

ENVIRONMENTAL ASSESSMENT
FOR
THE ESTABLISHMENT OF A PLATOON ATTACK RANGE IN TRAINING AREAS
(TA) 10A, 10C AND 15B
AT
MARINE CORPS BASE QUANTICO,
PRINCE WILLIAM COUNTY, VIRGINIA
STAFFORD COUNTY, VIRGINIA



NCR

National Environmental Policy Act (NEPA) Program,
Environmental Planning Section
Natural Resources and Environmental Affairs Branch
Installation and Environment Division
Marine Corps Base Quantico, Virginia



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Title of Proposed Action: The Establishment of a Platoon Attack Range
in TAs 10A,10C and 15B
Project Location: Marine Corps Base Quantico, Virginia
Lead Agency for the EA: United States Marine Corps
Action Proponent: Marine Corps Base, Quantico, VA and The Basic School (TBS)

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This Environmental Assessment (EA) is intended to meet NEPA requirements to establish a Platoon Attack Range in TAs 10A, 10C and 15B. The No Action Alternative (Alternative A) and the Action Alternative (Alternative B) were evaluated. Alternative A would have no adverse effects on cultural/natural resources or human health and the environment as the status quo would be maintained.

Alternative B - The Establishment of a Platoon Attack Range in TAs 10A, 10C and 15B would involve thinning and clearing 242 acres. Alternative B would also involve the establishment of a 1 mile, 50 foot wide, firebreak and the improvement of Muddy Road (Rd.). There would be no significant impacts to land use, water resources, biological resources, air quality, noise, infrastructure, traffic, socioeconomic, hazardous waste or cultural resources. Temporary water quality impacts associated with soil disturbance resulting from tree and vegetation removal as well as road improvement activities, would 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).

Alternative B is the preferred action and, if the stated mitigation measures are executed, would not have significant impacts on the human environment.

Table of Contents

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION	5
1.1 Introduction	5
1.2 Background	5
1.3 Location	6
1.4 Purpose of and Need for the Proposed Action	6
1.5 Scope of Environmental Analysis	6
1.6 Key Documents	7
1.7 Relevant Laws and Regulations	7
1.8 Public and Agency Participation and Intergovernmental Coordination	8
2.0 PROPOSED ACTION AND ALTERNATIVES	8
2.1 Proposed Action	9
2.2 Alternatives Carried Forward for Analysis	9
2.2.1 No Action Alternative - Alternative A	9
2.2.2 Action Alternative - Alternative B.	9
Figure 2.2.1	10
Figure 2.2.2	11
3.0 Affected Environment	12
3.1 Air Quality	13
3.1.1 Regulatory Setting	13
3.2 Water Resources	19
3.2.1 Regulatory Setting	20
3.2.2 Affected Environment	21
Figure 3.2.1	23
Figure 3.2.2	24
Figure 3.2.3	25
Figure 3.2.2.4.1	30
3.3 Geological Resources	31
3.3.1 Affected Environment	31
Figure 3.3.1.1	32
3.4 Cultural Resources	35
3.4.1 Regulatory Setting	36
3.4.2 Affected Environment	36
3.5 Biological Resources	36
3.5.1 Regulatory Setting	37
3.5.2 Affected Environment	38
Figure 3.5.2.1	40
3.6 Land Use	42
3.6.1 Regulatory Setting	42
3.6.2 Affected Environment	42
3.7 Military Training and Airspace	43

3.7.1	Affected Environment	43
3.7.3	Surface Danger Zone (SDZ)	44
Figure 3.7.3.1	45
3.7.4	Airspace	46
Figure 3.7.4.1	47
3.8	Noise	48
3.8.1	Basics of Sound and A-Weighted Sound Level	48
3.8.2	Regulatory Setting	50
3.8.3	Affected Environment	51
3.9	Infrastructure	51
3.9.1	Regulatory Setting	52
3.9.2	Affected Environment	52
3.10	Transportation	53
3.10.1	Regulatory Setting	53
3.10.2	Affected Environment	53
3.11	Public Health and Safety	53
3.12.	Regulatory Setting	54
3.13	Hazardous Materials and Wastes	54
3.13.1	Regulatory Setting	55
3.13.2	Affected Environment	57
4.0	ENVIRONMENTAL CONSEQUENCES.....	57
4.1	Air Quality	57
4.1.1	Alternative A - No Action	57
4.1.2	Alternative B.	58
4.2	Water Resources	60
4.2.1	Alternative A - No Action	60
4.2.2	Alternative B	60
4.3	Geological Resources	61
4.3.1	Alternative A - No Action	61
4.3.2	Alternative B	61
4.4	Cultural Resources	62
4.4.1	Alternative A - No Action	62
4.4.2	Alternative B	62
4.5	Biological Resources	63
4.5.1	Alternative A - No Action	64
4.5.2	Alternative B	64
4.6	Land Use	65
4.6.1	Alternative A - No Action	65
4.6.2	Alternative B	65
4.7	Military Training and Airspace	65
4.8.1	Alternative A - No Action	66
4.8.2	Alternative B	66
4.8	Noise	66
4.8.1	Alternative A - No Action	66
4.8.2	Alternative B	67
Figure 4.8.2.1	69
Figure 4.8.2.2	70

4.9 Infrastructure	71
4.9.1 Alternative A - No Action	71
4.9.2 Alternative B	71
4.10 Transportation	71
4.10.1 Alternative A - No Action	71
4.10.2 Alternative B	71
4.11 Public Health and Safety	72
4.11.1 Alternative A - No Action	72
4.11.2 Alternative B	72
4.12 Hazardous Materials and Wastes	73
4.12.1 Alternative A - No Action	73
5.0 Cumulative Impacts	73
5.1 Definition of Cumulative Impacts	73
5.2 Scope of Cumulative Impacts Analysis	74
5.3 Past, Present, and Reasonably Foreseeable Actions	75
5.3.1 Past Actions	75
5.3.2 Present and Reasonably Foreseeable Actions	76
5.3.3 Future projects:	76
5.4 Cumulative Impact Analysis	76
Figure 5.4.1	78
Figure 5.4.2	79
6.0 Other Considerations Required By NEPA	79
6.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations	79
6.2 Irreversible or Irretrievable Commitments of Resources	81
6.3 Unavoidable Adverse Impacts	82
6.4 Relationship Between Short-Term Use of the Environment and Long-Term Productivity	82
7.0 References	82
8.0 List of Preparers	85
9.0 List of Agencies and Persons Contacted	85

Appendices

Appendix A:	List of Acronyms
Appendix B:	Soil Maps
Appendix C:	National Historic Preservation Act Section 106 Documentation
Appendix D:	Endangered Species Act Documentation
Appendix E:	Air Quality Methodology and Calculations
Appendix F:	Construction Waste Management Report
Appendix G:	Timber Appraisal

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

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) P5090.2A Ch. 3, 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 Establishment of a Platoon Attack Range in TAs 10A, 10C and 15B, 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 Introduction

Marine Corps Base Quantico (MCBQ), a Command of the United States Marine Corps (USMC) and The Basic School (TBS) proposes to establish a Platoon Attack Range within TAs 10A, 10C and 15B. The range is expected to be completed by 2022. A section of Muddy Rd. will be improved and a one mile long firebreak will also be established around the range.

1.2 Background

The objective of TBS is to train and educate newly commissioned or appointed officers in the high standards of professional knowledge, spirit-de-corps, and leadership to prepare them for duty as company grade officers in the operating forces, with particular emphasis on the duties, responsibilities, and warfighting skills required of a rifle platoon commander. The proposed action would require thinning and clearing of 242 acres (See Figures 2.2.1 and 2.2.2). Clearing of timber would occur around the six small designated objectives (targets) however the remainder of the proposed Platoon Attack Range footprint would be thinned. The proposed action also involves the improvement

of a section of Muddy Rd. that is located within the proposed range footprint as well as the establishment of a one mile firebreak. Including the firebreak, the combined area of disturbance will be 272 acres. The federal government will be reimbursed for the full market value of any merchantable timber removed from the project footprint.

1.3 Location

The Platoon Attack Range would be established near the intersection of State Route (SR)-617 (Blackrock Rd.) and Marine Corps Base (MCB)-6 within TAs 10A, 10C and 15B at MCBQ. The proposed action would be implemented within Prince William and Stafford Counties in Virginia (See Figures 2.2.1 and 2.2.2).

1.4 Purpose of and Need for the Proposed Action

The purpose of the proposed action is to provide a Platoon Attack Range dedicated specifically for the use of Marine Corps Platoons from TBS and other units as needed. Currently, Marine platoons from TBS are utilizing Range 11 as a Platoon Attack Range. Generally, Range 11 is utilized between 130-140 times each year for a combined 1,889 hours. 651 of those hours are utilized for live-fire training. The range was only designed for use as a squad range in both size and capacity. A Marine Corps squad generally consists of 12 Marines and is led by a sergeant whereas a Marine Corps platoon consists of approximately 36 Marines and is led by a lieutenant. The size requirement for a Platoon Attack Range is 500 meters wide by 1,000 meters deep. Additionally, TBS platoons are generally larger than the standard Marine platoon which makes the constrained nature of the range more challenging while also potentially creating safety hazards. As a result, the range has become overcrowded and is no longer adequately able to effectively support training as well as readiness. MCBQ and TBS have attempted to look at other ranges within their inventory but none of those ranges meet the necessary size requirements for a Platoon Attack Range. None of the current ranges at MCBQ can be expanded due to terrain limitations and negative impacts on other ranges.

1.5 Scope of Environmental Analysis

This EA includes an analysis of potential environmental impacts associated with the action alternatives 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, visual resources, military training and airspace, noise, infrastructure, transportation, public health and safety, hazardous materials and waste, socioeconomic, and environmental justice.

1.6 Key Documents

- Atkins (2015). Marine Corps Base Quantico Master Plan Update. The Louis Berger Group.
- 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. (2012). Range Complex Management Plan, Marine Corps Base Quantico. Washington D.C.
- Virginia Tech Conservation Management Institute (VTCMI) 2017. 2017 Bat Survey for U.S. Marine Corps Base Quantico, Virginia Blacksburg, Virginia.

1.7 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.)
- 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 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks

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 6.0 (Table 6-1).

1.8 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 as well as 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.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

MCBQ and TBS proposed thinning and clearing 242 acres of timber to establish a Platoon Attack Range in TAs10A, 10C and 15B. Six small areas where objectives (targets) are going to be located will be established by clearing while the majority and remainder of the footprint will be thinned. The new range will allow platoons to effectively support mission and readiness. A section of Muddy Rd. would be improved and a one mile long, 50 ft. wide, 30 acre firebreak will be established around the range.

2.2 Alternatives Carried Forward for Analysis

2.2.1 No Action Alternative - Alternative A

Under the No Action Alternative, the proposed action would not occur. Platoons would continue to train on Range 11 at very high levels despite being constrained by its limitations. No vegetation removal would occur, Muddy Rd. would not be improved and a one mile, 50 ft. wide, 30 acre firebreak would not be established. The No Action Alternative would not meet the purpose and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA.

2.2.2 Action Alternative - Establishment of a Platoon Attack Range in TAs10A, 10C and 15B - Alternative B.

Under the Action Alternative, a 242 acre Platoon Attack Range would be established in TAs10A, 10C and 15B near the intersection of MCB-6 and SR-617 (Blackrock Rd.) Marine platoons from TBS would no longer be crowded on a squad range and would have adequate training space as well as time to support mission and readiness. Any safety issues pertaining to platoons training on a squad range would be eliminated. A one mile long, 50 ft. wide, 30 acre firebreak would be established to encircle the range. A section of Muddy Rd. will also be improved. The proposed action is illustrated in Figures 2.2.1 and 2.2.2 below.

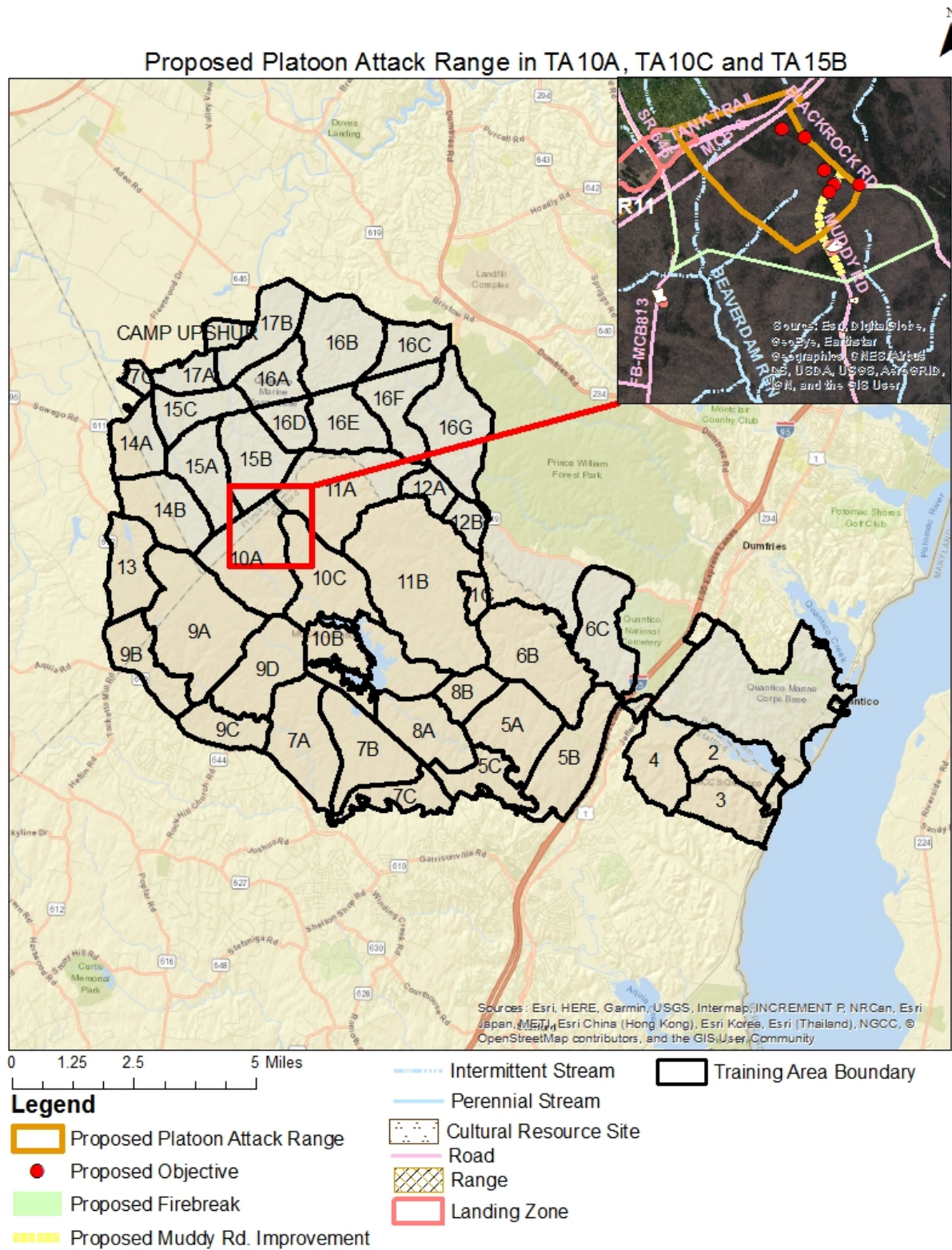


Figure 2.2.1

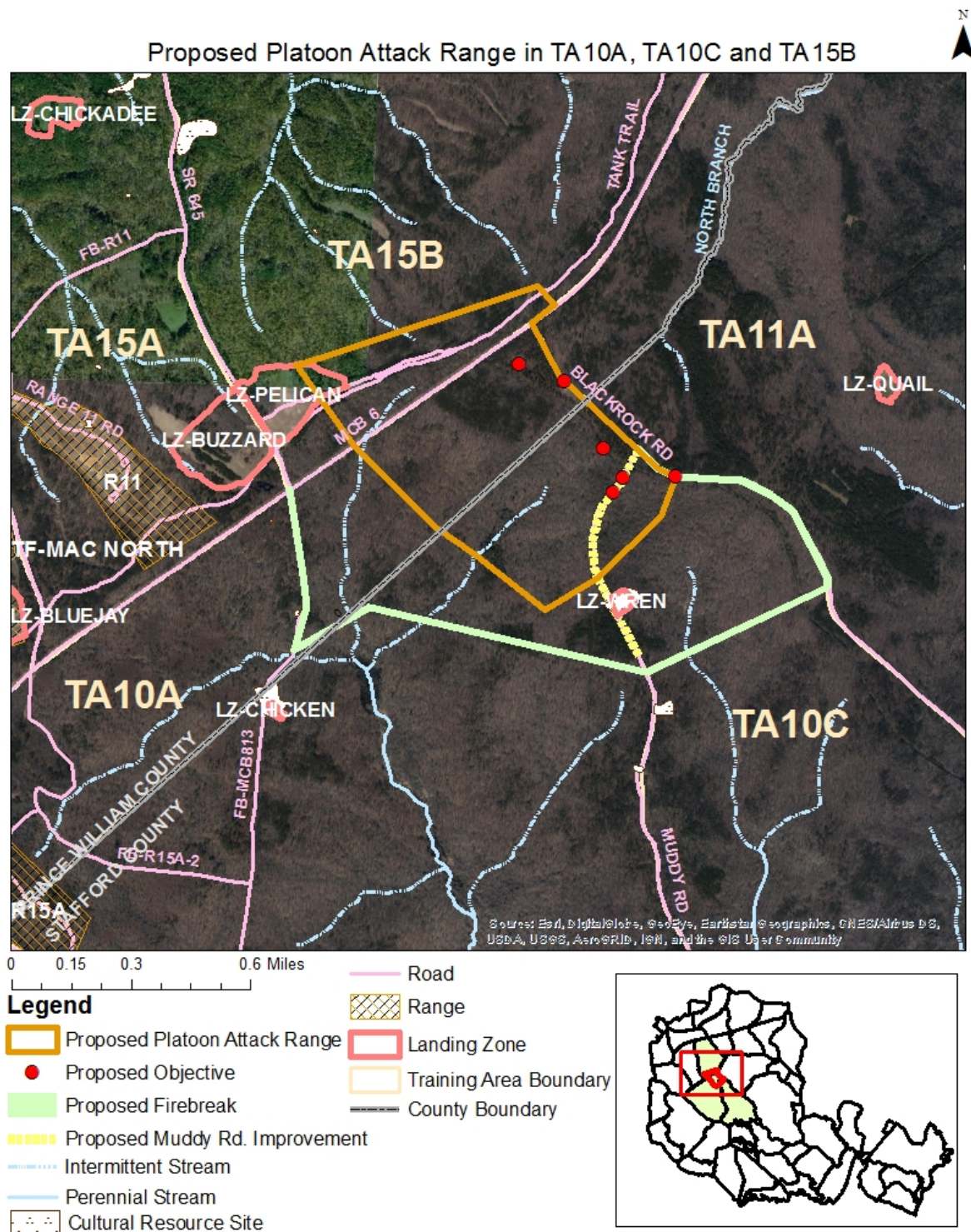


Figure 2.2.2

3.0 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, visual resources, military training and airspace, noise, infrastructure, transportation, public health and safety, hazardous materials and wastes, socioeconomics, and environmental justice.*

The potential impacts to the following resource areas are considered to be negligible or non-existent so they were not analyzed in detail in this EA:

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 of the establishment of the Platoon Attack Range in TAs10A, 10C and 15B. Although there will be clearing around the objectives, the remainder of the footprint will be thinned. The majority of the landscape will remain forested and will not be converted to an urban landscape. As a result, visual resources will not be impacted by the proposed action and are not analyzed within this EA.

