

ENVIRONMENTAL ASSESSMENT
FOR
THE ESTABLISHMENT OF RANGE 14G IN TRAINING AREA (TA) 12A
AT
MARINE CORPS BASE QUANTICO,
PRINCE WILLIAM COUNTY, VIRGINIA

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Table of Contents

1.0 Introduction..... 4

 1.1 Background..... 4

 1.2 Location..... 5

 Figure 1.2.1..... 5

 Figure 1.2.2..... 6

2.0 Need for the Proposed Action..... 6

3.0 Alternatives..... 7

4.0 Environmental Impacts..... 7

 Figure 4.1..... 9

 4.1 Air Quality..... 10

 4.1.1 Regulatory Setting..... 10

 4.1.2 Impacts of Alternative A - No Action..... 15

 4.1.3 Impacts of Alternative B - Establishment of Range 14G
 15

 4.2 Water Resources..... 17

 4.2.1 Regulatory Setting..... 18

 4.2.2 Affected Environment..... 19

 Figure 4.2.1..... 20

 Figure 4.2.2..... 21

 Figure 4.2.3..... 25

 4.2.3 Impacts of Alternative A - No Action..... 25

 4.2.4 Impacts of Alternative B - Establishment of Range 14G
 26

 4.3 Geological Resources..... 27

 4.3.1 Regulatory Setting..... 27

 4.3.2 Affected Environment..... 27

 Figure 4.3..... 28

 4.3.3 Impacts of Alternative A - No Action..... 30

 4.3.4 Impacts of Alternative B - Establishment of Range 14B 31

 4.4 Cultural Resources..... 31

 4.4.1 Regulatory Setting..... 31

 4.4.2 Affected Environment..... 32

 4.4.3 - Impacts of Alternative A..... 32

 4.4.4 - Impacts of Alternative B..... 32

 4.5 Biological Resources..... 33

 4.5.1 Regulatory Setting..... 34

 4.5.2 Affected Environment..... 35

 Figure 4.5.1..... 36

 4.5.3 - Impacts of Alternative A..... 39

 4.5.4 - Impacts of Alternative B..... 39

 4.6 Land Use..... 39

 4.6.1 Regulatory Setting..... 40

 4.6.2 Affected Environment..... 40

 4.6.3 - Impacts of Alternative A - No Action..... 41

 4.6.4 - Impacts of Alternative B..... 41

4.7 Military Training and Airspace	41
4.7.1 Affected Environment	41
4.7.2 Airspace	42
Figure 4.7.1	43
4.7.3 Surface Danger Zone (SDZ)	43
Figure 4.7.2	44
Figure 4.7.3	45
4.7.4 - Impacts of Alternative A	45
4.7.5 - Impacts of Alternative B	46
Figure 4.7.5.1	47
4.8 Transportation	47
4.8.1 Regulatory Setting	47
4.8.2 Affected Environment	48
4.8.3 - Impacts of Alternative A - No Action	48
4.8.4 - Impacts of Alternative B	48
4.9 Public Health and Safety	48
4.9.1 Regulatory Setting	49
4.9.2 - Impacts of Alternative A - No Action	49
4.9.3 - Impacts of Alternative B	50
4.10 Solid Wastes	50
4.10.1 Alternative A - No Action	50
4.10.2 Alternative B	50
5.0 Cumulative Impacts	51
5.1 Definition of Cumulative Impacts	51
5.2 Scope of Cumulative Impacts Analysis	52
5.3 Past, Present, and Reasonably Foreseeable Actions	53
5.3.1 Past Actions	53
5.3.2 Present and Reasonably Foreseeable Actions	54
5.4 Cumulative Impact Analysis	54
Figure 5.4.1	55
Figure 5.4.2	56
6.0 Other Considerations Required By NEPA	56
6.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations	56
7.0 Conclusions and Determinations	58
8.0 References	59
9.0 List of Agencies and Persons Contacted	61
10.0 Public and Agency Participation and Intergovernmental Coordination	61

Appendices

Appendix A: List of Acronyms	
Appendix B: Laws and Regulations	
Appendix C: Soil Survey Maps	
Appendix D: National Historic Preservation Act Section 106 Documentation	

Appendix E: Endangered Species Act Documentation
Appendix F: Air Quality Methodology and Calculations
Appendix G: Construction Waste Management Report
Appendix H: Erosion and Sediment Control Plan

1.0 Introduction

The MCBQ Range Management Branch (RMB), a Command of the United States Marine Corps (USMC) in Cooperation with the United States Drug Enforcement Administration (DEA) proposes to Establish a 8.8 acre multipurpose, small arms range adjacent to the 14 series ranges in TA12A that would be referred to as Range 14G. The range would be completed by mid to late 2020.

This environmental assessment (EA) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969; regulations of the Council on Environmental Quality (CEQ) 40 C.F.R. parts 1500-1508; and Marine Corps Order (MCO) P5090.2 which documents the US Marine Corps' (USMC) internal operating instructions on how to implement NEPA. This EA is intended to meet NEPA requirements for the Establishment of Range 14G at Marine Corps Base Quantico (MCBQ).

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

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

1.1 Background

In 2011, the site of the proposed action was evaluated for the establishment of a new fire and maneuver range for The Basic School (TBS). The proposed action was never implemented and the project was abandoned. In 2019, the DEA, a tenant agency at MCBQ, approached the base about creating a small arms, multipurpose range near the 14-series ranges that would suite their requirements. The mission of the DEA is to enforce the controlled substances laws of the United States (U.S.) and bring to the criminal and civil justice system of the U.S. or any

other competent jurisdiction, those organizations, involved in the growing, manufacture, or distribution of controlled substances appearing in or destined for illicit traffic in the U.S.; and to recommend and support non-enforcement programs aimed at reducing the availability of illicit controlled substances on the domestic and international markets.

1.2 Location

Proposed Range 14G would be established near Range 14F and the other 14-series ranges within TA12A. The proposed action location is near Marine Corps Base (MCB)-1 and aggregate covered firebreak road (FB-R14-5)(See Figures 1.2.1 and 1.2.2).



Figure 1.2.1

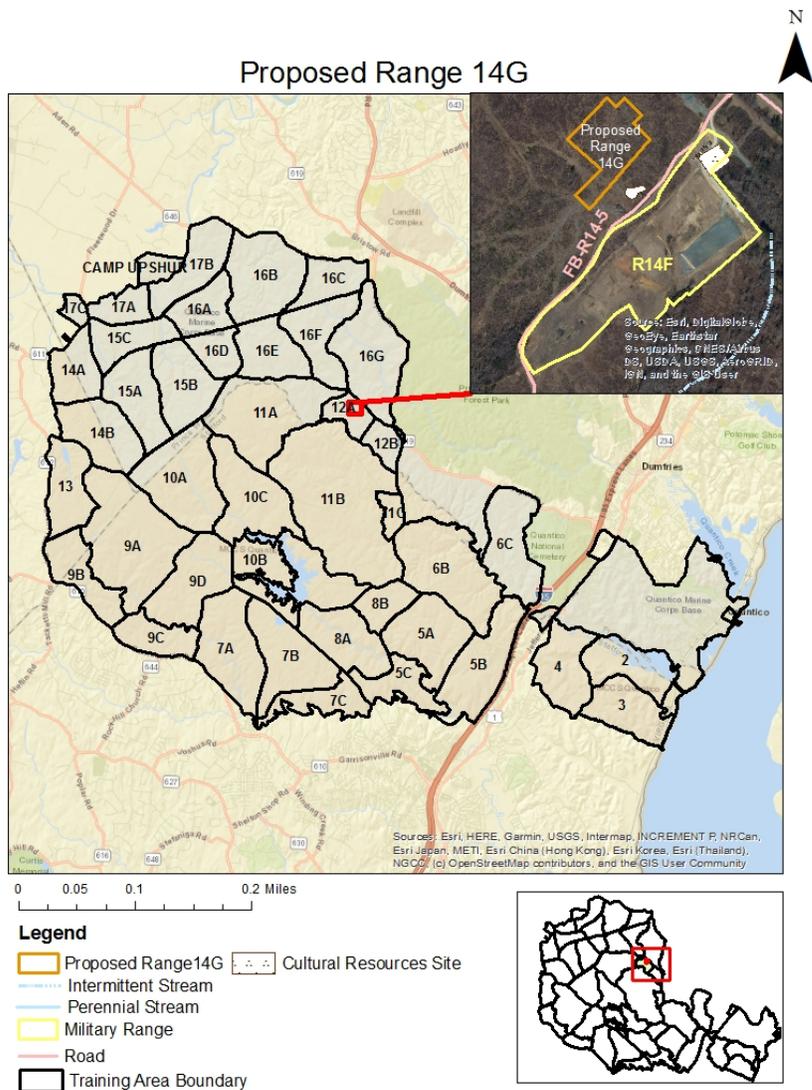


Figure 1.2.2

2.0 Need for the Proposed Action

The purpose of the proposed action is to construct a multi-purpose small arms range. The range would be used primarily by the DEA however other units at MCBQ would also use the facility when not occupied by DEA personnel. The proposed action is needed because the DEA currently does not have any ranges designated on the base for the agency to use that meets its needs and its schedule conflicts with the Federal Bureau of Investigation (FBI) ranges. All other ranges at MCB-Quantico are occupied by military personnel and the Marines have priority for the use of those ranges. The proposed action would establish a 8.8 acre range that is compatible with the DEA schedule and mission, compatible with the necessary terrain that

is required, compatible with weapons and ammunition that is being utilized in the 14-series ranges while also giving Marine corps units another range to utilize while other ranges are occupied.

