediment control permit and a Stormwater Pollution Prevention Plan (SWPPP). All permitting requirement will have to be completed prior the land disturbance activities. Project proponent must submit permits least 70 days prior to work starting on the project and allow at least 120 days for approval.

A geotechnical survey has not been completed for the proposed action. It is advised that a geotechnical engineer survey the underlying soil in the event that these areas should be redeveloped in the future.

3.7 Cultural Resources

This discussion of cultural resources includes prehistoric and historic archaeological sites; historic buildings, structures, and districts, and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left deposits of physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic or aesthetic significance.
- Traditional cultural properties may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

3.7.1 Regulatory Setting

Implementation of the proposed action must comply with the National Historic Preservation Act (NHPA) of 1966, (54 U.S.C. §300101 et seq.). Under the NHPA, consideration of historic preservation issues must be integrated into the early planning stages of project planning by federal agencies. Under NHPA 36 C.F.R. part 800 (Section 106), a federal agency is required to account for the effects of the proposed action on any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places (NRHP), prior to the expenditure of funds on the action. Under NHPA 54 U.S.C. §§306101(a) and 306102 (Section 110), the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP is required.

3.7.2 Affected Environment

Architectural historians with the U.S. Army Construction Engineering Research Laboratory (USCERL) conducted a survey of Quantico buildings between 1992 and 1994 (USCERL 1994). They identified significant historic buildings and landscapes on the base. Seven themes forming the historic context for the subsequently nominated NRHP QMCBHD include: First Permanent Construction, Aviation, Education, Industrial, Naval Clinic, African American Barracks, and Lustron Housing.

3.7.2.1 Archaeological Resources

There are no cultural resources within the proposed action footprint. There are two archeological sites that are located near the proposed action's area of potential effect (APE); but neither of these sites are eligible for the NRHP and are not within the proposed project footprint(See Figure 1.2.1).

3.7.3 Impacts of Alternative A – No Action Alternative

Under the No Action Alternative. This alternative would have no adverse effects upon the NRHP-eligible QMCBHD. Archeological resources would not be impacted.

3.7.4 Impacts of Alternative B – Construction of the VCC

The MCBQ Cultural Resources Manager (CRM) has reviewed the proposed action per the Programmatic Agreement between the United States Marine Corps and the SHPO and has determined pursuant to the streamlined review process that the project would require a 19th century steam engine to be avoided. However, this resource is not within the proposed action footprint. As currently planned, the proposed action would have no effect on archaeological or historic resources.

For excavations permitted where there are no known archaeological sites or cemeteries, caution must still be used by contractors. Some areas are urban terrain and have been significantly modified or disturbed; however, there may be undisturbed soil zones encountered adjacent to or under previous disturbances/fill.

The construction contractor should contact the MCBQ Archaeologist, NEPA program immediately if artifacts (e.g., metal tools, arrowheads, etc.) appearing to pre-date the 20th century or unusual soil zones are encountered during excavation.

In the event there are any unexpected discoveries of potential human remains (e.g., bones or bone fragments), work must be halted or diverted to other areas until appropriate measures are taken. Contract Project Managers must be informed that any human remains encountered are protected by state and federal law. The following procedures must be followed:

•Halt work at the location leaving remains in place and any associated features and objects.

•Notify base MCBQ CRM program per Section 7.0 of this EA

•Redesign project to avoid remains, if possible.

•The MCBQ Archaeologist/NEPA Section will contact the SHPO, and if remains are Native American will contact tribe(s). Removal of remains requires a permit from the SHPO, including the participation of a skeletal biologist or physical anthropologist, and plans to make appropriate notifications to possible descendants/relatives and other measures in accordance with state law

and Advisory Council on Historic Preservation (ACHP) guidelines.

3.8 Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are usually referred to as vegetation, and animal species as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, biological resources are divided into three major categories: (1) vegetation, (2) terrestrial wildlife, and (3) aquatic wildlife. Threatened, endangered, and other special status species are discussed in their respective categories.

3.8.1 Regulatory Setting

Special-status species, for the purpose of this EA, are those species listed as threatened or endangered under the Endangered Species Act (ESA) and species afforded federal protection under the Migratory Bird Treaty Act (MBTA).

The Endangered Species Act (ESA), 7 U.S.C. §136, 16 U.S.C. §1531 et seq., requires federal agencies to ensure that their actions will not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of its critical habitat.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §701-12) protects all species covered by the four migratory bird treaties the United States signed with Canada, Mexico, Japan, and Russia. The MBTA prohibits taking (e.g., pursuing, hunting, shooting, wounding, trapping, capturing, or collecting, or attempting to pursue, hunt, shoot, wound, trap, capture, or collect, intentionally or unintentionally), killing, or possessing of migratory birds (including parts, feathers, nests, and eggs) unless permitted by the Secretary of the Interior. The United States Fish and Wildlife Service (USFWS) currently recognizes 832 species of migratory birds.

Per Executive Order 13186, Responsibilities of Federal Agencies to Migratory Birds (2001), the DoD and USFWS set forth a Memorandum of Understanding (MOU) to promote the conservation of migratory birds and their habitats.

Bald eagles (*Haliaeetus leucocephalus)*, which are afforded federal protection under the MBTA and the Bald and Golden Eagle Protection Act (BGEPA) of 1940, as amended (16 U.S.C. §668-668d, 54 Stat. 250), and are listed as a species of concern in the USFWS Birds of Conservation Concern, 2008, are discussed within the Terrestrial Wildlife section (3.8.2.2) of this EA.

Marine Corps Order 5090.2 directs the USMC to comply with environmental requirements, protect the environment and human health, and enhance and sustain mission readiness, to include cooperating with the Commonwealth of Virginia to protect Virginia-listed rare species and to provide consideration of state-listed species during the NEPA process. According to Chief of Naval Operations Instruction (OPNAVINST) 5090.1B, it is Navy and Marine Corps policy to cooperate with states to protect state-listed species, if mission compatible. Hence, MCBQ also

considers project impacts to Virginia-listed rare species and state listed species during the NEPA process.

The Virginia Piedmont waterboatman, *Sigara depressa*, and the brook floater, *Alasmidonta varicose*, are two Virginia-listed endangered faunal species. Both species are water dependent. The Virginia Piedmont waterboatman is an insect that inhabits ponds and extremely slow moving streams. The brook floater is a bivalve that is found among boulders within gravel or sand. The little brown bat (*Myotis lucifugus)* and tri-colored bat (*Perimyotis subflavus)* are state listed endangered.

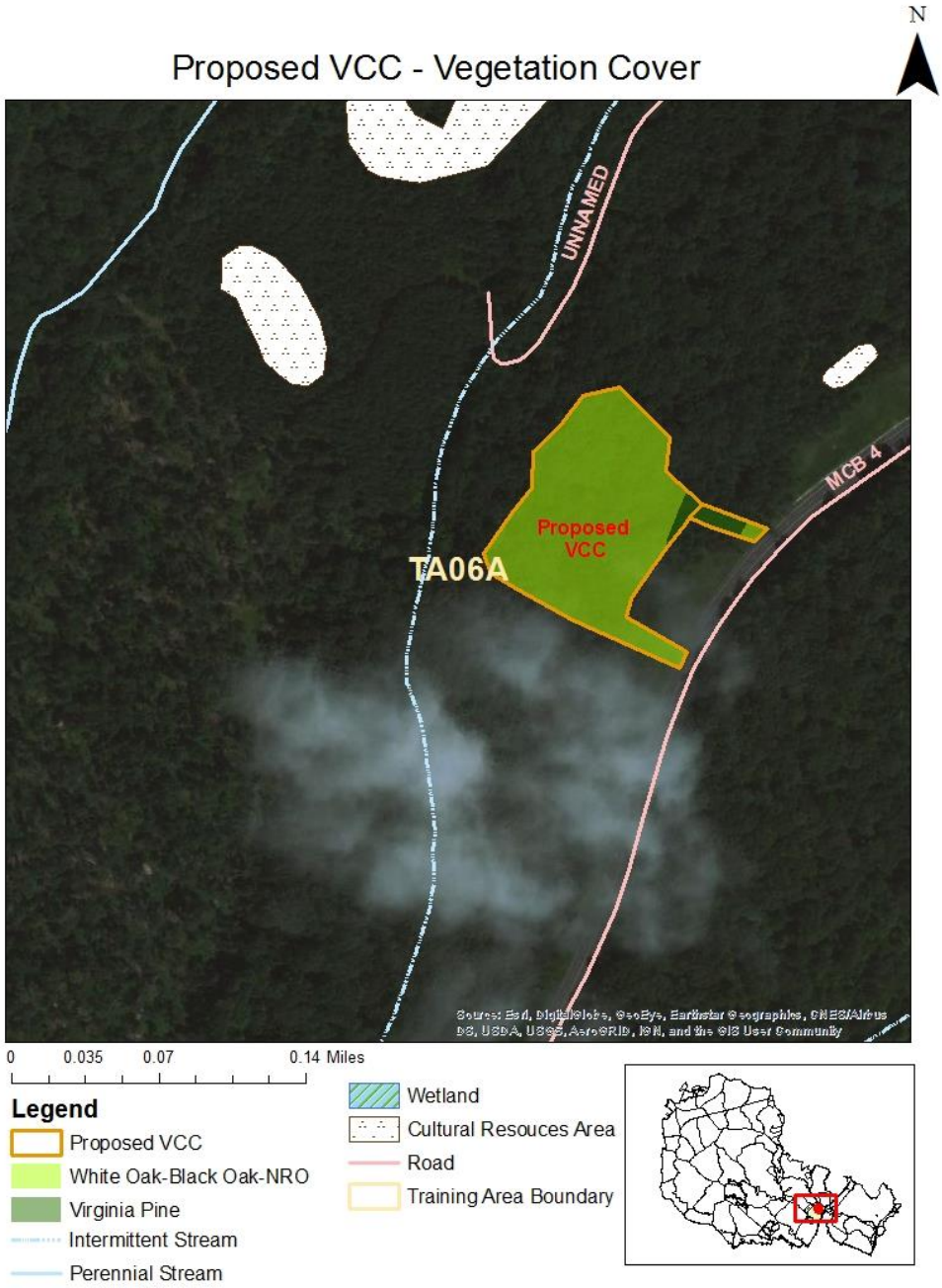
3.8.2 Affected Environment

The base supports a wide variety of both game and non-game species and a diversity of wildlife habitat is available. Game species include white-tailed deer, wild turkey, gray squirrel, cottontail rabbit and bobwhite quail. Non-game species include resident and migratory songbirds, raptors, and various reptiles, amphibians, and insects.

Migratory birds utilize a variety of habitats available throughout MCBQ including forestland, grassland, wetland, and riparian corridors.

3.8.2.1 Vegetation

The land area of MCBQ is primarily covered by a forested landscape. Forests account for approximately 90% of the land cover of the base. MCBQ is located within an ecological transition zone inside the Eastern Deciduous Forest Biome of the United States. The major tree types found within the forests, particularly on the Westside of the base, are associated with the Central and Southern forest regions of the United States. The most common tree species found at MCBQ are yellow poplar (*Liriodendron tulipifera*), black oak (*Quercus velutina*), northern red oak (NRO) (Quercus rubra), white oak (WO) (Quercus alba), shortleaf pine (Pinus echinata), Virginia pine (*Pinus virginiana*) and loblolly pine (*Pinus taeda*). Other species found on the base include sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), hickory (*Carya spp*.), red cedar (*Juniperus virginiana*), black walnut (*Juglans nigra*), black cherry (*Prunus serotina*) and bigtooth aspen (*Populus gradidentata*). The proposed action footprint consists primarily of WO, black oak and NRO. There is also Virginia pine located near the northeast corner of the proposed action footprint. Additionally, American beech, hickory, red maple and American holly have also been identified during site visits to the proposed action footprint. The vegetation cover at the proposed action is illustrated in Figure 3.8.1.



Vegetation Cover for Proposed VCC	
Virginia Pine	**White Oak - Black Oak - NRO**
5%	95%

Figure 3.8.1

Three plant species on MCBQ are federally-listed as threatened or endangered species. These are Harperella (*Ptilimnium nodosum*) and the small whorled pogonia (*Isotria medeoloides*) and the sensitive joint-vetch (*Aeschynomene virginica*).

Harperella is a federally-listed endangered plant species native to riverine habitats. This plant is

only found in 13 areas ranging from Maryland to Georgia. Harperella is found at one MCBQ location along Aquia Creek.

The small whorled pogonia (SWP) is a federally-listed threatened species. The SWP is a perennial plant that generally occurs on gentle to moderate slopes with eastern or northern exposures and prefers acidic sandy loam soils with low nutrient content.

The sensitive joint-vetch is a federally-threatened annual legume that is native to the eastern U.S. The plant is usually reaches a height of about 3-6 feet in a growing season but may grow as tall as 8 feet. The flowers are usually yellow, streaked red and the fruit is a pod that becomes brown when ripe. The plant inhabits the outer portions of marshes or shorelines that flood twice a day.

3.8.2.2 Terrestrial Wildlife

The Indiana bat (*Myotis sodalis*) is a terrestrial species that is potentially found at MCBQ and is federally-listed as endangered. The Indiana bat can be found over most of the eastern half of the United States. The bat spends winter hibernating in caves and occasionally in abandoned mines (hibernacula). During summer, the bats prefer to roost under the peeling bark of dead and dying trees. The Indiana bat has been detected at MCBQ however there were no detections within the proposed action footprint. There are no known Indiana bat maternity colonies or hibernacula on MCBQ.

The northern long-eared bat (*Myotis septentrionalis*) (NLEB) is also found on MCBQ. The NLEB is federally-listed as threatened. The bat spends winter hibernating in caves and mines (hibernacula). They prefer roosting sites with constant temperatures, high humidity, and no air currents. In summer, they prefer roosts under tree bark, in cavities or in crevices of both live and dead trees, and rarely in man-made structures such as barns or sheds. The NLEB has been detected via acoustic surveys since 2015. Additionally, several male NLEB have been caught via mist netting during the summers of 2018 and 2019. However, there are no known NLEB maternity roosts or hibernacula on MCBQ.

The little brown bat (*Myotis lucigus*) and the tri-colored bat (*Perymyotis subflavus*) are listed as state-endangered. Both species have been detected on the base. There is no known little brown bat or tri-colored bat winter hibernacula or maternity colonies on MCBQ.

The bald eagle was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The BGEPA requires a project and activity buffer of 660 ft. around a nesting site. Additionally, removal of overstory trees may not occur any time during the year within 330 ft. of an active or alternate nest. No bald eagle nests are located either within the proposed action location nor is the footprint within 660 ft. of a bald eagle nest or concentration area.

3.8.2.3 Aquatic Wildlife

Fish

Fish are vital components of aquatic ecosystems. They have great ecological and economic aspects. To protect this resource, the National Oceanic and Atmospheric Administration (NOAA) Fisheries works with the regional fishery management councils to identify the essential habitat for every life stage of each federally managed species using the best available scientific information. Essential fish habitat has been described for approximately 1000 managed species to date. Essential fish habitat includes all types of aquatic habitat, including wetlands, coral reefs, seagrasses, and rivers – all locations where fish spawn, breed, feed, or grow to maturity.

