ENVIRONMENTAL ASSESSMENT
FOR
AMMUNITION SUPPLY POINT EXPANSION
AT
MARINE CORPS BASE QUANTICO,
Stafford County, Virginia

National Environmental Policy Act (NEPA) Coordination Section
Natural Resources and Environmental Affairs Branch
Installation and Environment Division
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Proposed Agency Action: Expansion of the Ammunition Supply Point, Marine Corps Base Quantico, Virginia

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Abstract: This Environmental Assessment is intended to meet NEPA requirements to allow replacement and expansion at the Ammunition Supply Point. The No Action Alternative (Alternative A) and the Action Alternative (Alternative B) were evaluated. Alternative A would have no adverse effects on cultural/natural resources or the human environment as the status quo would be maintained.

Alternative B would allow for the demolition of five outdated and inadequate ammunition magazines. Six new, larger magazines would be constructed to both replace the existing magazines, and to accommodate increased demands. A new issue and segregation building would also be constructed. The larger magazines and increase in the quantity of ammunition stored constitutes a change in use. There would be no significant impacts to land use, water resources, biological resources, cultural resources, air quality, noise, infrastructure, traffic, socioeconomics, or hazardous waste issues. Temporary water quality impacts associated with soil disturbance resulting from demolition activities would be mitigated through appropriate Erosion and Sediment Control measures per the Virginia Erosion and Sediment Control Handbook. An additional alternative (Alternative C) for the relocation of MCB-1 was initially considered but eliminated from further evaluation due to high costs and inability to meet the ASP mission.

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

Table of Contents

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

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 CFR parts 1500-1508; and Marine Corps Order P5090.2A, which documents the US Marine Corps' internal operating instructions on how to implement NEPA. This EA is intended to meet NEPA requirements to allow replacement and expansion at the Ammunition Supply Point (ASP) at Marine Corps Base Quantico (MCBQ).

This Environmental Assessment is being executed, in part, to satisfy 36 CFR 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."

A previous NEPA document, a Categorical Exclusion (CATEX), was prepared for the construction of an Issue and Segregation (I&S) building (formerly called a production building) at the ASP. The CATEX was presented and recommended for approval at a meeting of the Environmental Impact Review Board on 28 August 2007, and the Decision Memorandum was signed on 16 October 2007. Plans for construction of the I&S building have changed from the previously approved document, and now include additional activities detailed in Alternative B.

1.1 Condition of the Ammunition Supply Point

The ASP currently has 25 magazines and four support buildings, and has Department of Defense Explosive Safety Board (DDESB) approval to store a maximum of 529,000 pounds net explosive weight (NEW). Based on the current DDESB-approved explosive limits, the Inhabited Building Distance (IBD) arcs from the ASP encumber MCB-1, meaning that the safe separation distance for travel is not met.

The facility currently used by the ASP is configured in a manner that generates an explosive arc that overlaps MCB-1. Increasing utilization of the road will soon require reclassification of the road and force closure of the road to traffic. A traffic study performed in 2005 measured daily vehicle traffic at approximately 9700 passengers per day. Road traffic that is less than 10,000 passengers per day classifies MCB-1 as a Public Traffic Route (PTR). It is assumed that, due to recent

construction of new administrative facilities on the Guadalcanal, or Westside, of MCBQ, traffic now exceeds 10,000 passengers per day, making MCB-1 subject to the IBD protection, which is identified as the Explosive Safety Quantity Distance (ESQD) Arc. PTRs are treated similarly to inhabited buildings, as passengers traveling through these areas are subject to accidental explosions just as if they were inhabitants in a building.

Currently, there is no dedicated I&S building at the ASP. These functions are currently performed using a temporary, relocatable metal ramp outside of the largest existing magazine (building 27145). This magazine is not configured optimally, as it is close to MCB-1, and does not have high enough explosives limits to properly accommodate I&S functions. Repeated exposure to adverse weather conditions could lead to the degradation of ammunition over time, causing rusting and other types of damage.

The existing ASP vehicle staging area is inadequately sized and does not provide adequate explosives limits to properly accommodate the ASP's designation as a "vehicle safe haven". In emergency situations, use of the ASP as a safe haven creates an explosives safety violation, endangering ASP personnel, assets, and property.

Five storage magazines have been determined to be outdated and dilapidated. They do not have adequate capacity to meet current increased storage requirements. Three 25 foot x 50 foot magazines require extensive repairs to the front blast walls to alleviate drainage problems, and they also require being recovered with earth. Two 9 foot x 14 foot magazines are obsolete and need to be replaced with functional magazines. Repairing and correcting discrepancies would cost more than the current value of the magazines.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A - No Action

Under the No Action alternative, I&S functions would continue to be performed at an inadequate facility near MCB-1 using temporary loading ramps, and the existing inadequate storage magazines would remain in place. The existing magazines would continue to be used at maximum capacity, the magazine configuration issues would be unresolved, and magazine conditions would continue to deteriorate. There would continue to be inadequate explosives limits and storage capacity to

safely and efficiently perform the mission of the ASP, requiring the ASP to coordinate numerous deliveries throughout the year at a cost of approximately $30,000 per year. MCBQ would continue to be ineffective as a vehicle safe haven for explosives-laden vehicles, due to its inadequate size and location, potentially endangering ASP personnel, assets, and property.

MCB-1 would eventually be reclassified due to increased traffic intersecting with the current explosive arcs. This reclassification would require the closure of MCB-1, which is the only direct access route to training areas west of Interstate 95 (I-95). All traffic going to The Basic School (TBS), Weapons Training Battalion (WTBn), and the Federal Bureau of Investigation (FBI) Academy compound would be required to enter the base via the gate on Onville Road, and continue on the new FBI bypass road, MCB-2, or through TBS. Traffic would likely back up at the traffic light at the intersection of MCB-2, MCB-1, and Hotpatch Road.

2.2 Alternative B – Expand the Ammunition Supply Point

Under this alternative, five inadequate ammunition storage magazines would be demolished and replaced by six new magazines. A new I&S building would be constructed and sited in compliance with DDESB design criteria and explosive arc requirements.

The new I&S building would be constructed of load-bearing concrete block walls with brick veneer, a standing seam metal roof, and a shallow foundation with reinforced slab on grade. Utilities would include electric, telecommunications, and sanitary sewer and water. Five inadequate ammunition storage magazines (buildings 27121, 27117, 27118, 27119, and 27120, built in 1956) would be demolished. Six new 25’ x 80’ magazines [12,000 square feet (SF) total] would be constructed in two sets of three. Construction of the new magazines would increase the NEW storage capacity by 500,000 pounds (for a total of 929,000 pounds NEW), which would enable the ASP to accommodate the total munitions requirement. In turn, this would decrease the number of annual deliveries required and ensure a ready supply of ammunition to users.

The new facilities would be designed to meet or exceed the useful service life specified in Department of Defense (DoD) Unified Facility Criteria. The facilities would incorporate features that provide the lowest practical life cycle cost solutions, satisfying the facility requirements and maximizing energy efficiency. The new I&S building and magazines would be

sited so that their respective explosive arcs do not overlap MCB-1.

Site preparation would include site clearing and earthwork. Site improvements would include landscaping, extension of a gravel perimeter road for security and fire access, storm drainage, paving, fence removal and installation, road removal and construction, and bioretention facilities. Paved areas would include a utility pad, ammunitions loading dock, vehicle staging and queuing areas, and magazine aprons.

Sustainable design principles would be included in the design and construction of this project in accordance with Executive Order 13423 and other laws and Executive Orders. Due to its small size, low occupancy, and minimal utilities, the explosives-related structures are unable to meet the requirements for Leadership in Energy and Environmental Design (LEED) certification. The facilities would comply with the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007 as much as is feasible. Low Impact Development (LID) would be included in the design and construction of this project as appropriate.

The project will expand the ASP by approximately 20 acres to the northeast, bringing the total size to approximately 105 acres.

2.3 Alternative C - Relocate MCB-1

Alternative C includes repairs and renovations to five existing inadequate magazines, construction of an I&S facility and vehicle safe haven, and relocate a two-mile section of MCB-1 outside of the existing IBD arcs. Alternative C would correct existing explosives safety violations and concerns associated with MCB-1, and provide increased capabilities associated with the I&S building. However, this alternative would not provide the full requirement of increased explosives limits and storage capacities needed for the ASP to meet its mission. It has also been determined that the overall estimated cost of Alternative C is substantially greater than that of Alternative B. Due to the costs involved and the fact that the ASP would not be able to meet its mission optimally, this alternative was eliminated from further review.

2.4 Alternatives dropped from further review

Additional locations for the new I&S building were previously evaluated through the NEPA process and eliminated due to the

lack of suitable sites that meet DDESB requirements. Deliveries of ammunition to MCBQ on an "as needed" basis were eliminated from further consideration due to the high cost. Leasing space is not a viable alternative due to the lack of available facilities in the area, and was therefore also eliminated from consideration.

3.0 Existing Environmental Conditions

CEQ regulations for implementing NEPA (40 CFR 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.

All the alternatives under consideration for this proposal are located within the Westside at MCBQ, in Stafford County, Virginia. The existing environmental conditions described in this section are the same for all alternatives.

3.1 Land Use

MCBQ is divided into two areas: Mainside, consisting of 6,000 acres east of I-95 and U.S. Route 1; and Westside, 53,200 acres west of the same highways. The ASP is located on the Westside of the base, north of and accessed via MCB-1.

The ASP is a secure facility and is completely enclosed by chain link fencing. The compound itself is on mostly cleared rolling terrain traversed by a narrow paved road. Ammunition storage magazines are located along this road.

An old home site and a site previously used as a family cemetery exist in the vicinity of the proposed new construction site. The home site and the cemetery pre-date the Marine Corps' acquisition of the Westside of MCBQ.

3.1.1 Geology

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

approximately 150 feet. These deposits are generally unconsolidated.

3.1.2 Soils

The soils found in the Coastal Plain are the result of the soil formation on the underlying sediments. Soils of the project areas are disturbed due to past construction and development. There are several soil types located at the ASP. A map of the soil types and their descriptions is shown at Appendix B.

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

3.1.3 Topography

The terrain of the proposed project areas consists of previously disturbed, wooded rolling terrain. The area is located at an elevation that ranges between 170 and 240 feet above sea level.

3.2 Water Resources

Due to the rugged upper Coastal Plain topography and proximity to various water bodies, activities conducted on the base could potentially affect the water resources of the area.

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:

- Section 404 of the Clean Water Act, which 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 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" wetlands 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 Section 401 water quality certification 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). 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 is a signatory to an agreement supporting the CBPA and its associated regulations and will comply to the maximum extent possible consistent with the military mission and budget constraints.

3.2.1 Surface Waters

There are no surface waters located within the ASP. Breckinridge Reservoir is located approximately 0.75 miles northwest of the ASP, and Nolan H. Gray Reservoir lies approximately 0.3 miles northeast.

3.2.2 Wetlands

No wetlands exist in the proposed project area. The nearest wetland is located approximately 0.5 miles away, and is associated with Gray Reservoir and Chopawamsic Creek.

3.2.3 Floodplains

Executive Order 11988, ***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 ASP is depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) number 5101540045E, panel 45 of 280. The FIRM shows the

entirety of the ASP in Flood Zone X (unshaded) which is an area outside of the 500-year floodplain.

3.2.4 Groundwater

A band along the western edge of the Coastal Plain is the groundwater recharge area for underground aquifers that extend eastward under the Chesapeake Bay. MCBQ lies within that 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 I-95. No comprehensive studies of groundwater resources have been conducted at MCBQ to date.

3.2.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended) provides guidance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. The CZMA states that "the boundary of a State's coastal zone must exclude lands owned, leased, held in trust or whose use is otherwise by law subject solely to the discretion of the Federal Government, its officers, or agents" (16 USC § 1453 [1]). According to this statute, MCBQ is not within Virginia's coastal zone.

Section 307 of the CZMA covers coordination and cooperation issues. Section 307 mandates that federal projects that affect land uses, water uses, or other coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally-approved coastal management plan. If a proposed federal project or activity affects coastal resources or uses beyond the boundaries of the federal property, Section 307 of the CZMA applies.

The Commonwealth of Virginia has developed and implemented a federally-approved coastal resources management program (CRMP) describing current coastal legislation and enforceable policies. The Virginia CRMP has nine enforceable policies which include: wetlands management, fisheries management, subaqueous lands management, dune management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management.

3.2.6 Stormwater

The proposed project area is located approximately 0.3 miles upslope from Chopawamsic Creek. Stormwater from the ASP flows into the existing stormwater system and/or downhill into natural, wooded ravines and gullies.

3.3 Biological Resources

3.3.1 Vegetation

The land adjacent to these project areas is primarily forested. Mixed hardwood forest exists in the surrounding area.

3.3.2 Wildlife

This portion of 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.

3.3.3 Threatened and Endangered Species

The Endangered Species Act requires federal agencies to ensure that their actions will not either jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of its critical habitat.

There are two endangered species and one threatened species known to be present at MCBQ. These are, respectively, the dwarf wedge mussel (*Alasmidonta heterodon*), harperella (*Ptilimnium nodosum*), and the small whorled pogonia (SWP) (*Isotria medeoloides*).

3.4 Cultural Resources

Implementation of the proposed action must comply with the National Historic Preservation Act (NHPA) of 1966, as amended. Under the NHPA, consideration of historic preservation issues must be integrated into the early planning stages of project planning by federal agencies. Under Section 106 of the NHPA, 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. Section 110 of the NHPA requires the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP.

Architectural historians with the U.S. Army Construction Engineering Research Laboratory conducted a survey of MCBQ buildings between 1992 and 1994 (USCERL 1994). They identified significant historic buildings and landscapes on the base that factor into the Quantico Marine Corps Base Historic District, as designated by the NRHP. Seven themes form the historic context for the Quantico Marine Corps Base Historic District, including: First Permanent Construction, Aviation, Education, Industrial, Naval Clinic, African American Barracks, and Lustron Housing.

The ASP and its associated structures are not listed or eligible for listing in the NRHP as contributing elements of the Quantico Marine Corps Base Historic District, nor are they located within the viewshed of it.

3.5 Air Quality

The U.S. Environmental Protection Agency (EPA) defines ambient air (40 C.F.R. Part 50) as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA), as amended in 1977 and 1990, the EPA has produced ambient air quality standards and regulations. The EPA has issued National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, sulfur dioxide (SO2), particulate matter (PM) at two levels - particles with a diameter less than or equal to a nominal 10 micrometers (PM10), PM with a diameter and less than or equal to a nominal 2.5 micrometers (PM2.5), ozone, nitrogen dioxide (NOx), and lead. Areas that do not meet NAAQS are called non-attainment areas. The location of the proposed action is within the Metropolitan Washington (DC) Region that has been designated as a moderate non-attainment area for the 8-hour ozone NAAQS and in a general non-attainment for PM2.5.

For federal facilities within nonattainment areas, all construction projects must undergo an evaluation to determine if the General Conformity rule applies. General Conformity regulates the air quality impacts from construction and limited post-construction activities at federal facilities. Projects with estimated direct and indirect sources of emissions during the construction and operational phases of the proposed action below a certain quantity are considered ***de minimis***, and are not

required to undergo the full General Conformity determination. For a moderate ozone non-attainment area, the General Conformity ***de minimis*** criterion for ozone is set for two precursors. The ozone precursor ***de minimis*** levels are is 100 tons per year for NOx and 50 TPY for volatile organic compounds (VOCs). The PM2.5 General Conformity ***de minimis*** criterion is 100 TPY.

Additionally, all facilities in the Commonwealth of Virginia are subject to the Fugitive Dust Emission Standard. MCBQ, as a major source of criteria air pollutants, is subject to self-reporting of violations of rules identified in its Title V major source operating permit. The Fugitive Dust Emission Standard is one of those requirements. As states in the Title V Operating Permit for MCBQ, Section N, Subpart N "Fugitive Dust Emission Standard":

"During the operation of a stationary source or any other building, structure, facility or installation, 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 precautions may include, but are not limited, to the following:

- 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;

- 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 the maintaining of them in a clean condition;

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

- Open equipment for conveying or transporting material likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion; and

- The prompt removal of spilled or traced dirt or other materials from paved streets and of dried sediments

resulting from soil erosion (9 VAC 5-40-90 and 9 VAC 5-50-90)."