3.0 Alternatives

The MCBQ and the DEA propose establishing a small arms, multi-purpose range by clearing 8.8 acres of timber. After the trees are removed, the proposed action footprint will be surfaced with aggregate. The proposed action would primarily support the mission of the DEA while also providing an additional range that supports units at MCBQ when it is not occupied by the DEA and other facilities are occupied. The new range will consist of a 50 yard pistol range with 55 firing points, a 100 yard range with 25 firing points, two story range operations tower that is comprised of two 20 foot (ft.) containers, equipment storage, parking and a road consisting of aggregate, turning targetry as well as covered bleachers.

3.1. No Action Alternative

Under the No Action Alternative, a 8.8 acre multipurpose small arms range would not be established. The location would remain a forested landscape and the DEA would still have training conflicts with the FBI.

3.2. Action Alternative - Establishment of Range 14G in TA12A

Under the action alternative, a 8.8 acre multipurpose small arms range, referred to as Range 14G would be established in TA12A. DEA personnel would be the primary tenants of the range while units at MCBQ would utilize the range while it is unoccupied.

4.0 Environmental Impacts

This chapter presents a description of the environmental resources currently within the proposed action footprint as well as the indirect and direct effects of both alternatives. The CEQ defines direct effects as those effects that are caused by the action and occur at the same time and place (CEQ 1508.8). Conversely, indirect effects are defined by the CEQ as effects that are caused by the action and are later in time or farther removed in distance but are still relatively foreseeable (CEQ 1508.8).

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.*

Figure 4.1 summarizes resource areas that have impacts that were considered to be negligible or non-existent so they were not analyzed in detail in this EA:

Resource Area	Rational for Not Analyzing in Detail
Visual Resources	The Quantico Marine Corps Base Historic District (QMCBHD) will not be impacted by the proposed action and there will be no impacts to viewsheds as a result. Additionally, Although there will be 5.7 acres of timber removed, the proposed action is adjacent to the 14 series ranges.
Hazardous Materials and Wastes	The proposed action is located in a naturally forested location. The site footprint has never been used as a hazardous waste storage location and is not a generator. Site is not a Comprehensive Environmental Response Compensation and Recovery Act (CERCLA) site, Resource Conservation and Recovery Act (RCRA) site and is not on the National Priority List (NPL).
Socioeconomics	The proposed action is within the boundary of the base and is near existing ranges. There are no sensitive receptors such as schools, homes or businesses that will be impacted by tree removal. Only activity that will occur is training either the same or similar to the Range 14 complex.
Environmental Justice	The proposed action is confined well within the boundaries of MCBQ. After the establishment of Range 14G, any impacts that will be generated will be confined within the base and are associated with similar or existing training that is occurring. The DEA is a tenant agency at MCBQ and Marine units are not being added to base.
Infrastructure	Utility lines are located on MCB-1, however there are none within or near the proposed action footprint.
Noise	Noise generated by the proposed action would be consistent with noise that is currently generated by training activities in the Range 14 complex. Closest noise receptor is Prince William Forest Park which is .8 miles away.

Figure 4.1

4.1 Air Quality

4.1.1 Regulatory Setting

4.1.1.1 National Ambient Air Quality Standards and Criteria Pollutants

The U.S. Environmental Protection Agency (EPA) defines ambient air as "that portion of the atmosphere, external to buildings, to which the general public has access" (40 C.F.R. part 50). In compliance with the Clean Air Act (CAA) (42 U.S.C. §7401 et seq.) the EPA promulgated the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (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. Prince William County has been designated as a nonattainment area for 8-hour ozone NAAQS. Prince William County is 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.

4.1.1.2 General Conformity

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

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

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

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

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

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

4.1.1.3 Permitting

New Source Review (Preconstruction Permit)

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

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

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

a NAAQS *attainment* area. PSD permits require application of Best Available Control Technology (BACT), dispersion modeling, and public notification and comment periods.

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

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

Title V (Operating Permit)

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

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

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

4.1.1.4 Greenhouse Gases

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

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

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.

4.1.2 Impacts of Alternative A - No Action

Under the No Action Alternative, Alternative A, current conditions would remain and no impacts to MCBQ air quality would occur.

4.1.3 Impacts of Alternative B - Establishment of Range 14G

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

Requires Record of Non-Applicability (RONA)(See Appendix E)

General Conformity under the Clean Air Act, Section 1.76, has been evaluated for the proposed project according to the requirements of MCO 5090.2 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 1.28 tons per year NO_x, and 0.08 tons per year VOC. These levels are below the conformity threshold value of 100 tpy NO_x and 50 tpy VOC, established by 40 CFR 93.153(b), for a Non-Attainment Area located in an Ozone Transportation Region.

2. ODOR

The proposed action is subject to the following Virginia regulations:

.9 VAC 5-40, Article 2 - Odor

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

3. FUGITIVE DUST

The proposed action is subject to the following Virginia regulations:

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

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

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

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

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

4. Open equipment for conveying or transporting materials likely to create objectionable air pollution when airborne shall

be covered or treated in an equally effective manner at all times when in motion.

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

4.2 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.

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

4.2.1 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.

4.2.2 Affected Environment

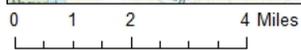
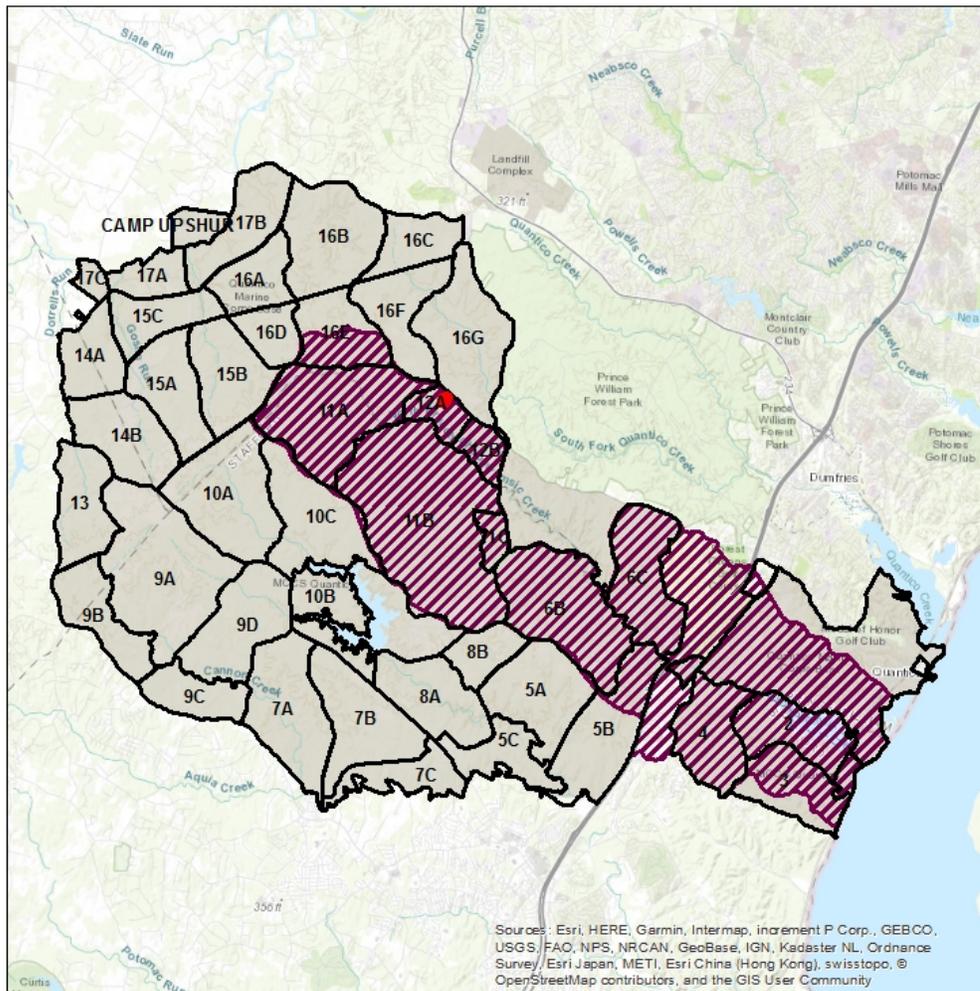
4.2.2.1 Groundwater

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.

4.2.2.2 Surface Water

The proposed action is located within the Chopawamsic Creek watershed. This watershed occupies a total of 20,461 acres and occupies the central portion of the base. The Chopawamsic Creek watershed is a part of the Potomac River watershed which occupies a total of 9,388,800 acres across the states of Maryland, Pennsylvania, Virginia, and West Virginia. These watersheds are illustrated in Figures 4.2.1 - 4.2.2. An intermittent stream the flows into the North Branch of Chopawamsic Creek is located 0.1 miles to the east of the proposed range however there are no streams located within the proposed range footprint.