Invertebrates

The yellow lance (*Elliptio lanceolata*), is a freshwater mussel species that is federally-listed as threatened. The species is often found within clean, coarse and medium sand but is also occasionally within gravel substrates. The yellow lance can be found in waterways ranging from medium-sized rivers to small streams and requires clean, moderately flowing water as part of its habitat. It has known populations within the Rappahannock, James, York and Chowan Rivers in Virginia. The species is believed to no longer populate the Potomac River.

The dwarf wedgemussel (*Alasmidonta heterodon*), found on portions of MCBQ, is federally-listed as endangered. It is a small bivalve that lives in freshwater streams and requires highly oxygenated and silt-free waters.

3.8.3 Impacts of Alternative A – No Action

Under the no action alternative, current environmental conditions will remain the same.

3.8.4 Impacts of Alternative B – Construction of VCC

Alternative B would involve the construction of a 5.0 acre VCC as well as access roadways to and from Russell Rd (MCB-4). Alternative B would also include a 100-space POV Parking Facility. Initial consultation with the USFWS was submitted through their Information for Planning and Consultation (IPaC) online system.

On 5 June 2019, a SWP survey was completed for Alternative B by MCBQ - NREA Natural Resources biologists. Although there was potential habitat were found within the proposed action footprint, the SWP was not present. As a result, Alternative B is not likely to adversely affect the federally-threatened SWP.

The yellow lance, dwarf wedgemussel, sensitive joint-vetch, and harperella are not found in area that would be affected by implementation of Alternative B.

Bat surveys are performed annually at MCBQ. The federally listed Indiana bat and Northern long-eared bat and the state listed little brown bat and tri-colored bat are presumed present within the project area. The proposed action is not located within or near critical habitat for the federally-endangered Indiana bat as well as the federally-threatened NLEB. MCBQ will adhere to the more stringent Indiana bat time of year restriction (TOYR) from 15 April – 15 September,

inclusive, to minimize any potential impacts to both bat species. This includes both species active pup season. During this time, no tree removal will occur. All tree removal will be performed outside of the TOYR. If a maternity colony or hibernacula for any state or federally listed bat species is encountered during timber removal activities, the project proponent must cease all timber removal activities and contact their contracting representative and MCBQ - NREA.

The state-endangered Virginia piedmont waterboatman and brook floater are not found in area that will be impacted by the proposed action.

3.9 Land Use

This discussion of land use includes current and planned uses and the regulations, policies, or zoning that may control the proposed land use. The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions.

3.9.1 Regulatory Setting

In many cases, land use descriptions are codified in installation master planning and local zoning laws. Marine Corps Order (MCO) 11010.16 provides guidance administering the Air Installation Compatible Use Zone (AICUZ) program, which recommends land uses that are compatible with noise levels, accident potential, and obstruction clearance criteria for military airfield operations. MCO 3550.11 provides guidance for a similar program, Range AICUZ (RAICUZ). This program includes range safety and noise analyses, and provides land use recommendations which will be compatible with Range Compatibility Zones and noise levels associated with military range operations.

3.9.2 Affected Environment

3.9.2.1 Current Land Use Compatibility

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1, and Westside (Guadalcanal), 53,200 acres west of the same highways. The proposed VCC would be constructed within TA6A which is on the Westside of the base MCBQ Growth Boundary meaning that any land use activities must be compatible with military training. TA6A is mostly forested and is 558 acres in size. The TA is currently not being used for military training due to a significant presence of infrastructure and is within the urban growth boundary or MCBQ. The closest major facility is the Russell-Knox Building which is located approximately 0.8 miles to the southwest and the Ammunition Supply Point (ASP) which is located just to the west of the current VCC.

3.9.3 Regulatory Setting

EO 13693, Planning for Federal Sustainability in the Next Decade, requires federal departments and agencies to enact specific actions and operations outlined within the EO to reduce agency direct greenhouse gas emissions by at least 40% over the next decade. Improved environmental performance and federal sustainability will be achieved by reducing energy use and cost. Pursuing clean sources of energy will improve energy and water security.

Antiterrorism Force Protection Standards have been adopted by the DoD through Instruction number 2000.16 of October 2006. The standards require all DoD components to adopt and adhere to common criteria and minimum construction standards to mitigate antiterrorism vulnerabilities and terrorist threats.

3.9.4 Impacts of Alternative A – No Action

Under the no action alternative, the current footprint would remain as vegetation cover.

3.9.5 Impacts of Alternative B – Construction of VCC

The proposed action footprint is located in east of the growth boundary and would not be utilized for training purposes. As a result, the proposed range would be compatible with land uses that occur within the urban growth boundary and TA6A. The proposed action location and nearby areas do provide hunting and hiking opportunities. Additionally, there is a trail located to the northwest of the proposed action footprint. Hunting will be allowed in the areas near the proposed action however any hunting must at least 200 yards from the new VCC. There will be no impact to recreational activities as a result of the proposed action

3.10 Transportation and Infrastructure

This discussion of transportation includes all of the air, land, and sea routes with the means of moving passengers and goods. A transportation system can consist of any of the following: roadways, bus routes, railways, subways, bikeways, trails, waterways, airports, and taxis, and can be looked at on a local or regional scale. The discussion of utilities includes the following:

Potable Water. Drinking water is provided to the Mainside of MCBQ from Breckinridge Reservoir, via the water treatment plant. The Westside receives its drinking water from Stafford County.

Wastewater. Wastewater and sewage are processed at the wastewater treatment plant, located adjacent to the Potomac River on the Mainside of MCBQ. Wastewater and sewage generated on the Westside of MCBQ is treated at Stafford County wastewater treatment facilities.

Stormwater. The developed portion on the Mainside of MCBQ is served by a network of stormwater and sanitary sewers. The Westside of MCBQ utilizes a standard network or stormwater and sanitary sewers as well.

Energy. Energy sources utilized by MCBQ include natural gas, geothermal, and solar. These each have their own specialized infrastructure.

Communications. Communications lines, including telephone and internet, are provided to MCBQ facilities via both buried and above-ground methods.

There are no utility lines adjacent or within the proposed action location.

3.10.1 Regulatory Setting

EO 13693 encourages the coordination of federal real property discussions with local communities in an effort to encourage planned transportation investments that aim to support public transit access.

3.10.2 Affected Environment

The proposed action is located in a forested location adjacent to Russell Rd./MCB-4. The current VCC in this location contains the lowest volume of traffic during the morning and afternoon rush hour periods according to the MCBQ Provost Marshall's Office (PMO). The area of the proposed action also would serve the majority of traffic on the base. In October 2011 – February 2012, Naval Facility Engineering Command (NAVFAC) contractors performed counts at six gate locations showing inbound traffic from 5:30AM to 9:30AM and outbound trips from 3:00PM to 6:30PM. During the morning approximately 835 vehicles entered the base from the current Westside VCC. In the afternoon, 825 vehicles exited the base from the Westside VCC. This was lower than the existing Main gate at Fuller Rd. (1,327 vehicles entering in the morning, 1,019 exiting in the evening) and at the Main gate at Russell Rd. (1,734 in the entering in morning, 1,496 exiting in the evening).

3.10.3 Impacts of Alternative A – No Action

Alternative A would have current conditions remaining the same. A 100 space parking lot, access roads and masonry building would not be constructed. Traffic patterns would also remain the same.

3.10.4 Impacts of Alternative B – Construction of VCC

If Alternative B is implemented, there would be an increase in traffic in the proposed VCC location. The new VCC would include short access roads and a 100 space parking lot. However, the proposed action is not located near critical infrastructure or utilities. Alternative B is also in a relatively low traffic volume area and although traffic will increase it is not anticipated that the existing transportation network will be overwhelmed.

3.11 Public Health and Safety

This discussion of public health and safety includes consideration for any activities, occurrences, or operations that have the potential to affect the safety, well-being, or health of members of the public. A safe environment is one in which there is no, or optimally reduced, potential for death, serious bodily injury or illness, or property damage. The primary goal is to identify and prevent potential accidents or impacts on the general public.

Public health and safety during construction, demolition, and renovation activities is generally associated with construction traffic, as well as the safety of personnel within or adjacent to the construction zones.

Operational safety may refer to the actual use of the facility or built-out proposed project, or training or testing activities and potential risks to inhabitants or users of adjacent or nearby land and water parcels. Safety measures are often implemented through designated safety zones, warning areas, or other types of designations.

Environmental health and safety risks to children are defined as those that are attributable to products or substances a child is likely to come into contact with or ingest, such as air, food, water, soil, and products that children use or to which they are exposed.

3.11.1 Regulatory Setting

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires federal agencies to "make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

The safety and environmental health analysis contained in the respective sections addresses issues related to the health and well-being of military personnel and civilians living and/or working on or in the vicinity of MCBQ. Additionally, this section addresses the environmental health and safety risks to children.

3.11.2 Alternative A – No Action

This alternative would maintain the status quo and would not have additional effects on health and safety.

3.11.3 Alternative B – Construction of VCC

Potential Impacts

Although the project area is not within any known munitions response sites, MCBQ includes active and former ranges and there is always the potential to encounter unexploded military munitions, discarded military munitions, and/or munitions and explosives of concern during excavating activities and earth disturbing activities. Potential land disturbances associated with

this project would include, but not be limited to tree-removal activities. The following guidance must be followed for the duration of the project:

According to the MCO 5090.2, Chapter 10, Section 2, Paragraph 10221, if contamination is discovered during construction and it is Defense Environmental Restoration Program (DERP) eligible, Naval Facility Engineering Command (NAVFACENGCOM) can carry out the site investigation/cleanup using Environmental Restoration-Navy (ER,N) funds. However, the site will compete with other ER sites based on risk management. If ER,N funding is not available in time to meet the construction schedule, the installation must use project funds to investigate/clean up the site.

HAZARDOUS WASTE AND HAZARDOUS MATERIALS

The Contractor Shall ensure all environmental requirements are met and ensure an Environmental Protection Plan (EPP) is submitted, signed, and accepted before any project that will change the footprint of any location in anyway is initiated.

Contractor shall ensure all employees and representatives of, are certified and trained to work will all hazardous materials which will be used in the performance of this contract.
All contractors (prime and sub and employees representing either) shall adhere to all of the following requirements which could/may apply while performing work at MCB Quantico: Resource Conservation and Recovery Act (RCRA) of 1976, Federal Facilities Compliance Act of 1992, 40CFR 260-279, OSHA 29 CFR 1910.120.q and CFR 1910.1200, Dept. of Transportation (DOT) 49 CFR, MCO P5090.2A w/ CH 3, Chapter 9, MCBO 5090.2D, MCBO 6240.4B, MCBQ Environmental Compliance and Protection Standard Operating Procedures chapters (ECPSOP) 3-Hazmat, 4-Hazwaste, and 5-Solid Waste, and the MCB Quantico Hazardous Waste Management Plan 5090.7 signed July 7th, 2017.

If any waste (non-haz, hazardous, or universal) is transported for disposal from MCBQ, only NREA personnel are authorized to sign transportation documentation. Copies of all documentation will be forwarded to the Commanding Officer (KO). Contractor shall ensure all employee's and representatives of, Hazmat/Hazwaste training certificate/s are provided to the KO before any work is initiated. If contractor is to use a laydown area which will store hazardous material/waste on Govt. property, he/she shall ensure the laydown area can be secured at the end of every work shift to ensure there is no unauthorized entry. The contractor shall ensure that all emergency POC names and numbers are posted and legible from 50' on all four sides. If hazardous materials/waste are stored on site at an authorized laydown area, a National Fire Protection Association (NFPA) diamond must be posted declaring the severity of each hazard being stored. All contractors shall ensure all specific Safety Data Sheets (SDS) are current and on site and all employees are trained and aware of each hazard. Contractor shall ensure that all employees are trained in spill response in case of a hazmat spill during the contract period.

Contractor shall ensure no Transite particulate becomes airborne from the cutting of the pipe. If possible any/all sections removed will be snapped to avoid cutting.

If cutting is required, contractor shall ensure measures are in place to ensure no particulate from the cutting becomes airborne.

Contractor shall ensure no soil being removed, graded, turned shows signs of being contaminated. If soil contamination is identified, work shall stop immediately and the KO notified. MCBQ Spill Manager shall also be notified. Work shall not resume until permission is granted by the KO. MCBQ - NREA Hazardous Waste Program Manager shall do a final inspection of the authorized laydown area before contracted work is completed and contractor demobilizes the site.

Contractor shall ensure all hazardous and non-hazardous liquid materials/waste are stored on secondary containment. Contractor shall ensure that all flammable liquids and compressed gas cylinders stored inside and/or outside of the authorized laydown area are stored at the most distance point from the closet highway. Contractor shall ensure all compressed gas cylinders are properly stored when not in use as well as in use to ensure fittings are not damaged which would cause a leak. Contractor shall ensure there is a certified and working eyewash station where chemicals are used and stored and, it is inspected weekly and inspection is annotated.

Contractor shall ensure all employees are trained and certified to work with any/all hazardous materials required to properly execute this contract.

Ensure all employees (prime, sub, and all representatives of both) are trained and certified in the skills required to perform the SOW on this specific contract.

All Lead Acid Batteries discarded and/or found during routine inspections will remain property of the DoD.

3.12 Solid Wastes

The solid waste contained in the respective sections addresses issues related to the use and management of solid waste at MCBQ.

3.12.1 Alternative A – No Action

This alternative would have no effect on general procedures and practices for solid waste management at MCBQ.

3.12.2 Alternative B – Construction of VCC

The following guidance pertaining to solid waste must be followed:

Potential Impacts

Solid Waste Reporting Requirement- The contractor will support the solid waste diversion goals outlined in Executive Order 13514 by recovering/recycling materials. Reports of waste generated

(including ALL items recycled/recovered), WILL include material type (Construction Demolition Debris (CDD), concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost. This shall be reported MONTHLY via the Construction Waste Management Report to NREA, NO LATER THAN October 15.

As soon as contract is awarded, contractor will email solid waste manager with company information.

All solid waste activities will be covered in the projects 'solid waste management plan'. This plan can be part of the Environmental Protection Plan, and must be submitted to NREA for review prior to receipt of the Notice to Proceed.

Neither alternative would have an effect on general procedures for removal of hazardous materials and hazardous waste management at MCBQ. No hazardous materials would be introduced under either of the alternatives.

RECYCLING:

SCRAP METAL/WIRE/COPPER: All attempts will be made to turn in scrap wire/copper will be turned into the MCBQ - NREA Qualified Recycling Program (QRP) Manager for recycling. ALL METAL is to be deposited either in the Facilities Maintenance Service (FMS) scrap metal dumpster OR the MCBQ - NREA/QRP Scrap Metal Dumpster.

NO TRANSFORMERS WILL BE ACCEPTED.

FOR BULK SCRAP METAL: The QRP will provide a bin for disposal. this service will include drop-off, swap out and end of project pick up at no charge to the contractor. Please contact MCBQ - NREA. Contractor MUST fill the bin.

Contractor WILL NOT put trash in any bin provided by QRP or QRP Contractor. IF there is trash found in the bin, the contractor WILL BE responsible for removing the trash.