Environmental Justice:

USEPA defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (USEPA 2014).

Executive Order (EO) 12898, *Federal Actions to address Environmental Justice in Minority Populations and Low-income*

Populations, was issued in 1994. This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these groups. The proposed action will not involve effects specific to minority or low-income populations.

EO 13045, *Protection of Children from Environmental Health and Safety Risk*, was issued in 1997. This order requires agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children.

The proposed action is confined well within the boundaries of MCBQ. After the establishment of the Platoon Attack Range any impacts that will be generated will be confined within the base and are associated with existing training that is already occurring. Marine units are not being added to MCBQ and platoon training is simply being relocated from Range 11 to the new range within the confines of MCBQ. As a result, Environmental Justice was not analyzed in detail.

Socioeconomics:

The proposed action is not located near the boundary of the base. There are no sensitive receptors such as schools, homes or businesses that will be impacted by tree removal. After the Platoon Attack Range is established, the only activity that will occur is training and the activity will simply be relocated from an existing range on the base to a new location. As a result, no socioeconomic impacts will occur as a result of the proposed action.

3.1 Air Quality

3.1.1 Regulatory Setting

3.1.1.1 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 (SO₂), 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. The location of the proposed action is within the Metropolitan Washington (DC) Region. Prince William County has been designated as a non-attainment area for the 8-hour ozone NAAQS whereas Stafford County is in attainment for the 8-hour ozone NAAQS. Both Prince William and Stafford Counties are in attainment for PM_{2.5}. NO_x and volatile organic compounds (VOCs) are precursors to ozone formation and are regulated to control ozone pollution.

3.1.1.2 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 for both Stafford and Prince William counties 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.

3.1.1.3 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 Platoon Attack Range would be established within Prince William and Stafford Counties. Stafford County is in attainment for ozone whereas Prince William County is in non-attainment.

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.

3.1.1.5 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 (CO₂), methane (CH₄), 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 (CO₂e) 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 CO₂e 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 CO₂e 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 CO₂e 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 CO₂e or more, and the Title V threshold for GHGs is 100,000 TPY of CO₂e 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 CO₂e or more.

Ozone Depleting Substances

Title VI of the CAA regulates the manufacture and use of ozone depleting substances (ODS) typically found in certain refrigerants, fire extinguishers, and consumer products. Work on equipment containing ODS must be performed only by technicians who are certified through an EPA accredited course. 40 C.F.R. part 82 requires strict production, consumption, recycling, and emission reduction programs.

The base operates a number of heating, ventilation, and air conditioning (HVAC) units that use ODS.

Virginia SIP Regulations

Virginia's SIP includes a number of broadly applicable regulations as well as process-specific regulations for existing sources intended to ensure continued progress towards attainment of all NAAQS.

Cutback asphalt is prohibited except when stockpile storage greater than one month is necessary, when used or applied during the months of November through March, or when used or applied as a penetrating prime or tack coat, as per 9 VAC 5-45, Article 7 of VDEQ's air pollution regulations.

Traffic making is limited to 150 grams/Liter of VOC per 9 VAC 5-45, Article 5: Emission Standards for Architectural and Industrial Maintenance Coatings. Building coatings must conform to Table 45-5A in the same rule. Additionally, adhesives and sealants must conform to the limits in Table 45-6A in 9 VAC 5-45, Article 6.

3.2 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 3.5, 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 USEPA and 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 and provide a basis for comparing the locale of the Proposed Action to the floodplains.

3.2.1 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.

3.2.2 Affected Environment

3.2.2.1 Groundwater

The Potomac Aquifer extends from New Jersey in the north, to North Carolina in the south, and eastward under the Chesapeake Bay. The MCBQ lies within this aquifer. 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.

3.2.2.2 Surface Water

Two intermittent streams that are tributaries of Beaverdam Run occur on the western section of the proposed action location. Another intermittent stream crosses the proposed firebreak near Muddy Rd. These surface waters are illustrated in Figure 2.2.2. The proposed Platoon Attack Range, proposed firebreak and Muddy Rd. improvements are located with both the Beaverdam Run and Cedar Run Watersheds. The Beaverdam Run Watershed, which occupies a total of 12,084 acres, is located in the south central section of MCBQ. The Cedar Run Watershed comprises a total of 12,952 acres and occupies much of the northern section of MCBQ. The Beaverdam Run and Cedar Run watersheds are part of the Potomac River Watershed that 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 and 3.2.3.

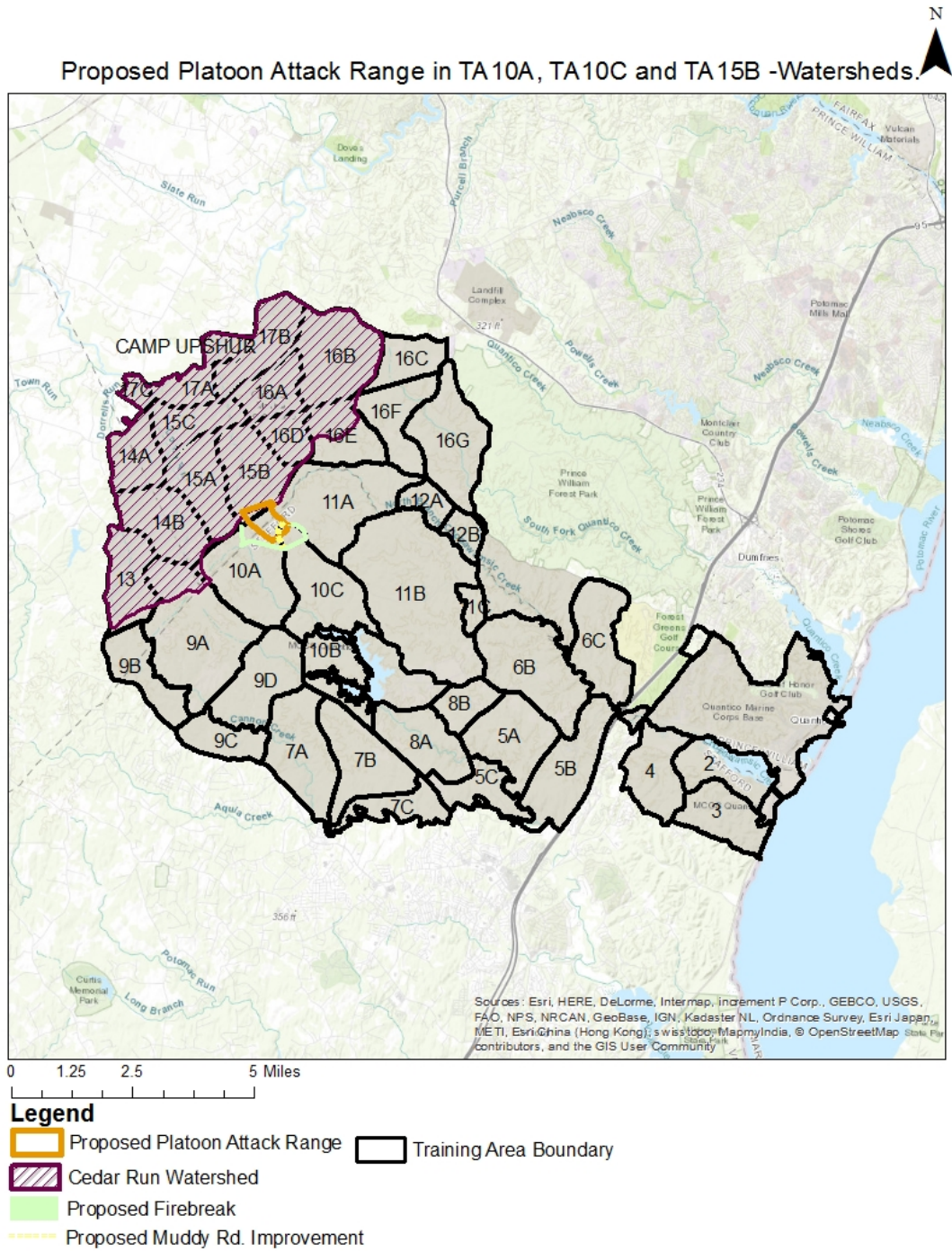


Figure 3.2.2

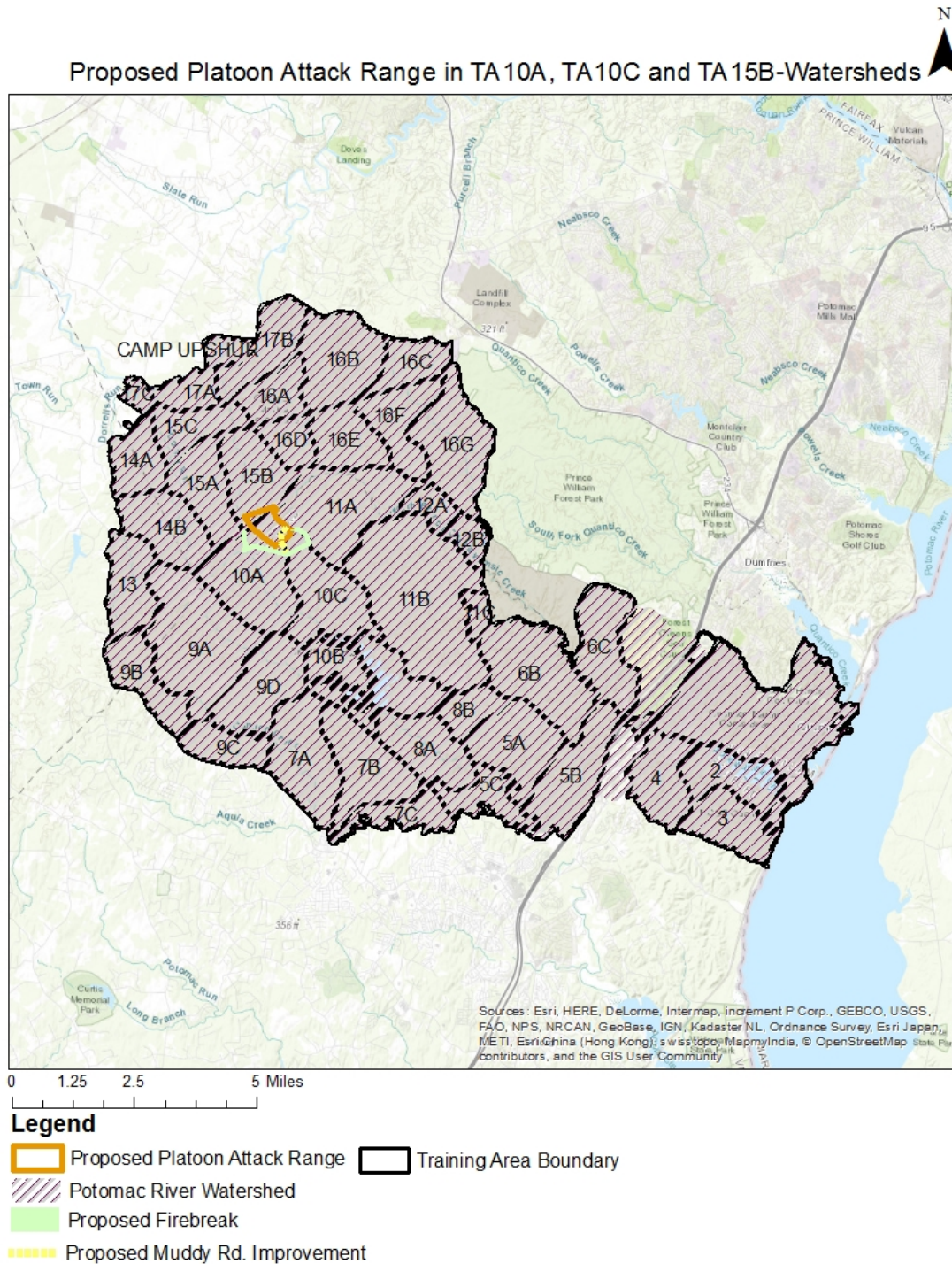


Figure 3.2.3

3.2.2.3 Wetlands

Wetlands are located along Beaverdam Run and one of its tributaries near both the proposed Platoon Attack Range location

and the proposed firebreak in the western area (See Figure 2.2.2). No wetlands are located within the proposed action footprint and associated improvements (See Figure 2.2.2).

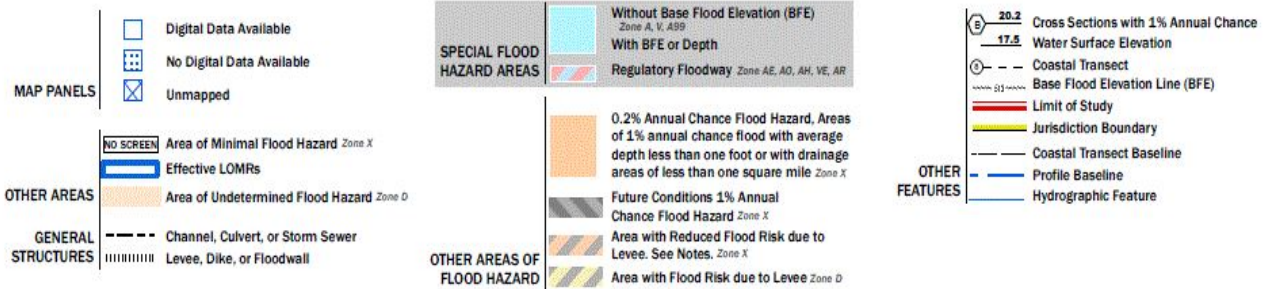
3.2.2.4 Floodplains

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 areas of the proposed action are depicted on the following Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM):

- FIRM number 51153C0275D, panel 275 of 330.
- FIRM number 5101540030E, panel 30 of 280.
- FIRM number 5101540010E, panel 10 of 280.

All of the FIRMS show the proposed action location outside of Flood Zone A which is the area outside of the 100-year floodplain. The FIRM/floodplain maps are displayed in Figure 3.2.2.4.1



Proposed Platoon Attack Range in TA10A, TA10C and TA15B-FEMA Floodplains

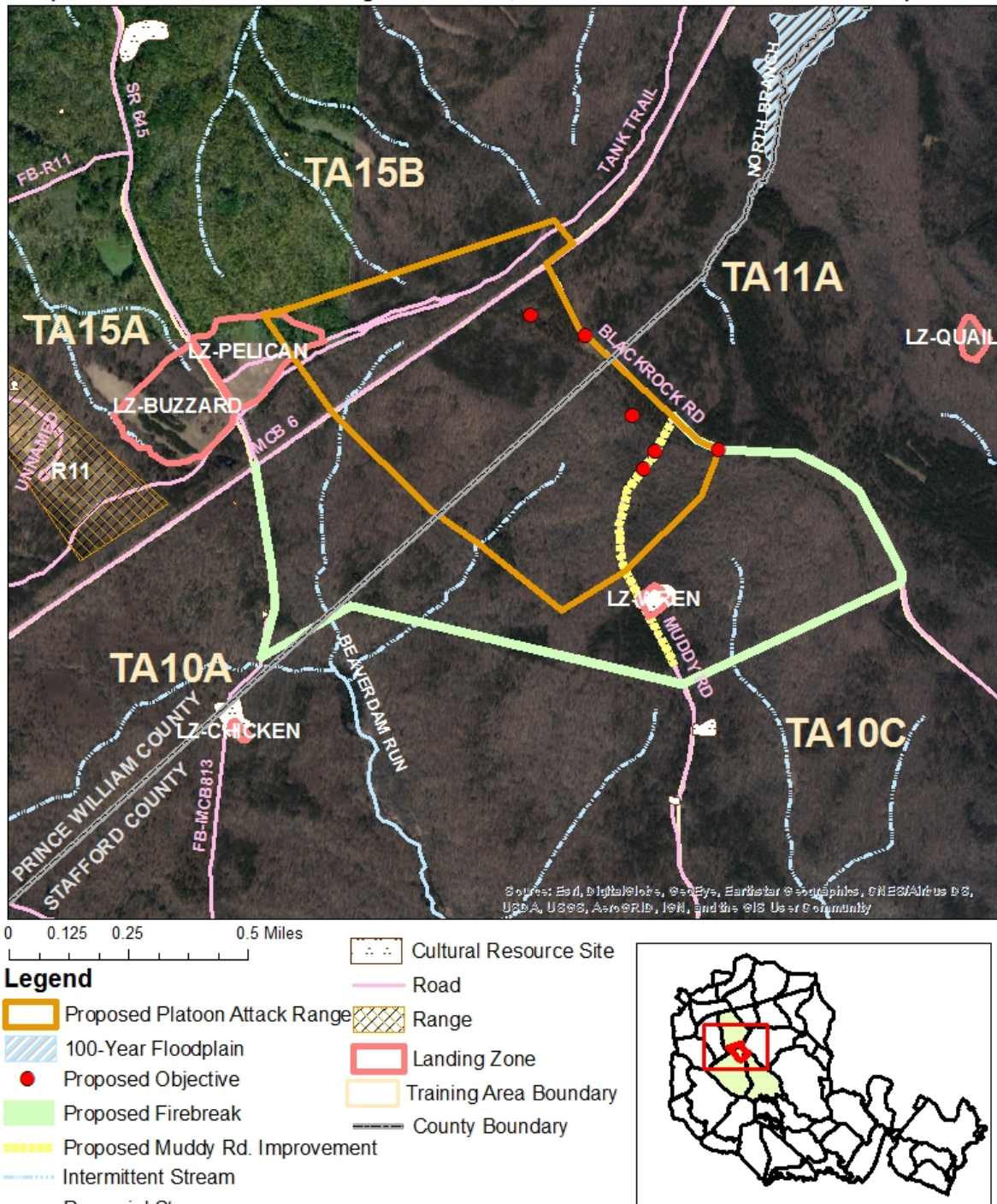


Figure 3.2.2.4.1

3.3 Geological Resources

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

3.3.1 Affected Environment

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

3.3.1.1 Topography

The terrain of the proposed Platoon Attack Range footprint is variable. The terrain steepens gradually moving northwest to southeast, reaching its highest point at approximately 430 ft. within the central portion of the footprint. The terrain is then characterized by a high gradient decreasing to about 400 ft. before increasing to 430 ft. near the southeast boundary. The elevation then decreases rapidly towards the proposed firebreak. Moving from northeast to southwest, the topography decreases from 440 ft. at SR-617 (Blackrock Rd.) to 400 feet at the southwestern boundary showing a high, steep gradient. The elevation continues to decrease rapidly approaching Beaverdam Run. All runoff generated within the proposed action footprint flows towards MCB-6 and Beaverdam Run.