Proposed Range 14G - Watershed Map



Legend

- Proposed Range 14G
- Chopawamsic Creek Watershed
- Training Area Boundary

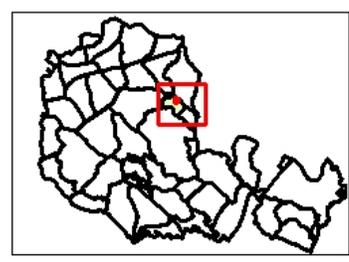
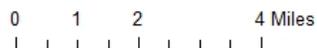
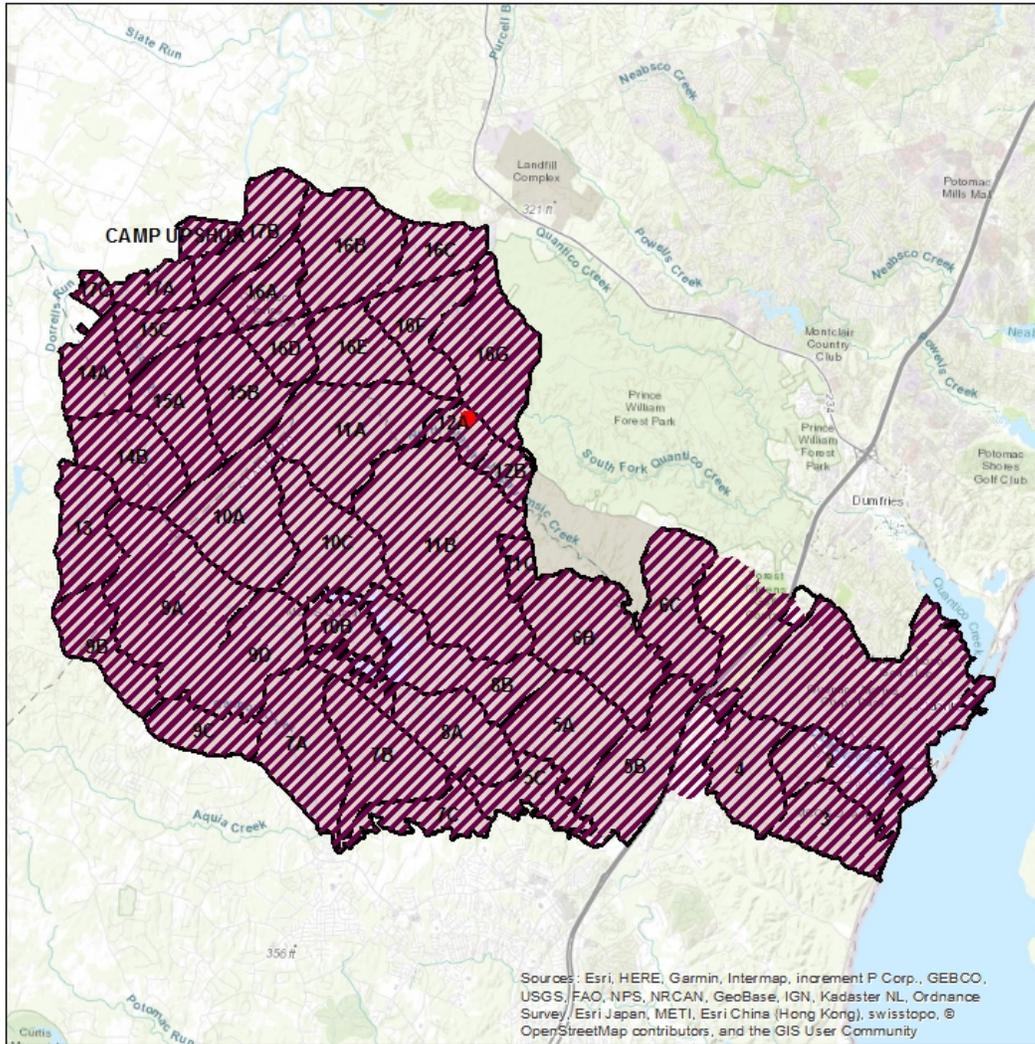


Figure 4.2.1

Proposed Range 14G - Watershed



Legend

- Proposed Range 14G
- Potomac River Watershed
- Training Area Boundary

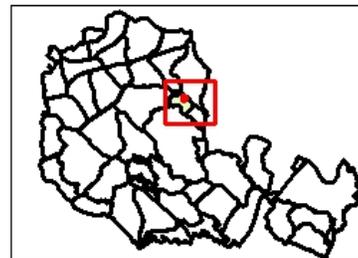


Figure 4.2.2

4.2.2.3 Wetlands

There are wetlands located along the North Branch of Chopawamsic Creek however the creek lies well outside the proposed action location. There are no wetlands within the proposed action footprint.

4.2.2.4 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 area of the proposed action is depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) number 51153C0300D, panel 300 of 330. The FIRM shows the proposed action outside of Flood Zone A which is an area inside of the 100-year floodplain. This is illustrated in Figure 3.2.3.

FEMA Flood Hazards

NOTES TO USERS

This map is for use in determining the Federal Flood Insurance Program's 100-year flood hazard areas. It does not, nor does it purport to, constitute a warranty, representation, or contract. It is not intended to be used for any purpose other than that for which it was prepared. It is not intended to be used for any purpose other than that for which it was prepared. It is not intended to be used for any purpose other than that for which it was prepared.

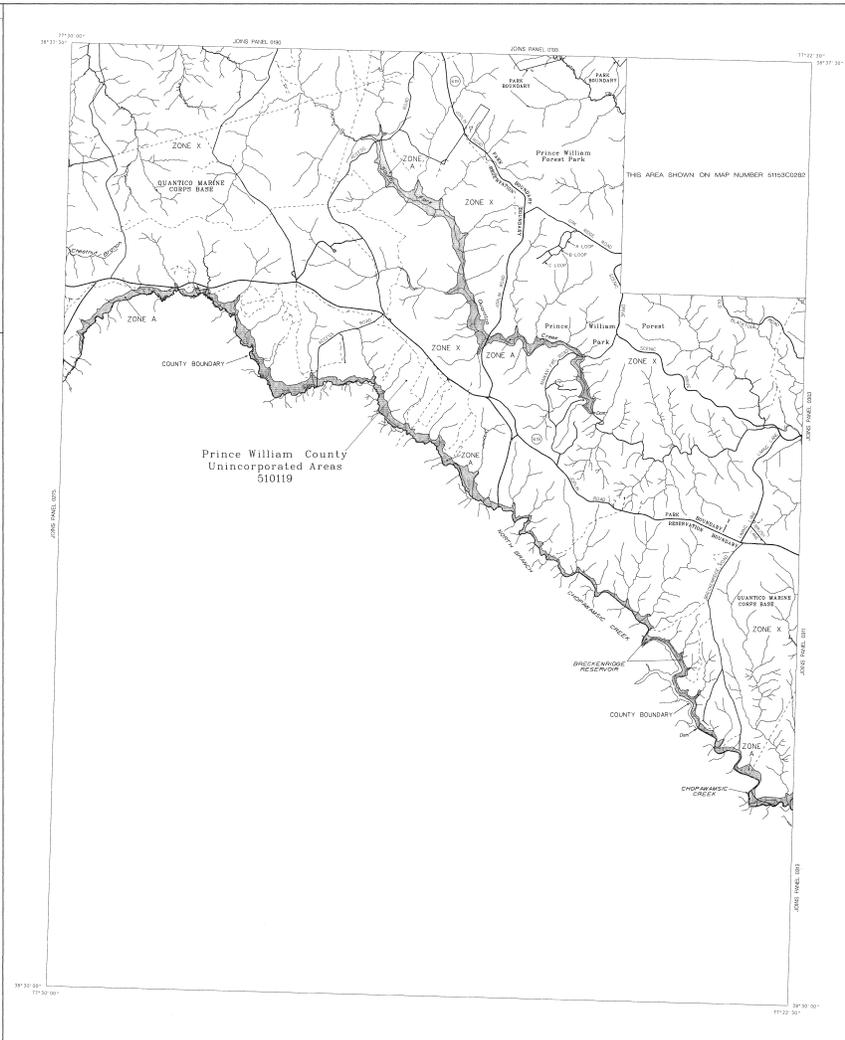
GENERAL NOTE: Flood hazard areas are shown on this map as shaded areas. The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA).

CAUTION: Flood hazard areas are shown on this map as shaded areas. The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA).

NOTE: The contents of this map are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The contents of this map are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The contents of this map are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA).

ATTENTION: Flood hazard areas are shown on this map as shaded areas. The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA). The shaded areas are based on the 100-year flood hazard areas as determined by the Federal Emergency Management Agency (FEMA).

Map No. 50119 This map is a reproduction of the original map prepared by the Federal Emergency Management Agency (FEMA) and is not intended to be used for any purpose other than that for which it was prepared. It is not intended to be used for any purpose other than that for which it was prepared. It is not intended to be used for any purpose other than that for which it was prepared.



LEGEND

SPECIAL FLOOD HAZARD AREAS Delineated BY 100-YEAR FLOOD

- Zone A: Flood hazard areas
- Zone X: Flood hazard areas
- Zone D: Flood hazard areas

FLOODWAY AREAS IN ZONE A

- Zone X: Flood hazard areas
- Zone D: Flood hazard areas

OTHER AREAS

- Zone X: Flood hazard areas
- Zone D: Flood hazard areas

UNDEVELOPED COASTAL BARRIERS

- Zone X: Flood hazard areas
- Zone D: Flood hazard areas

Map Information:

Map No. 50119
 Effective Date of Flood Hazard FEGM: 1995
 Effective Date of Revision to This Panel: 1995