Solid Waste-Contractor is responsible for coordinating all solid waste disposals at the county landfills that meets all Federal, State, and local regulatory standards.

4.0 Cumulative Impacts

This section (1) defines cumulative impacts, (2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (3) analyzes the incremental interaction the proposed action may have with other actions, and (4) evaluates cumulative impacts potentially resulting from these interactions.

4.1 Definition of Cumulative Impacts

The approach taken in the analysis of cumulative impacts follows the objectives of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and CEQ guidance. Cumulative impacts are defined in 40 CFR section 1508.7 as "the impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

To determine the scope of environmental impact analyses, agencies shall consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact analysis document.

In addition, CEQ and USEPA have published guidance addressing implementation of cumulative impact analyses—Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (CEQ 2005) and Consideration of Cumulative Impacts in EPA Review of NEPA Documents (USEPA 1999). CEQ guidance entitled Considering Cumulative Impacts Under NEPA (1997) states that cumulative impact analyses should

"…determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts…[and]…focus on truly meaningful impacts."

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

4.2 Scope of Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA, the study area delimits the geographic extent of the cumulative impacts analysis. In general, the study area will include those areas previously identified in Chapter 4 for the respective resource areas. The time frame for cumulative impacts centers on the timing of the proposed action.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the proposed action, the analysis employs the measure of "reasonably foreseeable" to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent for EISs and EAs, management plans, land use plans, and other planning related studies.

4.3 Past, Present, and Reasonably Foreseeable Actions

This section will focus on past, present, and reasonably foreseeable future projects at and near the proposed project location. In determining which projects to include in the cumulative impacts analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable action. Specifically, using the first fundamental question included in Section 5.1, it was determined if a relationship exists such that the affected resource areas of the Proposed Action (included in this EA) might interact with the affected resource area of a past, present, or reasonably foreseeable action. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis. In accordance with CEQ guidance (CEQ 2005), these actions considered but excluded from further cumulative effects analysis are not catalogued here as the intent is to focus the analysis on the meaningful actions relevant to informed decision-making. Projects included in this cumulative impacts analysis are listed in Table 4.4.2 and briefly described in the following subsections.

4.3.1 Past Actions

- **Initial Construction of MCIOC**
- **Construction of Addition to Building 27410 for Marine Corps Network Operations Center (MCNOC).**
- **Demolition of Building 27220, Target Warehouse.**
- **P644 Dining Facility.**
- **Construction of a Dining Facility at OCS.**
- **New Marine Corps Exchange – Mini-mart.**

4.3.2 Present and Reasonably Foreseeable Actions

- **Establishment of a Platoon Attack Range in TAs 10, 10C and 15B.**
- **Range 5 rehearsal area.**
- **Timber Harvest in TAs 10A, 10C and 11A.**
- **Establishment of a Crossing at Cannon Creek and Re-establishment of a Perimeter Trail in TA7A and TA9C.**
- **Proposed 12B Boundary Adjustment**
- **Proposed Range 14G**

Future projects:

- **Construction of Two COCO Retail Service Facilities.**
- **Improve the intersection of MCB-1 and MCB-2 with the addition of a traffic circle.**
- **The Expansion of Marine Corps Information and Operations Center – Phase II.**
- **Construct new TBS fire station.**
- **Construction of three large warehouses to create consolidated storage area.**
- **Construct new Game Check Station to the north of ASP along MCB-1.**
- **Gym/Water Survival Training Facility.**
- **P-593 – WTBN Headquarters.**
- **P-665 – Target Production Facility.**
- **P-639 – Butler Buildings RSU Storage.**
- **Widen MCB-1 to 4 lanes.**

4.4 Cumulative Impact Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA where possible. The analytical methodology presented in Chapter 3, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine cumulative impacts.

Environmental Impact Evaluation Matrix		
Resource	**Alternative A - No Action**	**Proposed VCC**
Air Quality	No effect	No effect
Water Resources	No effect	No effect: No streams or wetlands located within the proposed action footprint; potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices (BMPs) per the Virginia BMP Field Guide (2009), the Virginia BMPs For Water Quality Technical Manual (2011) and the Virginia Erosion and Sediment Control Handbook (1992).
Geological Resources/Land-Use	No effect	No effect: Best Management Practices (BMPs) will eliminate any impacts to soils.
Cultural Resources	No effect	No effect; there are no cultural resources within the proposed action location; a 19th century steam engine nearby will need to be avoided
Biological Resources	No effect	Not likely to adversely affect: On 5 June 2019 a survey completed by NREA found that although potential habitat was present, the SWP was not present within the proposed action footprint. USFWS TOYR will be implemented from 15 April - 15 September to reduce impacts to the NLEB and Indiana bat. No tree removal will occur during the USFWS TOYR. Action proponent will contact the contracting representative and NREA if a maternity colony, summer roost or winter hibernacula for any federally-listed or state-listed species is encountered during implementation of the proposed action.
Transportation	No effect	No effect; proposed action will not overwhelm exiting transportation network.
Public Health and Safety/Munitions Response	No effect	No effect
Hazardous Waste	No effect	No effect
Solid Waste	No effect	No effect

Figure 4.4.1

Forest Cover Remaining at MCBQ after the Construction of the VCC	
Current	52,090.00
MCIOC	52,089.90
New Fire Station	52,089.60
Mini Mart	52,089.50
Westside COCO Facility	52,084.70
Range 5 Staging Area	52,071.00
TA12B Adjustment	52,068.10
ASP Expansion	52,068.08
Establishment of a Perimeter Trail in TA7A and TA9C	52,051.08
Establishment of a Platoon Attack Range in TA10A, 10C and 11A	52,021.47
Timber Harvest in TA10A, TA10C and TA11A.	52,021.47
Range 14G	52,015.87
Construction of the VCC	**52,010.87**

Figure 4.4.2

5.0 Other Considerations Required By NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 Code of Federal Regulations (CFR) section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

- **Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action**

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
National Environmental Policy Act (NEPA); CEQ NEPA implementing regulations; Navy/USMC procedures for Implementing NEPA	**EA-Compliant**
Clean Air Act	**Compliant-All guidance will be followed.**
Clean Water Act; EO 11990, Protection of Wetlands	**Compliant – No streams or wetlands are present within the proposed action location. Virginia state Best Management Practices will be followed.**
National Historic Preservation Act	**Compliant – No NRHP eligible sites within the proposed action footprint. No cultural resource sites are located within the proposed action footprint although a 19th century stream engine that is nearby will have to be avoided.**
Endangered Species Act	**Compliant - USFWS TOYR from 15 April - 15 September will be implemented to reduce impacts to Indiana bat and NLEB. No SWP are located within the project area.**
Migratory Bird Treaty Act	**Compliant – Tree removal activities will occur outside of the nesting season.**
Bald and Golden Eagle Protection	**Compliant – Proposed action is not within 660 ft. of a Bald eagle concentration area or a Bald eagle nest. Proposed action does not require removal of overstory trees within 330 ft. of a Bald eagle nest.**
Comprehensive Environmental Response and Liability Act	**Compliant – Proposed action is not a CERCLA site or a current hazardous waste generator.**
Resource Conservation and Recovery Act	**Compliant – Proposed action locations are not within former munitions sites, do not contain contamination, and are not a hazardous waste storage location.**
Toxic Substances Control Act	**Compliant – If contamination is discovered during excavation or construction activities Public Health and Safety guidance in Section 4 will be followed.**
Executive Order 11988, Floodplain Management	**Compliant – Proposed action will occur outside of a 100-year floodplain and within an area of minimal risk.**
Executive Order 12088, Federal Compliance with Pollution Control Standards	**Compliant - If those conditions outlined in the Executive order are encountered, guidance in Section 4 will be followed.**
Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management	**EA-Compliant**

In the short-term, effects to the human environment with implementation of the proposed action would primarily relate to the construction activity itself. The proposed action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment. If all guidance is followed, the proposed construction of the VCC would not have any significant impacts to the human environment.

6.0 References

40 CFR parts 1500-1508, Council on Environmental Quality.

50 CFR part 17, Department of the Interior, Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern long-eared Bat With 4(d) Rule; Final Rule and Interim Rule, Vol. 80, No. 63, Thursday, April 2, 2015.

ARCADIS U.S. Inc. (2014). Range Vulnerability Environmental Assessment (REVA) 5-Year Review, Marine Corps Base Quantico.

Atkins (2015). Marine Corps Base Quantico Master Plan Update. The Louis Berger Group.

Bald and Golden Protection Eagle Act, 1940 (16 U.S.C. §668-668d, 54 Stat. 250)

Chesapeake Bay Preservation Act, 1988 (Code of Virginia, Title 10.1-Conservation, Chapter 21).

Clean Air Act, 1970 (42 U.S.C. §7401 et seq., as amended in 1977 and 1990).

Clean Water Act, 1972 (33 U.S.C. §1251 et seq.).

Coastal Zone Management Act, 1972 (16 U.S.C. §1451, et seq., as amended).

DoD Directive Number 4700.4, Natural Resources Management Program. 24 January 1989.

Endangered Species Act, 1973 (7 U.S.C. §136, 16 U.S.C. §1531 et seq.).

Executive Order (E.O.) 11988, Floodplain Management, 1977.

E.O. 12898 (As amended by EO 12948), Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, 1994.

E.O. 13045 (As amended by EO 13296), Protection of Children from Environmental Health and Safety Risk, 1997.

E.O. 13186, Responsibilities of Federal Agencies to Migratory Birds, 2001.

E.O. 13514, Leadership in Environmental, Energy, and Economic Performance, 2009.

Eyre, F.H., 1980, Forest Cover Types of the United States and Canada: Society of American Foresters, 148 pp.

Intergovernmental Panel on Climate Change (IPCC), 2007.

Mandatory Reporting of Greenhouse Gases rule (40 C.F.R. Part 98), Environmental Protection Agency, 2009.

Marine Corps Order 11010.16, 2008.

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Migratory Bird Treaty Act, 1918 (16 U.S.C. §701-12).

National Environmental Policy Act, 1969 (42 U.S.C. §4321 et seq.).

National Historic Preservation Act, 1966 (54 U.S.C. §300101 et seq.).

Natural Resources and Environmental Affairs Branch (NREA) 2007 Integrated Cultural Resource Management Plan for Marine Corps Base, Quantico, Virginia. Natural Resources and Environmental Affairs Branch, Marine Corps Base Quantico, VA.

Natural Resources and Environmental Affairs Branch (NREA) 2015-2019 Integrated Natural Resources Management Plan for Marine Corps Base, Quantico, Virginia. Natural Resources and Environmental Affairs Branch, Marine Corps Base Quantico, VA

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Naval Facilities Engineering Command.(2013). Transportation Management Plan, Marine Corps Base Quantico. Washington D.C.

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U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp.

U.S. Fish and Wildlife Service. Information for Planning and Consultation (IPAC) online submittal system.
https://ecos.fws.gov/ipac/

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Virginia Department of Conservation and Recreation (VDCR)
1992 Virginia Erosion and Sediment Control Handbook, Richmond, VA.

Virginia Department of Forestry. 2009. Virginia's Forestry
Best Management Practices for Water Quality Field Guide.
Charlottesville, Virginia.

Virginia Department of Forestry. 2011. Virginia's Forestry
Best Management Practices for Water Quality Technical Manual.
Charlottesville, Virginia.

7.0 List of Preparers

Darien Siddall
NEPA Coordination Program
Natural Resources and Environmental Affairs Branch
Installation and Environment Division (GF)
Marine Corps Base Quantico, VA 22134
(703) 432-6770

8.0 List of Agencies and Persons Contacted

Natural Resources and Environmental Affairs Branch, Installation and Environment Division, Marine Corps Base Quantico, VA 22134

Ms. Amy Denn, Head
Capt. Travis McWhirther, Deputy
Mr. Frank Duncan, Environmental Planning Section Head
Mr. J. David Grose, Environmental Compliance Section Head
Mr. John Rohm, Natural Resources Section Head
Mrs. Christa Nye, Fish, Wildlife and Agronomy Program Manager
Ms. Heather McDuff, NEPA Coordination Section Head
Ms. Brianne McNair, Environmental Management Systems Coordinator
Mr. Ronald Moyer, Forestry Section Head
Mrs. Catherine Roberts, Cultural Resources Manager
Miss Abbigale Anderson, AECOM, Air Program
Mr. Jonmark Sullivan, Water Program Manager
Mr. David Norris, Hazardous Waste Program Manager
Ms. Marilisa Porter, Solid Waste Program Manager
Mr. Brian Ventura, Hazardous Materials Program Manager

Appendix A
Acronyms

The following list of abbreviations and acronyms are commonly used in Navy and USMC environmental planning documents and are presented to ensure they are applied in a consistent manner throughout all Navy and USMC environmental planning documents.

µPa – micropascal
µg/L – micrograms per liter
AAQS - Ambient Air Quality Standard
AGL - above ground level
AICUZ - Air Installation Compatible Use Zone
AlB – Appling fine sandy loam, 2-6% slopes
AO - Area of Operations
AOR - Area of Responsibility
APE - Area of Potential Effect
APZ - Accident Potential Zone
ARPA - Archaeological Resources Protection Act
ASP – Ammunition Supply Point
ATC - air traffic control
ATFP - Antiterrorism Force Protection
AvB - Aura Gravelly Fine Sandy Loam
AvD2 -Aura Gravelly Fine Sandy Loam, 10-18% Eroded
AvE2 - Aura Gravelly Fine Sandy Loam 18-35% Slopes Eroded
BA - Biological Assessment
BASH - bird/aircraft strike hazard
BE - Biological Evaluation
BEQ - Bachelor Enlisted Quarters
BMP - Best Management Practice
BO - Biological Opinion
BOQ - bachelor officers quarters
CAA - Clean Air Act
CEQ - Council on Environmental Quality
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CDD – Construction Demolition Debris
CFR - Code of Federal Regulations
CH_4 - Methane
CNIC - Commander Navy Installations Command
CO - carbon monoxide
CO2 - carbon dioxide
CVIF – Commercial Vehicle Inspection Facility
CWA - Clean Water Act
CZMA - Coastal Zone Management Act
dB - decibel
dBA - A-weighted sound level
dBC - C-weighted sound level
dBP - peak decibel
DEA – Drug Enforcement Agency
DEIS - Draft Environmental Impact Statement