The proposed firebreak shows a high gradient increasing from 390 ft. to 440 ft. at its terminus at SR-617. All runoff would flow towards Beaverdam Run and its headwaters. The topographical profile of the proposed Platoon Attack Range, the proposed firebreak and associated improvements is illustrated in Figure 3.3.1.1.

Proposed Platoon Attack Range in TA10A, TA10C and TA15B-Topographical Profile

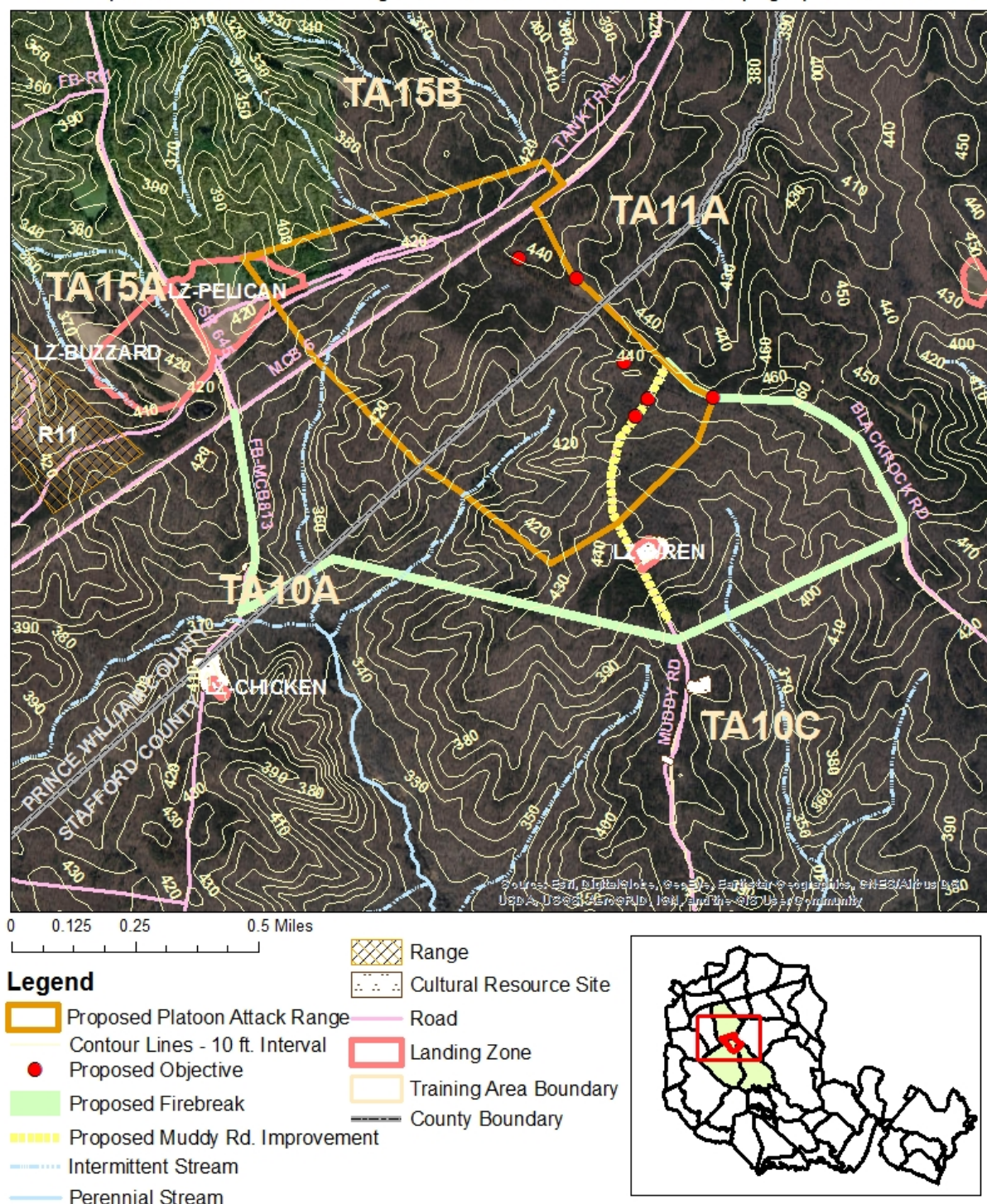


Figure 3.3.1.1

3.3.2.2 Geology

The proposed Platoon Attack Range would occur within the Westside (Guadalcanal) 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.

3.3.2.3 Soils

There are several soil types located within the proposed action location. The most dominant soil within the footprint is the Fairfax Loam (FaB) 2-6% slopes. It is found primarily in the northern and the central portions of the footprint. This soil type represents 42% of the soils that are found within the proposed action location. The profile of FaB consists of a loam, silty clay loam, gravelly silty clay loam and a silt loam. It is commonly associated with hillsides and prime farmland. The FaB is also a well-drained soil with a high water storage capacity and low probability to create runoff. Nason Silt Loam (NaC2), 6-15% slopes eroded represents the second most common soil that is found within the proposed action location. NaC2 is mostly found within the southeastern portion of the footprint. This soil represents 24% of the soils that comprises the footprint. The profile of NaC2 consists of a silt loam, clay and bedrock. Like FaB, NaC2 is commonly associated with hillsides, steep slopes and prime farmland. NaC2 is well-drained, has a high water storage capacity with a moderate probability to create runoff. The Nason Silt Loam (NaB), 2-6% slopes is located in the far southeastern portion of the footprint and represents 9% of the soils found. Its profile consists of a silt loam, clay and bedrock. NaB is associated with hillsides and prime farmland. This soil type is well-drained, has a high water storage capacity and low probability to create runoff.

Worsham Loam (Wr) also represents 9% of the soils found within the proposed action location and is located primarily in the southwestern portion of the footprint. Its profile consists of a loam, clay loam and fine sandy loam. Wr is associated with depressions, drains poorly, and has a moderate water storage capacity. Its probability to create runoff is very high.

Elioak Silt Loam (ElC2), 6-15% slopes eroded, represents 8% of the soils concentrated within the proposed action location and is located in the northwestern portion of the footprint. The profile of the soil consists of a silt loam and clay. ElC2 is commonly associated with steep slopes, hillsides and prime farmland. This soil type is well-drained, has a moderate water storage capacity and a moderate probability to create runoff. Colfax Fine Sandy Loam (ClB) 2-6% slopes represents 4% of the soil types concentrated within the proposed action location. ClB is found within the northwest and southeast corners of the footprint. Its profile consists for a fine sandy loam and sandy loam. The soil is associated with hillsides, is somewhat poorly drained, has a low water storage capacity and has a high probability to create runoff. The Appling Fine Sandy Loam (AlB) 2-6% slopes represents 3% of the soils concentrated within the proposed action location. This soil is located in the northwestern corner of the footprint. The profile of the soil consists of a fine sandy loam, clay, and clay loam. AlB is associated with prime farmland as well as hillsides. It is well-drained, has a moderate water storage capacity, and low probability to create runoff.

The Meadowville Silt Loam (Me) also represents 3% of the soil types found within the proposed action location. Me is located within the northeast corner of the proposed action location. This soil type's profile consists of a silt loam, silty clay loam, gravelly sandy clay loam and a fine sandy clay loam. Me is associated with prime farmland as well as drainageways. The soil is well-drained, consists of a high water storage capacity and possesses a very low probability to create runoff. The Appling Fine Sandy Loam (AlC2), 6-15% slopes eroded is concentrated within the far northwest corner of the proposed action location while consisting of 2% of the soils within the footprint. The profile of the soil consists of fine sandy loam, clay and a clay loam. AlC2 is commonly associated with steeply-sloped areas, hillsides and prime farmland. The soil is well-drained, maintains a moderate water storage capacity and has a moderate probability to create runoff. There are trace amounts of the Lignum Silt Loam (LgB) and the Elioak Silt Loam (ElB2), 2-6% slopes eroded within the proposed action footprint. The Lignum Silt Loam (LgB), 2-6% slopes represents 1% of the soils concentrated within the proposed action location. It is found within the far southeastern section of the footprint. The profile of this soil consists of silt loam, silty clay loam and bedrock. The soil is commonly associated with hillside as well as prime farmland. LgB is moderately well-drained, has a moderate water storage capacity and a moderate ability to create

runoff. ElB2 is found in the far western section of the footprint. This soil type's profile consists of a silt loam and clay. ElB2 is associated with prime farmland and hillsides. The soil is well-drained, has a moderate capacity to store water and has a low probability to create runoff.

The proposed firebreak is dominated by the FaB representing 22% of the soils within the footprint. NaB is the second most common soil with a 21% concentration. NaC2 represents the third highest soil concentration within the proposed firebreak location consisting of 14% of the soils present. ClB, Wr, LgB, ElB2, ElC2 and Me are found in significant amounts throughout the proposed firebreak location. The Cartecay Fine Sandy Loam (Ce) a soil with a profile consisting of a fine sandy loam, loamy fine sand and found in floodplains, is also located in the footprint. The soil type is somewhat poorly drained with a moderate water storage capacity with a very high probability to create runoff. The Muddy Rd. improvement area consists primarily of NaB. This soil type comprises 70% of the soils within the road improvement location. ElC2, comprises 16% of the soils within the footprint. The remaining 14% is comprised of NaC2 and ElB2.

3.4 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.

3.4.1 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.

3.4.2 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 Quantico Marine Corps Base Historical District (QMCBHD) include: First Permanent Construction, Aviation, Education, Industrial, Naval Clinic, African American Barracks, and Lustron Housing.

3.4.2.1 Archaeological Resources

There are archaeological sites in the area located adjacent to Muddy Rd., LZ Chicken, LZ Wren and SR-645. However, there are no archeological or NRHP eligible sites within the proposed action footprint.

3.5 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.

3.5.1 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 (3.5.2.2) of this EA.

Marine Corps Order P5090.2A, Ch. 3 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 Marine Corps Order P5090.2A, Section 11104.3b., to the maximum

extent practicable where it does not conflict with the installation mission, each installation should survey and take appropriate measures to identify, monitor and manage other species at risk. 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, *Alasmodonta 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.

3.5.2 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.

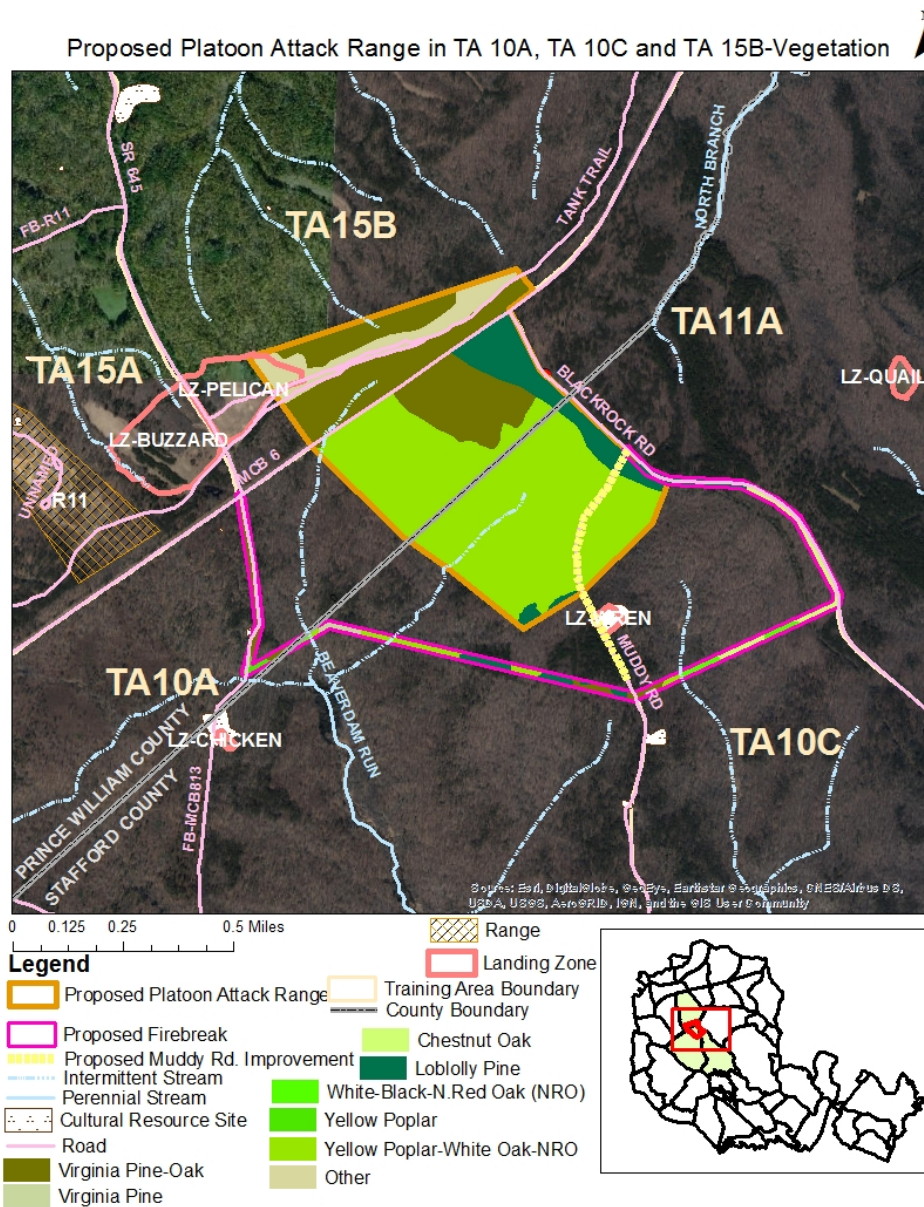
Migratory birds utilize a variety of habitats available throughout MCBQ including forestland, grassland, wetland, and riparian corridors.

3.5.2.1 Vegetation

Several plant species occupy the proposed action footprint. 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 (*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 sp.*), Red Cedar (*Juniperus virginiana*), Black Walnut (*Juglans nigra*), Black Cherry (*Prunus serotina*) and Bigtooth Aspen (*Populus gradidentata*). If there is an undisturbed clear space, the most

likely species to grow in that space is Virginia Pine.

The species found within the proposed action location mirrors much of the forest cover found on the base. The most dominant trees species found within the footprint is Yellow Poplar, Virginia Pine and Oak Species (NRO, White Oak, Black Oak, Chestnut Oak and Southern Red Oak (*Quercus falcata*)). Loblolly Pine also constitutes a significant amount of forest cover within the proposed action location. All of the species within the proposed action location provide habitat for a variety of mammals, birds, amphibians and insects. The forest cover within the proposed action footprint is found in Figure 3.5.2.1.



Proposed Platoon Attack Range in TA10A, TA10C and TA15B Vegetative Cover (Includes Proposed Firebreak)				
Chestnut Oak	Loblolly Pine	Virginia Pine	Virginia Pine-Oak	White-Black-NRO
2%	11%	0.4%	27%	1%
		Yellow Poplar	Yellow-Poplar-White Oak-NRO	Other
		0.4%	51%	7%

Figure 3.5.2.1

Three plant species on MCBQ are federally-listed as threatened or endangered species. These are Harperella (*Ptilimnium nodosum*), Sensitive Joint-vetch (*Aeschynomene virginica*) and the Small Whorled pogonia (*Isotria medeoloides*).

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.

The Sensitive Joint-vetch is an 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.

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 such as the soils located within the proposed action location (See Figure 3.3.2.3).

3.5.2.2 Terrestrial Wildlife

The Indiana bat (*Myotis sodalist*) is a terrestrial species that is found or 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. During summer, the bats prefer to roost under the peeling bark of dead and dying trees. Although there are no known Indiana bat summer roosts or hibernacula on MCBQ, the species was detected on base via acoustical surveys and within the proposed action location in 2017.

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. 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 (50 C.F.R. part 17). Although there are no known NLEB maternal colonies or hibernacula on MCBQ, NLEBs have been detected via acoustic surveys in 2017 and one male caught via mist netting in 2018 July.

The Little Brown bat (*Myotis lucigus*) and the Tri-Colored bat (*Perymyotis subflavus*) are listed as state-endangered. Although neither species has a known summer roost or hibernacula on MCBQ, both were detected on MCBQ and the proposed action footprint in 2017.

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 buffer of 660 ft. around a nesting site. Additionally, removal of overstory trees may not occur within 300 ft. of a nest. No Bald Eagle nests are located either within the proposed action location nor is the footprint within 660 ft. of a Bald Eagle concentration area.

3.5.2.3 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 Wedge mussel (*Alasmodonta 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.

3.6 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.

3.6.1 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.

3.6.2 Affected Environment

3.6.2.1 Current Land Use and 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 Platoon Attack Range would be established within TA10A, TA10C and TA15B on the Westside of the base. The proposed action is located west of the MCBQ Growth Boundary, meaning that any land use

changes must be compatible with training activities. TA10A is roughly 1,991 acres in size with a total of 7.5 miles of roads, firebreaks, and trails. The training area is primarily utilized for light forces, maneuver, and land navigation (LANDNAV) training. The two most notable training features are Range 15A, an automated multipurpose range, and LZ Chicken. TA10C is approximately 1,706 acres in size with a combined 7.5 miles of roads, trails, and firebreaks. As with TA10A, the training area is designated primarily for light forces, maneuver, and LANDNAV training. The two major facilities are LZ Condor, located 1.5 miles to the southeast of the proposed action footprint and LZ Wren which is located adjacent to Muddy Rd. just outside of the proposed range boundary. TA15B comprises 1,325 acres as well as 6 miles of roads, trails, and firebreaks. The TA is primarily used for light forces, maneuver, and LANDNAV training. The three primary facilities within TA15B are LZ Pelican, which is partially within the far northwest boundary of the footprint, LZ Duck, located 0.75 miles to the north, and LZ Tern, located 1.7 miles to the northwest.

3.7 Military Training and Airspace

3.7.1 Affected Environment

Several active LZs and ranges are within close proximity of the proposed action footprint. Range 11 serves as an Automated Infantry Platoon Battle Course (IPBC) and is located 0.4 miles from the footprint. The primary objective of the range is to train and test platoons on the skills necessary to conduct tactical movements as well as to detect, identify, engage, and defeat stationary and moving armored and infantry targets. The secondary function of Range 11 is as a sniper field fire range which trains and qualifies Marines in the use of a sniper rifle. The Military Operations in Urban Terrain Assault Course (MAC) is located one mile south of the of the proposed action footprint near MCB-6 and the Tank Trail. The MAC is utilized for low level collective training using live fire or a Multiple Integrated Laser Engagement System (MILES). The MAC also prepares Marines for utilizing the full Military Operations in Urban Terrain (MOUT) course. The MAC consists of an individual and team trainer, squad and platoon trainer, grenadier gunnery, offense/defense building as well as an underground trainer. Targets within the course are automated.