3.6 Noise

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with military installations. The major sources of noise at MCBQ include aircraft, artillery, small arms, explosives, vehicles, heavy equipment, and machinery.

Existing noise levels in the project area are primarily from ordnance detonation at the nearby Charlie Demolition Range. Other noise contributions come from temporary construction activities, but these are minor. Ordnance used in live and simulated fire exercises is generally conducted at ranges on the Westside of the base. There would be no additional noise associated with the project sites after demolition and construction activities cease.

3.7 Infrastructure, Utilities, and Transportation

3.7.1 Infrastructure and Utilities

The ASP is currently served by all necessary utilities. Utilities will not be removed as a result of the proposed demolition activities. Utilities associated with the existing production building and magazines would be capped and left in place.

3.7.2 Transportation

No roads, parking lots, or parking structures will be demolished as a part of the proposed alternatives. The proposed action alternatives would not create a significant increase in daytime traffic during the work week. Demolition crews associated with this project would not create a significant impact on traffic or parking availability.

3.8 Environmental Justice

Executive Order (EO) 12898, ***Federal Actions to address Environmental Justice in Minority Populations and Low-income Populations***, was issued in 1994. This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and

actions on these groups. The proposed action will not involve effects specific to minority or low-income populations.

EO 13045, ***Protection of Children from Environmental Health and safety Risk***, was issued in 1997. This order requires agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. The proposed action will not involve effects specific to children.

3.9 Hazardous Materials/Waste

Due to the age of the magazines and production building, asbestos containing materials, Polychlorinated biphenyls (PCBs), and lead-based paints could be present.

The proposed location of the ASP is not an unexploded ordnance (UXO) site. It is not a known munitions response site or a former impact area.

3.10 Recreation

The area surrounding the ASP is within a no hunting zone, and no recreational trails are adjacent to these areas. An archery practice range is located directly across MCB-1 from the ASP. The archery range is located within the explosive arc.

3.11 Military Training

The ASP is within the Westside of MCBQ and within areas used for military training of varying types. Codetalker Hall is an administrative building located approximately one mile west of the ASP, along MCB-1. Charlie Demolition Range, used for the disposal of explosives, resides approximately 1.5 miles southwest of the ASP.

4.0 ENVIRONMENTAL CONSEQUENCES

This section describes the anticipated direct, indirect, and cumulative environmental impacts of the no action alternative and one action alternative for expansion of the ASP.

4.1 Land Use

The no action alternative, Alternative A, would result in the ASP continuing to operate under current conditions. Alternative A would not be expected to impact the current geologic,

topographic, or soils conditions at MCBQ or the surrounding area.

Alternative B, the action alternative, would not affect the land use in the adjacent Westside administrative or military training areas. No land clearing activities would be conducted as a part of the proposed building demolition activities. Alternative B demolition activities would not be expected to significantly change or affect the geology of the area nor impact the topography of the base.

To prevent the loss or movement of soils from the disturbed areas, erosion and sediment control measures would be implemented during construction. Approximately 26 acres of land would be disturbed to implement Alternative B. With implementation of proper erosion and sediment control measures, the action alternative is not expected to significantly impact on-site or area soils. Erosion and sediment control (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.

4.2 Water Resources

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

It is expected that impacts to water resources would remain the same if no action is taken, as proposed under Alternative A. The building currently serving as an I&S facility constitutes an impervious surface which can contribute to increased stormwater velocity. Area stormwater flows discharge to the existing stormwater drainage system and/or into adjacent wooded areas.

The proposed action, Alternative B, would provide for the expansion of the ASP. No wetlands or surface waters will be directly affected through filling or alteration of hydrology. Potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices per the Virginia Erosion and Sediment Control Handbook (1992). The demolition and construction projects will require installation of proper erosion and sediment control (E&SC) measures (such as proper silt fence and storm drain inlet protection) prior to the onset of land disturbing activities.

The proposed action alternative would require no fill within the 100-year floodplain, which is considered an RMA under the CBPA. Neither of the alternatives would adversely affect an RPA or RMA as defined under the CBPA.

The proposed demolition and construction projects are consistent to the maximum extent practicable with the enforceable policies of Virginia's Coastal Management Plan. The proposed project is not expected to directly affect water resources (including wetlands) and not expected to have adverse effects on fisheries, shorelines, subaqueous lands, dunes, or coastal lands.

Alternative B would not adversely affect wetlands, surface waters, groundwater, floodplain areas, and will not violate CBPA requirements as applied to the Federal Government.

4.3 Biological Resources

Implementation of the no action alternative would not have a significant impact on vegetation, wildlife, or threatened or endangered species.

Due to the scope of work and the required Best Management Practices to protect water quality, there is no potential for Alternative B to adversely affect threatened and endangered species or habitats used by these species.

A survey for SWP was conducted in the proposed project area in July 2013. No colonies or individual plants were found during the survey. The survey report is at Appendix D.

The proposed new construction projects would require clearing of trees and vegetation. A timber assessment was performed in May 2013 to determine the estimated value of the timber to be removed as part of this project. The base must be reimbursed at fair market value for saleable timber that is removed as part of the project. The estimate is at Appendix E.

The proposed demolition projects will not have an adverse effect on vegetation since land clearing will not be required.

The proposed construction and demolition activities would have no adverse effects on wildlife (including migratory birds) or wildlife habitat.

4.4 Cultural Resources

Neither the no action alternative nor the action alternative would have an effect upon the Quantico Marine Corps Base Historic District, as they would not occur in the District or within the viewshed of it.

A survey for historic and archeological resources was conducted in September 2013. The survey report is at Appendix F. The proposed action has no potential to impact archaeological resources. Ground disturbing activities will be limited to areas which have no potential to contain significant archaeological resources. The areas are severely disturbed. New construction will not occur in the immediate vicinity of the former cemetery.

A second quarter 20th century homesite was identified and recommended as "ineligible" for the National Register of Historic Places. The former Mount Joy Cemetery is also within the Area of Potential Effect (APE). Records show that 40 graves were in the cemetery, all of which have been relocated to Cedar Run Cemetery. However, there may be unmarked graves remaining. The contractor will be informed that the former cemetery must be avoided, and that if there are any unanticipated discoveries of human remains, construction will stop and the base archaeologist notified. The former cemetery will not be accessible once construction around the area is completed.

4.5 Air Quality

Neither the no action alternative nor the action alternative would significantly impact the current air quality conditions at MCBQ or the Metropolitan Washington non-attainment area. The proposed action would have minor emissions resulting from the use of demolition equipment.

Sources of NO_x, VOC, $PM_{2.5}$, and SO_2 associated with the proposed action alternative would include emissions from demolition equipment, crew commuting vehicles, fugitive dust ($PM_{2.5}$), and from use of fuel-burning equipment. Alternative B activities are expected to be below the General Conformity ***de minimis*** levels.

The contractor in charge of demolition will be responsible for ensuring compliance with the Fugitive Dust Standard applicable to MCBQ as a Title V entity. The contractor must implement

applicable precautions under the standard, including, but not limited to:

- 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;
- 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 the maintaining of them in a clean condition;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty material. Adequate containment methods shall be employed during sandblasting or other similar operations;
- Open equipment for conveying or transporting material likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion; and
- The prompt removal of spilled or traced dirt or other materials from paved streets and of dried sediments resulting from soil erosion. (9 VAC 5-40-90 and 9 VAC 5-50-90)"

Assuming contractor compliance with the Fugitive Dust Standard, the proposed action alternative would not have significant air quality impacts.

4.6 Noise

The no action alternative would not create additional impacts to existing noise levels on the Base or the surrounding area.

Noise associated with the demolition of the existing magazines under Alternative B would be temporary and continually changing as work at the project sites progresses. Given the type and duration of the noise to be generated, lack of sensitive receptors near the project area, and the ambient noise level adjacent to the project sites, noise generated by demolition activities is not expected to result in significant noise impacts. No post demolition noise is expected at the project sites.

4.7 Infrastructure, Utilities, and Transportation

Utilities required for the new construction include electrical and exterior lighting. The I&S building would also have telecommunications systems and mechanical utilities (water and sanitary sewer) provided.

Implementation of the No Action Alternative could be expected to impact traffic through the Onville Road gate, MCB-2, MCB-3, MCB-4, and the FBI bypass road, and impact traffic at the intersection of MCB-2 and MCB-4 if MCB-1 is closed in the vicinity of the ASP.

Due to the scope of the proposed work, implementing Alternative A or B is not expected to alter the existing infrastructure or utilities within MCBQ and will not affect traffic patterns. Demolition and construction crews would not have a significant impact on traffic or parking space availability.

4.8 Environmental Justice

Implementing either of these proposed alternatives would not be expected to significantly impact the socioeconomics or create disproportionately high and adverse human health or environmental effects to minority or low-income populations at MCBQ or in the surrounding area. The proposed actions do not involve effects specific to children.

4.9 Hazardous Materials/Waste

The proposed no action or action alternatives would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ.

Due to their age, it is possible that asbestos, lead, or PCB containing materials exist within the existing magazines. No hazardous materials would be introduced under any of the alternatives and any hazardous waste generated would be disposed of according to all Federal and State regulations.

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 on the Waste Management Plan and submitted to the Natural Resources and Environmental Affairs Branch within 30 days of the close of the project, and no later than October 15 to be included in annual

report submissions. The Waste Management Plan form is at Appendix G.

The proposed location of the ASP is not an unexploded ordnance (UXO) site. It is not a known munitions response site or a former impact area.

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

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

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

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

4.10 Recreation

The ASP is in a "no hunting" zone so the proposed action alternative would not have an adverse effect on hunting opportunities aboard MCBQ. Demolition and construction activities would not affect MCBQ fishing or hiking opportunities, as the ASP lies in a controlled access area.

4.11 Military Training

Neither the no action nor the action alternative would have any effects on military training.

In the event mechanical crane usage is needed for demolition or construction under Alternative B, the Marine Corps Air Facility must be informed prior to crane erection as coordination with the Federal Aviation Administration (FAA) may be required.

4.12 Cumulative Impacts

For NEPA analysis, a cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future action. Impacts can result from individually minor but collectively significant actions taking place over a period of time.

The following actions are either recent past, ongoing, or future projects adjacent to or in the vicinity of the ASP:

- Replacement of the waterline between The Basic School and Weapons Training Battalion

Implementation of the No Action Alternative would not involve any new actions and therefore would not result in cumulative environmental impacts to soils, water resources, air quality, archeological resources, or threatened or endangered species within the base or surrounding communities. Traffic could be impacted if MBC-1 is closed and drivers seek alternate routes. Alternative B would involve demolition and construction activities at the ASP. This action would not result in any cumulatively significant impacts to soils, water resources, air quality, traffic, archeological resources, or threatened or endangered species within the base or surrounding communities when considered with other past, present, and reasonable foreseeable future actions at the facility.

4.13 Unavoidable Adverse Impacts

The primary adverse impact associated with this action are the impacts to the homesite and Mount Joy Cemetery, avoided only in the no action alternative, Alternative A. The homesite will be destroyed as part of the construction project. Because of the secure nature of the ASP, access to the former cemetery will no longer be available. However, due to the lack of significance

of the artifacts associated with the homesite, the lack of integrity of the site itself, and the fact that all known graves have been relocated, these impacts would not be considered significant.

4.14 Mitigation Measures

4.14.1 Mitigation of Effects to Historic Resources

A report of the archeological survey performed for this project was submitted to the Virginia SHPO via the ePix system. Their response is at Appendix F. The contractor will be informed that Mount Joy Cemetery must be avoided, and that if there are any unanticipated discoveries of human remains, construction will stop, and the base archaeologist notified.

4.14.2 Mitigation of Effects to Water Quality

The implementation of basic erosion and sediment control practices would be required during demolition as specified in the Virginia Erosion and Sediment Control Handbook (VDCR 1992). The proper installation and maintenance of erosion and sediment control measures would minimize the movement of disturbed soils off-site and into the Potomac River watershed. Following demolition, the disturbed area will be seeded and returned to pervious surfaces.

5.0 CONCLUSION

Two alternatives regarding the expansion of the ASP through demolition of inadequate ammunition storage magazines and construction of new magazines and an I&S building have been evaluated. Implementation of the Action Alternative has only minor adverse impacts that will be mitigated through measures described in this EA.

The project proponent has indicated that Alternative B is the preferred alternative, and MCBQ has determined that Alternative B would not have significant impacts on the human environment.

6.0 LIST OF PREPARERS

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Head, NEPA Coordination Section
Natural Resources and Environmental Affairs Branch
Installation and Environment Division (GF)
Marine Corps Base Quantico, VA 22134
(703) 432-6771

7.0 LIST OF AGENCIES AND PERSONS CONTACTED

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Virginia Department of Historic Resources, 2801 Kensington Avenue Richmond, VA 23221

Natural Resources and Environmental Affairs Branch, Installation and Environment Division, Marine Corps Base Quantico, VA 22134
- Ms. Amy Denn, Head
- Major Peter Baker, Deputy
- Mr. Frank Duncan, Environmental Planning Section Head
- Ms. Stacey Rosenquist, Environmental Compliance Section Head
- Mr. Robert Stamps, Fish and Wildlife Section Head
- Mr. John Giannico, Forestry Section Head
- Mrs. Catherine Roberts, Cultural Resources Manager

Office of Counsel (C 050), MCB, Marine Corps Base Quantico, VA 22134
- Mr. Nathan Stokes, Associate Counsel

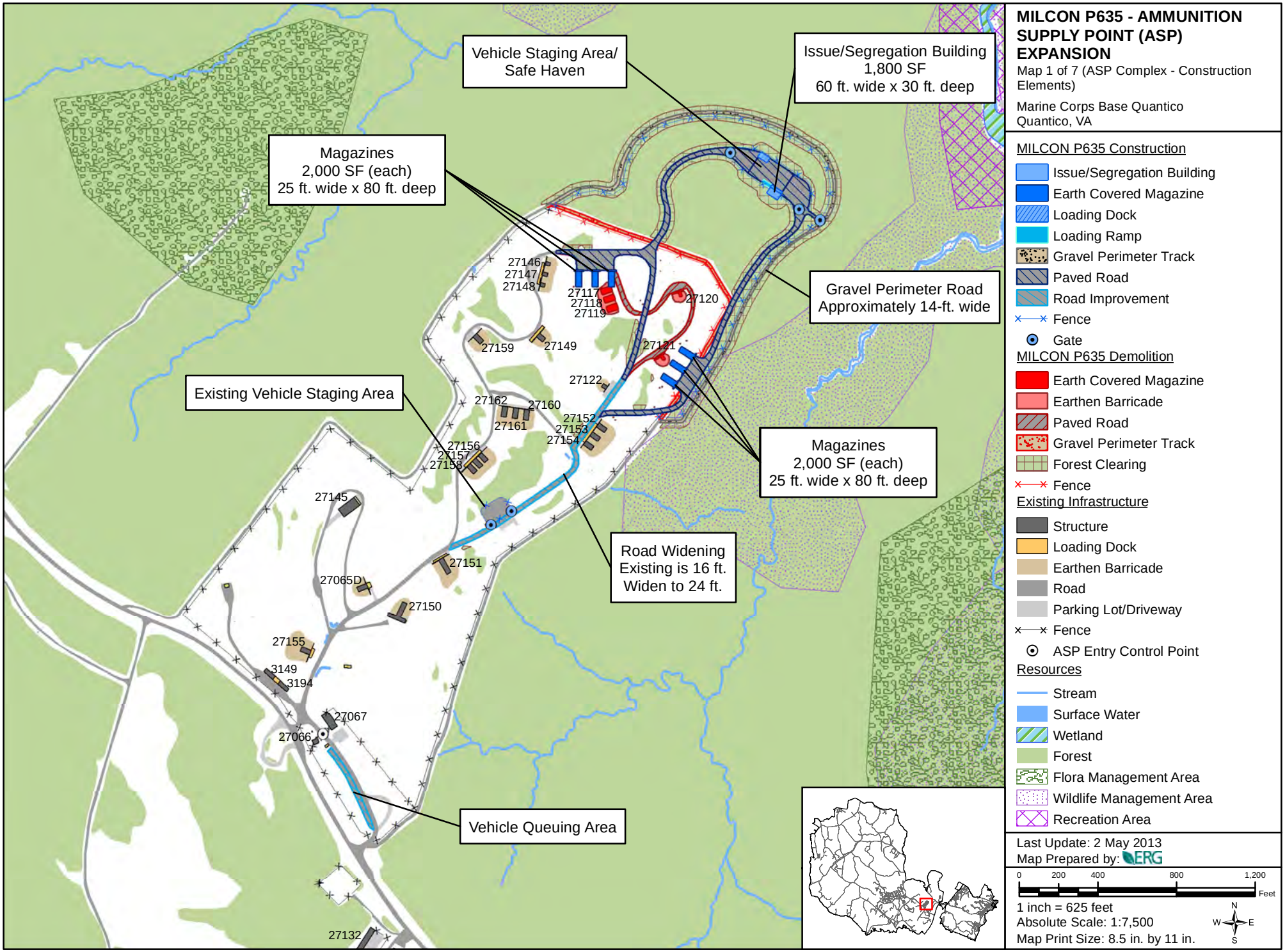
Public Works Branch, Facilities Division, Marine Corps Base Quantico, VA 22134
- Mr. Richard Reisch, Planner