DNL - day-night average sound level
DoD - United States Department of Defense
DON - United States Department of the Navy
DTRA – Defense Threat Reduction Agency
DZ - drop zone
EA - Environmental Assessment
EAP - Encroachment Action Plan
EFH - Essential Fish Habitat
EIS - Environmental Impact Statement
EO - Executive Order
EOD - explosive ordnance disposal
EPCRA - Emergency Planning and Community Right-to-Know Act
ER, N – Environmental Restoration-Navy
ESA - Endangered Species Act
ESQD - explosive safety quantity distance
FAA - Federal Aviation Administration
FBI – Federal Bureau of Investigation
FEIS - Final Environmental Impact Statement
FIFRA - Federal Insecticide, Fungicide, and Rodenticide Act
FIRM – Flood Insurance
FONSI - Finding of No Significant Impact
FY - fiscal year
GHG - greenhouse gas
GIS - geographic information system
HAP - hazardous air pollutant
HAPC - habitat areas of particular concern
HE - high explosive
ICRMP - Integrated Cultural Resources Management Plan
INRMP - Integrated Natural Resources Management Plan
IRP - Installation Restoration Program
JSIVA – Joint Services Integrated Vulnerability Assessment
kHz – kilohertz
KO – Commanding Officer
LANDNAV – Land Navigation
LBP - lead based paint
MCAF - Marine Corps Air Facility
MCB - Marine Corps Base
MCBQ – Marine Corps Base Quantico
MCCS – Marine Corps Community Services
MCO - Marine Corps Order
MEC - Munitions and Explosives of Concern
MEM - military expended material
mg/kg – milligrams per killigrams
MILCON - military construction
MLLW - mean lower low water
MMRP - Military Munitions Response Program

MOA - Military Operations Area
MSFCMA - Magnuson-Stevens Fishery Conservation and Management Act
MSL - mean sea level
MTR - military training route
NAAQS - National Ambient Air Quality Standards
NAGPRA - Native American Graves Protection and Reparation Act
NAVFAC - Naval Facilities Engineering Command
NAVFACOM - Naval Facility Engineering Command
NCIS - Naval Criminal Investigative Services
NEPA - National Environmental Policy Act
NFPA – National Fire Protection Association
NEW - net explosive weight
NHPA - National Historic Preservation Act
NO2 - nitrogen dioxide
NOA - notice of availability
NOI - Notice of Intent
NPDES - National Pollutant Discharge Elimination System
NPL – National Priority List
NPS - National Park Service
NRHP - National Register of Historic Places
NRO – Northern Red Oak
OPNAV - Office of the Chief of Naval Operations
OPNAVINST - Office of the Chief of Naval Operations Instruction
PAH - polynuclear aromatic hydrocarbon
PCB - polychlorinated biphenyl
PM10 - particulate matter less than or equal to 10 microns in diameter
PM2.5 - particulate matter less than or equal to 2.5 microns in diameter
Ppb - parts per billion
Ppm - parts per million
Ppt - parts per thousand
PPV - public/private venture
PTS - permanent threshold shift
RAICUZ - Range Air Installation Compatible Use Zone
RCMP - Range Complex Management Plan
RCRA - Resource Conservation and Recovery Act
REVA – Range Environmental Vulnerability Assessment
ROD - Record of Decision
RONA - Record of Non-Applicability
RV – Recreation Vehicle
QRP- Qualified Recycling Program
SAV - submerged aquatic vegetation
SDS – Safety Data Sheet

SEL - sound exposure level
SHPO - State Historic Preservation Officer
SIP - State Implementation Plan
SO2 - sulfur dioxide
SPL - sound pressure level
TA – Training Area
TOYR – Time of Year Restriction
TSCA - Toxic Substances Control Act
TTS - temporary threshold shift
U.S.C. - United States Code
UAV - unmanned aerial vehicle
USACE - U.S. Army Corps of Engineers
USEPA - U.S. Environmental Protection Agency
USFWS - U.S. Fish and Wildlife Service
USGS - U.S. Geological Survey
USMC - U.S. Marine Corps
UXO - unexploded ordnance
VCC – Vehicle Control Center
VDEQ – Virginia Department of Environmental Quality
WgE - Watt Silt Loam
WO – White Oak

Appendix B
Soil Maps

Soil Map—Stafford and King George Counties, Virginia
(Proposed Visitor Control Center (VCC) Soil Survey)

Map Scale: 1:1,820 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Stafford and King George Counties, Virginia
Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 3, 2019—Aug 1, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AvB	Aura gravelly fine sandy loam, 2 to 6 percent slopes	2.7	54.5%
AvD2	Aura gravelly fine sandy loam, 10 to 18 percent slopes, eroded	0.1	2.2%
AvE2	Aura gravelly fine sandy loam, 18 to 35 percent slopes, eroded	1.8	36.5%
WgE	Watt silt loam, gray surface variant, 15 to 35 percent slopes	0.3	6.9%
Totals for Area of Interest		**4.9**	**100.0%**

Appendix C
National Historical Preservation Act – Section 106 Consultation

Siddall CIV Darien G

From: Roberts CIV Catherine
Sent: Monday, May 18, 2020 9:47 AM
To: Siddall CIV Darien G
Subject: RE: Proposed Visitor Control Center (VCC) Cultural Resources Correspondence
Signed By: catherine.roberts@usmc.mil

Since the steam engine is outside of the APE, it won't be moved. However, it will have to be avoided.

kate

From: Siddall CIV Darien G <darien.siddall@usmc.mil>
Sent: Monday, May 18, 2020 9:41 AM
To: Roberts CIV Catherine <catherine.roberts@usmc.mil>
Subject: Proposed Visitor Control Center (VCC) Cultural Resources Correspondence

Kate,

See attached. I saw your comments in NEPA-PAMs for the proposed VCC.
Could you please put this in e-mail format and send back to me ?
I just need it for the administrative record for the project. Thanks

Darien Siddall
Natural Resource Specialist
NEPA Program
Natural Resources and Environmental Affairs (NREA)
Environmental Planning Section
3049 Bordelon Street
Phone: 703-432-6770
Fax: 703-783-4953
DSN: 278-4030
E-mail: darien.siddall@usmc.mil

Appendix D
Endangered Species Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date:15 April 2020

Self-Certification Letter

Project Name: Proposed Visitor Control Center (VCC) - Access Control Center at Marine Corps Base Quantico, VA

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: April 15, 2020
Consultation Code: 05E2VA00-2020-SLI-3230
Event Code: 05E2VA00-2020-E-09077
Project Name: Proposed Visitor Control Center (VCC) - Access Control Center at Marine Corps Base Quantico, VA

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-3230

Event Code: 05E2VA00-2020-E-09077

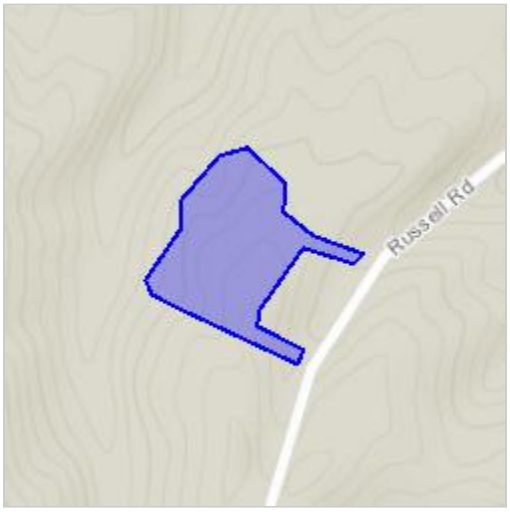
Project Name: Proposed Visitor Control Center (VCC) - Access Control Center at Marine Corps Base Quantico, VA

Project Type: DEVELOPMENT

Project Description: Proposed action involves the construction of a VCC. VCC will be approximately 5.0 acres, include a low rise masonry building, 100 space parking lot and access roads.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.52131870203171N77.38053715437519W



Counties: Stafford, VA

Endangered Species Act Species

There is a total of 4 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
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Harperella *Ptilimnium nodosum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3739	Endangered
Small Whorled Pogonia *Isotria medeoloides* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

Critical habitats

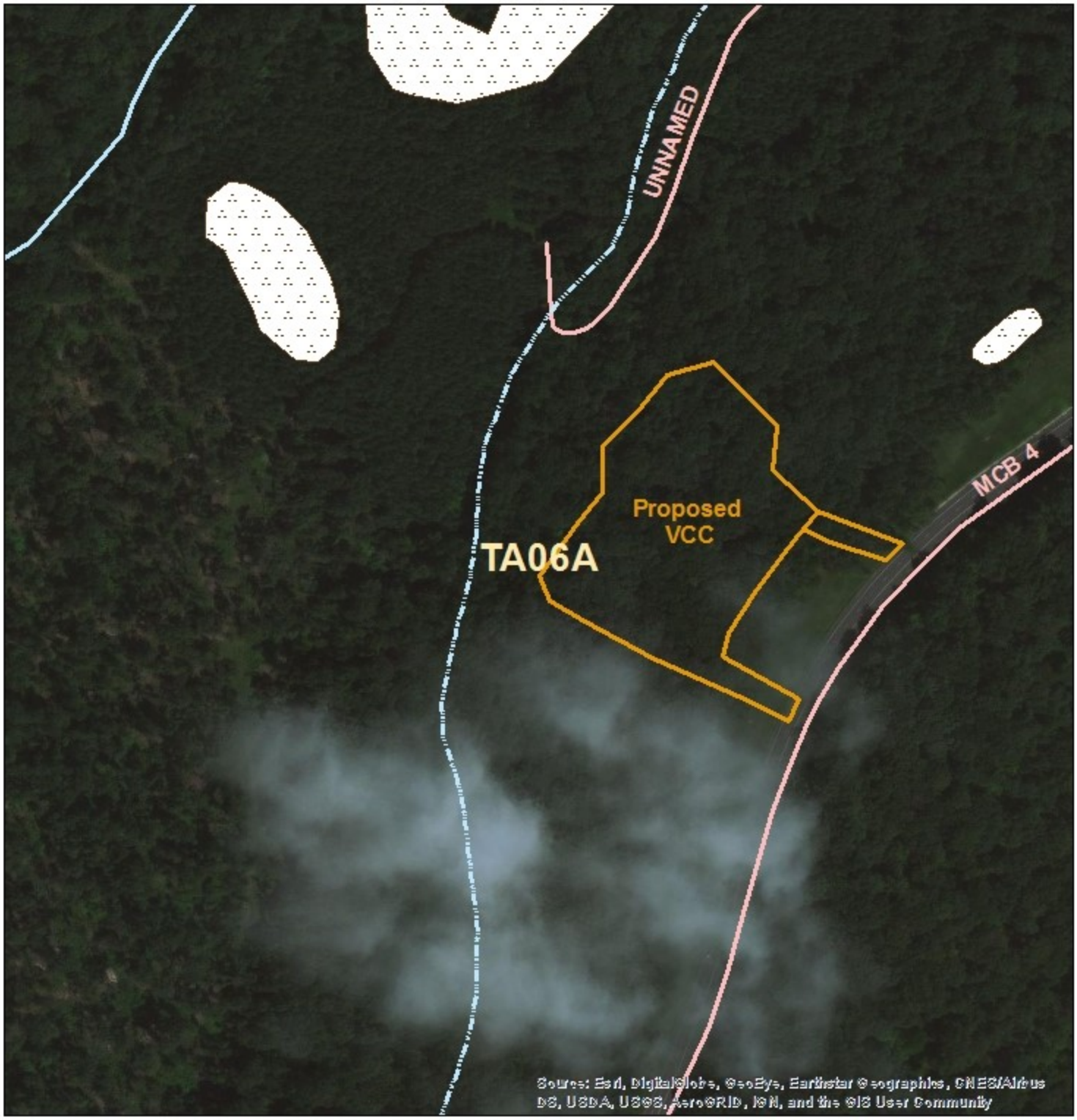
THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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.

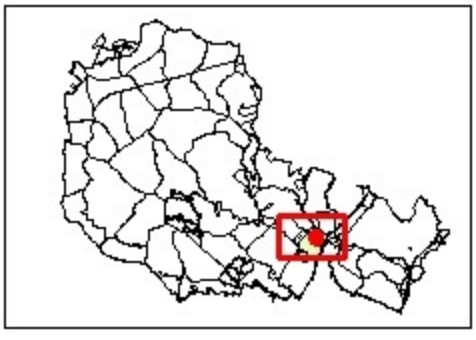
Proposed VCC



0 0.0325 0.065 0.13 Miles

Legend

- VCC
- Intermittent Stream
- Perennial Stream
- Wetland
- Cultural Resouces Area
- Road
- Training Area Boundary



UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS NATIONAL CAPITAL REGION
MARINE CORPS BASE
3250 CATLIN AVENUE
QUANTICO, VIRGINIA 22134 5001

IN REPLY REFER TO:
11015/1
B 046
02 July 2019

MEMORANDUM FOR THE RECORD

From: Head, Fish, Wildlife, & Agronomy Program, Natural Resources and Environmental Affairs Branch
To: File

Subj: SMALL WHORLED POGONIA SURVEY FOR THE VISITOR CONTROL CENTER

Encl: (1) Map of Survey Area for the Visitor Control Center Site
(2) Photographs of Site

1. In order to comply with DoD and Marine Corps access control requirements, the installation requires a Visitor Control Center (VCC). The current course of action is to construct a VCC on the north side of Russell Road near the ramp to Interstate 95. The site is approximately 8 acres.

2. On 5 June 2019, the proposed site location was surveyed for presence of the federally threatened, small whorled pogonia (*Isotria medeoloides,* SWP) by Christa Nye, Tomás Nocera, and Corey Boswell of the Natural Resources and Environmental Affairs Branch (B 046).

3. Enclosure 1 provides maps of the survey area.

4. The surveyed area extends outside of the proposed location to allow for site shifting during the planning phases. The surveyed area extends 500 meters along Russell Road (MCB-4) and approximately 250 meters north of Russell Road into the treeline. The site consists of upland hardwood on the northern end and maintained road right-of-way in the southern portion of the site. Overstory trees consist of American beech (*Fagus grandifolia),* white oak *(Quercus alba),* Hickory (*Carya spp.)* with red maple (*Acer rubrum)* and American holly (*Ilex opaca)* in the understory. The herbaceous layer was sparse but mostly consisted of partridgeberry (*Mitchella repens)* and Virginia creeper (*Parthenocissus quinquefolia*).

5. Indian cucumber root (*Medeola virginiana*) and large whorled pogonia (*Isotria verticillata)*, plants often associated with the SWP, were not found at the site.