Range 15A is roughly 1.5 miles away from the proposed action location. Range 15A serves as an automated multipurpose range

that supports infantry squad live fire operations with the goal of training Marines to identify, engage and defeat stationary, moving armor and infantry targets within a tactical environment. Landing Zones Blue Jay, Buzzard, Chicken, Chickadee, Pelican, Quail and Wren are all active and lie within a 1 mile radius of the proposed action footprint.

3.7.3 Surface Danger Zone (SDZ)

The proposed action also will involve the establishment of a new Surface Danger Zone (SDZ) for the Platoon Attack Range. A SDZ is defined within the training complex to include associated safety area, for vertical and lateral containment of projectiles, fragments, debris, and components resulting from the firing, launching, or detonation of weapons systems to include explosives or demolitions. Currently, there are two designated SDZs that occur near the proposed action location. The proposed action's SDZ would overlap with the current SDZs utilized by Range 8, a small arms range, and Range 11. The SDZ for Range 8, as small arms range, is roughly 3,675 acres and is orientated in a northeasterly direction. The SDZ for Range 11 is 2,749 acres and is orientated to the southeast. The new SDZ fan would be 2,210 acres in size, would be almost entirely located within the non-duddled impact area of MCBQ and be overlapped by the Range 8 and Range 11 SDZs. The far southeast corner of the proposed SDZ, approximately 60 acres, would be within theuddled impact area of MCBQ. The location of the proposed SDZ relative to the existing SDZs and impact areas (uddled and non-uddled) is displayed in Figure 3.7.3.1

Proposed Platoon Attack Range in TA 10A and TA 15B - SDZ

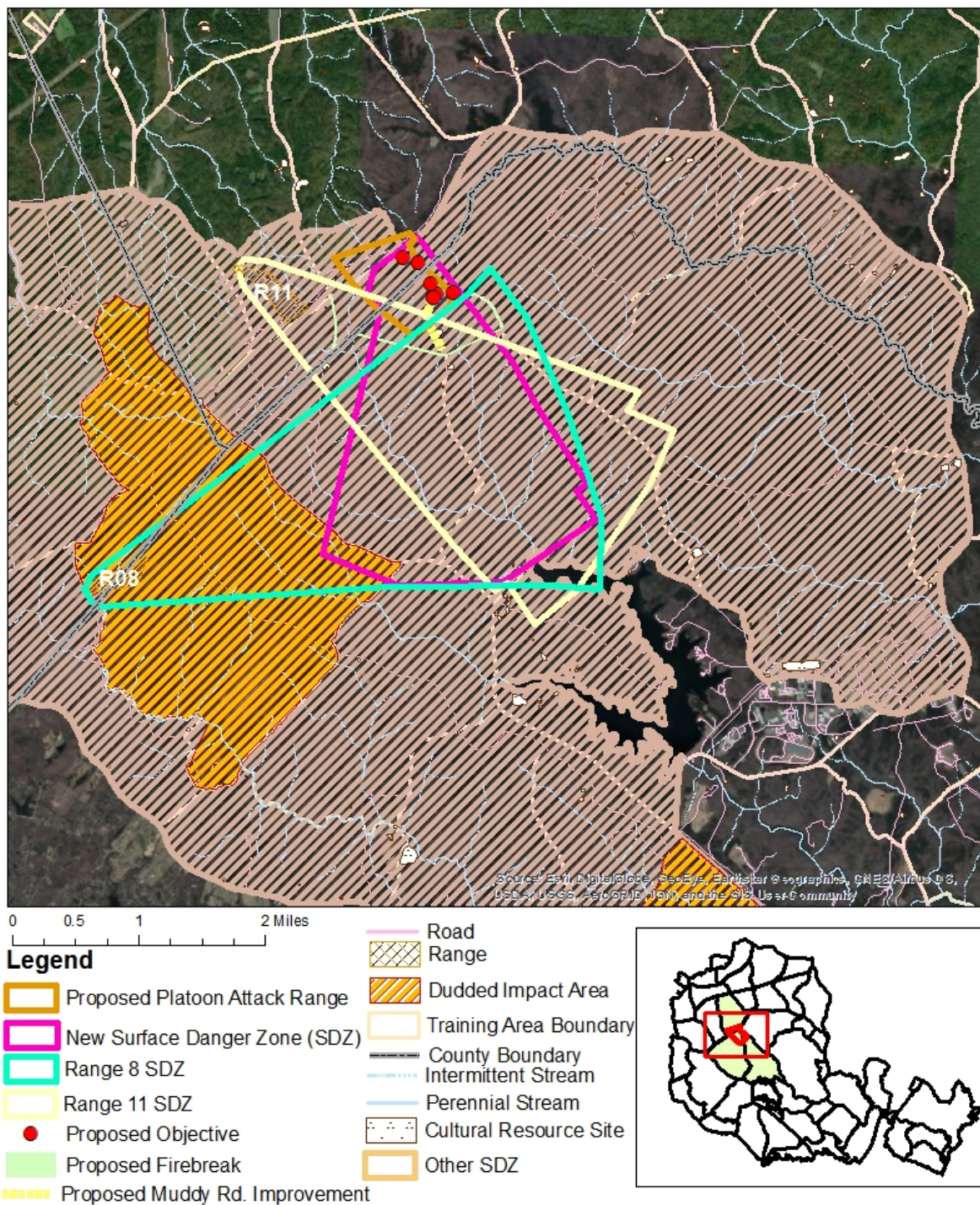


Figure 3.7.3.1

3.7.4 Airspace

MCBQ has coordinated with the FAA and implemented airspace control rules to protect aircraft from the impacts of live fire activities. R-6608 was established as a joint-use restricted Special Use Area (SUA) over MCBQ. R-6608 extends from the ground up to 10,000 ft. mean sea level (MSL). Additionally, three military operating areas (MOA) have also been established to provide aircraft maneuver areas. These MOAs are referred to as Demolition-1 (DEMO-1), DEMO-2 and DEMO-3. Figure 3.7.4.1 displays the proposed action location within DEMO-2 (MOA-2) and R-6608B.

Proposed Platoon Attack Range in TA10A, TA10C and TA15B Restricted Airspace/SUA

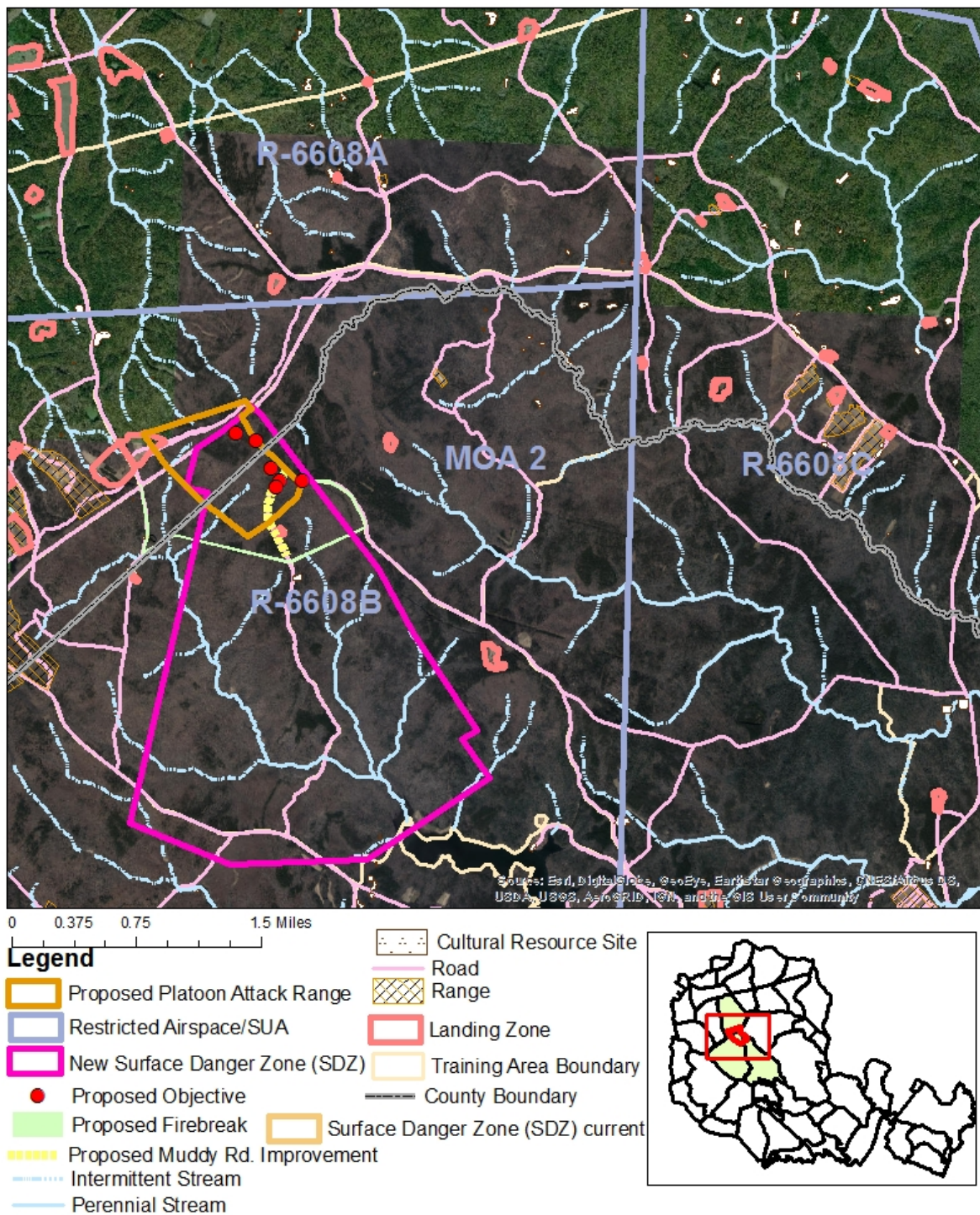


Figure 3.7.4.1

3.8 Noise

This discussion of noise includes the types or sources of noise and the associated sensitive receptors in the human environment.

The major sources of noise at MCBQ include aircraft, artillery, small arms, explosives, vehicles, heavy equipment, and machinery. Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual.

3.8.1 Basics of Sound and A-Weighted Sound Level

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. This vast range means that using a linear scale to represent sound intensity is not feasible. The dB is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level. All sounds have a spectral content, which means their magnitude or level changes with frequency, where frequency is measured in cycles per second or Hz. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies in order to replicate human sensitivity. It is common to add the "A" to the measurement unit in order to identify that the measurement has been made with this filtering process (dBA). In this document, the dB unit refers to A-weighted sound levels. Table 3-5 provides a comparison of how the human ear perceives changes in loudness on the logarithmic scale.

Figure 3-2 (Cowan, 1994) provides a chart of A-weighted sound levels from typical noise sources. Some noise sources (e.g., air conditioner, vacuum cleaner) are continuous sounds that maintain a constant sound level for some period of time. Other sources (e.g., automobile, heavy truck) are the maximum sound produced during an event like a vehicle pass-by. Other sounds

(e.g., urban daytime, urban nighttime) are averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed below.

Table 3-5 Subjective Responses to Changes in A-Weighted

<i>Change</i>	<i>Change in Perceived Loudness</i>
3 dB	Barely perceptible
5 dB	Quite noticeable
10 dB	Dramatic - twice or half as loud
20 dB	Striking - fourfold change

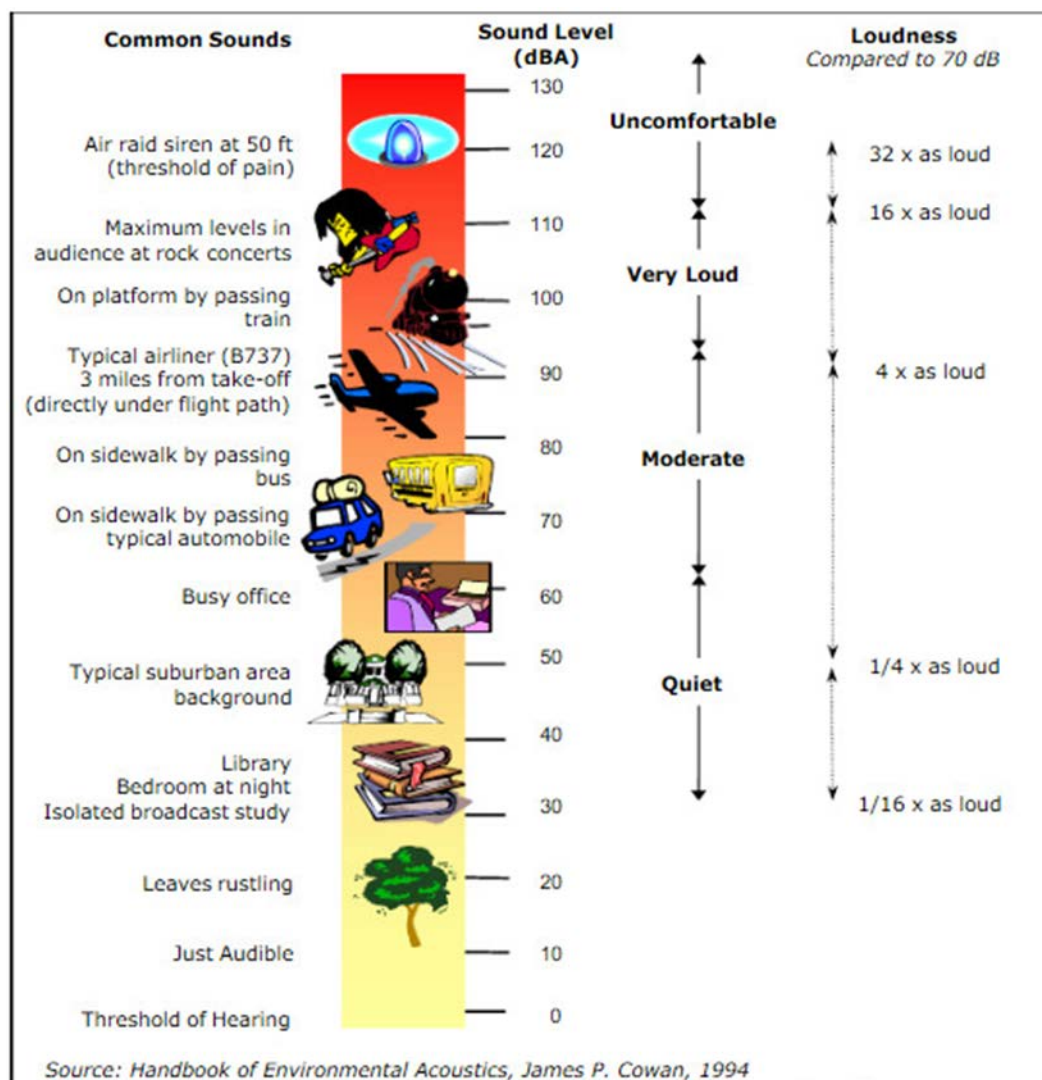


Figure 3-2 A-Weighted Sound Levels from Typical Sources

3.8.2 Regulatory Setting

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 A-weighted decibels (dBA) over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits.

The joint instruction, Chief of Naval Operations Instruction (OPNAVINST) 11010.36C and MCO 11010.16, Air Installations Compatible Use Zones (AICUZ) Program, provides guidance administering the AICUZ program which recommends land uses that are compatible with aircraft noise levels. MCO 3550.11 provides guidance for a similar program, 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.

3.8.3 Affected Environment

Many components may generate noise and warrant analysis as contributors to the total noise impact. The predominant noise sources consist of aircraft operations, both at and around the airfields, as well as in the airspace and on ranges. Other components such as construction, aircraft ground support equipment for maintenance purposes, and vehicle traffic produce noise, but such noise generally represents a transitory and negligible contribution to the average noise level environment. The federal government supports conditions free from noise that threaten human health and welfare and the environment. Response to noise varies, depending on the type and characteristics of the noise, distance between the noise source and whoever hears it (the receptor), receptor sensitivity, and time of day. A noise sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals, or certain wildlife species. The nearest sensitive receptors are residential homes and agriculture, which are located approximately five miles from the project site. The closest receptors are all training facilities (Range 15A, Range 11, MOUT, MAC and 6 LZs) are within 1.5 miles of the proposed action footprint.

3.9 Infrastructure

This section discusses infrastructure such as utilities (including drinking water production, storage, and distribution; wastewater collection treatment and disposal; stormwater management, solid waste management, energy production, transmission, and distribution; and communications), and facilities (including airfields, buildings, ranges, training and

testing areas, wharves, piers, housing, etc.). Transportation systems and traffic are addressed separately in Section 3.11.

3.9.1 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.

3.9.2 Affected Environment

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

3.9.2.1 Utilities

Potable Water. Drinking water is provided to the mainside of MCBQ from Breckinridge Reservoir, via the water treatment plant.

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 the Camp Upshur wastewater treatment plant as well as by Stafford County wastewater treatment facilities.

Stormwater. The developed portion of the mainside of MCBQ is served by a network of stormwater and sanitary sewers.

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 located within the proposed Platoon Attack Range footprint.

3.10 Transportation

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.

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 includes an approximately .6 mile improvement of Muddy Road. The improvement of Muddy Rd. would initiate from Blackrock Rd. (SR-617) on the northern boundary of the footprint and terminate near the planned firebreak. The road improvement would involve drainage improvements, repairing ruts and the application of aggregate.

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 within this EA discusses information pertaining to community emergency services, construction activities, operations, and environmental health and safety risks to children.

Community emergency services are organizations which ensure

public safety and health by addressing different emergencies. The three main emergency service functions onboard MCBQ include police, fire and rescue service, and emergency medical service.

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.

The AICUZ Program, which is discussed in the Land Use section, delineates accident potential zones (APZs), which are areas around an airfield where an aircraft mishap is most likely to happen. APZs are not predictors of accidents nor do they reflect accident probability. The DoD defines an APZ as a planning tool for local planning agencies. The APZs follow departure, arrival, and flight pattern tracks from an airfield and are based upon historical accident data. RAICUZ, which is also discussed in the Land Use section, addresses range safety.

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.

3.12. 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."

3.13 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous waste, toxic substances, and contaminated sites.

3.13.1 Regulatory Setting

Hazardous materials are defined by 49 CFR section 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR part 173." Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments, as: "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR part 273. Four types of waste are currently covered under the universal wastes regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps, such as fluorescent light bulbs.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). USEPA is given authority to regulate special hazard substances by the Toxic Substances Control Act (TSCA). Asbestos is also regulated by USEPA under the Clean Air Act, and the Comprehensive Environmental Response, Compensation, and Liability Act.