8.0 REFERENCES

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

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

APPENDIX A
Project Description, Maps, and Photographs



MILCON P635 - AMMUNITION SUPPLY POINT (ASP) EXPANSION

Map 1 of 7 (ASP Complex - Construction Elements)

Marine Corps Base Quantico
Quantico, VA

MILCON P635 Construction

- Issue/Segregation Building
- Earth Covered Magazine
- Loading Dock
- Loading Ramp
- Gravel Perimeter Track
- Paved Road
- Road Improvement
- Fence
- Gate

MILCON P635 Demolition

- Earth Covered Magazine
- Earthen Barricade
- Paved Road
- Gravel Perimeter Track
- Forest Clearing
- Fence

Existing Infrastructure

- Structure
- Loading Dock
- Earthen Barricade
- Road
- Parking Lot/Driveway
- Fence
- ASP Entry Control Point

Resources

- Stream
- Surface Water
- Wetland
- Forest
- Flora Management Area
- Wildlife Management Area
- Recreation Area

Last Update: 2 May 2013
Map Prepared by: ERG

0 200 400 800 1,200 Feet

1 inch = 625 feet
Absolute Scale: 1:7,500
Map Print Size: 8.5 in. by 11 in.

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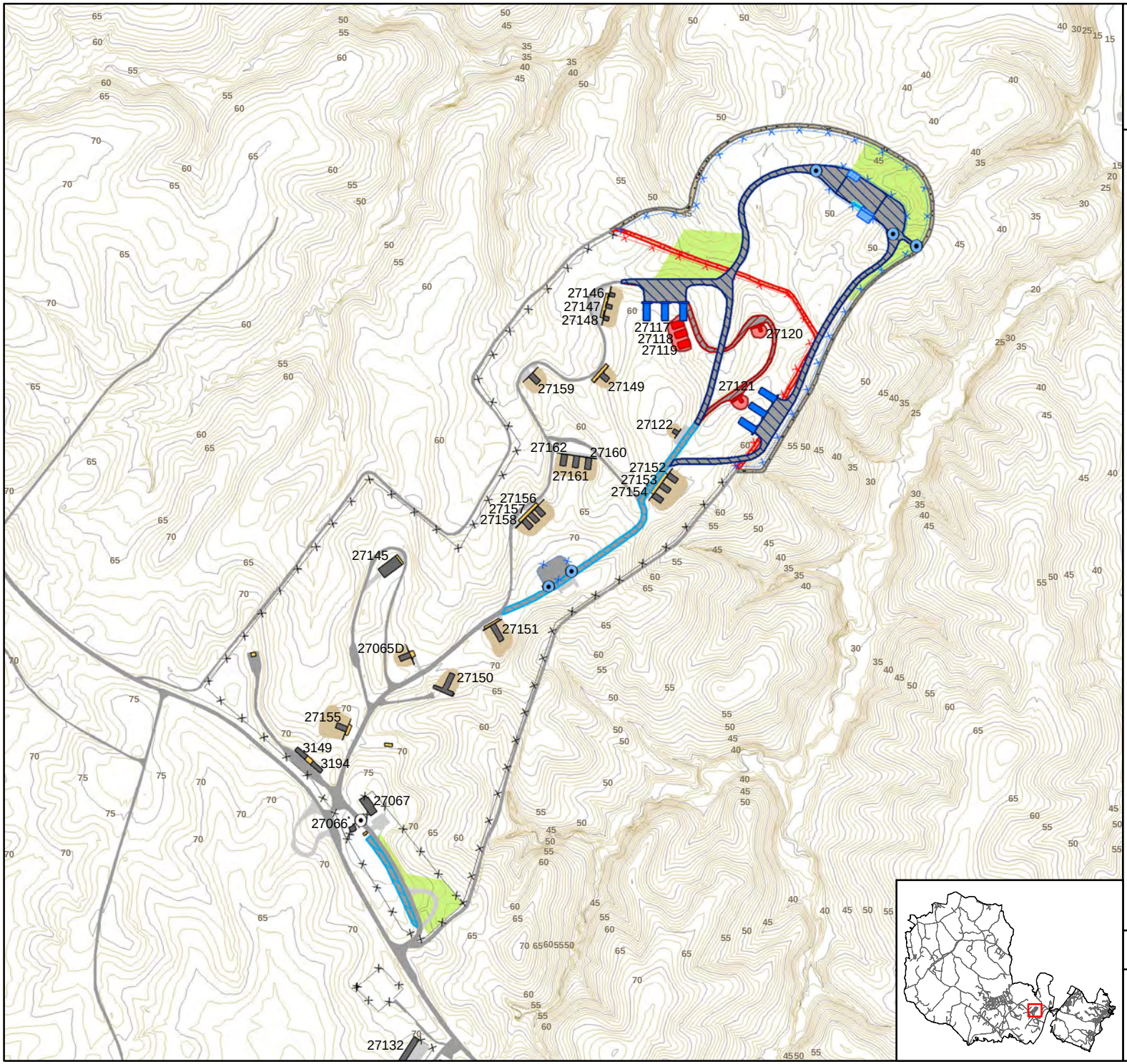

MILCON P635 - AMMUNITION SUPPLY POINT (ASP) EXPANSION

Map 2 of 7 (ASP Complex - Topography)

Marine Corps Base Quantico
Quantico, VA

MILCON P635 Construction

- Issue/Segregation Building
- Earth Covered Magazine
- Loading Dock
- Loading Ramp
- Gravel Perimeter Track
- Paved Road
- Road Improvement
- Fence
- Gate
- Area for Stormwater Management Features

MILCON P635 Demolition

- Earth Covered Magazine
- Earthen Barricade
- Paved Road
- Gravel Perimeter Track
- Fence

Existing Infrastructure

- Structure
- Loading Dock
- Earthen Barricade
- Road
- Parking Lot/Driveway
- Fence
- ASP Entry Control Point

Topography

- 5-Meter Contour
- 1-Meter Contour

Last Update: 2 May 2013
Map Prepared by: ERG

0 200 400 800 1,200 Feet

1 inch = 625 feet
Absolute Scale: 1:7,500
Map Print Size: 8.5 in. by 11 in.

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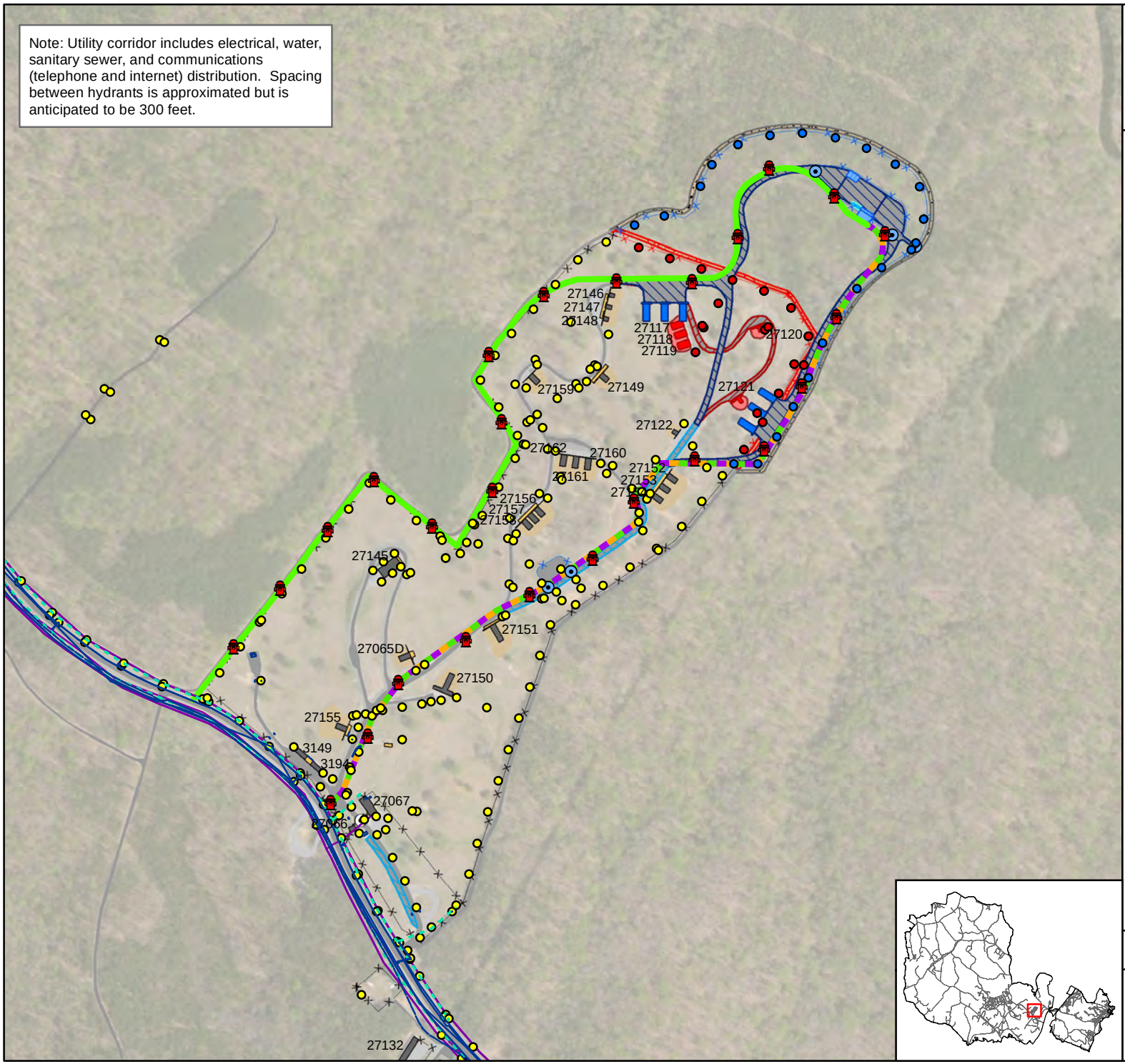
Note: Utility corridor includes electrical, water, sanitary sewer, and communications (telephone and internet) distribution. Spacing between hydrants is approximated but is anticipated to be 300 feet.



MILCON P635 - AMMUNITION SUPPLY POINT (ASP) EXPANSION

Map 3 of 7 (ASP Complex - Utilities)
Marine Corps Base Quantico
Quantico, VA

MILCON P635 Construction
- Issue/Segregation Building
- Earth Covered Magazine
- Loading Dock
- Loading Ramp
- Gravel Perimeter Track
- Paved Road
- Road Improvement
- Fence
- Gate

MILCON P635 Utility Installation
- Corridor for All Utilities
- Water Loop
- Exterior Light Pole
- Hydrants

MILCON P635 Demolition
- Earth Covered Magazine
- Earthen Barricade
- Paved Road
- Gravel Perimeter Track
- Fence
- Light/Utility Pole

Existing Infrastructure
- Structure
- Loading Dock
- Earthen Barricade
- Road
- Parking Lot/Driveway
- Fence
- ASP Entry Control Point

Existing Utilities
- Electrical Cable Line
- Communication/Fiber Line
- Water Distribution Line
- Light/Utility Pole

Last Update: 2 May 2013
Map Prepared by: ERG

0 200 400 800 1,200 Feet

1 inch = 625 feet
Absolute Scale: 1:7,500
Map Print Size: 8.5 in. by 11 in.

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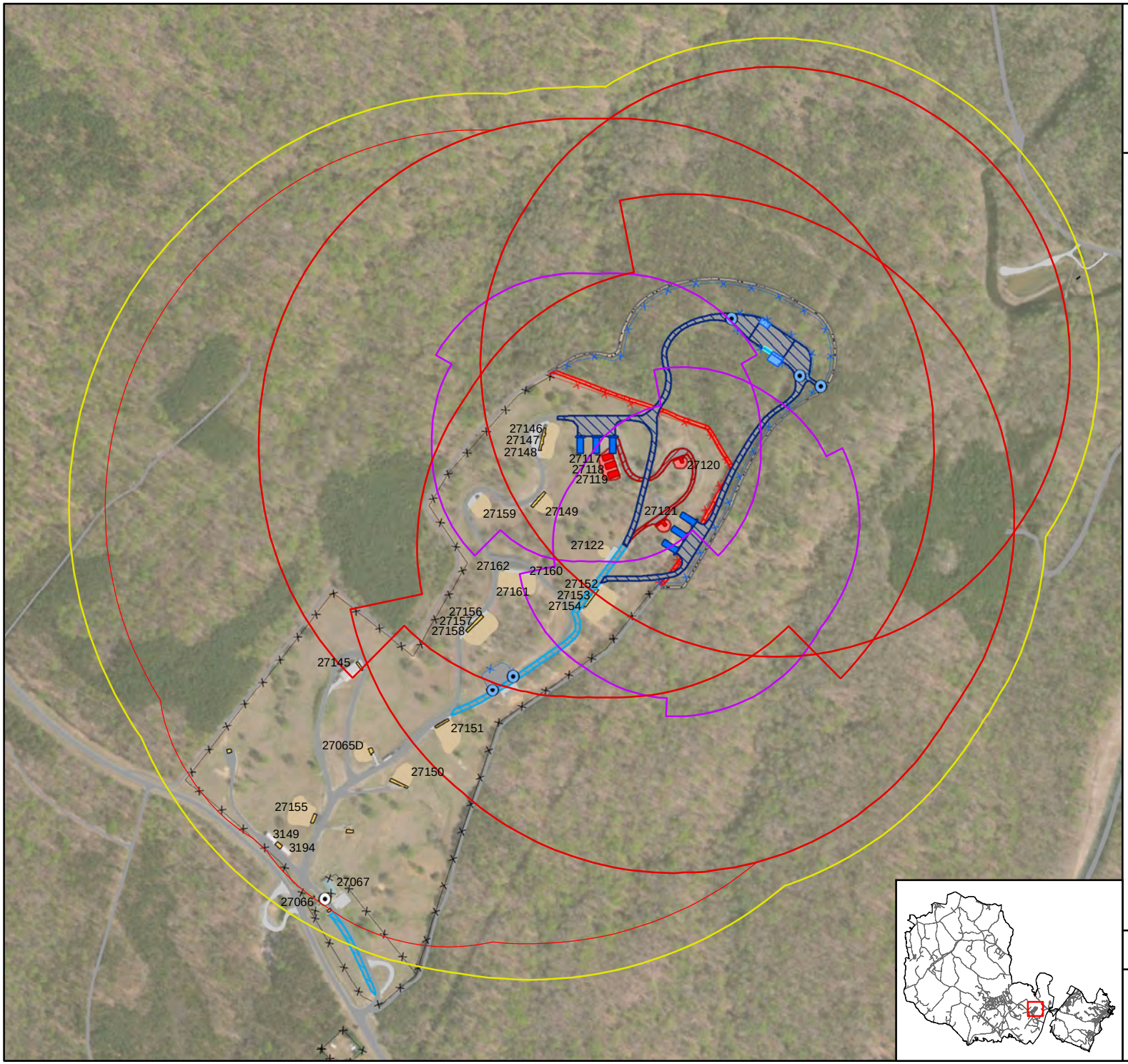

MILCON P635 - AMMUNITION SUPPLY POINT (ASP) EXPANSION

Map 4 of 7 (ASP Complex - Future Explosives Safety Quantity Distance (ESQD) Arcs)
Marine Corps Base Quantico
Quantico, VA

MILCON P635 Construction

- Issue/Segregation Building
- Earth Covered Magazine
- Loading Dock
- Loading Ramp
- Gravel Perimeter Track
- Paved Road
- Road Improvement
- Fence
- Gate

MILCON P635 Demolition

- Earth Covered Magazine
- Earthen Barricade
- Paved Road
- Gravel Perimeter Track
- Fence

Existing Infrastructure

- Structure
- Loading Dock
- Earthen Barricade
- Road
- Parking Lot/Driveway
- Fence
- ASP Entry Control Point

ESQD Arcs

- Inhabited Building Distance (IBD) Arc
- Intraline Arc
- IBD 110% Arc

Last Update: 2 May 2013
Map Prepared by: ERG

0 200 400 800 1,200 Feet

1 inch = 700 feet
Absolute Scale: 1:8,400
Map Print Size: 8.5 in. by 11 in.