Scale: 1 inch = 1 mile

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

PRINCE WILLIAM COUNTY, VIRGINIA AND INCORPORATED AREAS

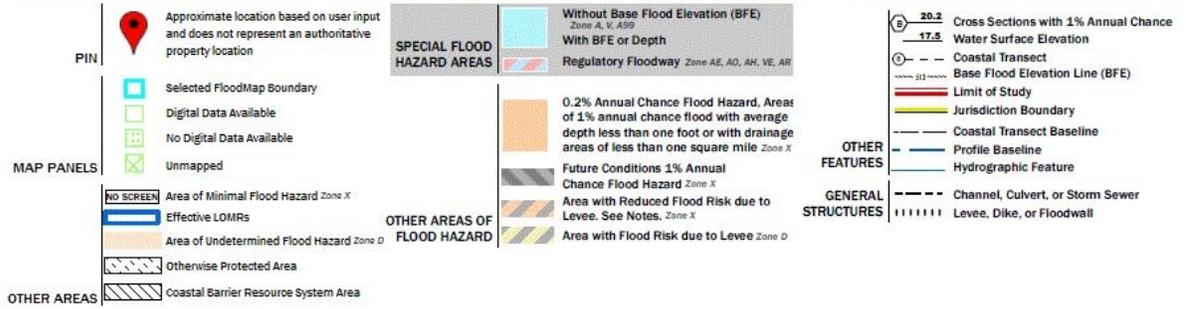
PANEL 300 OF 330

Map No. 50119

Map Number: 510119

Effective Date: 1995

Federal Emergency Management Agency



Proposed Range 14G - FEMA Floodplains

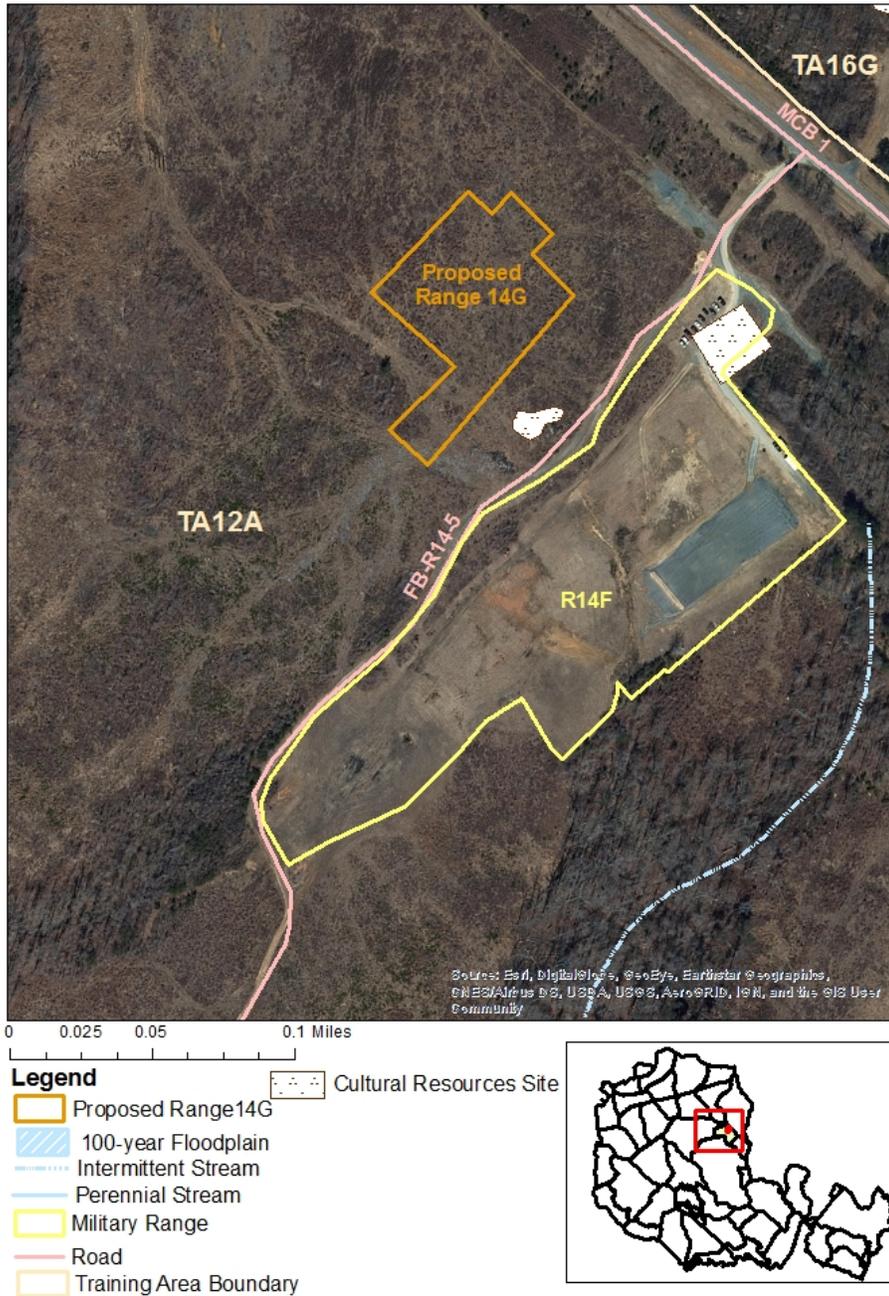


Figure 4.2.3

4.2.3 Impacts of Alternative A - No Action

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

4.2.4 Impacts of Alternative B - Establishment of Range 14G

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 range construction project 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 (See Appendix H).

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

MCBQ must conduct operational range assessments compliance with DoDI 4715.14 which:

" Establishes policy, assigns responsibilities, and prescribes procedures to assess the potential human health and environmental impacts to off-range receptors from the use of military munitions on operational ranges in the United States in accordance with the authority in DoD Directives (DoDDs) 5134.01, 4715.1E, and 6055.09E, and the July 13, 2018 Deputy Secretary of Defense Memorandum."

In 2014, the most recent Range Environmental Vulnerability Assessment (REVA) was completed. According to the REVA, in 2012, water samples were collected by the USGS and found dissolved lead within six locations in the Chopawamsic Creek watershed. Dissolved lead in surface water was detected in concentrations ranging from 0.72-0.81 micrograms per liter ($\mu\text{g/L}$). Within sediments, concentrations of 2.5 - 5.2 milligrams/kilograms (mg/kg) were detected within the North and Middle Branches of Chopawamsic Creek. These concentrations were well below the USEPA Region 3 ecological screening criteria. There were higher elevations of lead found in the South Branch of Chopawamsic Creek ranging from 31-35 mg/kg however the concentrations were still below the screening criteria. These elevated levels in the South Branch of Chopawamsic Creek were likely associated with the WTNB and existing FBI small arms ranges that are within the creek's drainage.

The implementation of basic erosion and sediment control practices will be required during construction as specified in Best Management Practices (BMPs) per the Virginia BMP Field

Guide (2009), the Virginia BMPs For Water Quality Technical Manual (2011), the Virginia Erosion and Sediment Control Handbook (VDCR 1992 - See Appendix H). After Alternative B has been established, the action proponent will leave sediment control measures in place. A technical team with munitions constituents experience will review these sediment control measures that are in place and determine if these measures will keep the constituents from migrating off of the range. Another preventative measure will be the use of SACON blocks. Any ammunition fired from the proposed range will be fired into these blocks. These blocks will assist in reducing lead exposure to the North Branch of Chopowamsic creek.

4.3 Geological Resources

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

4.3.1 Regulatory Setting

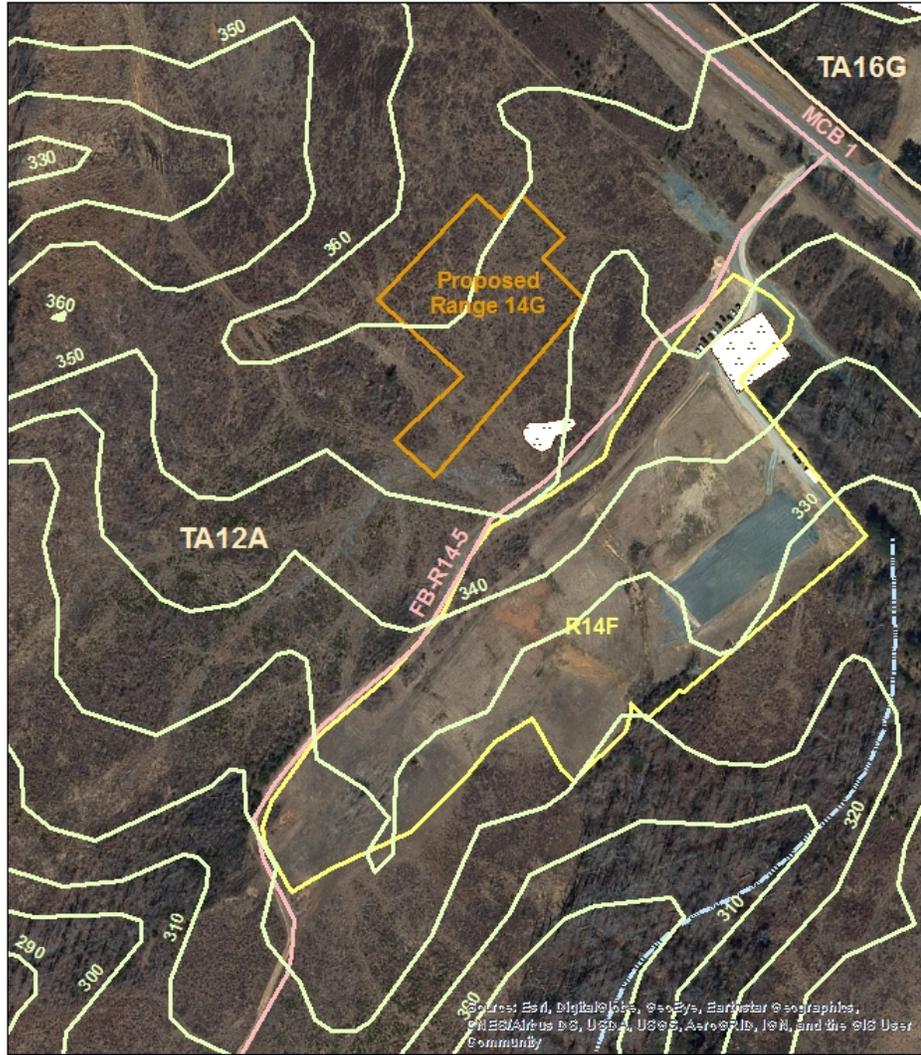
Consideration of geologic resources extends to prime or unique farmlands. The Farmland Protection Policy Act (FPPA) was enacted in 1981 to minimize the loss of prime or unique farmland due to federal actions. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. The proposed action location is a primarily wooded, scrub landscape and has not been utilized for agricultural purposes.