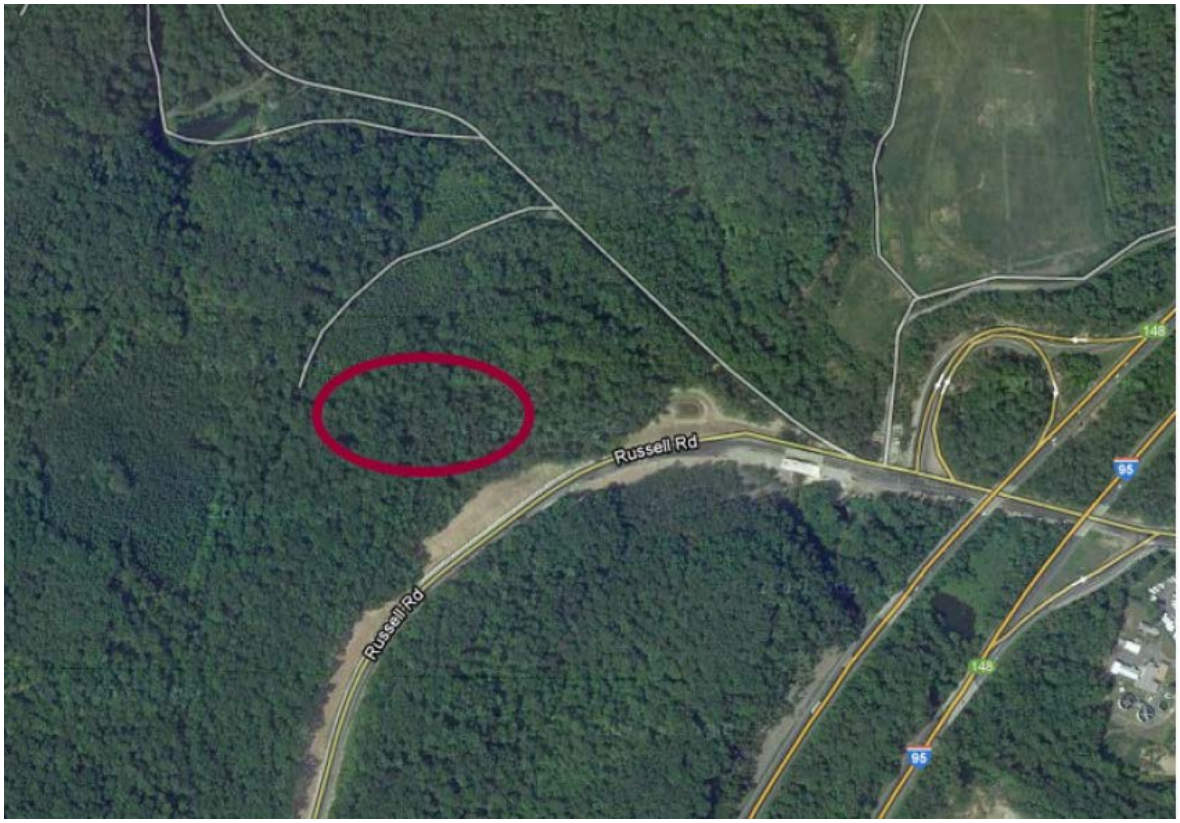
6. The site is xeric and does not contain potentially suitable SWP habitat. The SWP was not found during the survey.

7. The proposed Visitor Control Center project will not adversely affect the federally listed small whorled pogonia. This survey is valid for two years.

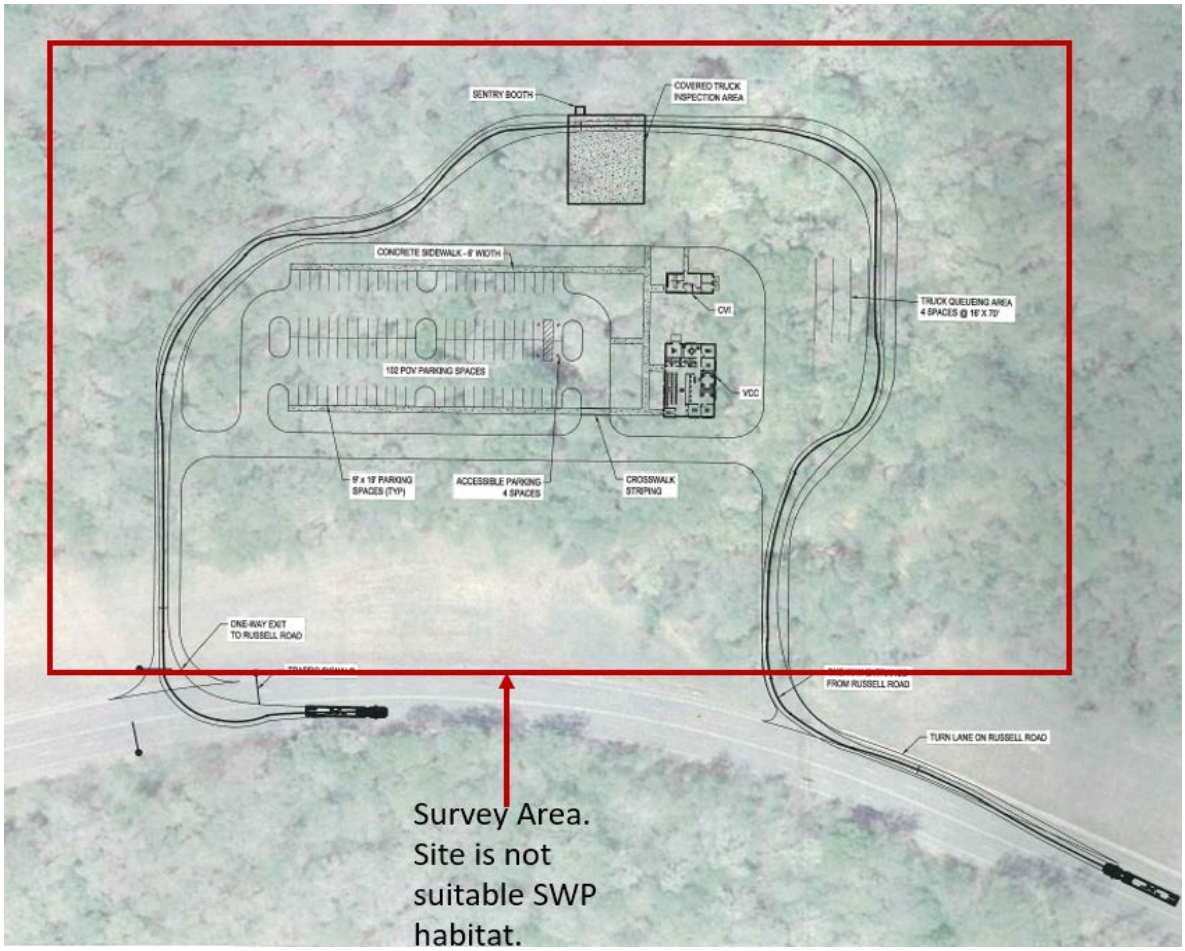
Christa Nye

Copy to:
Head, NEPA Program

Encl (1):



Site Location



Visitor Control Center SWP Survey Boundary

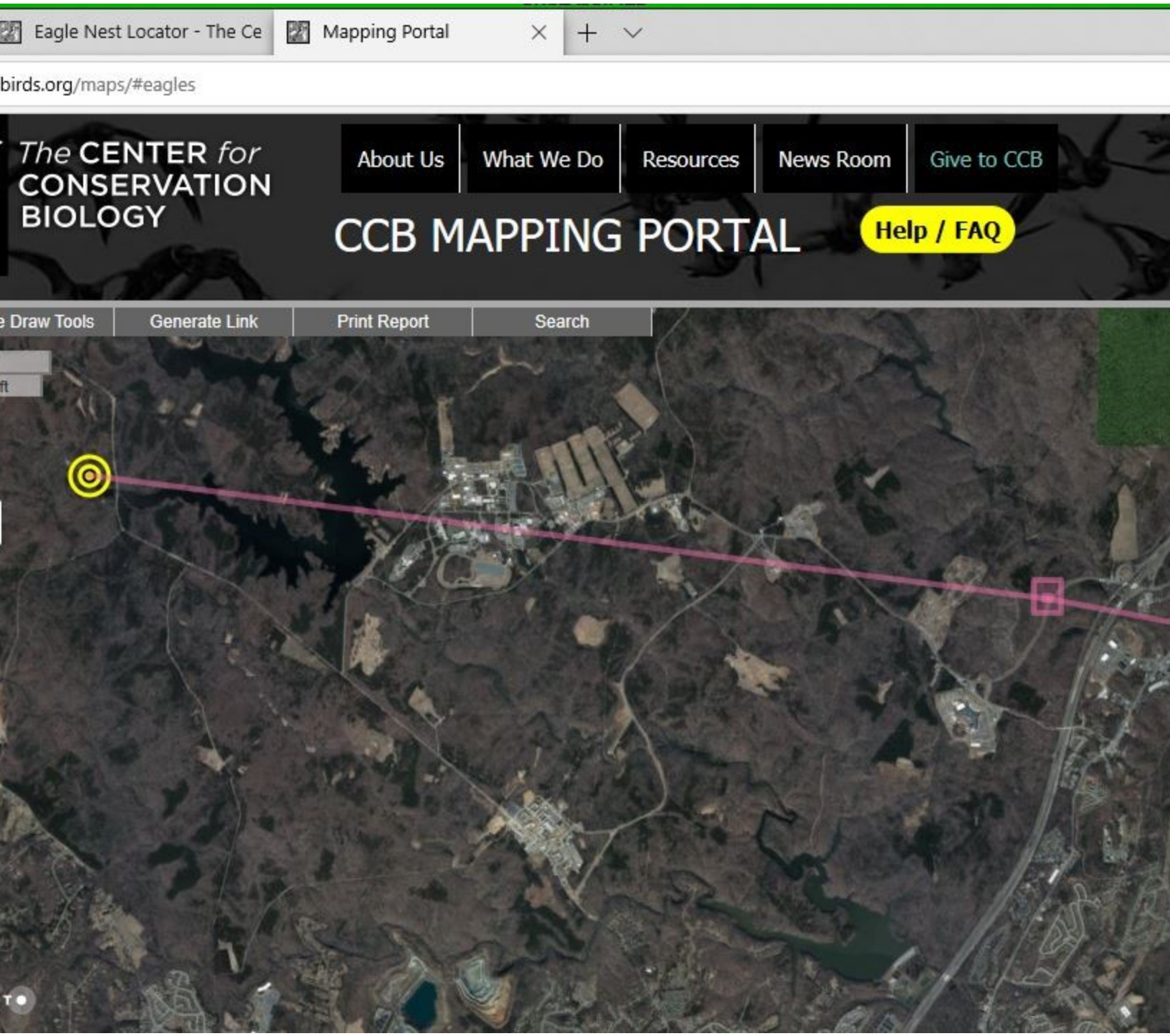
Encl (2):

Representative site conditions in middle portion of proposed project area.

Representative site conditions at northern portion of proposed project area.

Representative site conditions at southern boundary (along Russell Road) of proposed project area. This is the lowest elevation of the site.

Representative site conditions at southeast boundary (along Russell Road) of proposed project area.


Eagle Nest Locator - The Ce
Mapping Portal
birds.org/maps/#eagles
The CENTER for CONSERVATION BIOLOGY
About Us
What We Do
Resources
News Room
Give to CCB
CCB MAPPING PORTAL
Help / FAQ
e Draw Tools
Generate Link
Print Report
Search

Assessment of the Potential Habitat for the Federally Endangered Haperella (*Harperella vivipara*[1], Rose) at Marine Corps Base Quantico, Virginia (Interim Report)

Verl Emrick and Pabrita Aryal

[1] Please Note: This report uses the botanical nomenclature from the *Flora of Virginia* (Weakley et al. 2012).

Introduction

Harperella (*Harperella vivipara*, Rose) is a Federally Endangered annual herb in Apiaceae family with erect to spreading stems from 1-6 dm tall when growing in seasonally exposed river beds and up 1 m when growing on pond margins (Chafin 2008, Weakely et al 2012). Leaves are up to 30 cm long near the base of the plant, becoming shorter up the stem, round in cross-section, and hollow except for cross-partitions, tapering to a point, alternate (Chafin 2008). Ascending flowers are in flat-topped clusters (umbels) composed of 5 - 15 smaller umbels. Flowers care comprised of five tiny, white upturned petals while the tips of the stamens (anthers) are dark pink. Fruits are oval, 1-2 mm in length with 6 - 10 ribs (Chafin 2008). The fibrous root system is shallow, and the plants are reported to smell faintly of dill (Chafin 2008). Harperella is native to the Southeastern and Mid-Atlantic States with a disjunct population occurring in the Ouachita National Forest in Arkansas and Oklahoma (Buthod and Hoagland 2013, Feist et.al 2012, Godfrey and Wooten 1981). Harperella was federally listed as an endangered species on September 28, 1988 (U.S. Fish and Wildlife Service 2008).

Harperella occurs in riparian habitat in both lentic (still water) and lotic (flowing water) ecosystems, is dependent upon on a narrow set of hydrologic conditions, and is susceptible to hydrologic alterations (U.S. Fish and Wildlife Service 2008). Riverine Harperella habitat is dynamic and plants appear, disappear, and reappear according to naturally occurring changes in stream flow and in response to physical reworking of stream substrates during periodic flood events (Frye and Tessel 2012). The size of Harperella plants varies depending on rainfall and habitat (Chafin 2008). For example, individuals found in streams are generally shorter (20 to 45 cm high) compared to those from pond-side type are 35 to 95 cm high. The seeds generally germinate during short-

duration spring floods and the plants complete their life cycle by late summer or fall (USFWS 2015). Plants flower in July and August, releasing seed in September and October. Germination can occur immediately (Maddox and Bartgis 1992), and seed germination rates have been reported as high as 83% (Wells et al. 2004). Both pond site and riverine Harperella are negatively affected by sedimentation, erosion and water quality degradation. Additionallly, Harperella is threatened by physical disturbance of its riparian habitat, trampling, land-use conversion, and invasive plants (USFWS 2008, 2015).

The overall goal of the research is to assess and survey all potential habitat for the federally endangered Harperella occurring on MCB-Quantico. In order to fulfill this goal we had three specific objectives:

1. Develop a geospatial model based upon published literature that identifies all locations on MCB-Quantico that may provide habitat for Harperella.

2. Field verify the parameters to refine the geo-spatial model of the distribution, occurrence, and quality of potential habitat for Harperella.

3. Survey for specific occurrences of Harperella and-if located-measure habitat parameters to further refine the geospatial model.

This interim report summarizes and provides information for a small population of Harperella located during field surveys to support the overall research.

Field Survey

During the week of September 9th three researchers from the Virginia Tech Conservation Management Institute were conducting field surveys-using Rapid Bioassessment Protocols-to

support water quality monitoring on Aquia Creek. One of the selected monitoring reaches overlapped with a reach that the geo-spatial model identified as high quality habitat for Harperella (fig. 1). Indeed this reach of Aquia Creek encompassed the location of the known population of Harperella at MCB-Quantico.[2] Thus on September 11, 2019, VTCMI personnel intensively surveyed for Harperella within the reach that was identified as high quality habitat and where the known population had been previously located.

Results

During this intensive survey, researchers found Harperella in one location growing in a silt filled crack in a rock approximately mid-stream (fig. 1). The small "colony" of Harperella was comprised of at least 8 individuals one of which had flowered and produced 7 fruits (figs. 2 and 3). After locating this small colony of Harperella, the area upstream and downstream for 100m-in either direction-was intensively resurveyed and no additional Harperella was located.

[2] During the development of the geo-spatial model, analysts were not provided with the location of the known population of Harperella in order to control for bias in model development.