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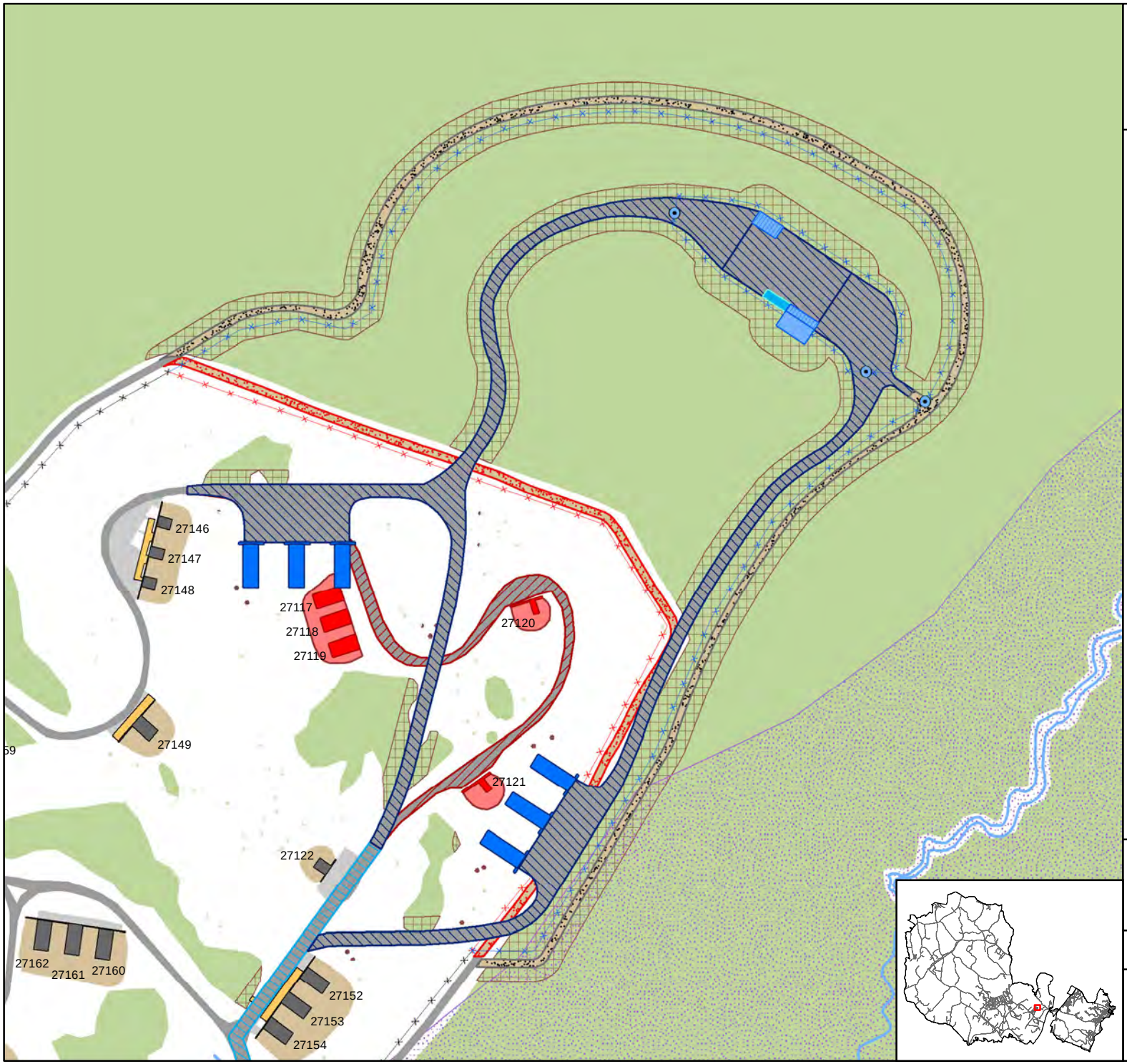


MILCON P635 - AMMUNITION SUPPLY POINT (ASP) EXPANSION

Map 5 of 7 (Primary Site - Resources)
Marine Corps Base Quantico
Quantico, VA

MILCON P635 Construction

- Issue/Segregation Building
- Earth Covered Magazine
- Loading Dock
- Loading Ramp
- Gravel Perimeter Track
- Paved Road
- Road Improvement
- Fence
- Gate

MILCON P635 Demolition

- Earth Covered Magazine
- Earthen Barricade
- Paved Road
- Gravel Perimeter Track
- Forest Clearing
- Fence

Existing Infrastructure

- Structure
- Loading Dock
- Earthen Barricade
- Road
- Parking Lot/Driveway
- Fence

Resources

- Stream
- Forest
- Wildlife Management Area

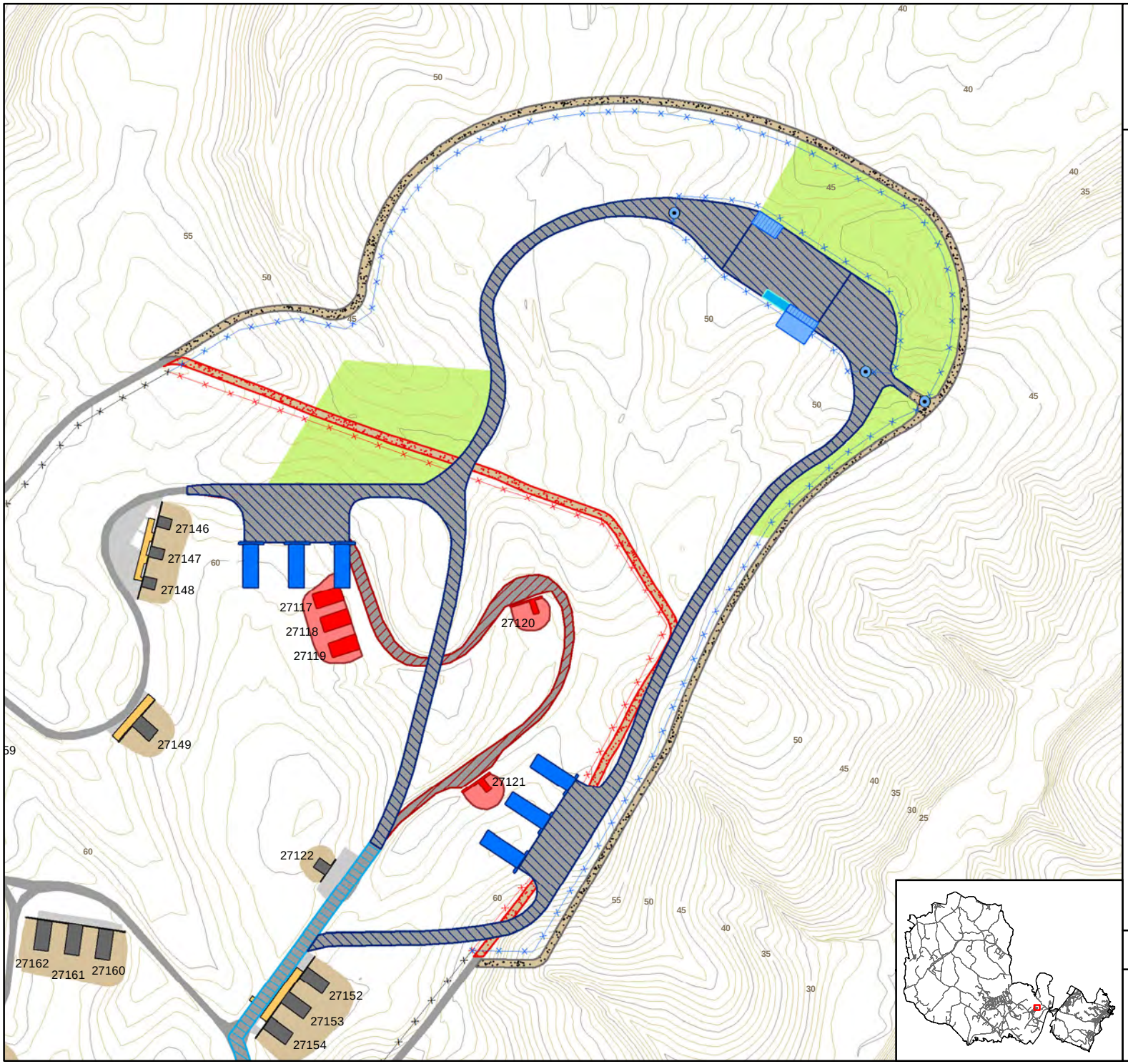
Note: Per MCB Quantico Natural Resources and Environmental Affairs office personnel, the wildlife management area shown has no impact on the project as proposed.

Last Update: 2 May 2013
Map Prepared by: ERG

0 75 150 300 450 Feet

1 inch = 250 feet
Absolute Scale: 1:3,000
Map Print Size: 8.5 in. by 11 in.

N W E S



MILCON P635 - AMMUNITION SUPPLY POINT (ASP) EXPANSION

Map 6 of 7 (Primary Site - Topography)
Marine Corps Base Quantico
Quantico, VA

MILCON P635 Construction

- Issue/Segregation Building
- Earth Covered Magazine
- Loading Dock
- Loading Ramp
- Gravel Perimeter Track
- Paved Road
- Road Improvement
- Fence
- Gate
- Area for Stormwater Management Features

MILCON P635 Demolition

- Earth Covered Magazine
- Earthen Barricade
- Paved Road
- Gravel Perimeter Track
- Fence

Existing Infrastructure

- Structure
- Loading Dock
- Earthen Barricade
- Road
- Parking Lot/Driveway
- Fence

Topography

- 5-Meter Contour
- 1-Meter Contour

Last Update: 2 May 2013
Map Prepared by: ERG

0 75 150 300 450 Feet

1 inch = 250 feet
Absolute Scale: 1:3,000
Map Print Size: 8.5 in. by 11 in.

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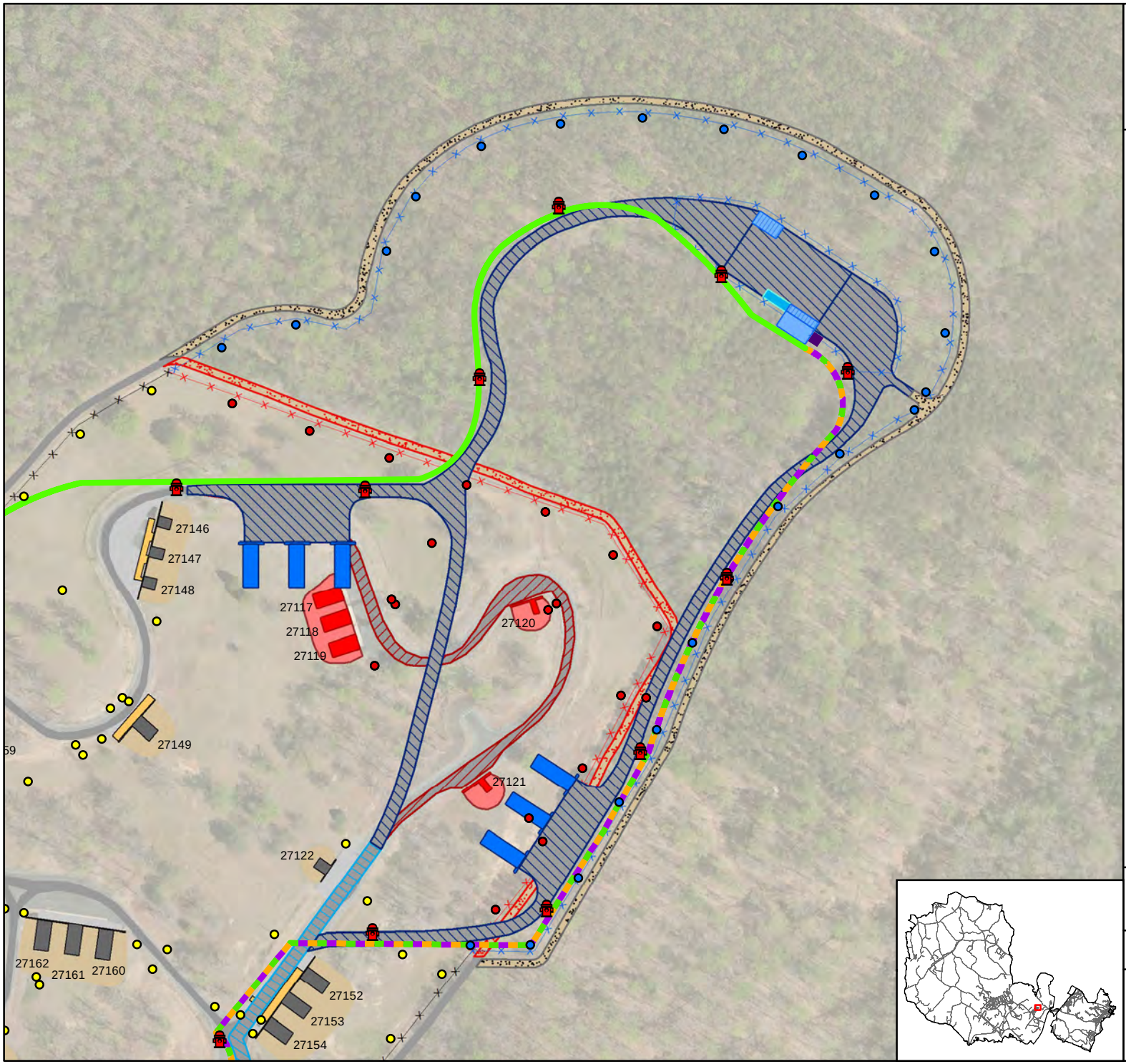

MILCON P635 - AMMUNITION SUPPLY POINT (ASP) EXPANSION

Map 7 of 7 (Primary Site - Utilities)
Marine Corps Base Quantico
Quantico, VA

MILCON P635 Construction
- Issue/Segregation Building
- Earth Covered Magazine
- Loading Dock
- Loading Ramp
- Gravel Perimeter Track
- Paved Road
- Road Improvement
- Utility Pad
- Fence

MILCON P635 Utility Installation
- Corridor for All Utilities
- Water Loop
- Exterior Light Pole
- Hydrants

MILCON P635 Demolition
- Earth Covered Magazine
- Earthen Barricade
- Paved Road
- Gravel Perimeter Track
- Fence
- Light/Utility Pole

Existing Infrastructure
- Structure
- Loading Dock
- Earthen Barricade
- Road
- Parking Lot/Driveway
- Fence

Existing Utilities
- Light/Utility Pole

Note: Utility corridor includes water, electrical, sanitary sewer, and communications (telephone and internet) distribution.

Last Update: 2 May 2013
Map Prepared by: ERG

0 75 150 300 450 Feet

1 inch = 250 feet
Absolute Scale: 1:3,000
Map Print Size: 8.5 in. by 11 in.