4.3.2 Affected Environment

4.3.2.1 Topography

The terrain of the proposed range location consists of a forested landscape and is characterized by a low gradient. The highest elevation of the footprint is in the northeastern section at roughly 360 ft. The elevation decreases very gradually by roughly 10 ft. to the south and southeastern boundaries (See Figure 4.3).

Proposed Range 14G - Topographical Profile



0 0.025 0.05 0.1 Miles

- Legend**
- Proposed Range 14G
 - Elevation Contours - 10 Feet Intervals
 - Intermittent Stream
 - Perennial Stream
 - Military Range
 - Road
 - Training Area Boundary
 - Cultural Resources Site

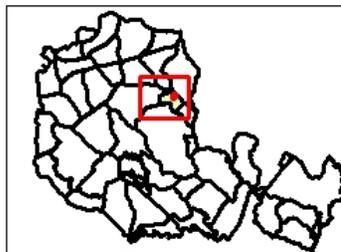


Figure 4.3

4.3.2.2 Geology

The proposed action would occur within the Mainside/Westside portion of the base, which lies in the Coastal Plain geologic region. The region consists of Mesozoic and Cenozoic marine sediments, some consolidated into sandstone and marl. The project area is specifically within the Patapsco formation, which dates to the Cretaceous Period at the end of the Mesozoic Era. It is comprised of sand and clay from shallow aquatic deposits, which cover Pre-Cambrian crystalline rock with a thickness of approximately 150 feet. These deposits are generally unconsolidated.

4.3.2.3 Soils

The soil type that is dominant within the proposed action area is the Bourne Loam, Rock Substratum, 2-6% Slopes (BoB). This soil type represents 86.8% of the soils that are found in the footprint and is most commonly associated with marine terraces. The profile of BoB consists of a loam at the top, sandy clay loam, fine sandy loam, sandy clay loam and bedrock at the bottom. The soil is moderately well-drained and has a low probability to create runoff. The second most common soil in the footprint is the Elioak Silty Clay Loam, 6-15%, Severely Eroded (EmC3). The soil type is dominant in the eastern and southeastern portions of the proposed action area while comprising 4.9% of the footprint. It is most commonly associated with hillsides and its profile consists of a silt clay loam at the top, clay as well as a silt loam. The soil is well-drained with a moderate ability to create runoff. The third most common soil type located within the proposed action footprint is the Colfax Fine Sandy Loam 2-6% Slopes (Clb). The soil type represents 4.5% of the soils located within the footprint and is commonly associated with hillsides. The soil is dominant in the area on the eastern boundary of the proposed action location. The profile consists of a fine sandy loam and a clay loam. This is a somewhat poorly drained soil with a high probability to create runoff. The fourth most common soil in the footprint is the Applling Fine Sandy Loam, 2-6% slopes (AlB) represents 3.1% of the soils found in the proposed action location and is the least common soil found. AlB is located in the northeastern portion of the footprint and is most commonly associated with hillslopes as well as prime farmland. The soil's profile is characterized by a fine sandy loam at the top layer, a clay loam, clay loam and a fine sandy loam. AlB is

very well drained with a low probability to create runoff. The soil is dominant in the northeastern portion of the footprint. The soil's profile consists of a fine clay loam at the top with the remaining layers consisting of a sandy clay loam. The Appling Fine Sandy Loam, 6-15% slopes eroded (AlC2) is well drained and has a moderate ability to create runoff. The third most common soil in the footprint is the The Appling Fine Sandy Loam, 2-6% slopes (AlC2) represents 0.4% of the soils found in the proposed action location and is the fifth most common soil found. AlC2 is located along the western boundary of the footprint and is most commonly associated with hillslopes. The soil's profile is characterized by a fine sandy loam at the top layer, clay, clay loam and a fine sandy loam. The least common of the soils found in the proposed action footprint is the Cecil Fine Sandy Loam 2-6% eroded (CfB2). CfB2 represents 0.3% of the soils found in the footprint and is found in the far northern portion of the footprint. The soil is most commonly associated with hillsides and prime farmland. The profile of the soil consists of a fine sandy loam, clay, clay loam, loam. The soil is well drained with a low probability to create runoff.

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

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.

4.3.3 Impacts of Alternative A - No Action

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

4.3.4 Impacts of Alternative B - Establishment of Range 14B

Approximately 8.8 acres of timber would be cleared as a result of the proposed action. A small parking lot and a gravel road, both comprised of aggregate would be constructed within the proposed action footprint. 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. With the inclusion of proper E&SC measures, Alternative B is not expected to significantly impact on-site soils.

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

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.

4.4.1 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.

4.4.2 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.

4.4.2.1 Archaeological Resources

There is an old farmstead located adjacent to the proposed action footprint near the access road. The farmstead is not a NRHP eligible site and there are no cultural resources located within the proposed range footprint.

4.4.3 - Impacts of Alternative A

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

4.4.4 - Impacts of Alternative B

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 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. In 2017, MCBQ and the Virginia State Historic Preservation Office (SHPO) signed a Programmatic Agreement for a streamlined review process allowing the MCBQ Cultural Resources Manager (CRM) to expedite reviews for projects where impacts are deemed to be minor or non-existent in scope. The MCBQ CRM has reviewed the proposed action per the Programmatic Agreement between the United States Marine Corps and the SHPO and has determined pursuant to the

streamlined review process that the project as planned would have no effect on archaeological or historic resources.

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

The construction contractor should contact the 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

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.

4.5.1 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. Habitat that would be considered critical to the natural history and/or life cycle of migratory birds is not located within the proposed action location.

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 P5090.2, directs the USMC to comply with environmental requirements, protect the environment and human

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

The Virginia Piedmont waterboatman, *Sigara depressa*, and the brook floater, *Alasmidonta varicose*, are two Virginia-listed endangered faunal species. Both species are water dependent. The Virginia Piedmont waterboatman is an insect that inhabits ponds and extremely slow moving streams. The brook floater is a bivalve that is found among boulders within gravel or sand.

4.5.2 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.

4.5.2.1 Vegetation

The land area of MCBQ is primarily covered by a forested landscape. Forests account for approximately 90% of the land cover of the base. MCBQ is located within an ecological transition zone inside the Eastern Deciduous Forest Biome of the United States. The major tree types found within the forests, particularly on the Westside of the base, are associated with the Central and Southern forest regions of the United States. The most common tree species found at MCBQ are yellow poplar (*Liriodendron tulipifera*), black oak (*Quercus velutina*), northern red oak (NRO) (*Quercus rubra*), white oak (WO) (*Quercus alba*), shortleaf pine (*Pinus echinata*), Virginia pine (*Pinus virginiana*) and loblolly pine (*Pinus taeda*). Other species found on the base include sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), american beech (*Fagus grandifolia*), hickory (*Carya sp.*), red cedar (*Juniperus virginiana*), black

walnut (*Juglans nigra*), black cherry (*Prunus serotina*) and bigtooth aspen (*Populus grandidentata*). If there is an undisturbed clear space, the most likely species to grow in that space is Virginia pine. The species that is found within the proposed range footprint is the Virginia pine and it is illustrated in Figure 4.5.1.



Figure 4.5.1

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

Harperella is a federally-listed endangered plant species native to riverine habitats. This plant is only found in 13 areas ranging from Maryland to Georgia.

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

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

4.5.2.2 Terrestrial Wildlife

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

The northern long-eared bat (*Myotis septentrionalis*) (NLEB) is also found on MCBQ. The NLEB is federally-listed as threatened. The bat spends winter hibernating in caves and mines (hibernacula). They prefer roosting sites with constant temperatures, high humidity, and no air currents. In summer, they prefer roosts under tree bark, in cavities or in crevices of both live and dead trees, and rarely in man-made structures such as barns or sheds (50 C.F.R. part 17). The NLEB was detected at MCBQ starting in 2016. Additionally, one male NLEB was caught via mist netting in July 2018 and one male caught via mist netting in July 2019 at MCBQ. However, there are no known NLEB maternity roosts or hibernacula on MCBQ.

The little brown bat (*Myotis lucifugus*) and the tri-colored bat (*Perymyotis subflavus*) are listed as state-endangered. Both species have been detected on the base. These bats were not detected within any of the proposed action locations. There is no known little brown bat or tri-colored bat winter hibernacula, summer roosts, or maternity colonies on MCBQ.

The bald eagle was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The BGEPA requires a 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.

4.5.2.3 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 wedgemussel (*Alasmidonta heterodon*), found on portions

of MCBQ, is federally-listed as endangered. It is a small bivalve that lives in freshwater streams and requires highly oxygenated and silt-free waters. The dwarf wedgemussel has been historically found within Aquia Creek which forms the southwest boundary of the installation.

4.5.3 - Impacts of Alternative A

Under Alternative A, the proposed project would not occur and there would be no change to biological resources. Therefore, no significant impacts to biological resources would occur with implementation of the No Action Alternative.

4.5.4 - Impacts of Alternative B

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

The federally-threatened SWP was not found within or near Alternative B. Suitable habitat for the SWP has not been identified either within or near the proposed action. The dwarf wedgemussel, sensitive joint-vetch, the yellow lance and harperella are not found in areas that would be impacted by Alternative B.