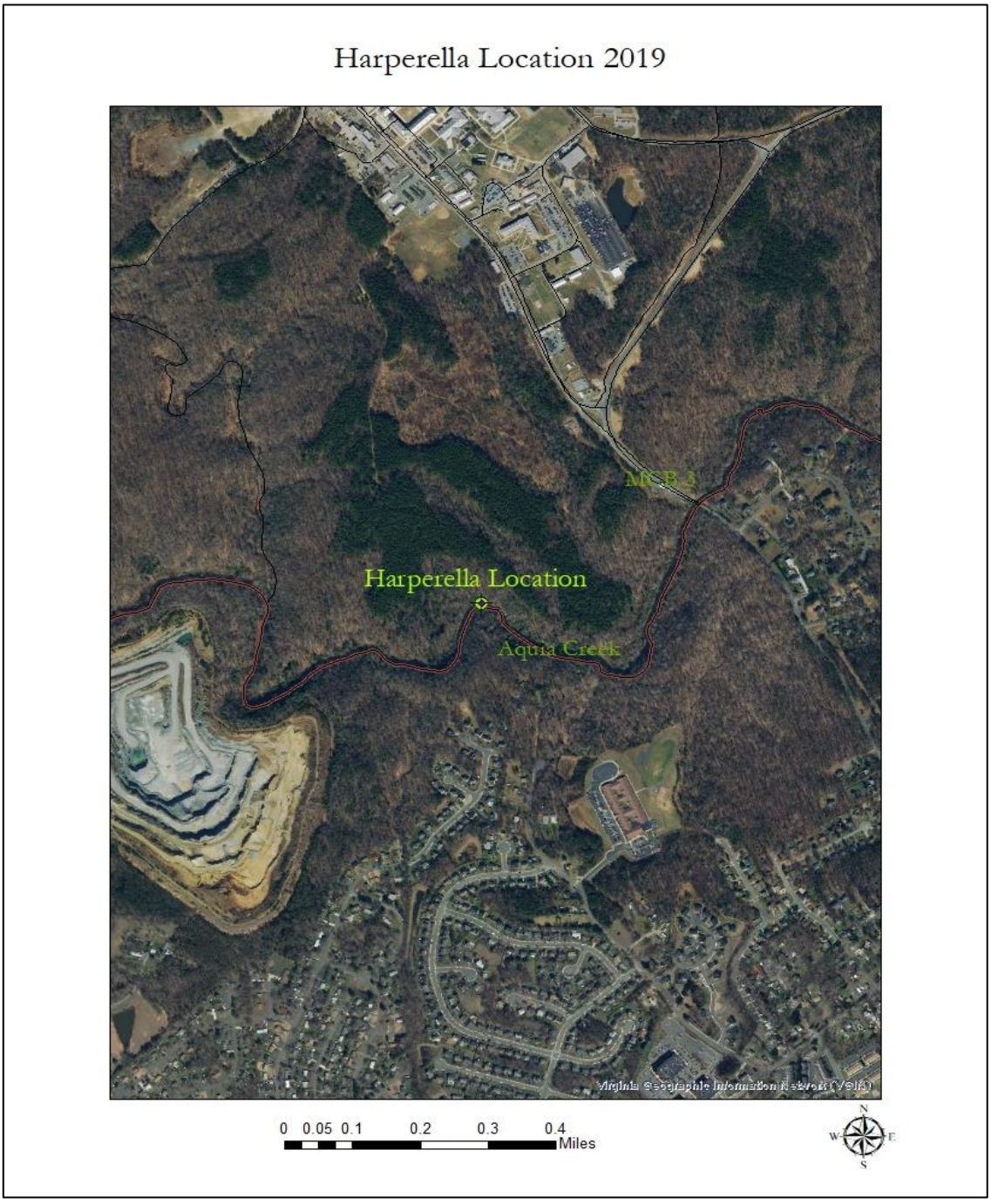


Figure 1. Location of small Haperella "colony" at MCB-Quantico located in September 2019.

Figure 2. Estimated eight individuals of Harperella (*Harperella vivipara*, Rose) growing in a silt-filled crevice in a rock mid-stream in Aquia Creek at MCB-Quantico.

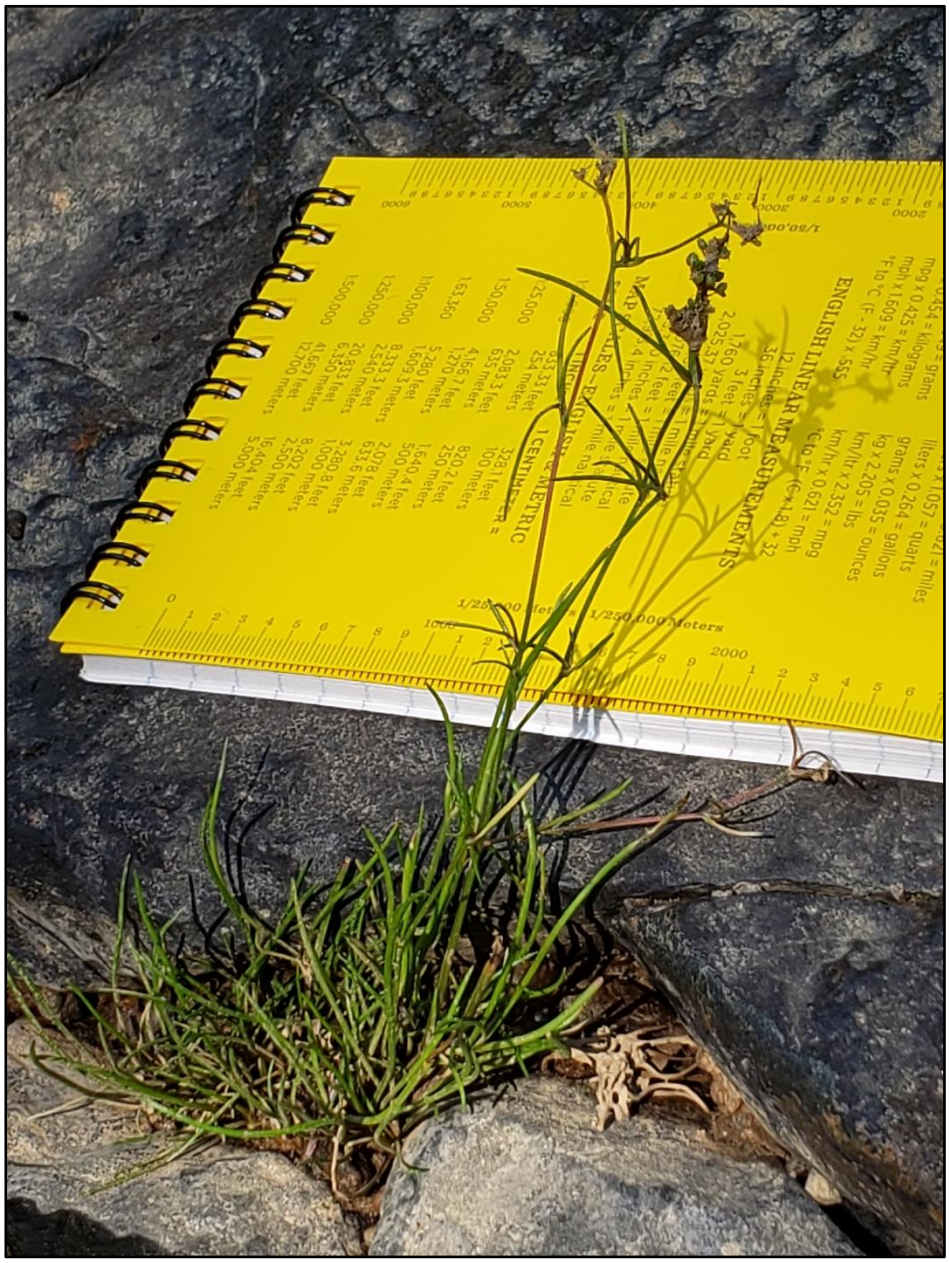


Figure 3. Individuals of Harperella (*Harperella vivipara*, Rose) growing in a rock crevice mid-stream in Aquia Creek MCB-Quantico. Note the seven fruits on the right branch of the single flowering stem.

Figure 4. General stream habitat for Harperella in Aquia Creek at MCB-Quantico.

References

Buthod, A.K. and B.W. Hoagland. 2013. Noteworthy Collections: Oklahoma. Castanea 78: 213-215.

Chafin, L.G. 2008. Harperella. Georgia Department of Natural Resources, Wildlife Resources.Species Fact Sheet. https://georgiawildlife.com/species

Feist, M.A.E., S.R. Downie, A.R. Magee and M. Liu. 2012. Revised generic delimitations for Oxypolis and Ptilimnium (Apiaceae) based on leaf morphology, comparative fruit anatomy, and phylogenetic analysis of nuclear rDNA Its and cpDNA "trnQ-trnK" intergenic spacer sequence data. Taxon 61(2): 402-418.

Frye, C. T., and Tessel, S. M. 2012. Multivariate Analysis of Stream Substrates in Subpopulations of Harperella (*Ptilimnium nodosum* (Rose) Mathias: Apiaceae) at Sideling Hill Creek, Maryland, USA. Castanea 77: 2-10.

Godfrey, R. K. & J. W. Wooten. 1981. Aquatic and Wetland Plants of Southeastern United States Dicotyledons 1–944. Univ. Georgia Press, Athens.

Maddox, G.D., and B.L. Bartgis. 1992. Harperella demographics and habitat studies. Final report for period 27 September 1989–30 June 1992. Maryland Department of Natural Resources, Natural Heritage Program, Tawes State Office Building, Annapolis, MD. 35 pp.

USFWS. 1988. Endangered and threatened wildlife and plants; determination of endangered status for Ptilimnium nodosum. Federal Register 53(188), 28 September.

USFWS. 2008. Harperella (*Ptilimnium nodosum*) 5-year review: Summary and evaluation. Draft document for comment. West Virginia Field Office, Elkins, WV.

Weakely, A.S., J.C. Ludwig, and J.F. Townsend. 2012. Flora of Virginia. Bland Crowder, ed. Foundation of the Flora of Virginia Project Inc., Richmond. Fort Worth: Botanical Research Institute of Texas Press.

Wells, E.F., C.E.C. Oberfoell, K.M. Redden, C.H. Marvil, and A.X. Truong. 2004. Reintroducing Harperella to cobblebars along the Potomac River (Maryland). Ecological Restoration 22:307.

Siddall CIV Darien G

From: Reynolds, Rick (DGIF) <Rick.Reynolds@dgif.virginia.gov>
Sent: Thursday, May 4, 2017 11:01 AM
To: Siddall CIV Darien G
Subject: [Non-DoD Source] RE: Hell Rick, this is Darien Siddall...this is concerning the Little Brown Bat and Tri-Colored Bat.

According to DGIF records we are not aware of summer roosts or winter hibernacula for either tri-colored or little brown bat on the Quantico Base.

Rick Reynolds
Wildlife Biologist
Virginia Department of Game and Inland Fisheries P.O. Box 996 Verona, VA 24482
540-248-9360

-----Original Message-----
From: Siddall CIV Darien G [mailto:darien.siddall@usmc.mil]
Sent: Thursday, May 04, 2017 10:52 AM
To: Reynolds, Rick (DGIF)
Subject: Hell Rick, this is Darien Siddall...this is concerning the Little Brown Bat and Tri-Colored Bat.
Importance: High

Hello Rick,

We spoke at today concerning the State Endangered Little Brown Bat and Tri-Colored Bat. Per our conversation and use of your system, you stated that there were no known colonies of either of these species.
They have been detected on our base though. Please send me your concurrence/non-concurrence on this issue. I have attached the map to this e-mail Thanks!

Darien Siddall
Natural Resource Specialist
NEPA Section
Natural Resources and Environmental Affairs (NREA) Environmental Planning Section
3049 Bordelon St.
Marine Corps Base (MCB) - Quantico, VA 22134
Phone: 703-432-6770
Fax: 703-784-4953
DSN: 278-4030
E-mail: darien.siddall@usmc.mil

Species Conclusions Table

Project Name: Proposed Visitor/Access Control Center at Marine Corps Base Quantico, Virginia

Date: 15 April 2020

Species / Resource Name	Conclusion	ESA Section 7	Notes / Documentation
Harperella	Habitat not present; species not present.	No effect	No perennial streams or harperella habitat within the proposed action footprint. A 50 ft. buffer will be maintained around all streams and wetlands. This will be done in accordance with the Virginia Best Management Practices (BMP) per the Virginia BMP Field Guide (2009), the Virginia BMPs for Water Quality Technical Manual (2011) and Virginia Erosion Control and Sedimentation Handbook (1992).
Small Whorled Pogonia	Habitat not present; species not present.	Not likely to adversely affect.	June 5, 2019 survey (attached) by qualified surveyor indicated absence of species.
Indiana Bat	Not within species critical habitat.	Not likely to adversely affect	Will be implementing USFWS TOYR to reduce impacts to federally-listed bat species. No trees will be removed from proposed action location from 15 April – 15 September.
Northern Long-Eared Bat	Suitable habitat present; no critical habitat present.	Not likely to adversely affect	Will be implementing USFWS TOYR to reduce impacts to federally-listed bat species. No trees will be removed from proposed action location from 15 April – 15 September.
Bald Eagle	Unlikely to disturb nesting Bald eagles.	No Eagle Act permit required.	The closest Bald eagle nest is well over 6,000 ft. (2 km) from the proposed action. Proposed action does not require the removal of overstory trees within 330 ft. of a Bald eagle nest. Proposed action is not within 660 feet of a Bald eagle nest or a Bald eagle concentration area

From: Case, Rachel L on behalf of Virginia Field Office, FW5
To: Siddall CIV Darien G
Subject: [Non-DoD Source] Re: [EXTERNAL] RE: Submission of Project Review Package and Self-Certification for Proposed VCC/ACC at Marine Corps Base Quantico, Virginia
Date: Friday, May 15, 2020 12:29:37 PM

Hi Darien,

I have received and reviewed your project submission. I have no comments or concerns regarding the proposed action.

All the best,
Rachel

From: Siddall CIV Darien G <darien.siddall@usmc.mil>
Sent: Friday, May 15, 2020 7:00 AM
To: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Subject: [EXTERNAL] RE: Submission of Project Review Package and Self-Certification for Proposed VCC/ACC at Marine Corps Base Quantico, Virginia

To Whom It May Concern,

I am Darien Siddall, Natural Resource Specialist at Marine Corps Base Quantico, Virginia.
On 15 April 2020, I submitted a Self-Certified, Project Review Package to you concerning the proposed Visitor
Control Center (VCC) at Marine Corps Base Quantico, Virginia. Have you had the opportunity to view the
proposed action and is there anything further you would like to see addressed ? Please respond by the Close of Business (COB) today, Friday 15 May 2020.

Darien Siddall
Natural Resource Specialist
NEPA Program
Natural Resources and Environmental Affairs (NREA)
Environmental Planning Section
3049 Bordelon Street
Phone: 703-432-6770
Fax: 703-783-4953
DSN: 278-4030
E-mail: darien.siddall@usmc.mil

From: Siddall CIV Darien G
Sent: Wednesday, April 15, 2020 10:56 AM
To: 'VirginiaFieldOffice@fws.gov' <VirginiaFieldOffice@fws.gov>
Subject: Submission of Project Review Package and Self-Certification for Proposed VCC/ACC at

Marine Corps Base Quantico, Virginia

To Whom It May Concern,

I am self-certifying and submitted attached project review package for the proposed Visitor Control Center (VCC)
Marine Corps Base Quantico, Virginia. Review and if you have any question please contact me. Thanks.