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MILCON P635 – Ammunition Supply Point Expansion
Building Photographs
Marine Corps Base Quantico
Quantico, Virginia

Magazines (Buildings 27117, 27118, and 27119) - Exterior

Magazines (Buildings 27117, 27118, and 27119) - Structural Issue

MILCON P635 – Ammunition Supply Point Expansion
Building Photographs
Marine Corps Base Quantico
Quantico, Virginia

Magazines (Buildings 27117, 27118, and 27119) - Structural Issue

Magazine (Buildings 27120) - Entrance

MILCON P635 – Ammunition Supply Point Expansion
Building Photographs
Marine Corps Base Quantico
Quantico, Virginia

Magazine (Buildings 27120) - Exterior

Magazine (Buildings 27120) – Entrance and Intrusion Detection System

MILCON P635 – Ammunition Supply Point Expansion
Building Photographs
Marine Corps Base Quantico
Quantico, Virginia

Magazine (Buildings 27120) - Exterior

Magazine (Building 27121) - Exterior

MILCON P635 – Ammunition Supply Point Expansion
Building Photographs
Marine Corps Base Quantico
Quantico, Virginia

Magazine (Building 27121) - Entrance

Magazine (Building 27121) – Earth Covering and Ventilation

MILCON P635 – Ammunition Supply Point Expansion
Building Photographs
Marine Corps Base Quantico
Quantico, Virginia

Magazine (Building 27121) - Door Exterior; Not at Grade

SITE INVESTIGATION REPORT
MILCON P635
AMMUNITION SUPPLY POINT EXPANSION
MARINE CORPS BASE QUANTICO
QUANTICO, VIRGINIA

Submitted to
Naval Facilities Engineering Command (NAVFAC) Washington
Washington Navy Yard
Washington, DC

Submitted by
The Mason & Hanger Group, Inc.
A Day & Zimmerman Company
300 West Vine Street, Suite 1300
Lexington, KY 40507

2 May 2013

AMMUNITION SUPPLY POINT EXPANSION

Site Investigation of 15 and 19 March 2013

Meeting Attendees:

See Attachment 1 for Meeting Minutes and Sign-in Sheet.

An initial site investigation / kick-off meeting was held on 15th March 2013 and a subsequent site visit was conducted on 19 March 2013. These meetings and site visits were conducted to obtain necessary information and documents, evaluate the current customer generated information, and update and incorporate necessary revisions to properly facilitate the proposed facilities.

1.0 GENERAL DESCRIPTION OF FACILITY

A. Marine Corps Base (MCB) Quantico is located south of Washington DC on the southwestern bank of the Potomac River. Founded in 1917, it is known as the "Crossroads of the Corps". It houses a number of units and includes The Basic School (TBS), Marine Corps University, the Marine Corps Intelligence Activity and the Marine Corps Combat Development Command.

B. The primary purpose of this project is to expand the existing Ammunition Supply Point (ASP) to provide a facility for the segregation and preparation of ammunition for receipt and distribution and replace deteriorating and insufficient magazines. The project constructs an Issue/Segregation Building and six high explosive magazines. The Issue/Segregation Building is not intended to store or house explosives, except during emergencies or inclement weather.

C. A delivery vehicle staging area will provide a Department of Defense Explosives Safety Board (DDESB)-approved safe haven for explosives-laden vehicles in the capital region during emergency situations (e.g. hurricanes, terrorist threats). This area will include a separate delivery loading dock.

1.01 Functional Components of the Facilities:

A. The Issue/Segregation Building consists of an administrative area, restroom, janitor's closet, mechanical room, and operations area. An exterior covered loading dock will be attached to the building. The Category Code for the facility is 14321 (Ammunition Segregation Facility). The sizing of the Issue/Segregation Building is based on an existing Issue/Segregation Building at Camp Lejeune. See Attachment 2 for photographs and a floor plan of the Camp Lejeune Issue/Segregation Building, which is provided as an example but is not intended for design purposes.

B. The administrative area will accommodate two (2) administrative personnel and six (6) ammunition technicians. This area will have heating, ventilation, and air conditioning (HVAC).

C. The operations area is required for visual inspection and inventory of all ammunition returned by or issued to the units. Munitions are inspected for serviceability prior to acceptance and storage in the ASP magazines. This area shall have a 12'-0" x 12'-0" overhead door.

D. The exterior covered loading dock shall have a leveler and a ramp for forklift access.

E. Other structures shall include six magazines, a vehicle staging /safe haven area, and a separate loading dock with a leveler near the Issue/Segregation Building.

1.02 General Arrangement of Required Spaces: Areas is provided in square meters (m2) and Gross Square Footage (GSF).

Magazines

Six (6) Type 33-15-74 Magazine	1,114.84 m^2 (12,000 GSF)
Total:	1,114.84 m^2 (12,000 GSF)

(Note that the area for the magazines is based on inside dimensions.)

Issue/Segregation Building

Administrative Area	55.74 m^2 (600 GSF)
Operations Area	111.48 m^2 (1,200 GSF)
Exterior Covered Loading Dock	40.88 m^2 (440 GSF)
Total:	208.10 m^2 (2,240 GSF)

(Note that the exterior covered loading dock area (440 GSF) represents the program area included in the DD Form 1391. For programming purposes, the total loading dock area is counted as half; therefore, the actual area is 880 GSF.)

1.03 Accessibility Requirements:

The building is intended for use by able bodied military personnel. The facility will not be required to comply with the Americans with Disabilities Act (ADA) and the Uniform Federal Accessibility Standards (UFAS).

1.04 Exterior/Interior Building Construction:

Structure:

A. This project shall construct multiple facilities, including an Issue/Segregation Building and six magazines. The following description of the exterior or interior building construction defines the requirements for the Issue/Segregation Building. The magazines are defined in the Structural Narrative below (see Section 2.0). The Issue/Segregation Building will include an administrative area, restroom, janitor's closet, mechanical room, and operations area. An exterior covered loading dock will be attached to the building.

B. Under the International Building Code (IBC) 2012, the use of the Issue/Segregation Building is classified as "H-1" (High Hazard), per Section 307. The type of construction shall be Type II-B which allows for maximum height of one (1) story and a maximum of 650 m^2 (7,000 SF) per floor as shown in Table 503.

C. The building shell shall be constructed of load-bearing concrete block walls with a brick veneer facade. The roof shall be a pitched roof system drained by gutters and downspouts.

D. Metal roof trusses with steel roof deck and standing seam roof covering, pitched to provide positive drainage, will make up the roof structure. Supplemental framing may be required for any roof mounted equipment.

E. The exterior will be constructed of masonry. All colors of wall surfaces, flashings, copings, storefront glass and framing shall conform to the base exterior architecture plan.

Floors:

A. At the administrative area, floors shall be commercial grade, 1/8-inch minimum thickness, through color vinyl composition floor tile, unless specified otherwise.

B. At the restroom and janitor's closet, floors shall be ceramic tile with a ceramic tile base.

C. At the operations area and mechanical room, the floor shall be sealed concrete.

Walls/Doors/Ceilings:

A. All interior walls shall be constructed of 8-inch or 12-inch concrete masonry.

B. All walls shall be painted.

C. All doors and window frames shall be factory finished.

D. All casework shall be plastic laminate covered, cabinet faces and sides with counter tops with rolled fronts and backsplashes.

E. At the administrative area and restroom, ceilings shall be 24-inch x 24-inch plain edged white acoustical ceiling tiles in a factory finished suspended grid system.

F. At the operations area there shall be no ceiling. Painting to exposed structure recommended.

1.05 Site Antiterrorism/Force Protection Features:

The site and building design shall incorporate the requirements noted and illustrated in Unified Facility Criteria (UFC) 4-010-01 dated 9 February 2012, "DoD Minimum Antiterrorism Standards for Buildings". Based on current tenant requirements, the facilities do not meet criteria for an inhabited building.

1.06 Special Equipment Requirements:

A. A grounding system shall be installed for all facilities, per OP 5 (NAVSEA OP 5 Volume 1, 7th Revision: AMMUNITION AND EXPLOSIVE SAFETY ASHORE) requirements.

B. An Intrusion Detection System (IDS) system with cameras shall be provided for each proposed magazine and at the fence line surrounding the Issue/Segregation Building. This system, including cabling, will be a part of the Space and Naval Warfare Systems Command (SPAWAR) contract through Quantico. The contractor will only need to install a back box and conduit system in the proposed magazines and the Issue/Segregation Building. SPAWAR to install cabling and units as well as the trenching and ductbank needed to connect the facilities.

C. A transfer switch shall be installed for connection of a roll up generator at the Issue/Segregation Building. The purchase and installation of the generator is not a part of this project.

D. Data communications and telephone outlets will be installed throughout the office area of the Issue/Segregation Building. A Navy and Marine Corps Internet (NMCI) service will also be required.

E. Exterior lighting at the new facility shall be wall mounted units, spaced as required.

F. Security lighting is to be placed around the perimeter fence line to match the spacing of the existing lighting (approximately 150' apart).

G. Provide interior lighting with normal switching as well as occupancy sensors for energy conservation.

H. New fire alarm and detection systems shall be tied into the existing base system.

I. Lightning protection will be provided as well as facility grounding for the Issue/Segregation Building, magazines, and vehicle staging/safe haven area, per code and OP 5 requirements.

J. A Direct Digital Control (DDC) System shall be provided for the facility with future capabilities to tie-in to the base's Energy Management Control System (EMCS).

1.07 Sustainable Design:

Sustainable design principles will be included in the design and construction of the project in accordance with Executive Order 13423 and other laws and Executive Orders. Due to small size of the structures, low occupancy and minimal utilities, the explosives-related structures are not able to meet the requirements for the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) certification. As feasible, facilities will comply with the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007. Low Impact Development will be included in the design and construction of this project as appropriate. A LEED waiver will have to be applied for and approved by the Base Commander.

1.08 Energy Conservation:

Energy conservation design shall be in accordance with UFC 3-400-01, Design Energy Conservation. The new Issue/Segregation building shall be in compliance with EPAct 2005 and the EISA.

1.09 Building Commissioning:

A. Provide Fundamental Commissioning to meet the requirements of Unified Facilities Guide Specifications (UFGS) section 01 45 00.05 20, *Design and Construction Quality Control*. At a minimum, the contractor shall commission the following systems: HVAC systems and controls, lighting controls, and if provided, day lighting controls, refrigeration systems and controls, and domestic hot water systems.

B. Provide Enhanced Commissioning to achieve potential LEED credit.

C. The designated Commissioning Authority (CA) shall meet the qualifications set by UFGS section 01 45 00.05 20, *Design and Construction Quality Control*. The CA shall report results, recommendations, and findings directly to the Government.

2.0 STRUCTURAL

2.01 Overall Design Concept:

The Issue/Segregation Building will include composite load-bearing masonry walls supporting a pitched roof consisting of metal trusses and decking. An exterior covered loading dock will be provided at one side of the building with stair access and a connecting loading ramp. The façade of the building will consist of brick veneer.

2.02 Foundation System:

The foundation system will be of shallow foundations with a reinforced slab on grade. Exterior loading dock column foundations to consist of spread footings. This recommendation is based on preliminary geotechnical report, which has been uploaded to the Electronic Project Generator (EPG) as an attachment for this project submittal.

The preliminary geotechnical report indicates that:

1. The soils encountered are consistent with locally mapped soils and geologic publications,
2. Recommends removing existing fill in the proposed building areas down to natural soils prior to placing any new fill, and
3. Recommends the use of an allowable bearing pressure of 2,500 psf.

Final foundation designs shall be based upon a final geotechnical report.

2.03 Earth-Covered Magazines:

The project will construct six 25'x80' (2,000 SF) 7-Bar earth-covered magazines, Frelok-Stradley oval arch type 33-15-74. Note that the standard dimensions for earth covered magazines are measured between inside faces of walls.

3.00 MECHANICAL

3.01 Fire Protection:

A. At the Issue/Segregation Building, provide an integrated fire alarm and suppression system capable of notifying building occupants and controlling any fire that may start inside the facility. Sprinkler system is required for the Issue/Segregation Building in accordance with UFC 3-600-01, Section 6-10.4.1.

B. Fire alarm and suppression system is not required within the magazines.

3.02 Plumbing:

A. Install backflow preventer and meter in the new domestic water service main. Backflow preventer and meter must meet base requirements and will require remote monitoring.

B. Domestic water supply will be branched from the fire protection water line to service sprinklers and plumbing fixtures in the Issue/Segregation Building. A separate domestic water supply line will not be provided.

C. Low flow fixtures with electronic sensing will be provided for water conservation.

D. Provide hot water heater in the new mechanical room to serve the facility.

3.03 Heating, Ventilation, and Air Conditioning (HVAC):

A. Air conditioning for the administrative area shall be provided by utilizing a split system direct (D/X) heat pump with low ambient kit, and back up electric heat.

B. Direct digital temperature controls system shall be utilized.

C. Anti-terrorism/force protection (AT/FP) measures will be included in the mechanical system design. A single shutdown switch will be provided. Air intakes will be 3-meters above grade. Equipment mounted closer than 10-meters to the building will be properly protected.

D. Magazines shall be provided with natural ventilation through louvers and gravity vents. All openings shall be provided with low leak motorized dampers interlocked with a smoke detector.

4.00 ELECTRICAL

Electrical, communications, life safety and security systems will be required in the construction of the new Issue/Segregation Building and magazines.

4.01 Service and Distribution:

A. Primary electrical service to each facility shall be provided by the utility company or contractor. The contractor will provide a complete 13.2kV or 35kV three-phase underground primary extension to the project site from road MCB-1 as well as the required transformers to step down the voltage as required – this is to include all trenching, backfill, conduit, and cabling.

B. Secondary electrical service to each facility shall be provided by the contractor. The contractor will install all trenching, backfill, conduit and conductors from the pad-mounted 225kVA transformer. The secondary service shall be terminated in the main service disconnecting means as soon as it enters each facility.

4.02 Electrical Power System:

A. Provide main electrical/mechanical room adjacent to the exterior foundation wall for electrical distribution equipment. Provide electrical distribution equipment for the Issue/Segregation Building, including service entrance switchboard at 120/208 volts, 3-phase, 4-wire and distribution and branch circuit panels also at 120/208 volts, 3- phase, 4-wire.

B. Provide distribution and branch circuit panels with bolt-on type circuit breakers throughout new facility to serve new loads as required. Provide all electrical panels with twenty-five percent (25%) spare capacity.

C. Provide Transient Voltage Surge Suppression (TVSS) for the service entrance switchboard.

D. Provide light switches and general-purpose receptacles throughout all spaces as required. All general-purpose receptacles shall be 20 Amps National Electrical Manufacturers Association (NEMA) WD 1.

E. Provide dedicated receptacles for all ancillary office equipment such as faxes, printers, plotters, shredders, or copiers. This equipment shall be circuited such that no more than one duplex receptacle is placed on one 20 amp, single-pole breaker. A dedicated circuit shall also be required for refrigerators, water coolers, microwaves, and vending machines.

F. Provide ground fault circuit interrupting receptacles as required by the National Electric Code (NEC) latest edition.

G. Provide controllers and disconnects for all motor-operated equipment.

4.03 Lighting

Exterior Lighting:

A. Exterior lighting shall meet the lighting levels required to meet safety and minimize glare in accordance with Illuminating Engineering Society of North America (IESNA) Lighting Handbook. Exterior lighting shall include all new canopies and building entrances or exits as well as flood lighting along the perimeter fence.

B. Provide fixtures and poles, with matching appearance to the existing, in the area.

C. Provide wall-mounted lighting fixtures for building exits and general security.

D. Provide exterior lighting control for fixtures via photocell controls and time clocks.

E. Security lighting is to be placed around the perimeter fence line to match the spacing of the existing lighting (approximately 150 feet apart).

Interior Lighting

A. Provide a complete lighting system including emergency lighting, Light Emitting Diode (LED) exit lights, and emergency egress lighting (integral to the fixture). All lighting control design, fixture layout, luminaire wattage requirements and lighting power allowance shall be in compliance with American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1 and EPAct.

B. Interior lighting shall provide general ambient lighting consisting generally of 600 x 1200 mm (2 feet x 4 feet) recessed LED fixtures in the office spaces. LED lighting will also be provided in other areas of the facilities utilizing the appropriate fixture types.

C. Lighting shall comply with ASHRAE requirements for building energy conservation compliance. This shall not exceed the maximum watts per square foot allowed for the building type and the provision of occupancy sensor lighting controls in each space.