To reduce or eliminate any impacts to the federally-endangered Indiana bat as well as the federally-threatened NLEB, MCBQ will adhere to the more stringent Indiana bat time of year restriction (TOYR) from 15 April - 15 September inclusive. This includes both species active pup season. During this time, no tree removal will occur. All tree removal will be performed outside of the TOYR. The little brown and tri-colored bats were not detected within any of the proposed action locations. If a maternity colony for any state or federally listed bat species is encountered during timber removal activities, the project proponent must cease all timber removal activities and contact their contracting representative and NREA.

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

4.6 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.

4.6.1 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.

4.6.2 Affected Environment

4.6.2.1 Current Land Use Compatibility

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1, and Westside (Guadalcanal), 53,200 acres west of the same highways. The proposed range would be established within TA12A which is on the Westside of the base and west of the MCBQ Growth Boundary meaning that any land use activities must be compatible with military training. TA12A is mostly forested, is 432 acres in size, and consists of three ranges: Range 14C, Range 14D and Range 14F. The TA also consists of 5.15 miles of roads, trails and firebreaks. The primary use of the TA12A is maneuver and light forces training as well as Land Navigation (LANDNAV) training. There are also 4 Landing Zones (LZs) located within 1 mile of the proposed range: LZ Bluebird, LZ Grackle, LZ Harrier and LZ Oriole. TA12A is bordered by TA12B, which contains the Range 14, TA16G to the north, TA11E to west, and TA16F to the north.

4.6.3 - Impacts of Alternative A - No Action

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

4.6.4 - Impacts of Alternative B

The proposed action footprint is located in west of the growth boundary and would be utilized for training purposes. As a result, the proposed range would be compatible with land uses required on the Westside of MCBQ. The proposed action location and nearby areas do provide hunting and hiking opportunities. When the proposed range is not occupied, the area may be used for recreational activities. There will be no impact to recreational activities as a result of the proposed action

4.7 Military Training and Airspace

This discussion of airspace includes current uses and controls of the airspace. The Federal Aviation Administration (FAA) manages all airspace within the United States and the U.S. territories. Airspace, which is defined in vertical and horizontal dimensions and also by time, is considered to be a finite resource that must be managed for the benefit of all aviation sectors including commercial, general, and military aviation.

4.7.1 Affected Environment

Range 14F is the closest active range to the proposed action. The range is 0.04 miles to the east and almost adjacent to the footprint. Range 14F is 9.7 acres and provides live fire and movement training techniques. Range 14D is located to the .23 miles to the east from the proposed action. Range 14D is 3.29 acres in size and serves as both a rifle and machine gun range. The range trains Marines to align sights and practice basic marksmanship against targets that are stationary. Range 14C, 0.4 miles to the east, serves as a non-standard small arms range that provides training consistent with the base commanders training requirements. Range 14C is 16.8 acres in size and currently is used as a 10-25 meter pistol and rifle range with temporary targets. Range 14, located in TA12B, is 0.5 miles away from proposed the proposed Range 14G. Range 14 is 30 acres in size and currently is serves as an Automated Infantry Squad Battle Course. The objective of the course is to provide training to Marine squads on individual, collective tactics, techniques and procedures. The course also trains Marine squads

on the necessary skills to perform tactical movement techniques, detect, identify, engage and defeat stationary as well as moving targets.

The training associated with the proposed range would be similar to the surrounding ranges. Range 14G, if established, would be 8.8 acres, consist of a 50 yard (yd.) pistol range with 55 firing points, and a 100 yd. rifle range with 25 firing points. The range would be utilized as a small arms range and most similar to the training at Range 14C.

4.7.2 Airspace

LZ Bluebird and LZ Grackle are both located within TA12A. LZ Bluebird is 5.5 acres and LZ Grackle is 2.6 acres. LZ Bluebird is located .4 miles to the southwest of the footprint whereas LZ Grackle is .2 miles to the east and is surrounded by Range 14D. LZ Oriole, which is 1.7 acres in size, is located near the northeast corner of Range 14 in TA12B. LZ Harrier, located directly across MCB-1 in TA16G, is the closest LZ to the proposed range. MCBQ has coordinated with the FAA and implements 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). Figure 4.7.1 displays the proposed action location within R-6608C.

Proposed Range 14G - Restricted Airspace

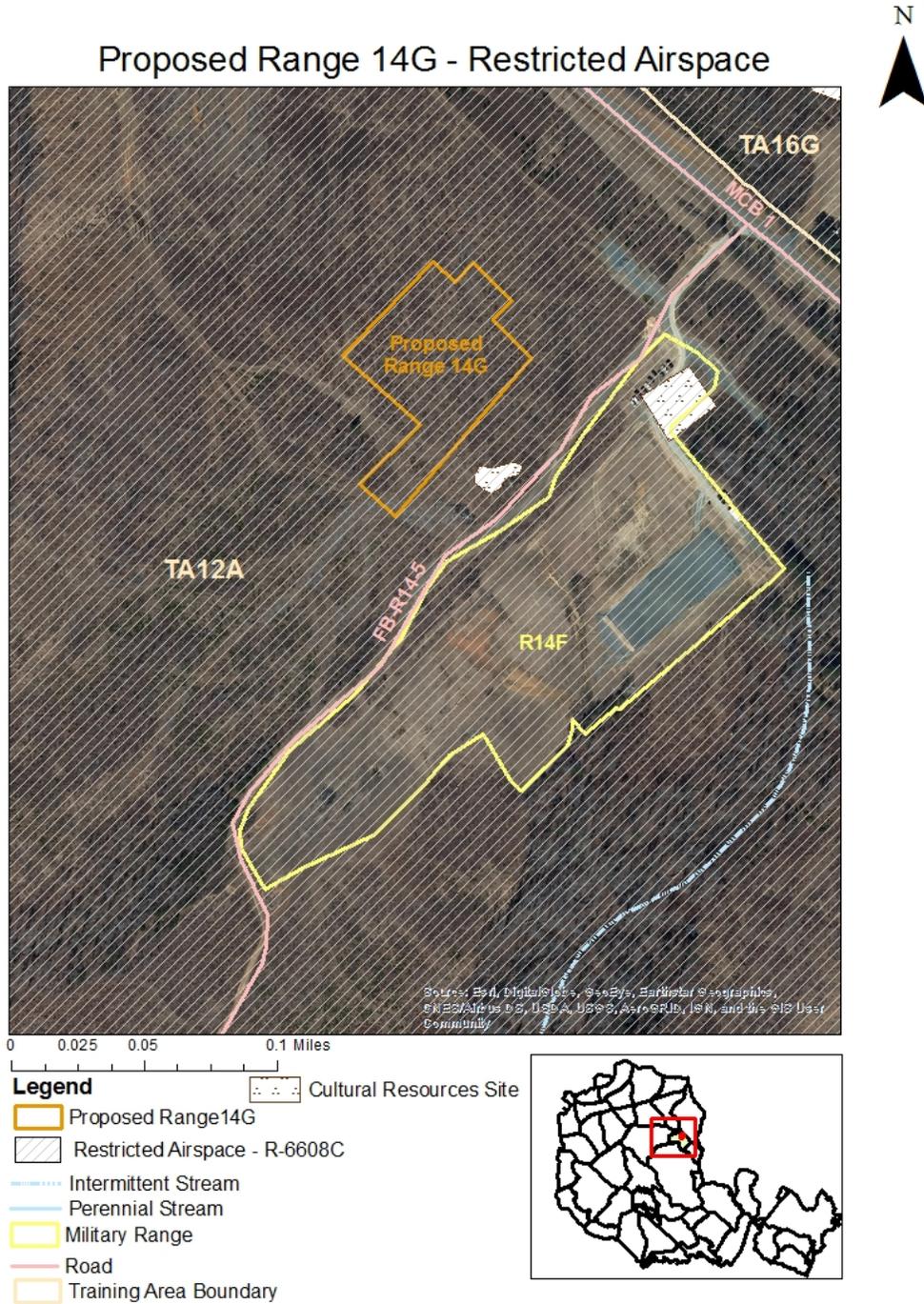


Figure 4.7.1

4.7.3 Surface Danger Zone (SDZ)

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. The current SDZ and impact area are illustrated in figures 4.7.2 and 4.7.3