The DoD established the Defense Environmental Restoration Program (DERP) to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The Installation

Restoration Program and the Military Munitions Response Program are components of the DERP. The Installation Restoration Program requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The Military Munitions Response Program addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination.

According to the Marine Corps Order 5090.2A Ch. 3, Chapter 10, Section 2, Paragraph 10221:

"All efforts must be made to ensure that Marine Corps' projects are not constructed on contaminated sites. However, there may be times when the project is being planned or is underway and contamination is discovered.

1. If contamination is discovered during the planning stage, Naval Facilities Engineering Command (NAVFAC) can investigate and determine the need for clean up using Environmental Restoration Program, Navy (ER,N) funds and following environmental restoration (ER) procedures. However, the site investigation/clean-up must compete with other ER sites based on risk management. In most cases, this will take several years and the site may not be available in time for the project.

2. If contamination is discovered during construction and it is Defense Environmental Restoration Program (DERP) eligible, NAVFAC can carry out the site investigation/cleanup using 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. If neither ER,N nor project funding is available in time to meet the construction schedule, the installation must stop the project altogether or re-site it. An installation does not have an option to pay for any DERP-eligible work with installation Navy Operations and Maintenance (OM,N) funds except to accomplish DERP-eligible work within the scope of an OM,N funded construction project."

Reports of waste generated (including recycling) including material type (construction/demolition debris, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported on the attached Waste Management Plan and submitted to the NREA Branch within 30 days of the close of the

project, and no later than October 15 of the respective calendar year to be included in annual report submissions.

Executive Order 13514, Leadership in Environmental, Energy, and Economic Performance, 2009, calls for meeting or exceeding fifty percent diversion of non-hazardous solid waste and construction and materials and debris from landfills by fiscal year 2015.

3.13.2 Affected Environment

Many portions of MCBQ consist of historic munitions impact sites. The proposed action location for the Platoon Attack Range is located within the non-dudged impact area of MCBQ, an area that consists of spent ammunition of small arms or are within Surface Danger Zone fans of small arms ranges.

4.0 ENVIRONMENTAL CONSEQUENCES

The CEQ regulations implementing NEPA (40 C.F.R. part 1500) require discussion of the impacts in proportion to their significance within NEPA documentation. The affected environment under the proposed action alternative ranges from site-specific physical and natural resources to broader regional concerns (i.e., air quality variables, noise, infrastructure, socioeconomic conditions, community facilities and services, transportation and traffic).

This section describes the anticipated direct, indirect, and cumulative environmental impacts of the no action alternative (Alternative A) and the proposed Platoon Attack Range in TAs10A, 10C and 15B (Alternative B).

4.1 Air Quality

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.

4.1.1 Alternative A - No Action

Under the no action alternative, Alternative A, there would be no additional emissions created within MCBQ, Prince William and Stafford Counties. Current air quality would remain the same.

4.1.2 Alternative B

4.1.2.1 Potential Impacts - All guidance below must be implemented:

General Conformity under the Clean Air Act, Section 1.76, has been evaluated for the proposed project according to the requirements of MCO 5090.2A and 40 CFR 93 Subpart B. The requirements of this rule are not applicable to this project because the total direct and indirect emissions from this project have been estimated at 2.63E+00 tons per year NOx, 2.61E-01 tons per year VOC. These levels are below the conformity threshold value of 50 tpy VOC and 100 tpy NOx, established by 40 CFR 93.153(b), for a Non-Attainment Area located in an Ozone Transportation Region. This action requires a Record of Non-Applicability (RONA) (See Appendix E).

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.

•9 VAC 5-130 - Open Burning

Open burning is prohibited except for those exceptions allowed by 9 VAC 5-130, - Regulation of Open Burning. This exception includes some forestry operations; however, NREA should be consulted prior to any open burning. Action proponent must also comply with all guidance associated with the Virginia Smoke Management Guidelines (1998).

New Source Review Permitting

The proposed action as currently planned does not involve the construction of any new stationary source or any project (which includes any addition or replacement of an emissions unit, any modification to an emissions unit or any combination of these changes), or the reduction of any stack outlet elevation at any stationary source. Therefore, NSR permitting regulations do not apply.

Greenhouse Gases

Implementation of Alternative B would contribute directly to emissions of greenhouse gases (GHGs) from the combustion of fossil fuels. Demolition, construction, and clearing activities would generate approximately 2.78E2 tons of CO₂e. These estimated annual GHG emissions fall below the CEQ threshold of 25,000 metric tons. This limited amount of emissions would not likely contribute to global temperature increase to any discernible extent. Therefore, implementation of Alternative B would not result in significant impacts to air quality.

The proposed project will not add new emission sources. This project will not encourage a use change, as the proposed project

supports the current mission activities. Emissions associated with the proposed Establishment of the Platoon Attack Range in TAs 10A, 10C and 15B would be short in duration, and are not covered by the Mandatory Reporting of Greenhouse Gases rule as the intent is to track and regulate stationary sources. This project would not have any long term changes in stationary or mobile emission sources or landfill operations. In compliance with the CEQ's and EPA's guidance, quantitative analysis of CO₂ equivalents is not required for the proposed action.

4.2 Water Resources

In this EA, the analysis of water resources looks at the potential impacts on groundwater, surface water, wetlands, and floodplains. Groundwater analysis focuses on the potential for impacts to the quality, quantity, and accessibility of the water. The analysis of surface water quality considers the potential for impacts that may change the water quality, including both improvements and degradation of current water quality. The impact assessment of wetlands considers the potential for impacts that may change the local hydrology, soils, or vegetation that support a wetland. The analysis of floodplains considers if any new construction is proposed within a floodplain or may impede the functions of floodplains in conveying floodwaters.

Potential impacts to the water resources were assessed based on the water quality, hydrology, surface water and wetlands, groundwater, and flooding potential in the project area.

4.2.1 Alternative A - No Action

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

4.2.2 Alternative B

The action alternative would involve the thinning and clearance of 242 acres of vegetation.

4.2.2.1 Potential Impacts

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 tree removal activities will require installation of proper E&SC measures (such as proper silt fence and storm drain inlets) prior to the onset of land disturbing activities.

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

The implementation of basic erosion and sediment control practices will be required during tree removal as specified in the Best Management Practices (BMPs) per the Virginia BMP Field Guide (2009), the Virginia BMPs For Water Quality Technical Manual (2011), Virginia Erosion and Sediment Control Handbook (VDCR 1992). Of note, a 50 ft. buffer will be maintained around all perennial and intermittent streams as required by the Virginia BMP Field Guide and Virginia BMPs For Water Quality Technical Manual. Following vegetation removal activities, the disturbed area will be seeded and returned to pervious surfaces.

The proposed action will not have a significant, direct impact to wetlands, streams or other waters of the United States.

4.3 Geological Resources

Geological resources are analyzed in terms of drainage, erosion, and prime farmland. The analysis of topography and soils focuses on the area of soils that would be disturbed, the potential for erosion of soils from construction areas, and the potential for eroded soils to become pollutants in downstream surface water during storm events. BMPs are identified to minimize soil impacts and prevent or control pollutant releases into stormwater. The potentially affected environment for geological resources is limited to lands that would be disturbed by any proposed facility development or demolition.

4.3.1 Alternative A - No Action

Under the No Action Alternative, the Platoon Attack Range would not be established 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.

4.3.2 Alternative B

4.3.2.1 Potential Impacts

To prevent the loss or movement of soils from the disturbed areas, E&SC measures would be implemented during construction. Approximately 242 acres of land would be disturbed to implement Alternative B. All E&SC and stormwater laws and regulations will be followed. All storm drains/inlets adjacent to the project area will be protected during the entire duration of the project. With implementation of proper E&SC measures, the action alternative is not expected to significantly impact on-site or area soils. E&SC plans and stormwater pollution prevention plans (SWPPP) are required to be submitted to the Water Program Manager, NREA Branch, MCBQ at least 70 days prior to work starting on the project.

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.

4.4 Cultural Resources

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed.

4.4.1 Alternative A - No Action

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

4.4.2 Alternative B

Potential Impacts

Alternative B will primarily involve the thinning of 242 acres of timber however the stumps of most of the trees will remain and ground disturbance will be limited. There are no archeological or NRHP eligible sites within the footprint of Alternative B.

The MCBQ Cultural Resources Manager (CRM) has reviewed the proposed action per the Programmatic Agreement between the United States Marine Corps and the Virginia State Historic Preservation Office and determined that the project as planned would have no effect on archaeological or historic resources, or the QMCBHD.

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 and logging contractors should contact the base Archaeologist, NEPA Section (703-432-6781/0519) 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 Archaeologist/NEPA Section per Section 7.0 of this EA
- Redesign project to avoid remains, if possible
- The base 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.

4.5 Biological Resources

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

4.5.1 Alternative A - No Action

Under Alternative A, the proposed project would not occur and the current biological conditions will remain the same. Therefore, no significant impacts to biological resources would occur with implementation of the No Action Alternative.

4.5.2 Alternative B

4.5.2.1 Potential Impacts

Initial consultation with the USFWS was submitted through their Information for Planning and Consultation (IPaC) online system.

2018 July 2-3, NREA conducted a SWP survey to determine whether the species was present within the proposed action footprint. Although there was potentially suitable habitat located within the proposed Alternative B footprint, there are no SWP colonies located in the proposed action area. The Dwarf Wedge mussel, Sensitive Joint-Vetch, Harperella and Yellow Lance are not found in areas that would be affected by implementation of the proposed action.

To reduce impacts to the federally-threatened NLEB and the federally endangered Indiana Bat, MCBQ will be implementing UFWS Time of Year Restrictions (TOYR). The TOYR prohibits tree removal from 15 April - 15 September corresponding with the Indiana bat active pup season. The NLEB active pup season is from 1 June - 31 July which overlaps with the Indiana bat season and as a result impacts to both species will be reduced. Although the Virginia state endangered Little Brown bat and Tri-Colored bat were detected within the proposed action footprint, there is no known summer roost nor winter hibernacula present for either species on MCBQ. If there is a maternity colony detected for any state of federally listed bat species, the project proponent must stop all tree removal activities and contact their contracting representative and NREA. The state-endangered Virginia Piedmont Waterboatman and Brook Floater are not found in areas that will be impacted by the proposed action.

Due to the scope of work and the required BMPs to protect water quality, there is no potential for the action alternative to

adversely affect species protected under the MBTA, threatened and endangered species, or habitats used by these species.

4.6 Land Use

The location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. Factors affecting a proposed action in terms of land use include its compatibility with on-site and adjacent land uses, restrictions on public access to land, or change in an existing land use that is valued by the community. Other considerations are given to proximity to a proposed action, the duration of a proposed activity, and its permanence.

4.6.1 Alternative A - No Action

Under Alternative A, there would not be any impacts to recreational activities.

4.6.2 Alternative B

4.6.2.1 Potential Impacts

There are trails that are located within the footprint of the proposed action. Hunting is currently allowed within the proposed action location. While tree removal activities are occurring during the establishment of the Platoon Attack Range, hiking and hunting activities will be prohibited. Hiking and hunting activities will also be prohibited during periods of time when the future Platoon Attack Range is being utilized by Marines for training. The Platoon Attack Range location and the surrounding areas will be available for recreational activities when not being utilized by Marines for training. Additionally, roughly 55,000 acres of hiking and hunting activities will still exist at MCBQ after the implementation of Alternative B. Impacts to recreational activities such as hiking, hunting and fishing at MCBQ will be negligible.

4.7 Military Training and Airspace

The analysis of airspace management and use involves consideration of many factors including the types, locations, frequency of aerial and other military or training operations, the presence or absence of already designated (controlled) airspace or ranges, and the amount of air traffic or military personnel transiting through a given area.

4.8.1 Alternative A - No Action

Under the No Action Alternative, a 242 acre Platoon Attack Range would not be established neither would a firebreak. Platoons at MCBQ would continue to train on Range 11 which is designed primarily to support squad training. Current conditions would remain the same.

4.8.2 Alternative B

4.8.2.1 Potential Impacts

Alternative B will involve the establishment of a 242 acre range that would be utilized by platoons at MCBQ. The range would include portions of three TAs, a 0.6 miles improvement to Muddy Rd. and a one mile long, 50 ft. wide, 30 acre firebreak. To address impacts to safety, a 2,210 acre SDZ will be established. The entire proposed action footprint and SDZ are located entirely within the non-dudged impact area of MCBQ. The new SDZ will overlap with the SDZs of Range 11 as well as Range 8. Any live-fire activities will be contained within this location as well as within the non-dudged impact area. However, this is the extreme scenario. More than likely projectiles, such as ammunition and practice rockets, will be stopped by a steel earth target located in the direction of fire. Small infantry targets will stop the ammunition for rifles. If the range ever becomes designated for the use of explosive rockets, an earthen backstop will be constructed to stop them. At the very least, projectiles will not travel any further than 2,600 meters (roughly 1.6 miles) from where it is fired and will not travel beyond Muddy Rd. R-6608B will be activated to protect commercial and military aircraft from the impact due to vertical projectiles. If all proper measures are taken as outlined, Marine training, airspace, as well as safety of civilians and Marines, will not be impacted.

4.8 Noise

Analysis of potential noise impacts includes estimating likely noise levels from the Proposed Action and determining potential effects to sensitive receptor sites.

4.8.1 Alternative A - No Action

The no action alternative would not cause impacts to existing noise levels on the base or the surrounding area.

4.8.2 Alternative B

4.8.2.1 Potential Impacts

Existing noise at and around the project area is largely attributed to training activities associated with the MAC, MOUT, Range 11, Ranges 15 and 15A and multiple LZs. Other major noise generators near the southwest boundary of MCBQ are Range 8 and Range 7. According to the MCBQ Community, Strategy and Operations Office (formerly the Public Affairs Office), residents have registered four noise complaints near the area of Alternative B thru April of 2018. These complaints were due to helicopters, mortars and .50 calibre rounds as are most complaints by nearby residents. None of the complaints were as a result of the usage of small arms or rockets.

The noise heard by residential and agricultural receptors outside of the range boundary is between 62-65 dB which is the same noise generated by a busy office or an automobile. The generator of the loudest noise that affects these receptors is Range 7. The noise generated by the ranges closest to the boundary and is heard by these receptors (Ranges 8, 15, 15A, the MOUT and MAC) is roughly 62 db, the sound of a busy office. Alternative B is located 4.3 miles from the southwest boundary of MCBQ and .4 miles from Range 11 which is not a major noise generator for receptors off base. Alternative B is 4.1 miles from the northeast boundary of the base, which does not have any significant noise generators.

Much of the noise generated during the implementation of the proposed action would be short-term, temporary noise from construction, tree clearing and logging operations (i.e., noise from logging trucks and road maintenance vehicles).

The proposed action would involve relocating platoon units from Range 11 to the new Platoon Attack Range, which is approximately 0.4 miles away or slightly less than a half-mile. Alternative B is located over 4.3 miles from the southwest boundary of MCBQ. Any noise generated by the proposed action that would be heard by sensitive residential and agricultural receptors would be at maximum 62db and probably less. As a result, the noise impacts to nearby residential or agricultural receptors would be negligible or non-existent. All noise generated by Alternative B on base would be the same as the noise associated with Marine training and other nearby ranges. As a result, any noise

impacts to Marines or civilians within the TAs would also be negligible or non-existent. No new platoons or other Marine units are relocating to the base or to the general area at this time. As a result, there will be no permanent or long-term significant impacts to noise levels at MCBQ as a result of implementing Alternative B. The noise zones relative to Alternative B and nearby ranges are displayed in Figure 4.8.2.1 and 4.8.2.2.