D. LED exit signs equipped with integral battery backup shall be provided per National Fire Protection Association (NFPA) 101 and NEC through-out each facility.

E. Design lighting to conserve energy, minimize glare, and provide a pleasant, comfortable, and functional environment.

F. Provide occupancy sensors to control lighting in, at a minimum, office spaces, toilets, and storage rooms. Occupancy sensors to include adjustable delayed off-time range between 30 seconds and 15 minutes and sensitivity adjustment. Include manual override switching for occupancy sensors.

4.04 Telecommunication Systems:

A. Telecommunications Systems design shall at a minimum comply with Military Handbook 1012/3, Electronic Industries Alliance/Telecommunications Industry Association (EIA/TIA)

publications 568C, 569 and 607. Intranet shall be installed per UFC 3-580-10 – Navy and Marine CORPS Intranet (NMCI) Standard Construction Practices.

B. Provide conduit from existing communications service located at road MCB-1 to new Point of Presence (POP) room for telephone/data, fire alarm system, and intrusion detection or alarm system service connections. The Issue/Segregation Building shall connect to the existing telephone and fiber service on site.

C. Provide a complete backbone distribution system, and horizontal distribution system including, but not necessarily limited to, all wiring, pathway systems, grounding, backboards, connector blocks, protectors for all copper service entrance pairs, patch panels, fiber optic distribution panels, terminators for all fiber optic cables, outlet boxes, telephone jacks, data jacks, and cover plates.

D. Provide base-wide telephone systems. Provide data and NMCI systems throughout Issue/Segregation Building.

E. Each telephone/data outlet shall be fed with shielded, category six (CAT 6), 4-pair cables. Any office cubicle communication outlet shall have two NMCI jacks, and one voice jack. At each printer/copier station there shall be three separate 4 termination connector plates and each one shall have two NMCI, one voice and one blank.

4.05 Lightning Protection:

A. Provide a complete lightning protection system that meets Underwriters Laboratories (UL) 96A, NFPA 780, and OP 5. Lightning protection (catenary) system shall be certified and shall require a UL Master Label.

B. Provide Transient Voltage Surge Suppression (TVSS) for the service entrance switchboard as required by NFPA 780 and UL96A for the lightning protection system to obtain a UL Master Label.

C. Provide counterpoise-grounding system around building connected to structural steel.

4.06 Fire Alarm/Mass Notification System:

A. At Issue/Segregation Building, provide a new fire alarm system capable of notifying building occupants in accordance with UFC 3-600-01, Section 6-10.4.1 and UFC 4-010-01. The new system, if required, shall be a voice evacuation type system to also serve as a mass notification system. These integrated systems shall be capable of notifying building occupants by means of tones, strobes, textural messaging, and pre-recorded and live voice announcements. The fire reporting portion of the system shall be compatible with the existing base fire reporting system. The fire alarm system shall include manual stations, system smoke detectors, duct smoke detectors, heat detectors, audio/visual alarms, electrical supervision of all sprinkler system alarm and supervisory devices.

B. Fire alarm and mass notification system is not required within the magazines, in accordance with UFC 4-010-01, Section B-4.7 and Appendix A.

4.07 Security Systems:

A. Provide conduit and box rough-in for an Electronic Security System (ESS) that encompasses the following subsystems: IDS and closed circuit television (CCTV) systems for assessment of alarm conditions. The IDS and CCTV for this project shall be provided by the Government.

B. Provide 120V power as required for security systems equipment.

5.00 SITE WORK

5.01 General:

A. The proposed ASP expansion includes an Issue/Segregation Building and six new magazines along with roads and utilities. Perimeter fencing and a perimeter gravel road are also included. The Issue/Segregation Building will be located in the wooded area northeast of the existing magazine complex in order to ensure that it is in a safe area away from the magazines. The Issue/Segregation Building will be nearly a mile northeast of Road MCB-1. Included in the project are portions of road widening of the existing roads in order to ensure sufficient roadway width.

B. The site lies at the existing ASP magazine complex on the northeastern side of Road MCB-1 at Quantico, Virginia.

C. The Issue/Segregation Building will require water, sewerage, electrical power, and communications. The magazines will require electrical power and intrusion detection infrastructure.

5.02 Demolition:

A. Included in the project is the demolition of five existing magazines (Buildings 27117, 27118, 27119, 27120 and 27121) and roads. The existing magazines will be demolished before the proposed magazines are built. The existing magazines are made of concrete and are covered with soil and grass. After demolition the debris will be hauled away and the locations covered in topsoil and seeded. The roads to be demolished are near the magazines to be demolished; after the asphalt and gravel are removed the areas will be covered in topsoil and seeded.

B. See the Environmental Narrative (Section 5.10) below concerning Unexploded Ordnance (UXO).

5.03 Clearing and Grubbing:

A. Much of the site is at present a wooded area lying northeast of the existing magazine complex. The wooded area will require the timber to be removed prior to any clearing and grubbing. MCB Quantico must be reimbursed for timber harvesting.

B. See the Environmental Narrative (Section 5.10) below concerning UXO.

5.04 Earthwork and Grading:

The wooded area on which the Issue/Segregation Building and connecting roads will be located is scored by deep creeks. A topography survey has been completed for the area and is attached in EPG. Cut and fill will be required in order to provide a road useable by the delivery vehicles receiving and supplying ammunition. The location of the proposed magazines and the Issue/Segregation Building are constrained by explosives safety quantity distances. However, the roads connecting to the Issue/Segregation Building are not so constrained and some optimization of the road layout might be possible during the design phase.

5.05 Storm Drainage / Stormwater Management:

The stormwater runoff generated by the new construction will be managed and mitigated by the use of Low Impact Development (LID) measures such as infiltration. The hilly terrain means that these measures will consist mainly of infiltration basins set in the natural creeks that flow in a northeastwardly direction through the site. The main features of the infiltration basins/bio- retention cells will be an earthen barrier to prevent unrestricted flow, and a permeable base in the bottom of the basin to allow infiltration.

5.06 Sanitary Sewer:

The Issue/Segregation Building inside the ASP will require a unisex restroom. Sewage will be pumped in a forced main to a receiving manhole in the Road MCB-1 corridor.

5.07 Water:

The project includes a looped water main through the ASP. Included is a fire hydrant every 300 feet and a fire pump to ensure sufficient pressure can be provided. The main will run from a point of connection, at the mid- point of the ASP, with the existing water main that runs along Road MCB-1, thence along the main spine road of the ASP, then along the western boundary of the ASP to another point of connection with the existing water main next to Road MCB-1 at the western end of the expanded ASP. This route will allow the MCB Quantico Fire department to fight fires within the existing ASP.
This main will supply the fire sprinklers and non potable domestic water uses in the Issue/Segregation Building. Potable water in the Issue/Segregation Building will be supplied by deliveries of bottled water.

5.08 Power, Telecommunication and Lighting:

Power, telecommunications and site lighting will be provided to the site in accordance with information furnished by the Government to meet the project requirements. See the Electrical Narrative (Section 4.01 and Section 4.04) for detailed information. Concrete foundations for exterior lighting poles will be provided.

5.09 Natural Gas:

There is no requirement for natural gas supply to this site.

5.10 Environmental:

A. The project will comply with all federal requirements of which EISA 2007, section 438 is the most recent. Although no threatened species have been identified within the construction site to date, the Small Whorled Pogonia is present in surrounding areas. Threatened species buffers identified by MCB Quantico Environmental shall be followed.

B. The Wildlife Management Area that is denoted within the GIS data was suggested in the early 1990s by the Virginia Natural Heritage Inventory (VA DCR). This was established to encourage a healthy riparian buffer and to prevent tree/vegetation removal. This guidance superseded the 100 foot riparian buffer required by the Chesapeake Bay Preservation Act. This wildlife management area also protected bald eagles which have been delisted. Smaller buffers are still required under the Bald and Golden Eagle Protection Act but this project does not lie within any buffers. Therefore, Wildlife Management Area noted in the GIS data has no impacts on the proposed project.

C. With regard to UXO, the site is on a military base and as such there is the possibility of UXO on site. All demolition and construction workers will have to be trained appropriately.

5.11 Historical and Archeological:

There are no known historic or archeological concerns.

5.12 Paving and Parking:

A. The project will include a 200 feet by 125 feet vehicle staging area / safe haven connected by a 24 foot wide loop road to the existing road network throughout the magazine complex.

B. Aprons will be provided in front of each proposed magazine. The magazines will have to be placed at a higher elevation than the roads in order to ensure positive drainage of the apron away from the magazine. At present it is envisioned that the aprons will be asphalted, a possible alternative surface is unreinforced Portland cement concrete.

C. Pavement facilities include vehicle staging area, aprons at each magazine, utility pads, and an ammunitions loading dock separate from the Issues/Segregation Building.

5.13 Road Improvements:

A. The main road improvement will be the 24feet wide asphalted loop road connecting the proposed Issue/Segregation Building to the existing magazine complex. This loop will also give access to three of the proposed magazines with a spur providing access to the other three proposed magazines. The road will have a geometry that will allow it to be used by commercial civilian tractor trailers.

B. In addition, widening of part of the existing road network inside the magazine complex will be provided. This will be completed in order to ensure that a 24’ wide two lane is available along the spine of the existing road network. The widened road will have a geometry that will allow it to be used by commercial civilian tractor trailers.

C. Outside the Entry Control Point (gate) the existing road will be widened to provide a Vehicle Queuing Area for tractor trailers waiting to pass through the gate.

D. A graveled track will be built just outside the proposed fence in order to ensure a continuous external patrol track around the magazine complex. This track will consist of gravel atop geotextile fabric and be approximately 14’ wide.

5.14 Security and Access:

Daily access will be by vehicles only via the existing Entry Control Point (gate). Emergency access to the ASP will be via the external patrol track and a padlocked gate set in the perimeter fence.

5.15 Landscaping:

Because of the location of the site, it is anticipated that landscaping will consist mostly of providing grass. This will aid in the use of infiltration techniques for stormwater management.

The site work recommendations are based on the final topographical map which has been uploaded to the Electronic Project Generator (EPG) as an attachment for this project submittal.

6.00 QUANTITIES AND COSTS

See Attachment 3 for quantities and costs.

Attachment 3 contains the items and quantities of material to be included in the Issue/Segregation Building, Supporting Facilities, and Special Costs.

Attachment 1

Kick-Off Meeting Notes and Site Visit Meeting Notes

MEETING NOTES

SUBJECT: MILCON P635 Region/FEC Validation Kickoff

DATE: 15 March 2013

LOCATION: Marine Corps Base (MCB) Quantico, Building 2004

ATTENDEES: See attached attendee list.

On 18 March, ERG provided draft meeting minutes to the meeting attendees for their review. ERG received comments and changes from Robert Greenberg (NAVFAC Washington) and Mason and Hanger representatives. The original notes are indicated in black text below. Any changes are noted in green text.

The purpose of this meeting was to kick off the Region/FEC validation of military construction (MILCON) project P635, Ammunition Supply Point (ASP) Expansion. This project is being planned as a fiscal year (FY) 2015 project. Meeting attendees discussed and agreed that the project will be design-bid-build (DBB). NAVFAC Washington will provide justification for DBB, for inclusion in the DD Form 1391, Block 11 Notes section.

Roles and Points of Contact

ERG and Mason & Hanger will be working together to complete the Region/FEC DD Form 1391 validation of the project. ERG reviewed the MILCON Planning Programming Process (MTP3) Green (i.e., Marine Corps) and specified that the project is still in the planning phase. During this phase, the focus of details should be on anything that affects the scope (i.e., square-foot area) or cost of the project. We will not be going into design details. ERG will serve as the planners on the project, while Mason and Hanger will provide the architecture and engineering services, including costs and the site investigation report, as the prime contractor. Mason & Hanger will also be coordinating with other subcontractors for site engineering studies.

CWO Hollingsworth is the ASP Officer In Charge (OIC) and will be the primary user/customer. Richard Reisch will be the primary POC for asset management, utilities, and other base information.

Richard Reisch notified the group that the Naval Audit Service has already visited the base and asked questions about MILCON P635. They expressed concern in the lack of documentation, which should be addressed by this Region/FEC DD Form 1391 validation process.

Project Background and Requirement

The ASP houses all types of ammunitions, including small arms, artillery, and high explosives for MCB Quantico and other organizations. The ASP is the Marine Corps largest ammunition storage area worldwide. The ASP is used by Army, Navy, FBI, The Basic School (TBS), Officer Candidate School, Secret Service, and DOJ; however, Richard Reisch and CWO Hollingsworth did not think that the project would qualify for Joint Use Certification.

Justification for the project was summarized into the following categories:

- Encumbrance of MCB 1: Currently, the explosives safety quantity distance (ESQD) arcs of numerous ASP facilities expand over the primary road through the base, MCB 1. MCB 1 is the main thoroughfare through the portion of MCB Quantico that is west of Interstate 95. The ASP is located just inside of the gate and all traffic on MCB-1 must pass it. New and growing missions on base (e.g., BRAC, FBI) have increased the usage of the road to above 10,000 passengers per day, which requires the road to meet inhabited building distance (IBD) standoff requirements. The current siting and explosives limits of facilities within the ASP do not meet this requirement and create an explosives safety violation. To correct this violation without new construction would require relocation of the main thoroughfare. Richard Reisch and Dave Wolfe will provide documentation of a previous traffic count study.

- Lack of capabilities: The ASP does not have an ordnance issue and segregation facility; therefore, these functions currently occur at Magazine 2. Although separate magazines do have loading docks, there is no centrally-located loading dock or place to offload vehicles. MCB Quantico is designated as a safe haven and is the only such location in the capital region. A "safe haven" is a place where explosives-laden vehicles can be parked during emergency situations (e.g., hurricanes, terrorist attacks) to get them off of the highways. The existing parking areas in the ASP are not sized adequately and do not have large enough explosives limits to properly meet this need. The proposed size of the vehicle staging/safe haven parking area is based on the size of the existing one at Camp Lejeune.

- Deteriorating and deficient existing magazines: Five earth-covered magazines will be demolished and replaced by this project. Two of the existing magazines are 1940's-era facilities with deficiencies including a failed grounding system and inability to be accessed with a forklift. Three of these facilities are collocated and are barrel-arch magazines. The wall of these magazines has cracked and requires repair or replacement. To repair the facility will be expensive because the earth covering must be removed prior to repair and a new vapor barrier and earth covering must be put in place after repair has occurred.

- Increased amount of storage capacity: The ASP does not have adequate capacity to support current ammunitions requirements. They often reach their explosives limit and cannot accept any additional shipments. The explosives limits for the magazines located closest to MCB 1 have been downgraded so the ESQD arcs do not encumber the road, which has decreased the amount of ammunition that can be stored by approximately 100,000 net explosives weight (NEW). The newest magazine was built in the 1990's, but storage needs have grown since that time. The project would increase the storage capacity at the ASP by 500,000 pounds (lbs) NEW (from the current 429,000 lbs NEW to 929,000 lbs NEW), increasing capabilities and storage flexibility. These increase capacities and capabilities should be adequate for the foreseeable future of operations at Quantico. Currently, the ASP receives ~~4-5 shipments~~ (see revised numbers below) per year at a cost of $5,000 per priority shipment and $3,000 per non-priority shipment; however, this could be reduced to 1-3 shipments per year with adequate capacity. [In subsequent discussions, ERG learned that a shipment consists of 25 to 30 truck deliveries, which may occur within a one to two week time frame. The ASP currently receives 5 non-priority shipments and 3 priority shipments per year, which could be reduced to 3 non-priority shipments and 1 priority shipment per year with adequate capacity.]

Facility Requirements

Issue/Segregation Building

The DD Form 1391 currently includes a production building; however, the use for this building is intended to be for the issuance and segregation of ammunitions as opposed to production. The facility is not intended to store or house explosives except during emergencies or inclement weather. The issues/segregation building will be based on plans for a similar facility at Camp Lejeune. Richard Reisch will provide the plans. David Wolfe provided photos of the facility at Camp Lejeune. ERG will scan the photos and provide to Mason and Hanger. The group agreed that the name of the facility should be changed to Issue/Segregation Building and the category code for the facility should be changed to 14321. Richard Reisch has started a basic facility requirement (BFR) document for this facility and will provide it.