Darien Siddall
Natural Resource Specialist
NEPA Program
Natural Resources and Environmental Affairs (NREA)
Environmental Planning Section
3049 Bordelon Street
Phone: 703-432-6770
Fax: 703-783-4953
DSN: 278-4030
E-mail: darien.siddall@usmc.mil

Appendix E
Emissions Calculations

MCBQ Refrigerant Cylinder Purchase Log

Cylinder ID: _____

Refrigerant Type: _____

Refrigerant Condition:

- ☐ New
- ☐ Contaminated
- ☐ Reclaimed
- ☐ Recycled
- ☐ Recovered
- ☐ Empty

Cylinder Size: _____

Cylinder Type:

- ☐ Recovery
- ☐ Returnable
- ☐ Disposable

Purchase Date: _____

MCBQ Refrigerant Equipment Reporting Form

FAX TO NREA AIR PROGRAM MANAGER AT (703) 784-4953 WITHIN 24 HOURS

Building Number: _____

Specific Location: _____

☐ **New Unit Installation**
☐ **Replacement Unit**
☐ **Unit Disposal**

Date Installed or Disposed:
_____

PW Number (lowest):
_____

Manufacturer:
_____

Model:
_____

Serial Number:
_____

Choose One:
☐ **Comfort Cooling**
☐ **Commercial**
☐ **Industrial Process**
☐ **Other**

Refrigerant Charge

Circuit Number	Refrigerant Type	Charge (lbs)

Appliance Type:
_____
Chiller, Heat Pump, Window Unit, Refrigerator, etc.

If disposed of, was the unit tagged "Refrigerant Recovered"? ☐ **Yes** ☐ **No**

Amount of Recovered Refrigerant: _____

Recovery Vacuum Level Achieved: _____

NREA Processing: Date Received: _____ ☐ **Entered in RCM**

MCBQ Refrigerant Service Order Form

Work Order: _____

Date Issued: _____ **Completed:** _____

Technicians: _____

Building Number: _____

PW Number (lowest): _____

Manufacturer: _____

Model: _____

Serial #: _____

Refrigerant Type: _____ **Circuit 1 Charge:** _____ **lb** _____ **oz** **Circuit 2 Charge:** _____ **lb** _____ **oz**

Circuit 3 Charge: _____ **lb** _____ **oz** **Circuit 4 Charge:** _____ **lb** _____ **oz**

☐ **Did you dispose of the unit?** ***If checked, then complete this section.***

☐ Refrigerant Recovered ☐ Unit Tagged - "Refrigerant Recovered" Vacuum Level:

☐ 0 ☐ 10 ☐ 15 ☐ 28.2 Inches

Service Description Notes (optional):

Refrigerant	**Cylinder ID**	**Type**	**Condition**	**Quantity**
Recovered				**lb** **oz**
				lb **oz**
Added				**lb** **oz**
				lb **oz**
				lb **oz**
				lb **oz**

☐ **Did an accidental release of more than a "de minimis" amount occur?** ***If checked, then complete this section.***

Estimated Amount Released: _____ **lb** _____ **oz**

Description: _____

Leaks

Leak Notes: Exact location of leak and description of how repaired.

☐ Leak Found Date: _____

Leak Type: _____

☐ Leak Repaired Date: _____

☐ Initial Leak Verification Test Date: _____

Test done after repair, but before charging.

Method: _____

☐ Follow-up Verification Test Date: _____

Test done with unit running under normal load.

Method: _____

NREA Processing:

Date Received: _____ ☐ Entered in RCM

FAX TO AIR PROGRAM MANAGER AT (703) 784-4953 WITHIN 24 HOURS OF COMPLETION.

Appendix F
Construction Waste Management Report

NREA Rcvd:_____
FY Reporting Period:_____

Construction Waste Management Report
Quantico Marine Corps Base

Report Date: _____
Project Number: _____Project Name: _____
Contract Number: _____Contract Task Order/Delivery Order: _____
Reporting Period: _____ to _____

RETURN THIS FORM TO marilisa.porter@usmc.mil FAX (703) 784-6335
REPORTS MUST BE TURNED IN MONTHLY
ANNUAL TURNINS ARE CASE BY CASE ONLY

Comments: _____
_____

Waste Stream	Disposal (Tons)	Disposal Cost	Recycled (Tons)	Recycled Cost	Recycled Revenues
Landfill		$		$	$
Incinerated		$		$	$
Composted		$		$	$

For each landfill and/or incinerator, provide name, city, county, state and tipping fee. If there are multiple landfills, please annotate below on the additional lines provided.

_____
Name City, County, State Tipping Fee

_____
Name City, County, State Tipping Fee

_____
Name City, County, State Tipping Fee

_____
Name City, County, State Tipping Fee

Recycling Breakdown (Qty should add up to recycled tons)

Category	Tons
Food	
Glass	
Metals (Brass .50 cal and below)	
Metals (excluding brass)	
Other (non-food, describe in comments)	
Paper and Paperboard	
Cardboard	

Form created 11/2008, revised 8/18 by Marilisa Porter, Solid Waste Manager

NREA Rcvd:_____
FY Reporting Period:_____

Plastic	
Wood	
Yard/Green Waste	

Comments: _____

_____

CONSTRUCTION & DEMOLITION DEBRIS (C&D).

- Record hazardous and non-hazardous C&D waste as one entry. Enter total tons of C&D disposed of in a landfill, by incineration, and/or by hazardous waste contract.
- Enter total disposal cost for C&D.
- Enter the recycled hazardous and non-hazardous C&D tons as one entry under the recycling column. You can also claim C&D diversion conducted by a construction contractor or MILCON project. If you have recycled C&D, it is likely that some was disposed of as well. Therefore, if there are recycled tons of C&D there should be some disposed tons of C&D.
- Enter the cost associated with recycling. Recycling costs include handling, processing, transportation, and other costs associated with recycling C&D. Soils that are used at another location or that are reclaimed count toward recycling.
- Enter Recycling Revenues. Enter only actual revenues received from recycling. Do not enter cost avoidance for recycling revenues.

Reported by:
Company: _____ Contact: _____
Address: _____ Title: _____
_____ E-mail address: _____
Telephone: _____
Fax: _____

Definitions:

Construction and Demolition (C&D) Debris. Waste derived from the construction, renovation, demolition or deconstruction of residential and commercial buildings and their infrastructure. C&D waste typically includes concrete, wood, metals, gypsum wallboard, asphalt, and roofing material.

Other Select Waste (OSW). Construction and demolition debris are the "Other Select Waste" categories for purposes of DoD metric reporting via SW module. If the Other Select Wastes are hazardous they must also be reported in the calendar year HW module.

Appendix G
Stormwater Management Requirements

NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH
MCB QUANTICO, VIRGINIA

CHECKLIST FOR STORM WATER POLLUTION PREVENTION PLAN REVIEW FOR MCB QUANTICO CONSTRUCTION PROJECTS

Construction Project Name: _____ Submittal Date: _____

Reviewer: _____ Review Date: _____ Approved? YES ☐ NO ☐

A. Site Description	YES	NO	N/A
1. Description of the nature of the construction activity	☐	☐	☐
2. Existing data describing the soil or the quality of any discharge from the site	☐	☐	☐
3. A description of existing vegetation at the site	☐	☐	☐
4. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities including offsite borrow and fill areas covered by the plan	☐	☐	☐
5. Offsite material storage areas (also including overburden and stockpiles of dirt, borrow areas, etc.) where storm water discharges are authorized by this permit are considered a part of the project and shall be addressed in the plan	☐	☐	☐
5. An estimate of the runoff coefficient of the site prior to construction and after construction activities are completed	☐	☐	☐
6. The name of the receiving water(s) and the ultimate receiving water(s), and areal extent of wetland acreage at the site	☐	☐	☐
7. Are unique site features and sensitive (critical areas) addressed in the plan	☐	☐	☐
8. **Potential Sources of Pollution:**			
a. A description of any other potential pollution sources, such as vehicle fueling, storage of fertilizers or chemicals, sanitary waste facilities, etc.	☐	☐	☐
b. Current edition of the VA E&SC Law and Regulations, and the Va E&SC Handbook cited?	☐	☐	☐
c. Description of pollutant sources from areas other than the permitted construction activity (including storm water discharges from dedicated asphalt plants and dedicated concrete plants) that contribute to the permitted discharge	☐	☐	☐
9. Have endangered species on the project site been addressed in the plan	☐	☐	☐
10. Has the plan addressed historic preservation areas on the project site	☐	☐	☐
11. **A site plans that include:**			
a. North Arrow indicated on all pages	☐	☐	☐
b. drainage patterns and approximate slopes or contours for existing and proposed after major grading activities	☐	☐	☐
c. soil maps from USDA soil surveys and any soil boring locations shown with corresponding soil data	☐	☐	☐
d. areas of soil disturbance and areas of the site which will not be disturbed	☐	☐	☐
e. the location of major structural and nonstructural controls identified in the plan	☐	☐	☐
f. the location of areas where stabilization practices are expected to occur including the types of vegetative cover	☐	☐	☐
g. surface waters (including wetlands)	☐	☐	☐
h. locations where storm water is discharged to a surface water with an outline of the drainage area for each discharge point	☐	☐	☐
i. existing and planned paved areas and buildings and other impervious surfaces	☐	☐	☐
j. locations of permanent storm water management practices to be used to control pollutants in storm water after construction activities have been completed	☐	☐	☐
k. proposed land use(s) w/ calculation of percentage of surface area to used for the various uses	☐	☐	☐
l. locations of offsite material, waste, borrow or equipment storage areas covered by the plan	☐	☐	☐
m. locations of other potential pollution sources as described in 8. above	☐	☐	☐
10. The location and description of any discharge associated with industrial activity other than construction, including storm water discharges from dedicated asphalt plants and dedicated concrete plants, which is covered by this permit	☐	☐	☐

B. Controls

	YES	NO	N/A
1. A description of the intended sequence of major activities which disturb soils for major portions of the site (e.g. grubbing, excavation, grading, utilities and infrastructure installation)	☐	☐	☐

For ***each*** specific major activity, the plan will address the following:

2. **Structural Practices:**			
a. The plan shall include a description of structural practices to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable	☐	☐	☐
b. area with 3 or more acres at one time, a temporary (or permanent) sediment basin providing 3,618 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site	☐	☐	☐
c. For drainage locations serving less than 3 acres, smaller sediment basins or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips or equivalent sediment controls are required for all downslope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for 3,618 cubic feet of storage per acre drained is provided	☐	☐	☐
3. Stabilization Practices:			
a. Description of interim and permanent stabilization practices	☐	☐	☐
b. Site-specific scheduling of the implementation of the practices	☐	☐	☐
c. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized	☐	☐	☐
4. Slope Protection:			
a. Does the plan address slope protection (i.e. blankets, tackifiers, etc.) and include design specs and details for all slopes on the project	☐	☐	☐
b. Does the plan identify any critical slopes? If so, are they located on maps and described within the plan?	☐	☐	☐
5. Storm Drains:			
a. Has the plan addressed storm drains and stipulated how each type of drain on the site will be protected	☐	☐	☐
6. Perimeter Controls:			
a. Does the plan address structural practices (i.e. silt fence, fiber rolls, etc.) including design specifications and details to filter and trap sediment before it leaves the construction site	☐	☐	☐
b. The plan must address how offsite accumulations of sediment must be removed, at a frequency sufficient to minimize offsite impacts, if sediment escapes the construction site.	☐	☐	☐
7. Onsite sediment and dewatering retention:			
a. The plan must describe all control practices (i.e. sediment traps, basins), including design specifications and details (volume, dimensions, outlet structure) that will be implemented onsite	☐	☐	☐
b. The plan must describe how dewatering practices are to be conducted if water must be removed from from an area, while retaining the water onsite	☐	☐	☐
8. Construction Entrances/Exits:			
a. The plan must address the locations for all construction entrances/exits	☐	☐	☐
b. The plan must address procedures to remove accumulated sediment off-site (i.e. vehicle tracking) and stabilization practices (i.e. stone pads, wash racks, etc.) to minimize off-site tracking of sediments and discharges to storm water.	☐	☐	☐
c. The plan must contain a statement saying sediment tracked onto the roadway will be cleaned from the roadway each day	☐	☐	☐

C. Housekeeping

	YES	NO	N/A
1. Material Handling and Waste Management:			
a. The plan must address and describe measure for trash disposal, sanitary wastes, recycling, and proper handling of other materials to prevent discharge of solid materials	☐	☐	☐
b. Plan must contain a statement saying that no solid materials, including building materials, garbage, and debris shall be discharged to surface water of the state, except as authorized by a **CWA Section 404 permit**	☐	☐	☐
c. The plan must ensure and demonstrate compliance with applicable state or local waste disposal, sanitary sewer or septic system regulations	☐	☐	☐
d. Statement saying that litter, construction debris, and construction chemicals exposed to storm water shall be prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, picked up daily).	☐	☐	☐

C. Housekeeping (Continued)

	YES	NO	N/A
2. Building Material Staging Areas:			
A. Onsite:			
a. Description of construction and waste materials expected to be stored onsite with updates as appropriate	☐	☐	☐
b. Description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response	☐	☐	☐
B. Offsite:			
a. Description of construction and waste materials expected to be stored offsite with updates as appropriate	☐	☐	☐
b. Description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response	☐	☐	☐
3. Washout Areas (concrete, concrete mixers, paint, etc.):			
a. Washout areas must be designated in the plan and shown on the drawings	☐	☐	☐
b. Each area designated must address the controls necessary to minimize potential for storm water pollution	☐	☐	☐
4. Vehicle and Vehicle Fueling and Maintenance:			
a. Plan must address where vehicles/equipment will be stored and maintained as well as what maintenance practices would be implemented to control pollutants from entering storm water (secondary containment, drip pans, etc.)	☐	☐	☐
5. Vehicle and Equipment Washing:			
a. Plan must address the measures to be implemented to control pollutant discharges from washing activities	☐	☐	☐
b. Washing areas are depicted on the drawings	☐	☐	☐
6. Spill Prevention and Control Plan:			
a. Reduce chance of spills	☐	☐	☐
b. Stop the source of spills	☐	☐	☐
c. Contain and clean up spills	☐	☐	☐
d. Dispose of materials contaminated by spills	☐	☐	☐
e. Train personnel responsible for spill prevention	☐	☐	☐
7. Non-Storm Water Discharges:			
a. Except for flows from fire fighting activities, sources of non-storm water that are combined with storm water discharges from the construction site must be identified in the plan.	☐	☐	☐
b. The plan shall identify and ensure the implementation of appropriate pollution prevention measures and controls for the non-storm water component(s) of the discharge	☐	☐	☐

D. Post-Construction BMP's

	YES	NO	N/A
1. A description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur ***after*** construction operations have been completed	☐	☐	☐
2. LID should be incorporated into design	☐	☐	☐
3. Structural BMPs require design specifications and details	☐	☐	☐

E. Inspections and Maintenance

	YES	NO	N/A
Inspections:			
1. Inspections shall be conducted at least once every fourteen calendar days and within 48 hours of the end of a storm event that is 0.25 inches or greater	☐	☐	☐
2. Inspection reports shall included:			
a. name(s) and qualifications of personnel making the inspection, and the date(s) of the inspection	☐	☐	☐
b. major observations relating to the implementation of the SWPP plan	☐	☐	☐
c. the location(s) of discharges of sediment or other pollutants from the site	☐	☐	☐
d. location(s) of BMPs that need to be maintained	☐	☐	☐
e. location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location	☐	☐	☐
f. location(s) where additional BMPs are needed that did not exist at the time of inspection	☐	☐	☐
g. Incidents of noncompliance	☐	☐	☐
h. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit	☐	☐	☐
i. Signature	☐	☐	☐
3. Statement saying that if periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the permittee must replace or modify the control for site situations	☐	☐	☐