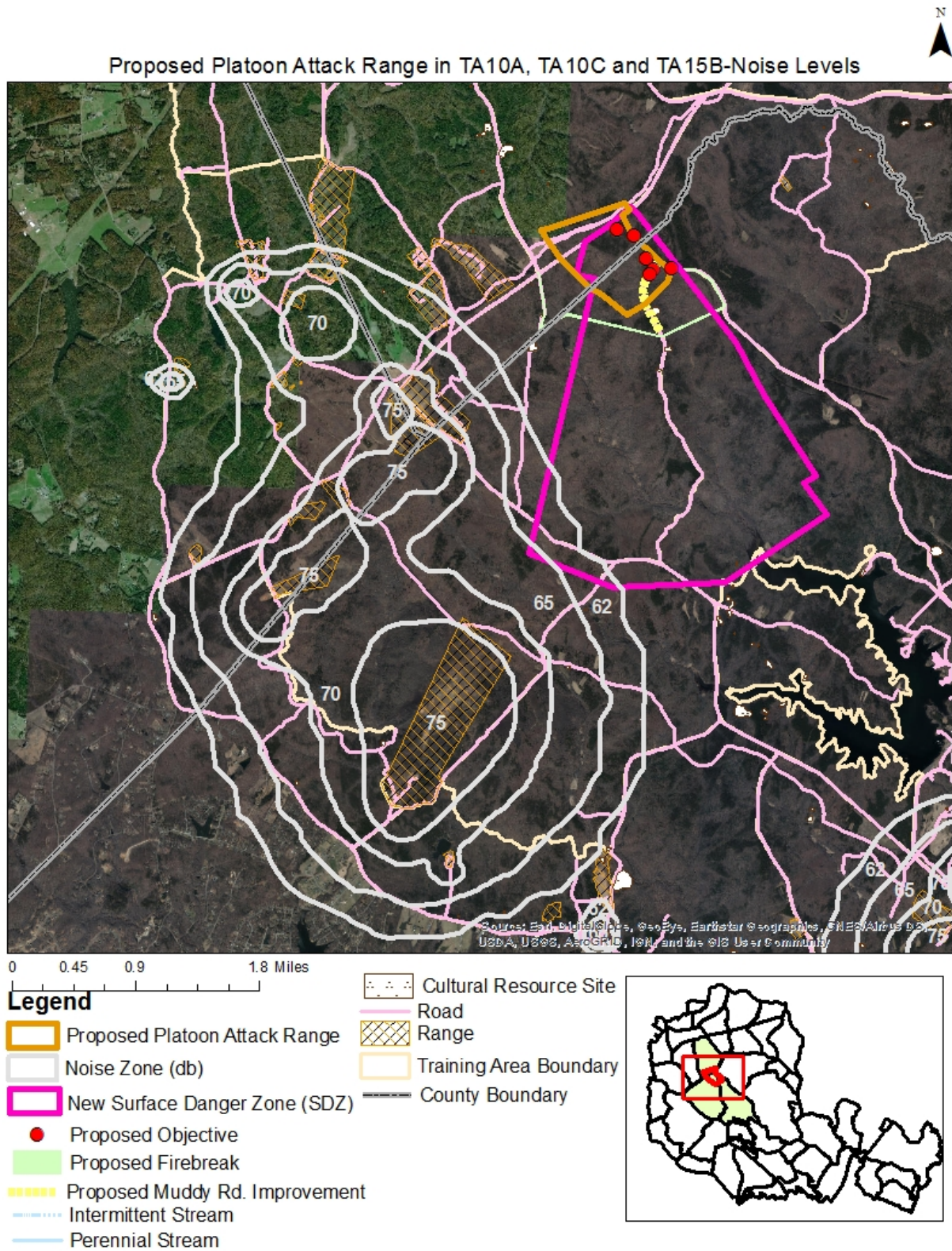


Figure 4.8.2.1

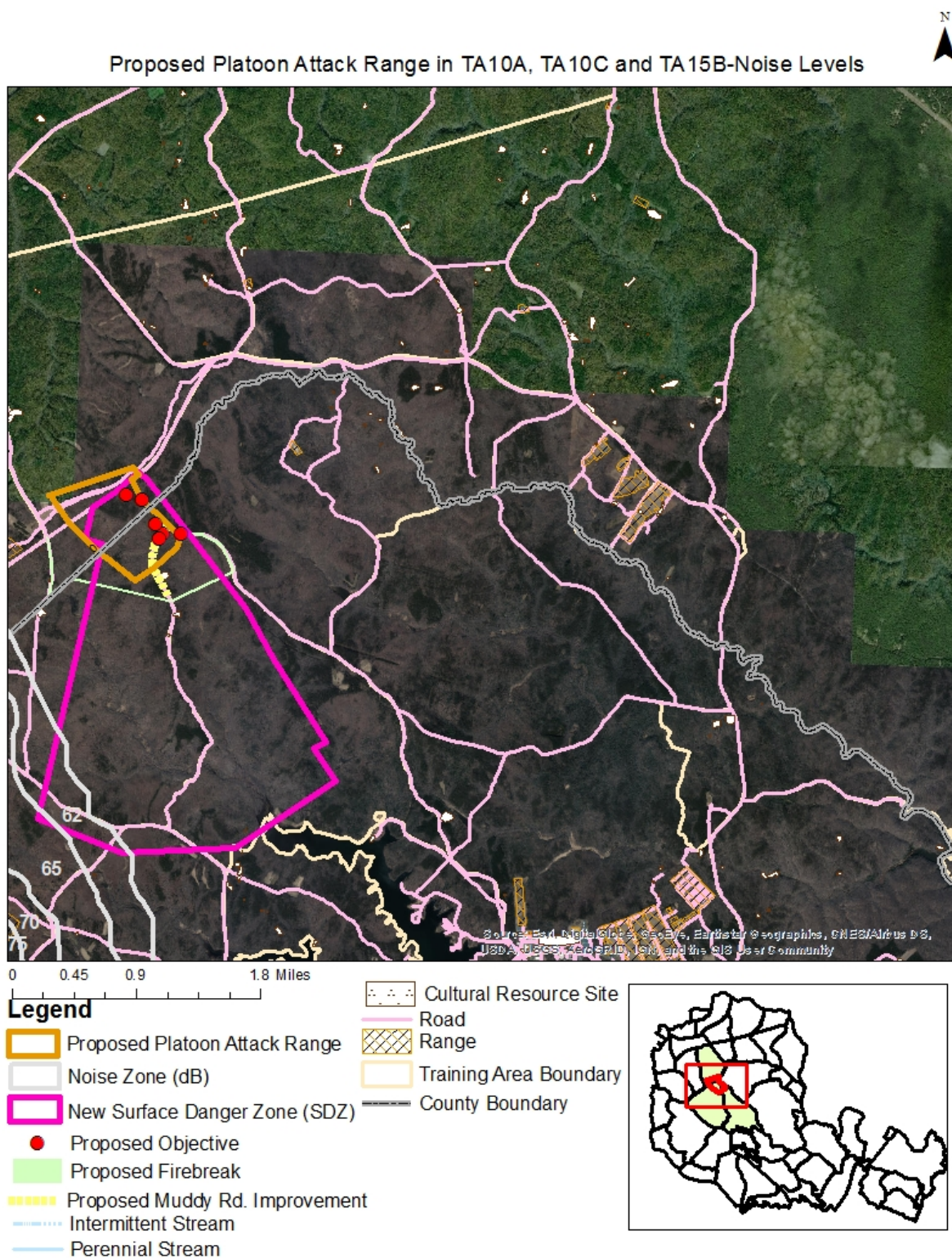


Figure 4.8.2.2

4.9 Infrastructure

This section analyzes the magnitude of anticipated increases or decreases in public works infrastructure demands considering historic levels, existing management practices, and storage capacity, and evaluates potential impacts to public works infrastructure associated with implementation of the alternatives. Impacts are evaluated by whether they would result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned.

4.9.1 Alternative A - No Action

Under the no alternative, no additional infrastructure will be added. No existing infrastructure will be impacted.

4.9.2 Alternative B

4.9.2.1 Potential Impacts

Alternative B will not require any additional infrastructure or impact existing utilities.

4.10 Transportation

Impacts to ground traffic and transportation are analyzed by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic.

4.10.1 Alternative A - No Action

Under the no action alternative, Muddy Rd. would stay in its current condition and not be improved.

4.10.2 Alternative B

Under Alternative B, a 0.6 mile portion of Muddy Rd. from the proposed action's northern boundary to the planned firebreak would be improved. Implementing Alternative B would involve improvements to drainage, smoothing out ruts, and adding aggregate. All improvements would occur on existing infrastructure and would not be outside the existing footprint

of Muddy Rd. No widening of Muddy Rd. will occur and as a result forest cover and other vegetation will not be removed. As a result, any impacts to the environment due to the upgrades to Muddy Rd. would be negligible.

4.11 Public Health and Safety

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.

4.11.1 Alternative A - No Action

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

4.11.2 Alternative B

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 location of Alternative B - the proposed Platoon Attack Range in TAS10A, 10C and 15B is within the non-dudged impact area of MCBQ and not within a UXO or munitions response site. However, since the area is within the non-dudged impact area the following guidance must be followed:

According to the MCO 5090.2A. Ch. 3, Chapter 10, Section 2, Paragraph 10221, if contamination is discovered during construction and it is Defense Environmental Restoration Program (DERP) eligible, NAVFACENGCOM can carry out the site investigation/cleanup using 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.

4.12 Hazardous Materials and Wastes

The hazardous materials and wastes analysis contained in the respective sections addresses issues related to the use and management of hazardous materials and wastes as well as the presence and management of specific cleanup sites at MCBQ.

4.12.1 Alternative A - No Action

This alternative would have no effect on general procedures and practices for hazardous material removal, hazardous waste management, or solid waste management at MCBQ.

4.12.2 Alternative B

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.

5.0 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.

5.1 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?

5.2 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.

5.3 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 5-1 and briefly described in the following subsections.

5.3.1 Past Actions

- Construction of Marine Corps Information Operations Center (MCIOC).
- Construction of Addition to Building 27410 for Marine Corps Network Operations Center (MCNOC).
- Demolition of Building 27220, Target Warehouse.

- P644 Dining Facility.

5.3.2 Present and Reasonably Foreseeable Actions

- Establishment of a Crossing at Cannon Creek and Re-establishment of a Perimeter Trail in TA7A and 9C.
- Construction of the Range 5 Staging Area.
- Construction of a Mini Mart near intersection of MCB-1 and Hotpatch Rd.
- Ammunition Supply Point (ASP) expansion.
- Timber Harvest in TAs10A, 10C and 11A

5.3.3 Future projects:

- Construction of Two COCO Retail Service Facilities.
- The TA12B Boundary Adjustment.
- Improve the intersection of MCB-1 and MCB-2 with the addition of a traffic circle.
- Construct new TBS fire station.
- Construction of three large warehouses to create consolidated storage area.
- P-656 - Visitor Control Center along Russell Rd. prior to existing gate house.
- Construct new Game Check Station to the north of ASP along MCB-1.
- Demolition of old Game Check Station on Telegraph Loop.
- 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.

5.4 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 4, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine cumulative impacts. Figure 5.4.1 summarizes the overall impacts of Alternative B. Figure 5.4.2 displays the impact to forest cover based on several similar actions that are currently being implemented or will be implemented in the near future at MCBQ, including the Establishment of the Platoon Attack Range in TA10A, TA10C and TA15B.

Environmental Impact Evaluation Matrix		
Resource	Alternative A - No Action	Alternative B - Establishment of a Platoon Attack Range in Training Areas 10A, 10C and 15B.
Air Quality	No effect	No effect
Water Resources	No effect	No effect: A 50 foot buffer will be maintained around all perennial, intermittent streams and wetlands
Geological Resources	No effect	No effect: Best Management Practices (BMPs) will eliminate any impacts to soils.
Cultural Resources	No effect	No effect
Biological Resources	No effect	Not likely to adversely affect: USFWS TOYR from 15 April - 15 September will be implemented to reduce impacts to Indiana bat and NLEB. Action proponent will cease all tree removal activities and contact their contracting officer as well as NREA if a maternity colony for the Indiana bat, NLEB, Little Brown bat or Tri-Colored bat is encountered during tree-removal/thinning activities.
Noise	No effect	No effect
Infrastructure	No effect	No effect
Transportation	No effect	No effect
Military Training	No effect	Existing Training will not be impacted
Public Health and Safety/Munitions Response	No effect	No effect
Hazardous Waste	No effect	No effect

Figure 5.4.1

Forest Cover Remaining at MCBQ after implementation of the Platoon Attack Range in TA10A, TA10C and TA15B.	
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
Timber Harvest in TA10A, 11C and 11A	52,051.08
Establishment of a Platoon Attack Range in TA10A, 10C and 11A	52,021.47

Figure 5.4.2

Establishing the Platoon Attack Range will mostly involve thinning or selectively removing timber within the 242 acre footprint. The only locations where timber will be cleared are around the six objectives and the firebreak. With the exception of these two locations, the majority of the proposed action footprint will remain forested. The establishment of the firebreak will remove approximately 30 acres of forest cover at MCBQ, however well over 52,000 acres of forest cover will remain. Both the firebreak and areas around the objectives will be replanted with vegetation suitable for training while additionally stabilizing soil, preventing erosion and eliminating any impacts to streams or wetlands.

6.0 Other Considerations Required By NEPA

6.1 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 6-1 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. These findings are also thoroughly discussed in section 4.0.

• **Table 6-1 Principal Federal and State Laws Applicable to the Proposed Action.**

<i>Federal, State, Local, and Regional Land Use Plans, Policies, and Controls</i>	<i>Status of Compliance</i>
National Environmental Policy Act (NEPA); CEQ NEPA implementing regulations; Navy/USMC procedures for Implementing NEPA	Compliant - EA
Clean Air Act	Compliant - Proposed action eligible for RONA. All guidance pertaining to open burning and fugitive dust emissions will be followed.
Clean Water Act; 11990, Protection of Wetlands;	Compliant - Will maintain 50 ft. buffer around all streams and wetlands. No fill or discharge will occur into stream, wetlands or other designated waters of the U.S.
National Historic Preservation Act	Compliant - Proposed action will not involve significant ground disturbance. The majority of tree stumps will be left in place.
Endangered Species Act	Compliant - Will not likely adversely affect the federally-endangered Indiana bat, federally-threatened NLEB or federally-threatened SWP. MBCQ will be implementing USFWS TOYR to prevent any impacts to the Indiana Bat and NLEB.
Migratory Bird Treaty Act	Compliant - Tree removal activities will occur outside of the nesting season.
Bald and Golden Eagle Protection	Compliant - There are no known Bald Eagle nests within the project area. Project will adhere to the

• **Table 6-1 Principal Federal and State Laws Applicable to the Proposed Action.**

<i>Federal, State, Local, and Regional Land Use Plans, Policies, and Controls</i>	<i>Status of Compliance</i>
	330 ft. overstory and 660 ft. buffers from the Bald Eagle nest. Project is not within a Bald Eagle Concentration Area.
Resource Conservation and Recovery Act; Toxic Substances Control Act (15 U.S.C. sections 2601-2629)	Compliant - Proposed action location is not a former munitions site or UXO site and is not a hazardous waste storage location.
Executive Order 11988, Floodplain Management.	Compliant - Proposed action is located outside of a 100-year floodplain and within area of minimal flood risk.
Executive Order 12088, Federal Compliance with Pollution Control Standards; Toxic Substances Control Act (15 U.S.C. sections 2601-2629)	Compliant - Proposed action location is not a former munitions site, does not contain contamination and is not a hazardous waste storage location.
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	Compliant - Proposed action will not negatively impact minority populations and low-income populations. Any impacts will be temporary in nature.
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	Compliant - Proposed action will not negatively impact minority populations and low-income populations. Any impacts will be temporary in nature.

6.2 Irreversible or Irretrievable Commitments of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of the Proposed Action would involve human labor; the consumption of fuel, oil, and lubricants for construction and logging vehicles as well as primarily thinning of 242 acres of trees. Implementing the Proposed Action would not result in significant irreversible or irretrievable commitment of resources.

6.3 Unavoidable Adverse Impacts

This EA has determined that the alternatives considered would not result in any unavoidable significant impacts.

6.4 Relationship Between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

In the short-term, effects to the human environment with implementation of the proposed action would primarily relate to the timber thinning and removal activities. Air quality, noise, and recreational opportunities would be impacted in the short-term. If the USFWS TOYR and water resource BMPs are followed, there would be no long-term negative effects due to the implementation of the proposed action. The proposed Platoon Attack Range in TA10A, 10C and 15B would not significantly impact the long-term natural resource productivity of the area. The proposed action would also not result in any impacts that would significantly reduce environmental productivity or human health.

7.0 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.

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).

Headquarters Department of the Army (2012) Range Safety. DA PAM 385-63. Washington D.C.

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, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, 1994.

E.O. 13045, *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.

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.

Marine Corps Order P5090.2A Ch 3

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)
2016. 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

NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions, draft, 2010. Council on Environmental Quality.

Naval Facilities Engineering Command. (2012). Range Complex Management Plan, Marine Corps Base Quantico. Washington D.C.

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/>

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

Virginia Tech Conservation Management Institute 2016 (VTCMI).
Bat Survey for U.S. Marine Corps Base Quantico, Virginia
Blacksburg, Virginia.

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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
AAQS - Ambient Air Quality Standard
AGL - above ground level
AICUZ - Air Installation Compatible Use Zone
AlB - Appling Fine Sandy Loam, 2-6% Slopes
AlC2 - Appling Fine Sandy Loam, 6-15% Slopes eroded
AO - Area of Operations
AOR - Area of Responsibility
APE - Area of Potential Effect
APZ - Accident Potential Zone
ARPA - Archaeological Resources Protection Act
ATC - air traffic control
ATFP - Antiterrorism Force Protection
BA - Biological Assessment
BACT - Best Available Control Technology
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
Ce - Cartecay Fine Sandy Loam
CEQ - Council on Environmental Quality
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
CHPPM - Center for Health Promotion and Preventive Medicine
ClB - Colfax Fine Sandy Loam, 2-6% Slopes
CNIC - Commander Navy Installations Command
CO - carbon monoxide
CO2 - carbon dioxide
CWA - Clean Water Act
CZMA - Coastal Zone Management Act
dB - decibel
dBA - A-weighted sound level
dBC - C-weighted sound level
dBP - peak decibel
DEIS - Draft Environmental Impact Statement
DERP - Defense Environmental Restoration Program
DNL - day-night average sound level
DoD - United States Department of Defense

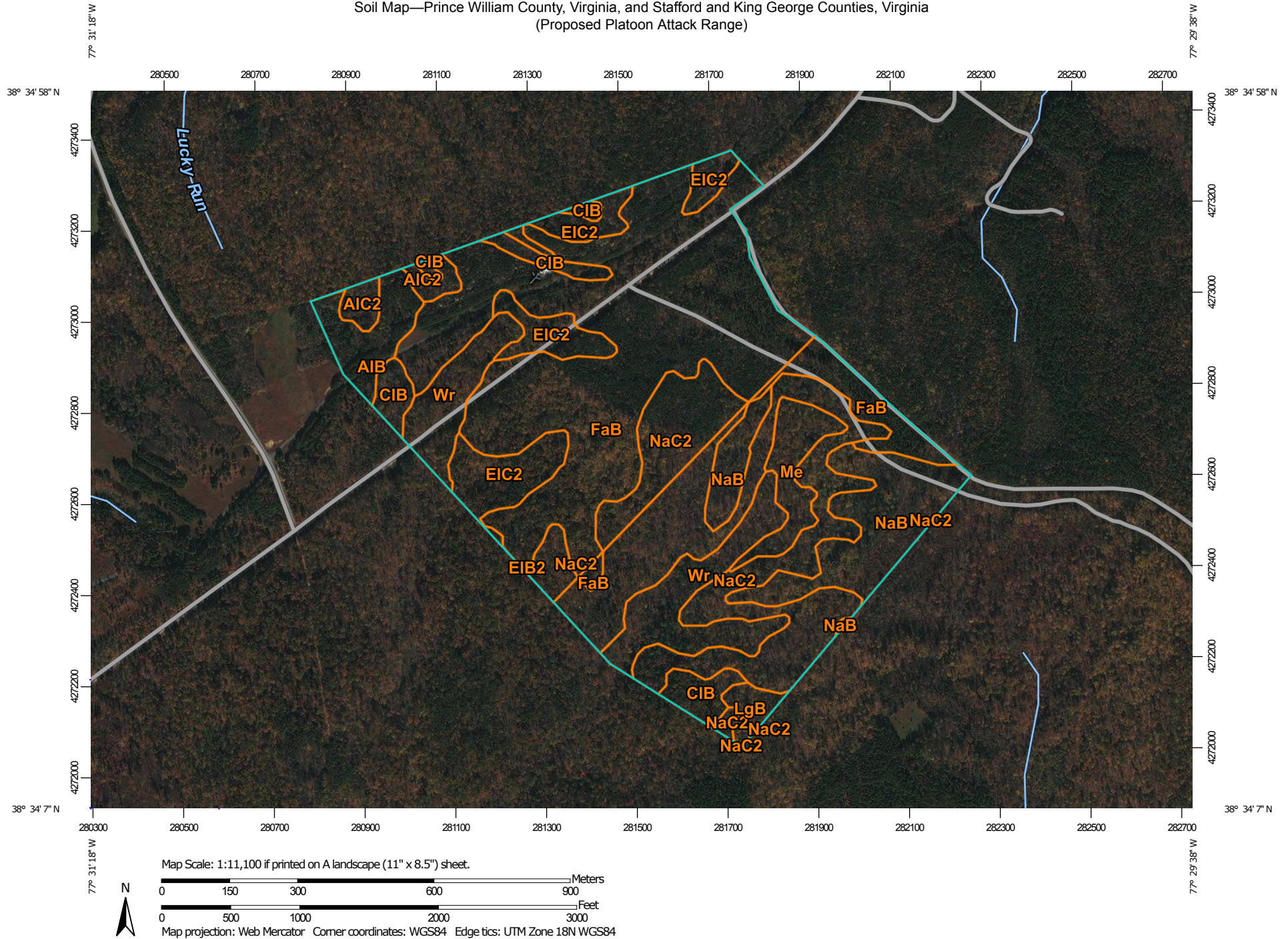
DON - United States Department of the Navy
DZ - drop zone
EA - Environmental Assessment
EAP - Encroachment Action Plan
EFH - Essential Fish Habitat
EIS - Environmental Impact Statement
ElB2 - Elioak Silt Loam, 2-6% Slopes Eroded
ElC2 - Elioak Silt Loam, 6-15% Slopes, Eroded
EO - Executive Order
EOD - explosive ordnance disposal
ESA - Endangered Species Act
EPCRA - Emergency Planning and Community Right-to-Know Act
ESQD - explosive safety quantity distance
FAA - Federal Aviation Administration
FaB - Fairfax Loam, 2-6% Slopes
FEIS - Final Environmental Impact Statement
FEMA - Federal Emergency Management Agency
FIFRA - Federal Insecticide, Fungicide, and Rodenticide Act
FIRM - Flood Insurance Rate Map
FONSI - Finding of No Significant Impact
Ft. - Feet
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
kHz - kilohertz
LANDNAV - Land Navigation
LBP - lead based paint
LgB - Lignum Silt Loam, 2-6% Slopes
LZ - Landing Zone
MAC - Military Operations in Urban Terrain Assault Course
MBTA - Migratory Bird Treaty Act
MCAF - Marine Corps Air Facility
MCB - Marine Corps Base
MCBQ - Marine Corps Base Quantico, Virginia
MCCS - Marine Corps Community Services
MCO - Marine Corps Order
Me - Meadowville Silt Loam
MEC - Munitions and Explosives of Concern
MEM - military expended material
MILCON - military construction