The one-story facility will require the following:

- An office area for 2-6 people and restrooms (approximately 900 SF) with heating, ventilation, and air conditioning (HVAC). Office area will include computers and desks for personnel and a printer.
- Water, sewer, electrical, fiber (i.e. telephone and IT), and lightning protection.
- Standard fire protection system, if required per building code.
- One (1) telephone drop.
- Two (2) NMCI drops.
- A covered loading dock with leveler. The covered loading dock is not currently reflected in the building square footage and should be reflected in the BFR. ERG will reference P-80 criteria and consult with Robert Greenberg and Mason & Hanger to determine whether the loading dock should be added to the facility gross square footage included in the BFR and DD Form 1391, and if so whether a reduction factor of 0.5 should be applied per P-80 criteria for category code 61010 . [Per Robert Greenberg, the covered loading dock should be counted at 50% gross square feet (GSF) per UFC 3-101-01, Section 2-2 Building Area Calculations.]
- 12-foot high roll up door. Other than the roll up door and dock leveler, no other built-in equipment is anticipated.
- A ramp for the forklift to access the loading dock.
- Intrusion detection system (IDS) and two closed circuit television (CCTV) cameras, which will be connected to the existing system that is alarmed to the Provost Marshal Office (PMO).
- A disconnect and hookup for a generator should be provided for emergency use; however, the generator itself will not be provided due to air quality issues.
- A separate loading dock near the facility with a dock leveler.

- The facility does not need a forklift charging station, as they do not currently have any electric forklifts.

- Built to the standards in the base exterior architecture plan (BEAP). A copy of the plan will be provided by Richard Reisch. Richard Reisch will need to verify whether specifications from the BEAP will be required for P635, or if not, which specifications are relieved (for example, brick veneer).

This facility will have an asphalt pad in front of it that will be used for vehicle offload and onload and will also function as the safe haven parking lot. ERG asked whether standard asphalt will be structurally adequate for the loaded trucks and trailers and attendees confirmed that it will be – reinforced concrete pads will not be required. Additional parking will not be required, as this space will provide sufficient space for the facility's parking requirement.

Magazines

The project will construct six new 25' by 80' (2,000 SF) 7 Bar earth-covered magazines, Frelok-Stradley oval arch type 33-15-74. Note that the standard dimensions for earth covered magazines are measured between inside faces of walls. The magazines will require the following:

- Constructed as high explosives magazines to allow for flexibility of storage.

- Earth-covered; 2-foot minimum depth of earth (NAVSEA OP-5 Paragraph 8-2.5.5); however, depth of cover is typically specified to be greater than 2 feet to allow for erosion over time. There is also an earth-cover slope requirement of 2:1 for new construction.

- Require IDS and CCTV, which must be installed by SPAWAR. Conduit must be provided in the project; however, the equipment and wiring will be provided by other appropriations. ERG requested costs for IDS. Richard Reisch said he would contact Eric Horton to request them.

- Lighting, ventilation, and lightning protection. Richard Reisch recommended use of LED lighting for sustainability reasons.

- Fire suppression is not required.

- Requires forklift access. At-grade entrances are preferred. The asphalt/road will go up to the magazine headwall and no additional parking is needed.

- Stormwater runoff over the existing roads near the magazines is a problem and creates some icy conditions. This problem will need to be addressed for the new magazine designs. Stormwater will also need to be evaluated for the new magazines by either having a positive slope away from the at-grade entrances or whether trench drains will be required to prevent water infiltration.

The new magazines will provide an additional 500,000 lbs net explosives weight (NEW) as compared to the current ASP. Demolition of five existing, inadequate magazines is included in the project. Considering the robust construction of the magazines, Richard Reisch requested the Mason and Hanger develop an appropriate demolition cost based on their experience as opposed to using

a historical average unit cost for demolition at the base. The barrel-arch magazines also have a large loading dock area that will have to be removed. Richard Reisch will look into whether any existing as-built drawings are available for the facilities to be demolished. Building photos for the magazines to be demolished were taken during the site visit.

Vehicle Staging Area/Safe Haven Parking

The vehicle staging area/safe haven will be constructed of asphalt capable of supporting semi-trailer trucks. ERG asked whether standard asphalt will be structurally adequate for the loaded trucks and trailers and attendees confirmed that it will be – reinforced concrete pads will not be required. Richard Reisch anticipated that they would need space for approximately 10 trucks, but will provide additional documentation of the requirement and proposed parking layout for inclusion in the project BFR.

Infrastructure Requirements

Road upgrades and utilities will be required as part of the project. Water, fiber and electrical will be required; however, natural gas (as was shown in the draft DD Form 1391) is not required. Automated metering to a central location is preferred, but not required. The utility corridor should follow the existing fire road that circles the complex. Richard Reisch will be the point of contact to request information on the existing utilities, including line sizes and capacity.

Water

Approximately 3,000 linear feet of water and sewer will be run from MCB 1 to the issue/segregation building. The group thought that the existing water lines were 12" or 16". They did not believe that there had been any existing flow tests to ensure proper pressure or capacity. Flow tests will not be performed as part of the existing Region/FEC DD Form 1391 validation scope of work. Richard Reisch said that a fire pump should be included in the project. Fire hydrants will also have to be installed. Richard Reisch will provide additional information regarding the fire department's requirements for the number and location of the hydrants.

Fiber and Electrical

Fiber and electrical will also be run from MCB 1. Fiber will only be required at the issue/segregation building, while each building will need electrical. Adrewn Joseph will provide the unit cost for fiber installation at the base. The serving requirements of the electrical will be 120/208V or 277/480V. Both 13.2KV and 35KV distribution lines are readily available at MCB 1. A transformer will be required to drop the voltage from the line to the buildings.

Fencing

The expansion of the complex should be enclosed with fencing that will be connected to the existing perimeter fence. The existing fence has a light every 150 feet and the new fence will provide lights at the same interval. A gravel access road with a lockable gate will be provided along the fire road in order to provide access for safety and emergency vehicles. A 20-foot clear zone should be maintained on the interior of the fence and a 30-foot clear zone should be maintained on the outside of the fence.

Roads

Road upgrades will be required as part of the project. The complex currently has single lane entry access, but additional queuing capacity is required at the gate off of MCB 1, because of limitations on the number of vehicles and personnel allowed in the ASP at one time. The lack of adequate queuing capacity presents a safety hazard and has caused the ASP to be cited for explosives safety violations. Dave will provide photographs and a copy of the violation.

In addition, a portion of the road within the complex will need to be widened to 24-foot width with an additional 4-foot gravel shoulder on either side of the road.

Economic Alternatives

The status quo is not a viable alternative because it is in violation of explosives safety requirements. The lease alternative is also not a viable alternative. The only viable alternative would be to construct a new ASP in an alternate location or to move a 1-2 mile section of MCB 1 further south west, so it is no longer in the ESQD arc. Richard Reisch will provide the cost estimate that he had previously developed for relocation MCB 1. Constructing an entirely new ASP is not considered to be a viable alternative and will not be considered in the economic analysis, as other existing magazines and infrastructure would not be leveraged and deliveries would become more difficult and expensive.

The economic analysis will consider the renovation alternative, which will include the following elements:

- Relocating a portion of MCB 1.
- New construction of the issue/segregation building.
- Renovation of the existing magazines.
- Potentially also include the construction of additional magazines to increase the storage capacity.

Site Constraints and Environmental Considerations

ERG asked if there was the potential for unexploded ordnance (UXO) at the site. Attendees said that it does not need to be considered in the project, but will be noted in all procedures that if UXO is encountered, all work must stop until it can be evaluated.

National Environmental Policy Act (NEPA) for the project has been started. Previous versions of the project have qualified as a Categorical Exclusion (CATEX), which was completed and approved. However, because the project will increase the capacity supported by the mission and now includes demolition of existing magazines, an Environmental Assessment (EA) must now be completed. The NEPA documentation can be presented for approval in November, and the FONSI can be expected between December 2013 and January 2014. Although environmental considerations are present at the site, no environmental mitigation cost is necessary for inclusion in the DD Form 1391.

The site may present the following natural and cultural resource issues:

- Archeological resources: Some studies have been performed; however, once the project site plan and DD Form 1391 has been completed, Environmental will review the project to determine whether additional archeological studies will be required. The existing archeological information cannot be shown on the site plans due to concerns over maintaining security of the sites.

- Threatened and endangered species: The previous threatened species survey for the area has expired, so a new study will have to be conducted in June when the Small World Begonia is present. This may necessitate implementation of threatened species buffers.

- Tree clearing: Tree clearing will be required for the project and the base will have to be paid for the timber. The need for tree replacement or re-planting is not anticipated.

- Historic buildings: ERG asked if any of the magazines to be demolished are historic. Meeting attendees present at that time did not know. ERG will contact Heather McDuff to determine if they are historic.

There are no bald eagle nesting areas or wetlands located within the site.

Schedule and Next Steps

ERG emphasized that the project schedule is very aggressive and not ideal. It is also still being finalized as far as drafts deadlines, review durations, and review meeting dates. The first draft of the project will be delivered on 29 March for government review. The government will have approximately one week for review of the draft and a review meeting will most likely be scheduled the week of 8-12 April. A spreadsheet will be sent out with the draft, and we request that all comments are submitted using the spreadsheet format.

NAVFAC Washington will be submitting the project to the Consistency Review Board (CRB) on 5 April. The CRB will meet to review the projects the week of 8-12 April.

At this time, all subsequent deliverable dates and reviews are undetermined and may depend on the issues raised and number of comments received on the first draft.

Action Items

Action items that resulted from the MILCON P635 Kickoff Meeting are shown below. ERG will contact the responsible party with additional specific questions.

No.	Task	Responsible Party	Status as of 27 March
1	Provide MCB 1 traffic study/counts.	Richard Reisch/Dave Wolfe	Outstanding
2	Provide documentation of explosives safety violations.	Dave Wolfe	Complete
3	Provide photos and as-built drawings of facilities to be demolished.	Richard Reisch/ CWO Hollingsworth	Outstanding
4	Work with ERG to develop the project BFR, economic analysis, and DD Form 1391 text.	Richard Reisch/CWO Hollingsworth	Partially complete
5	Provide information on pavement requirements and parking configuration (e.g., safe haven and queuing space) for inclusion in the BFR.	Richard Reisch	Outstanding
6	Provide information regarding the number and location of the hydrants.	Richard Reisch	Outstanding
7	Provide unit cost of fiber installation.	Adrewn Joseph	Complete
8	Provide past estimate for moving MCB 1.	Richard Reisch	Complete
9	Provide the Base Exterior Architectural Plan and identify any requirements that are relieved for this project	Richard Reisch	Outstanding
10	Provide GIS data.	Richard Reisch	Complete
11	Provide plans for the issue/segregation facility at Camp Lejeune.	Dave Wolfe/ Richard Reisch	Complete
12	Contact Eric Horton to request costs for IDS.	Richard Reisch	Outstanding
13	Contact Heather McDuff to confirm that the facilities to be demolished are not historic.	Richard Reisch	Outstanding

Meeting Attendee Sign-In Sheet
MILCON P635 Kickoff Meeting
15-Mar-13
Marine Corps Base Quantico

No.	Name	Organization	Position	Phone	E-mail
1	Kelly Davis	ERG	Planner	703-633-1683	Kelly.Davis@erg.com
2	Jilian Breeden	ERG	Project Manager	703-633-1628	Jilian.Breeden@erg.com
3	Allen Wilson	NAVFAC Washington	Project Manager	202-685-3137	Allen.Wilson@navy.mil
4	Dave Wolfe	Quantico	Explosives Safety	703-432-1092	David.P.Wolfe@usmc.mil
5	Rich Reisch	MCBQ PWB	Asset Management	703-784-5490	Richard.Reisch@usmc.mil
6	CWO Hollingsworth	MCB ASP	ASP OIC	703-784-5744	James.Hollingsworth@usmc.mil
7	Jason Canfield	MCBQ PWB	EIC	703-784-5163	Jason.M.Canfield@usmc.mil
8	Carlos Cordova	NAVFAC Washington	Cost Engineer	202-765-0723	Carlos.Cordova@navy.mil
9	Juana Hamlett	G-6	Plans	703-784-4330	Juana.Hamlett@usmc.mil
10	Adrewn E Jospeh	G-6	Telecomm	703-432-4367	Adrewn.Joseph@usmc.mil
11	Doug Adams	M&H	Project Manager	859-280-3534	Doug.Adams@masonandhanger.com
12	Warren Foy	M&H	Structural Engineer	859-280-3572	Warren.Foy@masonandhanger.com
13	David Parker	M&H	Civil Engineer	859-280-3565	David.Parker@masonandhanger.com
14	Greg Brumagen	M&H	Electrical Engineer	859-280-3513	Greg.Brumagen@masonandhanger.com
15	Joanne Hoban	M&H	Mechanical Engineer	913-905-1487	Joanne.Hoban@masonandhanger.com
16	Heather McDuff	MCBQ	Environmental	Not Provided	heather.a.mcduff@usmc.mil

MEETING MINUTES

PROJECT: **98.03 P-635 Quantico, VA**

LOCATION: **Existing ASP**

MEETING DATE &TIME: **19 March 2013, 0900**

ATTENDEES: **Richard Reisch, CWO Hollingsworth, David Wolfe, Kelly Davis, Greg Brumagen, David Parker**

ITEMS OF DISCUSSION:

1) CWO Hollingsworth led a tour of the existing Magazines finishing at Magazine 2 which is used at present as an Ammunition Supply Point. Bulk ammunition is received and then distributed to the magazines. From the magazines material is brought to Magazine 2 or to the Vehicle Staging area for collection by users. Magazine 2 is also the receiving point for ammunition returned by users. Magazines are ventilated with. supply at front/doors, vent through roof. Dampers linked to fire alarm to shut vents in case of fire.

2) Parts of the existing road network in the existing magazine area have horizontal and vertical bends that prevent use by commercial tractor trailers.

3) At Building 27067, which functions as an Entry Control Point, there is insufficient roadway width to allow both for arriving vehicles to wait and safe two way traffic in and out of the gate.

4) The perimeter track is outside the fenced perimeter and is a single lane gravel track. Perimeter fence is conventional 7' chain link with 1' outrigger. Fence lit every 150'. Fire fighters would use perimeter track and padlocked gate to access ASP.

5) Proposed Building 27170 (ASP) will be inhabited and require utilities including water, sewer, elec. power communications and IDS. IDS not part of MILCON.

6) All utilities are to be underground. For water one fire water line supplemented by a flush mechanism to ensure safe potable water will suffice.

7) Utilities are available at road MCB-1. All utilities are base owned.

8) For communications information Mason and Hanger will contact Mr Andrew Joseph of Quantico.

9) Communications and Electrical will follow the fire road from MCB-1 to the (ASP).

10) Quantico to supply historic AutoCAD/Microstation contours.

11) Team walked through the woods in the expansion area. Expansion area drains to the north east. It is moderately to heavily timbered with the ground split by creeks 10-25' deep.