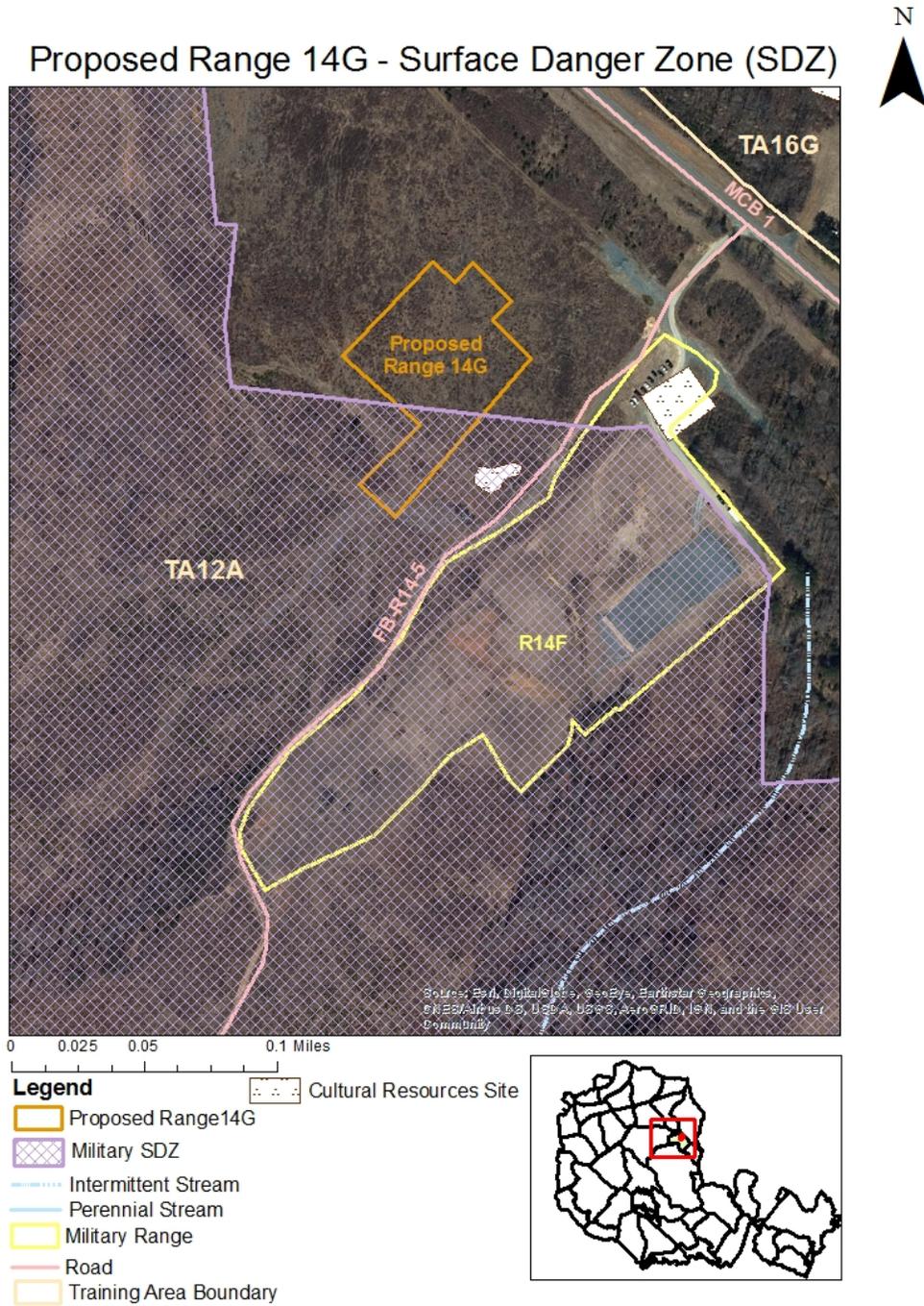


Figure 4.7.2

Proposed Range 14G - Impact Areas



Figure 4.7.3

4.7.4 - Impacts of Alternative A

Under the no action alternative, DEA personnel would continue to utilize the FBI ranges and training conflicts with the FBI would also be prevalent. MCBQ Marines would also not have an overflow range to utilize when other ranges are fully occupied.

4.7.5 - Impacts of Alternative B

Alternative B would involve the establishment of a multipurpose, small arms range that would be referred to as Range 14G. The range would consist of 8.8 acres and be near Range 14F. While DEA personnel would get priority for the new range, Marines would be free to utilize the range while it is not occupied by the DEA. A new 676 acre SDZ for Range 14G would be created however the new range would utilize the same dedicated impact area as the 14 series ranges that lie almost adjacent to the proposed action location. The proposed action is located near an area that is already utilized for high levels of training. RMB currently coordinates range activity for the base and will ensure the safety of civilians, Marines and other personnel on the base. All impacts to military training as a result of the proposed action would be positive and there would be no negative impacts. Figure 4.7.5.1 shows the New SDZ and the non-dudged impact area.

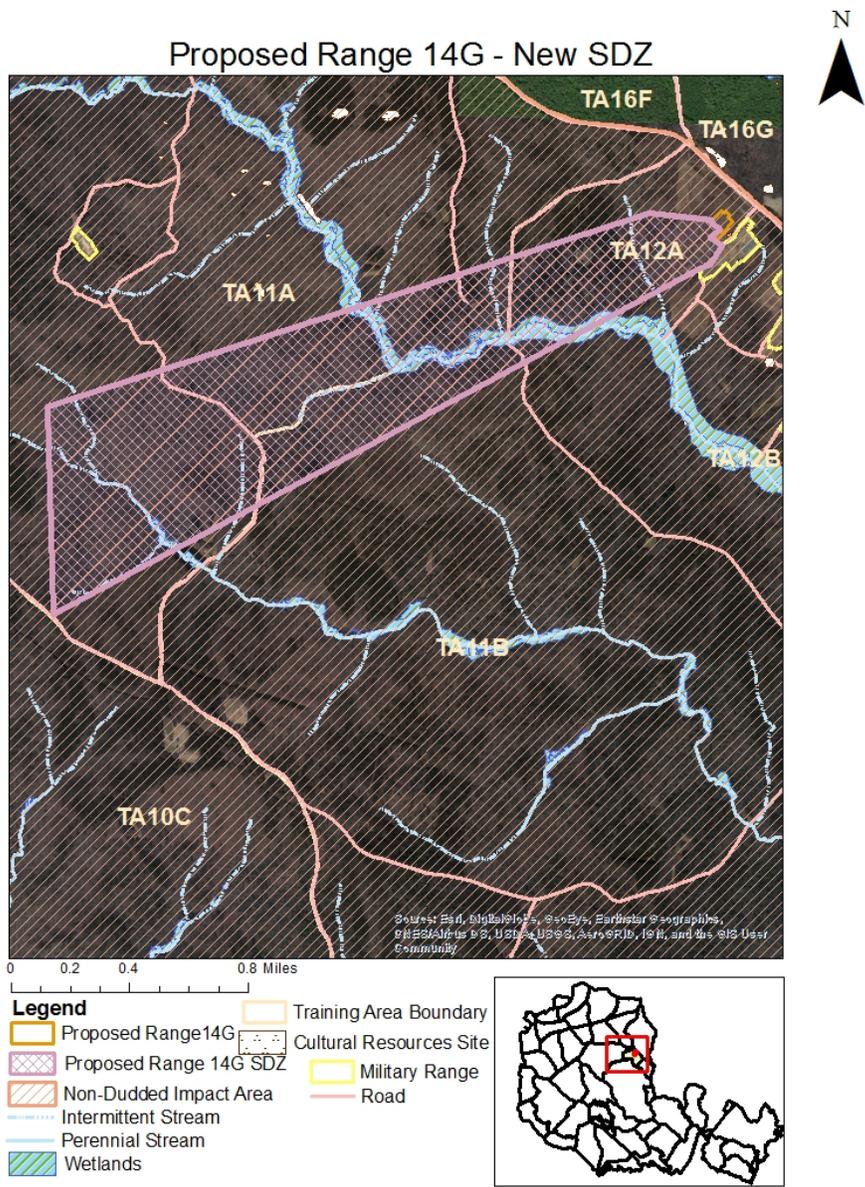


Figure 4.7.5.1

4.8 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.

4.8.1 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.

4.8.2 Affected Environment

The proposed action does include the establishment of a parking lot that would hold enough capacity for 20 vehicles and the construction of an access road. Both of these infrastructure would consist of aggregate.

4.8.3 - Impacts of Alternative A - No Action

Under the no action alternative, neither a 20 vehicle capacity parking lot nor access road would not be constructed.

4.8.4 - Impacts of Alternative B

Alternative B would involve the construction of a small access road and parking lot. Both features would be comprised of aggregate. No negative impacts would to the existing transportation network of the base would occur due to the implementation of Alternative B.

4.9 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.

4.9.1 Regulatory Setting

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

Many portions of MCBQ consist of historic munitions impact sites. As stated in section 3.7, the proposed action location is within the non-dudged impact area of MCBQ and this is displayed in figure 3.7.3.

4.9.2 - Impacts of Alternative A - No Action

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

4.9.3 - Impacts of 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 range, is within the non-duded impact area of MCBQ and not within a UXO or munitions response site. However, since the area is within the non-duded impact area the following guidance must be followed:

According to the MCO 5090.2, Chapter 10, Section 2, Paragraph 10221, if contamination is discovered during construction and it is Defense Environmental Restoration Program (DERP) eligible, 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.

4.10 Solid Wastes

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

4.10.1 Alternative A - No Action

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

4.10.2 Alternative B

Potential Impacts

This alternative would result in construction demolition debris (CDD) and waste. Reports of waste generated (including recycling) including material type (CDD, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported via the Construction Waste Management Report

to NREA within 30 days of the close of the project, and no later than October 15, to be included in annual report submissions (see Appendix G). All spoils and debris generated by the demolition operation shall be transported off base and disposed of in accordance with all federal, state, and local regulations.

The construction contractor is responsible for coordinating all solid waste disposal at a landfill that meets all Federal, State, and local regulatory standards. The contractor will support the solid waste diversion philosophy outlined in E.O. 13514 by recovering/recycling.

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

- Initial Construction of MCIOC
- Construction of Addition to Building 27410 for Marine Corps Network Operations Center (MCNOC).
- Demolition of Building 27220, Target Warehouse.
- P644 Dining Facility.
- Construction of a Dining Facility at OCS
- The TA12B Boundary Adjustment.
- Demolition of old Game Check Station on Telegraph Loop.
- The TA12B Boundary Adjustment.

5.3.2 Present and Reasonably Foreseeable Actions

- New Marine Corps Exchange - Mini-mart.
- Establishment of a Platoon Attack Range in TAs 10, 10C and 15B.
- Range 5 rehearsal area.
- Timber Harvest in TAs 10A, 10C and 11A.
- Establishment of a Crossing at Cannon Creek and Re-establishment of a Perimeter Trail in TA7A and TA9C.

Future projects:

- Construction of Two COCO Retail Service Facilities.
- Improve the intersection of MCB-1 and MCB-2 with the addition of a traffic circle.
- The Expansion of Marine Corps Information and Operations Center - Phase II.
- Construct new TBS fire station.
- Construction of three large warehouses to create consolidated storage area.
- 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.