MILES - Multiple Integrated Laser Engagement System
 MLLW - mean lower low water
 MMRP - Military Munitions Response Program
 MOA - Military Operations Area
 MOUT - Military Operations in Urban Terrain
 MSFCMA - Magnuson-Stevens Fishery Conservation and Management Act
 MSL - mean sea level
 MTR - military training route
 NAAQS - National Ambient Air Quality Standards
 NaB - Nason Silt Loam, 2-6% Slopes
 NaC2 - Nason Silt Loam, 6-15% Slopes, Eroded
 NAGPRA - Native American Graves Protection and Reparation Act
 NAVFAC - Naval Facilities Engineering Command
 NEPA - National Environmental Policy Act
 NEW - net explosive weight
 NHPA - National Historic Preservation Act
 NO2 - nitrogen dioxide
 NO_x - nitrous oxide
 NOA - notice of availability
 NOI - Notice of Intent
 NPDES - National Pollutant Discharge Elimination System
 NPS - National Park Service
 NRHP - National Register of Historic Places
 NSR - New Source Review
 ODS - Ozone Depleting Substances
 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
 PTE - Potential to Emit
 PTS - permanent threshold shift
 QRP - Qualified Recycling Program
 RAICUZ - Range Air Installation Compatible Use Zone
 Rd. - Road

RCMP - Range Complex Management Plan
RCRA - Resource Conservation and Recovery Act
ROD - Record of Decision
RONA - Record of Non-Applicability
SAV - submerged aquatic vegetation
SDZ - Surface Danger Zone
SEL - sound exposure level
SHPO - State Historic Preservation Officer
SIP - State Implementation Plan
SO2 - sulfur dioxide
SPL - sound pressure level
SR - State Route
SUA - Special Use Area
SWP - Small-Whorled Pogonia
TA - Training Area
TBS - The Basic School
TOYR - Time of Year Restrictions
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
Wr - Worsham Loam

APPENDIX B
Soil Maps


Soil Map—Prince William County, Virginia, and Stafford and King George Counties, Virginia
(Proposed Platoon Attack Range)



Soil Map—Prince William County, Virginia, and Stafford and King George Counties, Virginia
(Proposed Platoon Attack Range)


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.

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: Prince William County, Virginia

Survey Area Data: Version 14, Oct 5, 2017

Soil Survey Area: Stafford and King George Counties, Virginia

Survey Area Data: Version 13, Oct 5, 2017

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Sep 25, 2014—Mar 10, 2017

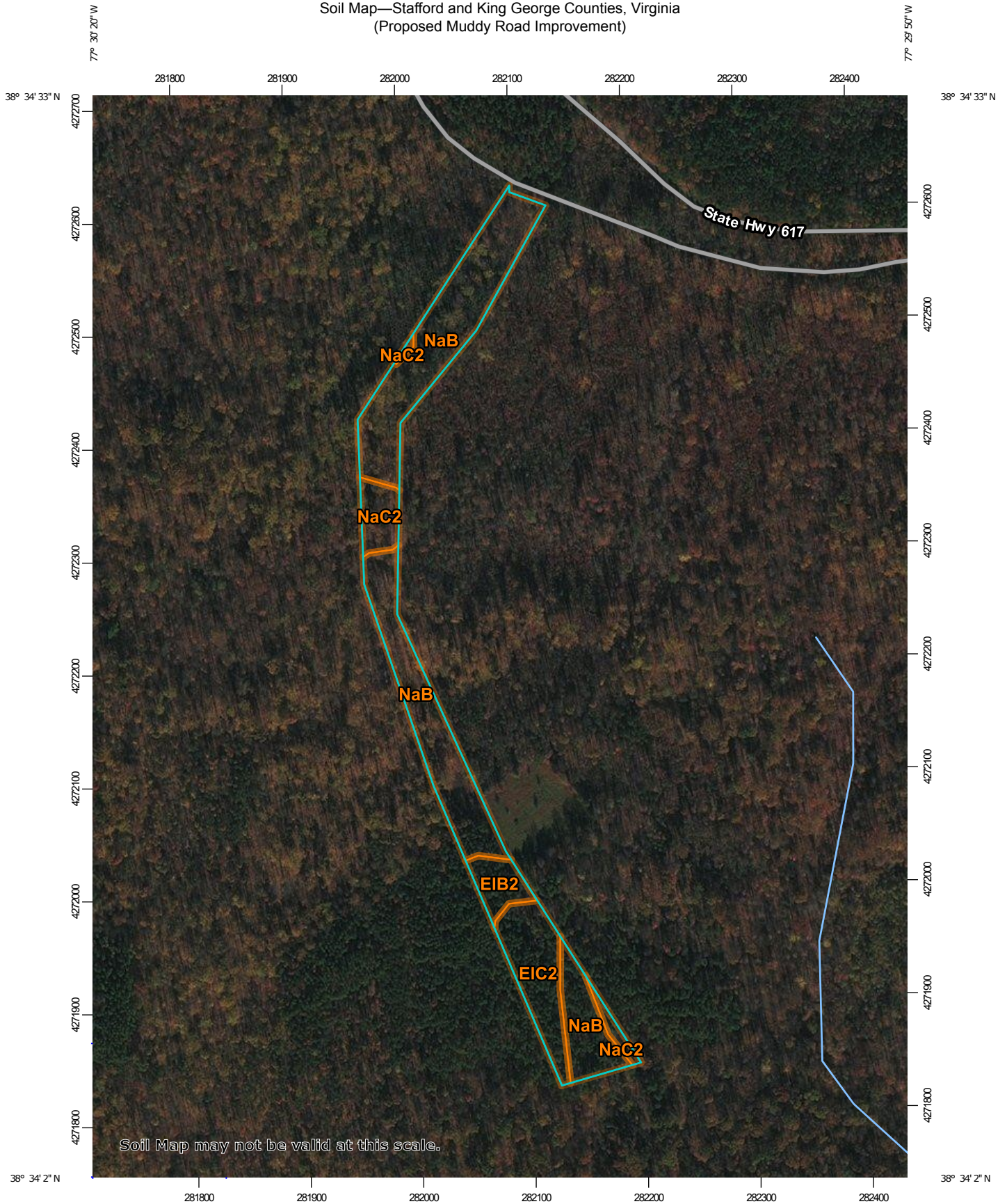
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

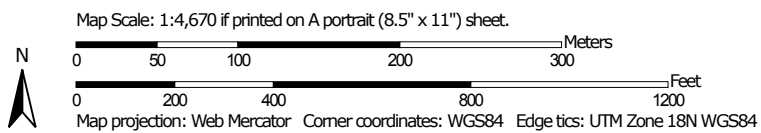
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AIB	Appling fine sandy loam, 2 to 6 percent slopes	7.7	3.2%
AIC2	Appling fine sandy loam, 6 to 15 percent slopes, eroded	3.7	1.5%
CIB	Colfax fine sandy loam, 2 to 6 percent slopes	5.3	2.2%
EIB2	Elioak silt loam, 2 to 6 percent slopes, eroded	0.1	0.0%
EIC2	Elioak silt loam, 6 to 15 percent slopes, eroded	18.0	7.5%
FaB	Fairfax loam, 2 to 6 percent slopes	83.7	34.7%
NaC2	Nason silt loam, 6 to 15 percent slopes, eroded	14.4	6.0%
Wr	Worsham loam	8.7	3.6%
Subtotals for Soil Survey Area		141.6	58.7%
Totals for Area of Interest		241.2	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CIB	Colfax fine sandy loam, 2 to 6 percent slopes	3.3	1.4%
FaB	Fairfax loam, 2 to 6 percent slopes	7.6	3.1%
LgB	Lignum silt loam, 2 to 6 percent slopes	2.4	1.0%
Me	Meadowville silt loam	7.4	3.1%
NaB	Nason silt loam, 2 to 6 percent slopes	22.2	9.2%
NaC2	Nason silt loam, 6 to 15 percent slopes, eroded	42.9	17.8%
Wr	Worsham loam	13.7	5.7%
Subtotals for Soil Survey Area		99.6	41.3%
Totals for Area of Interest		241.2	100.0%

Soil Map—Stafford and King George Counties, Virginia
(Proposed Muddy Road Improvement)




Soil Map may not be valid at this scale.



Soil Map—Stafford and King George Counties, Virginia
(Proposed Muddy Road Improvement)

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 13, Oct 5, 2017

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

Date(s) aerial images were photographed: Sep 25, 2014—Mar 10, 2017

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
EIB2	Elioak silt loam, 2 to 6 percent slopes, eroded	0.5	5.9%
EIC2	Elioak silt loam, 6 to 15 percent slopes, eroded	1.3	15.7%
NaB	Nason silt loam, 2 to 6 percent slopes	5.8	70.1%
NaC2	Nason silt loam, 6 to 15 percent slopes, eroded	0.7	8.3%
Totals for Area of Interest		8.3	100.0%


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.

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: Prince William County, Virginia

Survey Area Data: Version 14, Oct 5, 2017

Soil Survey Area: Stafford and King George Counties, Virginia

Survey Area Data: Version 13, Oct 5, 2017

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Sep 25, 2014—Mar 10, 2017

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
CIB	Colfax fine sandy loam, 2 to 6 percent slopes	5.9	11.7%
FaB	Fairfax loam, 2 to 6 percent slopes	4.2	8.4%
NaC2	Nason silt loam, 6 to 15 percent slopes, eroded	1.3	2.6%
Wr	Worsham loam	1.7	3.4%
Subtotals for Soil Survey Area		13.0	26.1%
Totals for Area of Interest		50.0	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Cartecay fine sandy loam	2.2	4.5%
EIB2	Elioak silt loam, 2 to 6 percent slopes, eroded	1.6	3.2%
EIC2	Elioak silt loam, 6 to 15 percent slopes, eroded	2.1	4.2%
FaB	Fairfax loam, 2 to 6 percent slopes	6.9	13.7%
LgB	Lignum silt loam, 2 to 6 percent slopes	3.7	7.3%
Me	Meadowville silt loam	1.4	2.9%
NaB	Nason silt loam, 2 to 6 percent slopes	10.6	21.2%
NaC2	Nason silt loam, 6 to 15 percent slopes, eroded	5.5	10.9%
Wr	Worsham loam	2.9	5.9%
Subtotals for Soil Survey Area		37.0	73.9%
Totals for Area of Interest		50.0	100.0%

Appendix C
Cultural and Archaeological Resource Documentation

From: [Roberts CIV Catherine](#)
To: [Siddall CIV Darien G](#)
Date: Monday, July 16, 2018 1:18:58 PM

Darien

You can adjust the wording to fit into the EA

There are no impacts to historic resources to TA 10A related to the construction of the platoon attack range.

Marine Corps Base Quantico
Archaeologist
703 432 6781

Appendix D
Endangered Species Documentation



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:

May 21, 2018

Consultation Code: 05E2VA00-2018-SLI-3447

Event Code: 05E2VA00-2018-E-07997

Project Name: Proposed Platoon Attack Range in Training Areas (TA) 10A, 10C and 15B

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: 05E2VA00-2018-SLI-3447

Event Code: 05E2VA00-2018-E-07997

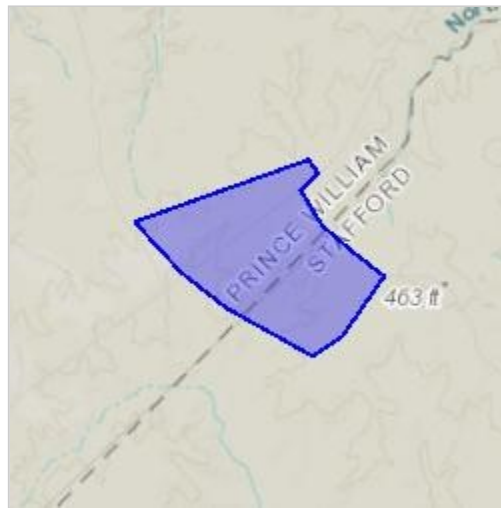
Project Name: Proposed Platoon Attack Range in Training Areas (TA) 10A, 10C and 15B

Project Type: LAND - CLEARING

Project Description: Will mostly thin approximately 242 acres of land to establish a Platoon Attack Range within TAs 10A, 10C and 15B. There will be clearing around the six proposed target location. Tree removal will begin in 2019.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.57616838491124N77.5085840618331W>



Counties: Prince William, VA | 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 Fisheries¹, 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 <i>Myotis sodalis</i> 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 <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

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

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

New Platoon
Attack Range

-MCB-6

Range
243 Acres

Loblolly & Pine
Thinnings
210 Acres

Muddy Rd.

Rt 617

Metal
Contamination
230 Acres

N



Scale: 1" = 800'



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

3 July 18

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 PROPOSED PLATOON ATTACK
RANGE

Encl: (1) Map of Survey Area for the Platoon Attack Range
(2) Photographs of Sites

1. Range Management Branch, MCINCR-MCBQ, has proposed a 243 acre Platoon Attack Range located south of MCB-6, west of Route 617 and east of 613. Muddy Road is located near the center of the project. Additionally, timber will be thinned south and east of the proposed range with a firebreak and proposed road improvements. The total project area is approximately 650 acres.

2. On 2-3 July 2018, the proposed Platoon Attack Range, firebreak, and associated timber removal area was surveyed for presence of the federally threatened, small whorled pogonia (SWP). Enclosure 1 provides a map of the survey areas. Survey personnel consisted of Christa Nye, Brad Watkin, Jim Ma, Kenneth Erwin, Audrey McCrary, Cory Boswell, Rebecca Schuab, Frank Duncan, and Marlene McGraw of the Natural Resources and Environmental Affairs Branch (B 046).

3. Due to an intense range-induced wildfire around 2014, the center of the project area straddling Muddy Road consists of downed trees and thick understory regeneration consisting of tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), white oak (*Quercus alba*), and devil's walking stick (*Aralia spinosa*). The fire also created patches with little to no canopy cover near muddy road. This area was deemed unsuitable habitat and not surveyed for the SWP.

4. Several pine plantations are within the project area. These areas were deemed unsuitable habitat and were not surveyed for the SWP.

5. Beaverdam Run and associated tributaries run from the northwestern portion of the site with an active beaver dam located near the southern boundary.

6. Marginal SWP habitat was found throughout the north and west portions of the site and consisted of tulip poplar (*Liriodendron tulipifera*), sassafras (*Sassafras albidum*), chestnut oak (*Quercus montana*), white oak (*Quercus alba*), red oak (*Quercus rubra*), and hickory (*Carya spp.*) in the canopy with American holly (*Ilex opaca*), mountain laurel (*Kalmia latifolia*), blackgum (*Nyssa sylvatica*) in the understory. The herbaceous layer consisted of greenbrier (*Smilax spp.*) lowbush blueberry and deerberry (*Vaccinium spp.*).

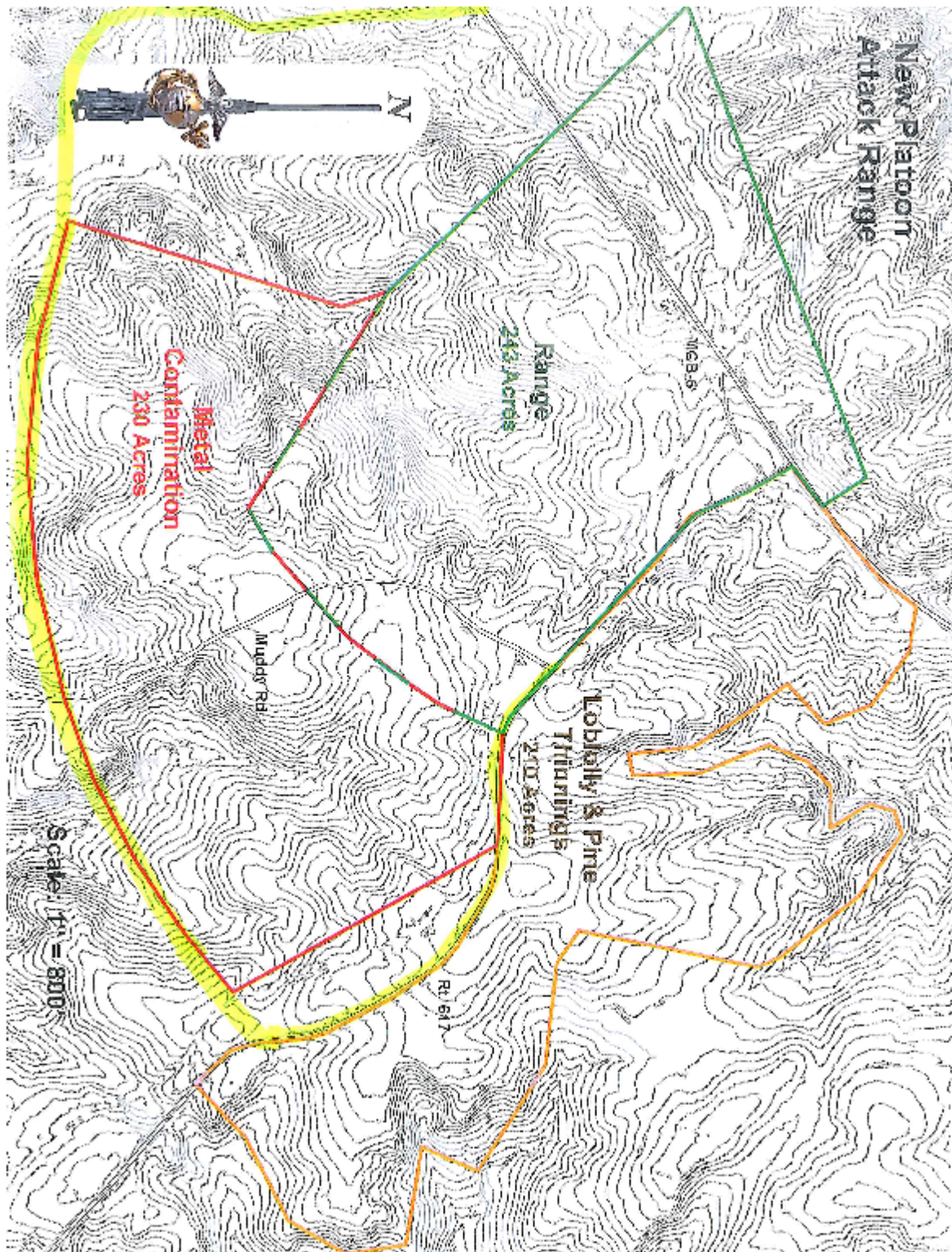
7. Potentially suitable habitat at the site (western and southern portion) consisted tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), chestnut oak (*Quercus montana*), willow oak (*Quercus phellos*), and red maple (*Acer rubra*), in the overstory layer with deer-tongue grass (*Dichanthelium clandestinum*) and New York fern (*Thelypteris noveboracensis*) in the herbaceous layer.