E. Inspections and Maintenance (Contiuned)

	YES	NO	N/A
Maintenance:			
4. Description and schedule of procedures to maintain in good and effective operating conditions vegetation, erosion and sediment control measures and other protective measures during construction identified in the site plan	☐	☐	☐
5. If site inspections identify BMPs that are not operating effectively, maintenance shall be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of storm water controls	☐	☐	☐
6. Statement saying that sediment must be removed from sediment traps, sedimentation ponds and all other sediment trapping devices when design capacity has been reduced by 50%.	☐	☐	☐
7. Corrective Action Log:			
a. Describes repair, replacement, and maintenance of BMPs undertaken based on inspections and maintenance procedures	☐	☐	☐
b. Section for actions related to the findings of inspections reference specific inspection report	☐	☐	☐
c. Section on log for actions taken, date completed and note the person that was responsible for work	☐	☐	☐

F. Recordkeeping and Training

	YES	NO	N/A
1. Recordkeeping:			
a. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained and included in the plan	☐	☐	☐
b. Statement saying that VSMP Construction General Permit must be kept onsite at all times	☐	☐	☐
c. Copy of the signed fee form and permit application form	☐	☐	☐
d. Copy of approved VSMP permit and number must be kept onsite at all times	☐	☐	☐
e. Log book of completed RLD inspection reports	☐	☐	☐
f. Records relating to endangered species and historic preservation	☐	☐	☐
8. Changes to SWPPP:			
a. Log created for changes and updates to the SWPPP	☐	☐	☐
i. Addition of new BMPs	☐	☐	☐
ii. Replacement of failed BMPs	☐	☐	☐
iii. Significant changes in activity or timing of BMPs	☐	☐	☐
iv. Changes in personnel	☐	☐	☐
v. Changes in inspection/maintenance procedures	☐	☐	☐
vi. Updates to site maps	☐	☐	☐
9. Training:			
a. Training log for staff and subcontractors who have storm water responsibilities (installing, inspecting, maintaining), which contains:	☐	☐	☐
i. Date of training	☐	☐	☐
ii. Number and names of attendees	☐	☐	☐
iii. Subjects covered	☐	☐	☐
iv. Length of training	☐	☐	☐

G. Final Stabilization

	YES	NO	N/A
1. Procedures for final stabilization outlined	☐	☐	☐
2. Statement describing final stabilization as 90% uniform coverage across the entire site, ability to inhibit erosion and mature enough to survive, including two (2) – 3 inch cuttings	☐	☐	☐
3. Statement saying once NREA Water Program has approved the site as permanently stabilized, contractor shall complete the Notice of Termination (NOT) form and return it to NREA. NREA will forward all applicable information to the state for permit termination.	☐	☐	☐

H. Hydrologic and Hydraulic Analysis

	YES	NO	N/A
1. Site map with locations of design points and drainage areas (size in acres) for runoff calcuations	☐	☐	☐
2. Description of water quantity and quality compliance strategy	☐	☐	☐
3. VRRM sheets provided	☐	☐	☐
4. Time of Concentration (and associated flow paths)	☐	☐	☐
5. NRCS runoff curve numbers and runoff coefficients	☐	☐	☐
6. Hydrologic analysis for existing conditions – runoff rates, volumes & velocities – methods used and calculations	☐	☐	☐
7. Hydrologic analysis for proposed conditions – runoff rates, volumes & velocities – methods used and calculations	☐	☐	☐

H. Hydrologic and Hydraulic Analysis (Continued)

	YES	NO	N/A
8. Hydrologic and hydraulic analysis of the stormwater management system for all applicable storms	☐	☐	☐
9. Pollution load and load reduction requirements and calculations (VRRM sheets)	☐	☐	☐
10. Stormwater control measures are properly sized and designed	☐	☐	☐
11. Downstream analysis and impact/effects of the project provided	☐	☐	☐
12. Cross-section and profile drawings/details of stormwater control measures and conveyances include the following:			
a. Existing and proposed structural elevations (i.e. pipe inverts, manholes, etc.)	☐	☐	☐
b. Design surface water elevations	☐	☐	☐
c. Structural details of BMP designs, outlet structures, embankments, spillways, conveyance channels, etc.	☐	☐	☐

I. Certification

	YES	NO	N/A
1. Certification page signed and dated by appropriate contractor personnel	☐	☐	☐
2. Are the plans stamped by a licensed professional engineer	☐	☐	☐

NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH

MCB QUANTICO, VIRGINIA

CHECKLIST FOR LID (Low Impact Development) PLAN REVIEW

FOR MCB QUANTICO CONSTRUCTION PROJECTS

Construction Project Name: Review Date/Time:

Reviewer: Title: Approved? YES ☐ NO ☐

	Yes	No	N/A
1. Do the LID features designed reduce the hydrologic impact of development and maintain or restore the sites hydrologic and hydraulic function?	☐	☐	☐
2. LID site design strategies (check all that apply):			
a. Grading to encourage sheet flow and lengthen flow paths	☐	☐	☐
b. Maintaining natural drainage divides to keep flow paths dispersed	☐	☐	☐
c. Disconnecting impervious areas such as pavement and roofs from the storm drain network, allowing runoff to be conveyed over pervious areas instead	☐	☐	☐
d. Preserving the naturally vegetated areas and soil types that slow runoff, filter out pollutants, and facilitate infiltration	☐	☐	☐
e. Directing runoff into or across vegetated areas to help filter runoff and encourage recharge	☐	☐	☐
f. Providing small-scale distributed features/devices that help meet regulatory and resource objectives	☐	☐	☐
g. Treating pollutant loads where they are generated, or prevent their generation	☐	☐	☐
3. Are the LID features designed site applicable (i.e. size of drainage area, available storage, land use, soil type, slope, vegetative cover, etc.)?	☐	☐	☐
4. Are pre-construction and post-construction calculations and data included in design	☐	☐	☐
5. Estimated Cost for LID features in design $_____			

Individual Design Components:

1. Does the LID design provide for the conservation of natural areas ☐ ☐ ☐
2. Does the LID design provide minimization of development impacts ☐ ☐ ☐
3. Does the LID design control the watershed timing and runoff patterns ☐ ☐ ☐
4. Does the LID design use Integrated Management Practices (IMPs) ☐ ☐ ☐
5. Does the LID design provide for pollution prevention ☐ ☐ ☐
6. Does the LID design provide for O&M procedures for each LID practice in the site plan ☐ ☐ ☐

LID Features Used In Design (check all that apply):

a. Soil Amendments ☐ qty. _____
b. Bioretention ☐ qty. _____
c. Dry Wells ☐ qty. _____
d. Filter Strips ☐ qty. _____
e. Vegetated Buffer ☐ qty. _____
f. Grassed Swales ☐ qty. _____
g. Infiltration Trenches ☐ qty. _____
h. Inlet Devices ☐ qty. _____
i. Rain Barrels ☐ qty. _____
j. Cisterns ☐ qty. _____
k. Tree Box Filters ☐ qty. _____
l. Vegetated Roofs ☐ qty. _____
m. Permeable Pavers ☐ qty. _____
n. Permeable Pavement ☐ qty. _____

NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH
MCB QUANTICO, VIRGINIA

CHECKLIST FOR EROSION & SEDIMENTATION CONTROL (E&SC) PLAN REVIEW FOR MCB QUANTICO CONSTRUCTION PROJECTS

Construction Project Name: Submission Date:

Reviewer: Title: Review Date:

A. PROJECT NARRATIVE REQUIREMENTS	YES	NO	N/A
1. **Proper Certifications provided:**			
a. Is an RLD named and valid certificate provided?	☐	☐	☐
b. Are plans stamped by a Certified Professional Engineer?	☐	☐	☐
2. **Project Description:**			
a. Nature and purpose of land disturbance described?	☐	☐	☐
b. Land area (in acres) to be disturbed specified in the narrative?	☐	☐	☐
3. **Existing Site Conditions:** Description of existing topography, drainage, and vegetation provided?	☐	☐	☐
4. **Adjacent Areas:** Description of neighboring areas which might be affected by the land disturbance provided?	☐	☐	☐
5. **Off-Site Areas:** Description of any off-site land disturbing activities (borrow pit, waste, surplus, etc.) provided?	☐	☐	☐
6. **Soils:** Brief description of the soils on the site giving such information as soil name, mapping unit, erodibility, permeability, depth, texture and soil structure provided?	☐	☐	☐
7. **Critical Areas:** Description of areas on the site that are potential erosion problems (steep slopes, channels, underground springs) provided?	☐	☐	☐
8. **Erosion and Sedimentation Control Measures:**			
a. Current edition of the VA E&SC Law and Regulations, and the Va E&SC Handbook cited?	☐	☐	☐
b. Enumerated description of methods which will be used to control E&SC on the site provided?	☐	☐	☐
c. Cited the maintenance and use of current VESCHB & approved E&SC plan at job site?	☐	☐	☐
9. **Permanent Stabilization:**			
a. Brief description, including specifications, of how the site will be stabilized provided?	☐	☐	☐
b. Statement describing permanent stabilization as 90% uniform growth on entire site, ability to inhibit erosion and mature enough to survive, including two (2) – 3 inch cuttings	☐	☐	☐
10. **Stormwater Runoff Considerations:**			
a. Increase of peak runoff resulting from site development determined?	☐	☐	☐
b. Flooding or downstream channel degradation as a result of runoff increase determined?	☐	☐	☐
c. Description of strategy used to control stormwater runoff provided?	☐	☐	☐
11. **Calculations:**			
a. Calculations for pre- and post-development runoff provided?	☐	☐	☐
b. Detailed calculations for the design of temp sediment basins, perm storm detention basins, diversions, channels, etc. provided?	☐	☐	☐
12. **Maintenance:** A plan or schedule of regular inspections and repair of E&SC devices described? Plan should stipulate that all E&SC devices shall be inspected every 14 calendar days and within 48 hours of a rainfall event of 0.5" or greater	☐	☐	☐

B. SITE PLAN REQUIREMENTS	YES	NO	N/A
1. **Vicinity Map:**			
a. Is a small map showing the site location in relation to surrounding area included in the drawings?	☐	☐	☐
b. Land area (in acres) to be disturbed included in the drawings?	☐	☐	☐
2. **North Arrow:** Is North arrow shown on all pages of E&SC drawings?	☐	☐	☐
3. **Limits of Clearing and Grading:** Are areas to be cleared and/or graded marked?	☐	☐	☐

B. SITE PLAN REQUIREMENTS (Continued)

	YES	NO	N/A
4. **Existing Contours:**			
a. Existing contours on site shown?	☐	☐	☐
b. Existing contours at offsite areas which will affected by the land disturbance shown?	☐	☐	☐
5. **Final Contours:**			
a. Changes to the existing contours shown?	☐	☐	☐
b. Final drainage patterns shown?	☐	☐	☐
6. **Existing Vegetation:** Existing tree lines, grassed areas, or unique vegetation shown?	☐	☐	☐
7. **Soils:** Boundaries of soil types shown?	☐	☐	☐
8. **Existing Drainage Patterns:**			
a. Drainage divides and respective direction of flow shown?	☐	☐	☐
b. Area (in acres) of each drainage divide shown?	☐	☐	☐
9. **Critical Erosion Areas:** Per Chapter 6 of VESCH, are potentially serious erosion areas shown?	☐	☐	☐
10. **Site Development:** Are all site developments such as buildings, parking lots, access roads, utility construction, storm sewer system, final drainage, etc. shown?	☐	☐	☐
11. **Location of Practices:** Locations of E&SC and stormwater management practices used on site shown?	☐	☐	☐
12. **Off-site Areas:**			
a. Any off-site land disturbing activities identified?	☐	☐	☐
b. Adequate E&SC measures, protection, or stabilization shown?	☐	☐	☐
13. **Detail Drawings:** All detail drawings of E&SC devices not referenced to the VESCH explained and/or illustrated?	☐	☐	☐
14. **Minimum Standard Requirements (Per 4VAC50-30-40)**			
MS-1 Has temp or perm stabilization of denuded areas been addressed in the narrative? Seeded? Yes / No Mulched? Yes / No Graveled? Yes / No	☐	☐	☐
MS-2 Has stabilization of soil stockpiles been addressed with seeding and/or sediment trapping devices?	☐	☐	☐
MS-3 Has maintenance of permanent stabilization been addressed?	☐	☐	☐
MS-4 Will all sediment trapping devices be constructed and functional as first step in LDA?	☐	☐	☐
MS-5 For perimeter sediment trapping devices, has stabilization of earthen structures been addressed?	☐	☐	☐
MS-6 Are adequate sediment traps and/or basins required where needed?	☐	☐	☐
MS-7 Has stabilization of cut and fill slopes been adequately addressed?	☐	☐	☐
MS-8 Are paved flumes, channels, or slope drains required where necessary?	☐	☐	☐
MS-9 Has adequate stabilization or protection of surface roughening, outlets, etc. been addressed?	☐	☐	☐
MS-10 Has adequate protection of all operational storm sewer inlets been addressed?	☐	☐	☐
MS-11 Are channel lining or outlet protection adequate for stormwater conveyance channels?	☐	☐	☐
MS-12 Are in-stream construction measures adequately addressed to minimize channel damage?	☐	☐	☐
MS-13 Are temporary stream crossings of non-erodible materials planned for installation where applicable?	☐	☐	☐
MS-15 Has restabilization of areas subject to in-stream construction been adequately addressed?	☐	☐	☐
MS-16 Is stabilization of utility trenches adequately addressed?	☐	☐	☐
MS-17 Is the transport of soil and mud onto public roadways adequately addressed with applicable measures?	☐	☐	☐
MS-18 Has removal of all temp control devices been addressed?	☐	☐	☐
Has maintenance of all control devices been addressed?	☐	☐	☐
MS-19 Are properties and waterways downstream adequately protected from erosion and sediment deposition due to increases in peak runoff?	☐	☐	☐

C. CONCLUSION: ☐ **E&SC Plan Approved** ☐ **E&SC Plan Disapproved**

D. GENERAL JUSTIFICATION/S:

- ☐ The E&SC Plan does not meet the 19 Minimum Standards of the VESCH.
- ☐ Verbiage in the E&SC Narrative is either inadequate or insufficient, or both.
- ☐ Details of E&SC measures on construction drawings (Site Plan) is either inadequate or insufficient, or both.
- ☐ Other (comment/s shown below)

E. COMMENTS:

Reviewer's Signature:_____
Email:_____
Phone:_____

Total Area Disturbed: _____

Anticipated Start Date: _____

Contractor Information: _____
(Address, Phone, etc.) _____

Contractor POC: _____
Email:_____
Phone: _____

Contractor RLD: _____
Email:_____
Phone: _____

MCBQ FEAD POC(s): _____
Email:_____
Phone: _____