Environmental Impact Evaluation Matrix		
Resource	Alternative A -No Action	Alternative B - Construction of MCI OC Phase II Facility
Air Quality	No effect	No effect
Water Resources	No effect	No effect: No streams present at the proposed action location. Virginia State Forestry Best Management Practices (BMPs) will be implemented to protect all nearby wetlands and streams and Chopawamsic Creek watershed. Action proponent will leave sediment control measures in place. These measures will be inspected for effectiveness. SACON blocks will also absorb and eliminate potential contamination.
Land Use/Geological Resources	No effect	No effect: BMPs will eliminate any impacts to soils.
Cultural Resources	No effect	No adverse 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 NLEB, Little Brown bat or Tri-Colored bat is encountered during tree removal activities.
Transportation	No effect	No effect
Military Training	No effect	Positive Effect: Existing training will not be effective and the DEA will no longer have scheduling conflicts with the FBI. When the DEA is not using Alternative B, Marines will be allowed to train on the proposed range and it will serve as an overflow range.
Public Health and Safety/Munitions Response	No effect	No effect; guidance must be followed pertaining to potential contamination
Solid Waste	No effect	No effect; all guidance must be followed pertaining to solid

Figure 5.4.1

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

Figure 5.4.2

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.

• **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	EA-Compliant
Clean Air Act	Compliant-All guidance will be followed.
Clean Water Act; EO 11990, Protection of Wetlands	Compliant - No streams or wetlands are present within the proposed action location. Virginia state Best Management Practices will be followed. The action proponent will leave all sediment control measures in place. Sediment control measures will be inspected for effectiveness.
National Historic Preservation Act	Compliant - No NRHP eligible sites within the proposed action footprint. No cultural resource sites within the proposed action footprint.
Endangered Species Act	Compliant - USFWS TOYR from 15 April - 15 September will be implemented to reduce impacts to 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 - Proposed action is not within 660 ft. of a Bald eagle concentration area or a Bald eagle nest. Proposed action does not require removal of overstory trees within 300 ft. of a Bald eagle nest
Comprehensive Environmental Response and Liability Act	Compliant - Proposed action is not a CERCLA site or a current hazardous waste generator.
Resource Conservation and Recovery Act	Compliant - Proposed action locations are not within former munitions sites, do not contain contamination, and are not a hazardous waste storage location.

• **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>
Toxic Substances Control Act	Compliant - If contamination is discovered during excavation or construction activities Public Health and Safety guidance in Section 4 will be followed.
Executive Order 11988, Floodplain Management	Compliant - Proposed action will occur outside of a 100-year floodplain and within an area of minimal risk.
Executive Order 12088, Federal Compliance with Pollution Control Standards	Compliant - If those conditions outlined in the Executive order are encountered, guidance in Section 4 will be followed.
Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management	EA-Compliant

7.0 Conclusions and Determinations

In the short-term, effects to the human environment with implementation of the proposed action would primarily relate to the construction activity itself. Air quality and recreational opportunities would be temporarily impacted during the implementation of the proposed action however after the completion of construction, those impacts would be non-existent. Potential impacts to water quality will be minimized by permanently leaving BMPs in place.

The proposed action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment. If all guidance is followed, the proposed establishment of Range 14G MCIOC Phase II Facility would not have any significant impacts to the human environment.

8.0 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.

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

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

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

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

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

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

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

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

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1992 Virginia Erosion and Sediment Control Handbook, Richmond,
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Charlottesville, Virginia.

9.0 List of Agencies and Persons Contacted

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

Ms. Amy Denn, Head

Lt. Col. Daniel Droste, Deputy

Mr. Frank Duncan, Environmental Planning Section Head

Mr. J. David Grose, Environmental Compliance Section Head

Mr. John Rohm, Natural Resources Section Head

Mrs. Christa Nye, Fish, Wildlife and Agronomy Program Manager

Ms. Heather McDuff, NEPA Coordination Section Head

Ms. Brianne McNair, Environmental Management Systems
Coordinator

Mr. Ronald Moyer, Forestry Section Head

Mrs. Catherine Roberts, Cultural Resources Manager

Miss Abbigale Anderson, AECOM, Air Program

Mr. Jonmark Sullivan, Water Program Manager

Mr. David Norris, Hazardous Waste Program Manager

Ms. Marilisa Porter, Solid Waste Program Manager

Mr. Brian Ventura, Hazardous Materials Program Manager

10.0 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.

Appendix A
Acronyms

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

μPa - micropascal
μg/L - micrograms per liter
AAQS - Ambient Air Quality Standard
AGL - above ground level
AICUZ - Air Installation Compatible Use Zone
AlB - Applying fine sandy loam, 2-6% slopes
AO - Area of Operations
AOR - Area of Responsibility
APE - Area of Potential Effect
APZ - Accident Potential Zone
ARPA - Archaeological Resources Protection Act
ATC - air traffic control
ATFP - Antiterrorism Force Protection
BA - Biological Assessment
BASH - bird/aircraft strike hazard
BE - Biological Evaluation
BEQ - bachelor enlisted quarters
BMP - best management practice
BO - Biological Opinion
BoB - Bourne loam, rock substratum, 2-6% slopes
BOQ - bachelor officers quarters
CAA - Clean Air Act
CEQ - Council on Environmental Quality
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
CH₄ - Methane
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
DEA - Drug Enforcement Agency
DEIS - Draft Environmental Impact Statement
DNL - day-night average sound level
DoD - United States Department of Defense
DON - United States Department of the Navy

DZ - drop zone
EA - Environmental Assessment
EAP - Encroachment Action Plan
EFH - Essential Fish Habitat
EIS - Environmental Impact Statement
EmC3 - Elioak silty clay loam, 6-15% slopes, severely 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
FBI - Federal Bureau of Investigation
FEIS - Final Environmental Impact Statement
FIFRA - Federal Insecticide, Fungicide, and Rodenticide Act
FIRM - Flood Insurance
FONSI - Finding of No Significant Impact
FY - fiscal year
GHG - greenhouse gas
GIS - geographic information system
HAP - hazardous air pollutant
HAPC - habitat areas of particular concern
HE - high explosive
ICRMP - Integrated Cultural Resources Management Plan
INRMP - Integrated Natural Resources Management Plan
IRP - Installation Restoration Program
kHz - kilohertz
LANDNAV - Land Navigation
LBP - lead based paint
MCAF - Marine Corps Air Facility
MCB - Marine Corps Base
MCCS - Marine Corps Community Services
MCO - Marine Corps Order
MEC - Munitions and Explosives of Concern
MEM - military expended material
mg/kg - milligrams per kilogram
MILCON - military construction
MLLW - mean lower low water
MMRP - Military Munitions Response Program
MOA - Military Operations Area
MSFCMA - Magnuson-Stevens Fishery Conservation and Management Act
MSL - mean sea level
MTR - military training route
NAAQS - National Ambient Air Quality Standards
NAGPRA - Native American Graves Protection and Repatriation Act
NAVFAC - Naval Facilities Engineering Command

NEPA - National Environmental Policy Act
NEW - net explosive weight
NHPA - National Historic Preservation Act
NO₂ - nitrogen dioxide
NOA - notice of availability
NOI - Notice of Intent
NPDES - National Pollutant Discharge Elimination System
NPL - National Priority List
NPS - National Park Service
NRHP - National Register of Historic Places
NRO - Northern Red Oak
OPNAV - Office of the Chief of Naval Operations
OPNAVINST - Office of the Chief of Naval Operations Instruction
PAH - polynuclear aromatic hydrocarbon
PCB - polychlorinated biphenyl
PM₁₀ - particulate matter less than or equal to 10 microns in diameter
PM_{2.5} - particulate matter less than or equal to 2.5 microns in diameter
Ppb - parts per billion
Ppm - parts per million
Ppt - parts per thousand
PPV - public/private venture
PTS - permanent threshold shift
RAICUZ - Range Air Installation Compatible Use Zone
RCMP - Range Complex Management Plan
RCRA - Resource Conservation and Recovery Act
REVA - Range Environmental Vulnerability Assessment
ROD - Record of Decision
RONA - Record of Non-Applicability
SAV - submerged aquatic vegetation
SEL - sound exposure level
SHPO - State Historic Preservation Officer
SIP - State Implementation Plan
SO₂ - sulfur dioxide
SPL - sound pressure level
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
VDEQ - Virginia Department of Environmental Quality

WO - White Oak

APPENDIX B
Laws and Regulations

National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] sections 4321-4370h), which requires an environmental analysis for major federal actions that have the potential to significantly impact the quality of the human environment

Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [C.F.R.] parts 1500-1508)

Clean Air Act (42 U.S.C. section 7401 et seq.)

Clean Water Act (33 U.S.C. section 1251 et seq.)

Department of Defense Initiative (DODI) 4715.14

National Historic Preservation Act (54 U.S.C. section 306108 et seq.)

Endangered Species Act (16 U.S.C. section 1531 et seq.)

Migratory Bird Treaty Act (16 U.S.C. sections 703-712)

Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)

Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.)

Toxic Substances Control Act (15 U.S.C. sections 2601-2629)

Executive Order (EO) 11988, Floodplain Management

EO 11990, Protection of Wetlands

EO 12088, Federal Compliance with Pollution Control Standards

EO 13693, Planning for Federal Sustainability in the Next Decade

Appendix C
Soil Maps

Appendix D
National Historic Preservation Act Section 106
Documentation

Appendix E
Endangered Species Act Documentation

Appendix F
Emissions Calculations

Appendix G
Construction Waste Management Report