8. While suitable habitat was found adjacent to streams located in the western and southern portion of the project area, the SWP was not found during the survey. A large number of Indian cucumber root (*Medeola virginiana*) and large-whorled pogonia (*Isotria verticillata*) were found along these drainages. While potentially suitable habitat is present, the proposed Platoon Attack Range and associated timber thinning will not likely adversely affect this federally listed species.

Christa Nye

Copy to:
Head, NEPA Program

Encl (1):



Encl (2):



Western portion of the site near the proposed firebreak.



Wetland area in the southwestern portion of the project.



Large-whorled pogonia and Indian cucumber root (from western portion)



Tree blow down in eastern portion of the site



Ephemeral stream in the southeast portion of the site.



Indian cucumber root found in the south eastern portion of the site.



Dense understory near the center of the project area.



Dense understory near the center of the project area.



Potentially suitable habitat found in northwest portion.



Proposed loblolly thinning area east of the proposed range.



Northeast portion of the site.



Species Conclusions Table

Project Name: Proposed Platoon Attack Range in Training Areas (TA) 10A, 10C and 15B (includes firebreak).

Date: 3 July 2018

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
Bald Eagle	Unlikely to disturb nesting Bald Eagles.	No Eagle Act Permit required.	Proposed action is over 13,000 feet from closest Bald Eagle nest. Not within 600 ft. of a Bald Eagle Nest and not within a concentration area.
Harperella	No suitable habitat present	No effect.	No perennial streams within or near 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) Field Guide (2009), the Virginia BMPs for Water Quality Technical Manual (2011) and Virginia Erosion Control and Sedimentation Handbook (1992).
Indiana Bat	Suitable habitat present	Not likely to adversely effect.	USFWS Time of Year Restrictions will be implemented. No trees/timber will be removed within the proposed action footprints from 15 April to 15 September to during the active pup season for the Indiana Bat.
Northern Long-Eared Bat (NLEB)	Suitable habitat present	Not likely to adversely effect.	USFWS Time of Year Restrictions will be implemented. No trees/timber will be removed within the proposed action footprints from 15 April to 15 September to during the active pup season for the NLEB.
Small-Whorled Pogonia	Suitable habitat present	Not likely to adversely effect.	Although potentially suitable and marginally suitable habitat was detected. No Small-Whorled Pogonia was found within the proposed action location



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: 5 July 2018

Self-Certification Letter

Project Name: Proposed Platoon Attack Range in Training Areas (TA) 10A, 10B and 15B.

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), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended (Eagle Act). 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 and Eagle Act conclusions. These conclusions resulted in:

- “no effect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- “may affect, not likely to adversely affect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- “may affect, likely to adversely affect” determination for the Northern long-eared bat (*Myotis septentrionalis*) and relying on the findings of the January 5, 2016 Programmatic Biological Opinion for the Final 4(d) Rule on the Northern long-eared bat; and/or
- “no Eagle Act permit required” determinations for eagles.

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 “no effect” or “not likely to adversely affect” determinations for proposed and listed species and proposed and designated critical habitat; the “may affect” determination for Northern long-eared bat; and/or the “no Eagle Act permit required” determinations for eagles. 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, or bald eagles 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,

A handwritten signature in blue ink that reads "Cynthia A. Schulz". The signature is written in a cursive style.

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:

May 21, 2018

Consultation Code: 05E2VA00-2018-SLI-3445

Event Code: 05E2VA00-2018-E-07993

Project Name: Firebreak for Proposed Platoon Attack Range

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: 05E2VA00-2018-SLI-3445

Event Code: 05E2VA00-2018-E-07993

Project Name: Firebreak for Proposed Platoon Attack Range

Project Type: LAND - CLEARING

Project Description: 1-mile, 50 ft wide firebreak for Platoon Attack Range in TA10A, 10C and 15B.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.571484719831105N77.51606733321785W>



Counties: Prince William, VA | 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 Fisheries¹, 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 <i>Myotis sodalis</i> 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 <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

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

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

New Platoon
Attack Range

-MCB-6

Range
243 Acres

Loblolly & Pine
Thinnings
210 Acres

Muddy Rd.

Rt 617

Metal
Contamination
230 Acres

N



Scale: 1" = 800'



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

3 July 18

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 PROPOSED PLATOON ATTACK
RANGE

Encl: (1) Map of Survey Area for the Platoon Attack Range
(2) Photographs of Sites

1. Range Management Branch, MCINCR-MCBQ, has proposed a 243 acre Platoon Attack Range located south of MCB-6, west of Route 617 and east of 613. Muddy Road is located near the center of the project. Additionally, timber will be thinned south and east of the proposed range with a firebreak and proposed road improvements. The total project area is approximately 650 acres.

2. On 2-3 July 2018, the proposed Platoon Attack Range, firebreak, and associated timber removal area was surveyed for presence of the federally threatened, small whorled pogonia (SWP). Enclosure 1 provides a map of the survey areas. Survey personnel consisted of Christa Nye, Brad Watkin, Jim Ma, Kenneth Erwin, Audrey McCrary, Cory Boswell, Rebecca Schuab, Frank Duncan, and Marlene McGraw of the Natural Resources and Environmental Affairs Branch (B 046).

3. Due to an intense range-induced wildfire around 2014, the center of the project area straddling Muddy Road consists of downed trees and thick understory regeneration consisting of tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), white oak (*Quercus alba*), and devil's walking stick (*Aralia spinosa*). The fire also created patches with little to no canopy cover near muddy road. This area was deemed unsuitable habitat and not surveyed for the SWP.

4. Several pine plantations are within the project area. These areas were deemed unsuitable habitat and were not surveyed for the SWP.

5. Beaverdam Run and associated tributaries run from the northwestern portion of the site with an active beaver dam located near the southern boundary.

6. Marginal SWP habitat was found throughout the north and west portions of the site and consisted of tulip poplar (*Liriodendron tulipifera*), sassafras (*Sassafras albidum*), (chestnut oak (*Quercus montana*), white oak (*Quercus alba*), red oak (*Quercus rubra*), and hickory (*Carya spp.*) in the canopy with American holly (*Ilex opaca*), mountain laurel (*Kalmia latifolia*), blackgum (*Nyssa sylvatica*) in the understory. The herbaceous layer consisted of greenbriar (*Smilax spp.*) lowbush blueberry and deerberry (*Vaccinium spp.*).

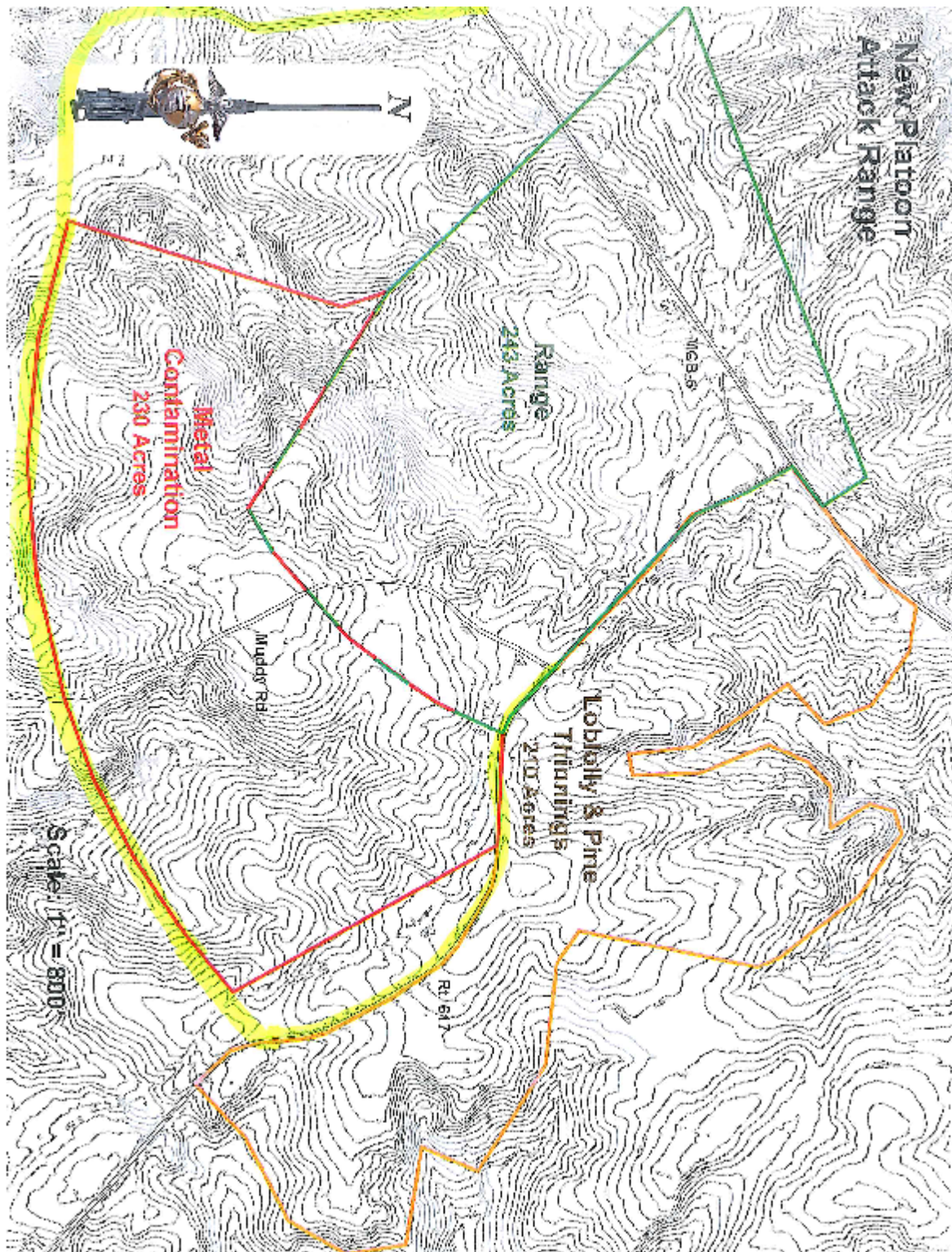
7. Potentially suitable habitat at the site (western and southern portion) consisted tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), chestnut oak (*Quercus montana*), willow oak (*Quercus phellos*), and red maple (*Acer rubra*), in the overstory layer with deer-tongue grass (*Dichanthelium clandestinum*) and New York fern (*Thelypteris noveboracensis*) in the herbaceous layer.

8. While suitable habitat was found adjacent to streams located in the western and southern portion of the project area, the SWP was not found during the survey. A large number of Indian cucumber root (*Medeola virginiana*) and large-whorled pogonia (*Isotria verticillata*) were found along these drainages. While potentially suitable habitat is present, the proposed Platoon Attack Range and associated timber thinning will not likely adversely affect this federally listed species.

Christa Nye

Copy to:
Head, NEPA Program

Encl (1):



Encl (2):



Western portion of the site near the proposed firebreak.



Wetland area in the southwestern portion of the project.



Large-whorled pogonia and Indian cucumber root (from western portion)



Tree blow down in eastern portion of the site



Ephemeral stream in the southeast portion of the site.



Indian cucumber root found in the south eastern portion of the site.



Dense understory near the center of the project area.



Dense understory near the center of the project area.



Potentially suitable habitat found in northwest portion.



Proposed loblolly thinning area east of the proposed range.



Northeast portion of the site.

Mapping Portal

Eagle Nest Locator - The Center for Conservation Biology

www.cccbirds.org/maps/#eagles

From Internet Explorer

MSN.com - Hotmail, ...

Kilometers to Feet conversion

...

Search

About Us

What We Do

Resources

News Room

Give to CCB

Help / FAQ

CCB MAPPING PORTAL

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Nests

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Species Conclusions Table

Project Name: Proposed Platoon Attack Range in Training Areas (TA) 10A, 10C and 15B (includes firebreak).

Date: 3 July 2018

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
Bald Eagle	Unlikely to disturb nesting Bald Eagles.	No Eagle Act Permit required.	Proposed action is over 13,000 feet from closest Bald Eagle nest. Not within 600 ft. of a Bald Eagle Nest and not within a concentration area.
Harperella	No suitable habitat present	No effect.	No perennial streams within or near 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) Field Guide (2009), the Virginia BMPs for Water Quality Technical Manual (2011) and Virginia Erosion Control and Sedimentation Handbook (1992).
Indiana Bat	Suitable habitat present	Not likely to adversely effect.	USFWS Time of Year Restrictions will be implemented. No trees/timber will be removed within the proposed action footprints from 15 April to 15 September to during the active pup season for the Indiana Bat.
Northern Long-Eared Bat (NLEB)	Suitable habitat present	Not likely to adversely effect.	USFWS Time of Year Restrictions will be implemented. No trees/timber will be removed within the proposed action footprints from 15 April to 15 September to during the active pup season for the NLEB.
Small-Whorled Pogonia	Suitable habitat present	Not likely to adversely effect.	Although potentially suitable and marginally suitable habitat was detected. No Small-Whorled Pogonia was found within the proposed action location



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: 5 July 2018

Self-Certification Letter

Project Name: Firebreak for Proposed Platoon Attack Range in TA10A, 10C and 15B.

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), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended (Eagle Act). 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 and Eagle Act conclusions. These conclusions resulted in:

- “no effect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- “may affect, not likely to adversely affect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- “may affect, likely to adversely affect” determination for the Northern long-eared bat (*Myotis septentrionalis*) and relying on the findings of the January 5, 2016 Programmatic Biological Opinion for the Final 4(d) Rule on the Northern long-eared bat; and/or
- “no Eagle Act permit required” determinations for eagles.

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 “no effect” or “not likely to adversely affect” determinations for proposed and listed species and proposed and designated critical habitat; the “may affect” determination for Northern long-eared bat; and/or the “no Eagle Act permit required” determinations for eagles. 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, or bald eagles 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,

A handwritten signature in blue ink that reads "Cynthia A. Schulz". The signature is written in a cursive style and is positioned above the printed name.

Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

Appendix E
Emissions Calculations

Record of Non-Applicability (RONA) for General Conformity

Project Name _____

Project Number _____

Project Contact _____

General Conformity under the Clean Air Act, Section 176(c) has been evaluated for the project described above according to the requirements of Title 40 Code of Federal Regulations (CFR) Part 93 and the applicable State Implementation Plan. The requirement of a conformity determination under this rule is not applicable to this project/action because:

- ☐ The project/action qualifies as an exempt action. The applicable exemption citation is:

Example: 40 CFR 93.153(c)(2)(xiv) Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of the transfer.

Note: Exemptions must be contained in the State Implementation Plan.

OR

- ☐ Total direct and indirect emissions from this project/action have been determined to be below the *de minimus* threshold for conformity purposes estimated at:

_____ tons/year of NO_x

_____ tons/year of VOC

_____ tons/year of PM_{2.5}

_____ tons/year of CO₂

_____ tons/year of _____

These levels are below the conformity threshold values established at 40 CFR 93.153(b), and supporting documentation and emission estimates are:

- ☐ Attached
☐ Appear in the NEPA Documentation
☐ Other _____

ENVIRONMENTAL COORDINATOR (title and signature)

DATE

Appendix F
Construction Waste Management Report

ISWM Program Manager 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 _____

**SUBMIT THIS FORM BY FAX TO (703) 784-4953, OR BY EMAIL TO: Marilisa Porter
at marilisa.porter@usmc.mil or call (703) 432-0522**

Comments: _____

Waste Stream	Disposal (Tons)	Disposal Cost	Recycled (Tons)	Recycled Cost	Recycled Revenues
C&D		\$		\$	\$

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
Timber Appraisal

GOVERNMENT ESTIMATE FOR SALE OF TIMBER

CONTRACT #: 617 Range Expansion

INSTALLATION: MCB, Quantico

PRODUCTS FOR SALE

(VOLUMES ESTIMATED USING STANDARD TECHNIQUES)

SPECIES AND PRODUCT	ESTIMATED QUANTITY AND UNIT OF MEASURE		VALUE/ UNIT	TOTAL	
<u>Sawtimber</u>					
Virginia Pine	102.7	MBF*	\$80	\$	8,216
Yellow Poplar	244.0	MBF	\$180	\$	43,920
White Oak	102.2	MBF	\$225	\$	22,995
Red Oak	169.7	MBF	\$200	\$	33,940
Chestnut Oak	202.3	MBF	\$100	\$	20,230
Miscellaneous	71.7	MBF	\$80	\$	5,736
<u>Pulpwood</u>					
Pine	748	Cords	\$15	\$	11,220
Hardwood	1093	Cords	\$8	\$	\$8,744
* MBF is thousand board feet based on the International 1/4 - Inch Tree Scale					

This estimate is based on the most recent timber sales on MCB Quantico, with value adjustments made based on quality, defect, and species of timber. Volumes are based on the acreage of the boundaries identified in the project plans dated Jul. 10, 2018. Any changes or additions to these boundaries will require changes to the volume and value of this appraisal. As directed by Marine Corps Base Order 11015.1B section 6c, payment shall be made by the responsible organization prior to any trees being removed from the site. Checks should be made payable to the U.S. Treasury. This appraisal is valid for 120 days.

TOTAL GOVERNMENT ESTIMATE: \$ 155,001

Submitted By: Justin Jennings

(NAME/SIGNATURE)

Title: Forester

Date: July 10, 2018