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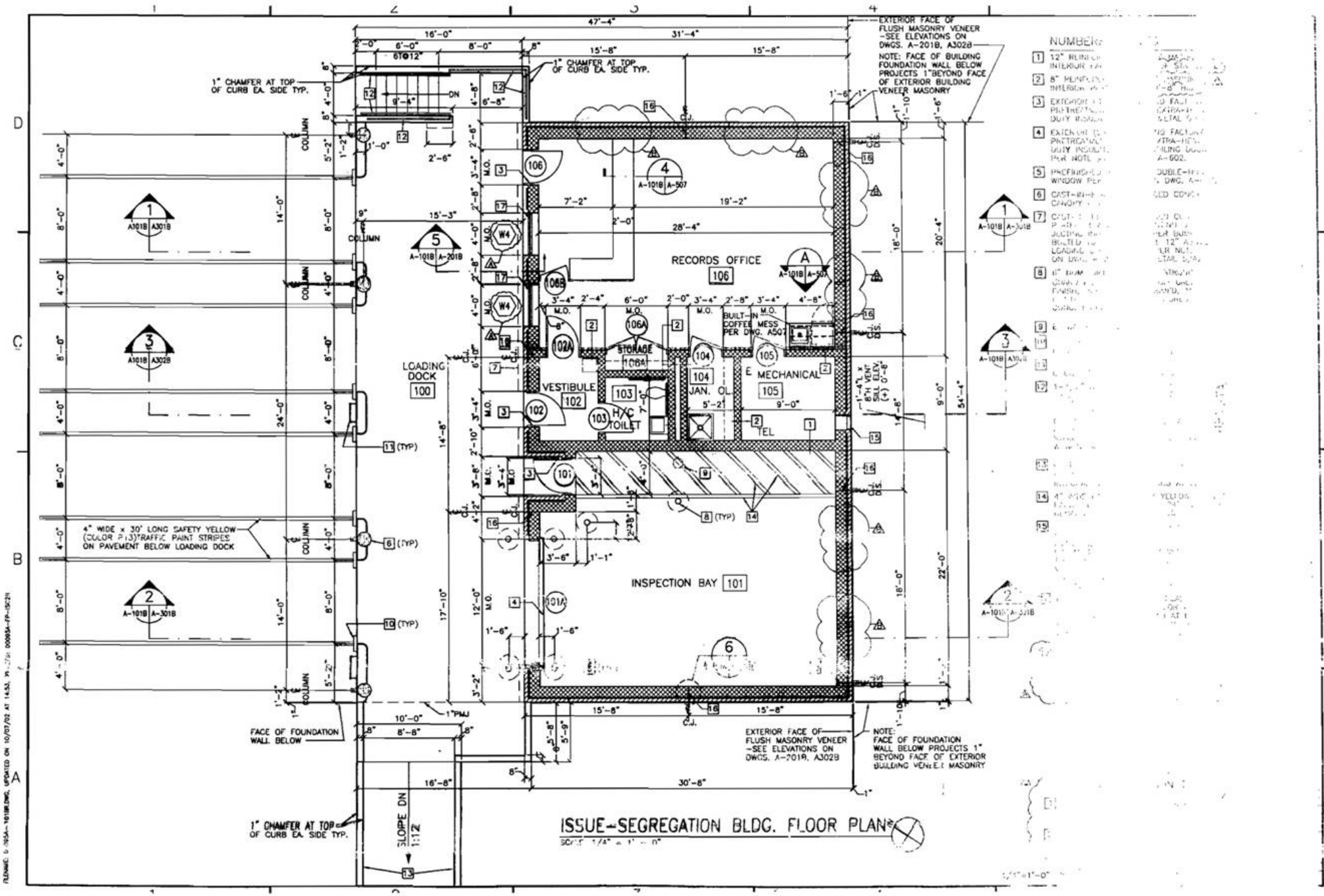
Meeting ended at 12:15 p.m.

Attachment 2

Camp Lejeune Issue/Segregation Building Photographs and Floor Plan


SH49


RECORDS OFFICE 106
INSPECTION BAY 101
LOADING DOCK 100
VESTIBULE 102
STORAGE 106A
H/C TOILET 103
JAN. CL 104
MECHANICAL 105
BUILT-IN COFFEE MESS PER DWG. A507
TEL
47'-4"
31'-4"
16'-0"
15'-8"
28'-4"
19'-2"
7'-2"
54'-4"
22'-0"
30'-8"
16'-8"
1" CHAMFER AT TOP OF CURB EA. SIDE TYP.
EXTERIOR FACE OF FLUSH MASONRY VENEER -SEE ELEVATIONS ON DWGS. A-201B, A302B
NOTE: FACE OF BUILDING FOUNDATION WALL BELOW PROJECTS 1" BEYOND FACE OF EXTERIOR BUILDING VENEER MASONRY
4" WIDE x 30' LONG SAFETY YELLOW (COLOR #13) TRAFFIC PAINT STRIPES ON PAVEMENT BELOW LOADING DOCK
FACE OF FOUNDATION WALL BELOW
EXTERIOR FACE OF FLUSH MASONRY VENEER -SEE ELEVATIONS ON DWGS. A-201B, A302B
NOTE: FACE OF FOUNDATION WALL BELOW PROJECTS 1" BEYOND FACE OF EXTERIOR BUILDING VENEER MASONRY
SLOPE DN 1:12
ISSUE-SEGREGATION BLDG. FLOOR PLAN

ERG

MEMORANDUM

TO: Naval Facilities Engineering Command (NAVFAC) Washington; Marine Corps Base (MCB) Quantico

FROM: ERG

SUBJECT: MILCON P635 - Applicability to United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Credits

DATE: 26 April 2013

Military Construction (MILCON) project P635, Ammunition Supply Point (ASP) Expansion, constructs an Issue/Segregation Building and six high explosive magazines to correct violations of the Department of Defense Explosive Safety Board (DDESB) siting requirements and replace existing deteriorating facilities.

The explosives-related functions and minimal utility requirements of the buildings to be constructed are not conducive to achieving the required LEED credits. The buildings constructed in this project may not achieve all USGBC LEED Minimum Program Requirements (MPRs) (see MPR Assessment in Attachment 1) and are not expected to earn the required number of credits to achieve USGBC LEED Silver certification. However, it is recommended that, where feasible, the project design integrate sustainable strategies and features to minimize energy consumption, conserve resources, minimize adverse effects to the environment, and improve occupant productivity, health, and comfort.

The project may not meet the following MPRs:

- MPR 4. Although the total area of the Issue/Segregation Building does comply with the 1,000-square feet minimum floor area requirement, the occupied portion of the building that contains heating, ventilation, and air conditioning (HVAC) and water utilities is only 600 square feet, which does not meet this space requirement. The thresholds and calculations that make up the system of evaluation in LEED begin to break down and lose meaning once the space being evaluated reaches diminutive proportions.
- MPR 5. The magazines are uninhabited and therefore do not meet MPR for occupancy.
- MPR 7. The total project site is large in comparison to the Issue/Segregation Building footprint. Definition of the project boundary will be important in order to meet the MPR for building footprint.

If during design it is determined that the MPRs can be achieved, the project may still be unable to achieve the required number of credits for LEED Silver certification for the following reasons:

- Mission requirements and location within the ASP provides limited applicability of Sustainable Sites credits.

- Indoor Environmental Quality credits cannot be achieved in the magazines due to MPR restrictions. Many prerequisites and credits evaluate the impact of the project on the building users, therefore, requiring that a minimum number of people benefit from the strategies implemented in order to earn credits.

- Achieving the Materials and Resources credits in the Issue/Segregation Building may be difficult as sufficient sustainable materials to achieve required cost-based percentages may be difficult to incorporate.

- Achieving the Materials and Resources prerequisite of storage and collection of recyclables would be impractical in uninhabited magazines and would limit mission-critical space.

The attached LEED Checklist (Attachment 2) is provided as a preliminary guideline for credits that may be implemented at the Issue/Segregation Building; although additional investigation into the applicability and life-cycle cost savings of these credits is recommended during design.

MILCON P635 - Ammunition Supply Point Expansion
LEED 2009 for New Construction and Major Renovations
Attachment 1 - MPR Assessment
Marine Corps Base Quantico
Quantico, Virginia

Issue/Segregation	Magazines	Minimum Program Requirements (MPR)	
Y	Y	MPR 1	**Complies with Environmental Laws**
Y	Y	MPR 2	**A complete, permanent building or space**
Y	Y	MPR 3	**Site boundary includes land associated with project**
M	Y	MPR 4	**Minimum area of 1,000 square feet**
Y	N	MPR 5	**At least one full time (8 hour day) occupant**
Y	Y	MPR 6	**Energy and water use data made public (DoD exception available)**
M	Y	MPR 7	**Gross floor area > 2% of gross land within project boundary**

Notes:

1. Y = Yes - MPR will be met; M = Maybe - MPR may be met; N = No - MPR will not be met.

MILCON P635 - Ammunition Supply Point Expansion
LEED 2009 for New Construction and Major Renovations
Attachment 2 - Preliminary Checklist
Marine Corps Base Quantico
Quantico, Virginia

Possible Points	Yes	?	No			
26	4	2	20	**Sustainable Sites (SS)**		**Relevance** [1]
	Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
1			1	Credit 1	**Site Selection:** - Executive Order (EO) 13514 requires coordination with regional programs for federal, state, tribal, and local ecosystem, watershed, and environmental management.	Illustrates Compliance
5			5	Credit 2	**Development Density & Community Connectivity:** - EO 13514 requires that planning for new federal facilities includes consideration of sites that are pedestrian friendly, near existing employment centers/town centers, and accessible to public transit.	Illustrates Compliance
1			1	Credit 3	**Brownfield Redevelopment:** - No requirement exists.	Discretionary
6			6	Credit 4.1	**Alternative Transportation -** Public Transportation Access: - EO 13514 requires reduction of Department of Defense (DoD) scope 3 greenhouse gases, including strategies to support lower-carbon commuting and travel by staff. EO 13514 also requires that planning for new federal facilities includes consideration of sites that are pedestrian friendly, near existing employment centers/town centers, and accessible to public transit.	Illustrates Compliance
1			1	Credit 4.2	**Alternative Transportation -** Bicycle Storage & Changing Rooms: - EO 13514 requires reduction of DoD scope 3 greenhouse gases, including strategies to support lower-carbon commuting and travel by staff.	Illustrates Compliance
3			3	Credit 4.3	**Alternative Transportation -** Low-Emitting & Fuel-Efficient Vehicles: - EO 13514 requires reduction of DoD scope 3 greenhouse gases, including strategies to support lower-carbon commuting and travel by staff.	Illustrates Compliance
2			2	Credit 4.4	**Alternative Transportation -** Parking Capacity: - EO 13514 requires reduction of DoD scope 3 greenhouse gases, including strategies to support lower-carbon commuting and travel by staff. - Reducing parking capacity and impervious surface reduces stormwater impacts (see SS Credit 6.1 and 6.2 for requirements).	Illustrates Compliance
1			1	Credit 5.1	**Site Development -** Protect or Restore Habitat: - Protecting or restoring habitat reduces stormwater impacts (see SS Credit 6.1 and 6.2 for requirements).	Discretionary
1	1			Credit 5.2	**Site Development -** Maximize Open Space: - No requirement exists.	Discretionary
1	1			Credit 6.1	**Stormwater Design -** Quantity Control: - The Energy Independence and Security Act of 2007 (EISA) Section 438 requires that any federal facility with a footprint exceeding 5,000 square feet being developed or redeveloped "shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow." - EO 13514 requires implementation of EPA's guidance on EISA Section 438. - The Department of the Navy's Low Impact Development (LID) policy sets a goal of no net increase in stormwater volume from major renovation and construction projects. It also requires that LID be considered in the design process and implemented where possible. The Unified Facilities Criteria (UFC) titled "Design: Low Impact Development Manual" provides guidance for LID planning and implementation. - The Virginia Stormwater Management Handbook requires that the 10-year post development peak runoff rate shall not exceed the 10-year pre-development peak runoff rate.	Required

MILCON P635 - Ammunition Supply Point Expansion
LEED 2009 for New Construction and Major Renovations
Attachment 2 - Preliminary Checklist
Marine Corps Base Quantico
Quantico, Virginia

Possible Points	Yes	?	No			
1	1			Credit 6.2	**Stormwater Design -** Quality Control: - The 2008 Guiding Principles for Sustainable New Construction and Major Renovations (GPs), required by EO 13514, require a reduction of polluted stormwater runoff. - Quantity control strategies required under EISA and SS Credit 6.1 help reduce pollutant loadings and, therefore, help achieve this credit. - The Chesapeake Bay Executive Order Section 501 states that "agencies with land, facilities, or installation management responsibilities affecting ten or more acres within the watershed of the Chesapeake Bay shall...implement land management practices to protect the Chesapeake Bay and its tributary waters consistent" with pending EPA guidance that will strengthen stormwater management practices and establish stormwater best practices. - The Department of the Navy's LID policy sets a goal of "no net increase in sediment or nutrient loading from major renovation and construction projects". It also requires that LID be considered in the design process and implemented where possible. The UFC titled "Design: Low Impact Development Manual" provides guidance for LID planning and implementation. - The Virginia Stormwater Management Program requires that pollutant discharge after development shall not exceed existing pollutant discharge based on average land cover condition within a watershed. If existing percent impervious cover is greater than average land cover condition (assumed to be 16%), pollutant discharge after development shall not exceed either the pollutant discharge based on existing conditions less than 10% impervious cover, or the pollutant discharge based on the average land condition, whichever is greater.		Illustrates Compliance
1		1		Credit 7.1	**Heat Island Effect -** Non-Roof: - No requirement exists.		Discretionary
1	1			Credit 7.2	**Heat Island Effect -** Roof: - EO 13514 requires the use of cost-effective, innovative strategies, such as highly reflective and vegetated roofs, to minimize consumption of energy, water, and materials. - This credit also helps to achieve the EO 13514 greenhouse gas reduction goals and EO 13423 and GPs energy efficiency goals.		Illustrates Compliance
1		1		Credit 8	**Light Pollution Reduction:** - No requirement exists.		Discretionary
10	8	2	0	**Water Efficiency (WE)**			**Relevance**
	Y			Prereq 1	**Water Use Reduction**		Required
4	4			Credit 1	**Water Efficient Landscaping:**		-
(2)					2	Reduce by 50% - The GPs require outdoor potable water consumption to be reduced by a minimum of 50% over that consumed by conventional means. - EO 13514 requires a 2% annual reduction in DoD industrial, agricultural, and landscaping water consumption through fiscal year 2020.	Required
(2)					2	Use only captured rainwater, recycled wastewater, or water treated and conveyed by a public agency specifically for nonpotable uses for irrigation -OR - install landscaping that does not require permanent irrigation systems - Credit exceeds the GPs requirement, but helps achieve the EO 13514 requirement for reduction in DoD landscaping water use.	Discretionary
2	2			Credit 2	**Innovative Wastewater Technologies:** - The GPs require indoor water use to be reduced by 20% from a baseline calculated using the Uniform Plumbing Codes (UPC) 2006 fixture performance requirements. - EO 13514 requires (consistent with state law) implementation of water reuse strategies that reduce potable water consumption.		Discretionary
4	2	2		Credit 3	**Water Use Reduction:** - The GPs require indoor water use to be reduced by 20% from a baseline calculated using the UPC 2006 fixture performance requirements. - EO 13514 requires a 2% annual reduction in DoD potable water consumption through fiscal year 2020. - WE Credit 3 exceeds the GPs requirement, but helps achieve the EO 13514 requirement for reduction in DoD water consumption.		-
(2)					2	Reduce by 30%	Discretionary
(1)						Reduce by 35%	Discretionary
(1)						Reduce by 40%	Discretionary

MILCON P635 - Ammunition Supply Point Expansion
LEED 2009 for New Construction and Major Renovations
Attachment 2 - Preliminary Checklist
Marine Corps Base Quantico
Quantico, Virginia

Possible Points	Yes	?	No			Relevance
35	8	0	27	**Energy & Atmosphere (EA)**		**Relevance**
	Y			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
	Y			Prereq 2	**Minimum Energy Performance**	Required
	Y			Prereq 3	**Fundamental Refrigerant Management**	Required
19	1		18	Credit 1	**Optimize Energy Performance:** - The GPs require new buildings to reduce energy consumption to 30% below ASHRAE Standard 90.1-2007. - EO 13423 and EISA require a 30% reduction in overall DoD energy consumption (relative to fiscal year 2003) by 2015. - Option 2 Path 3 applies to this project.	-
7			7	Credit 2	**On-Site Renewable Energy:** - EPAct 2005 sets annual requirements for the amount of renewable energy the federal government shall consume. - EO 13423 requires that half of the renewable energy be "new" renewables and, where feasible, shall be produced onsite. - EISA requires that 30% of hot water demand in new federal buildings and major renovations must be met with solar hot water if life-cycle cost effective.	-
(1)					1% Renewable Energy	Discretionary
(1)					3% Renewable Energy	Discretionary
(1)					5% Renewable Energy	Discretionary
(1)					7% Renewable Energy	Discretionary
(1)					9% Renewable Energy	Discretionary
(1)					11% Renewable Energy	Discretionary
(1)					13% Renewable Energy	Discretionary
2	2			Credit 3	**Enhanced Commissioning:** - EA Credit 3 exceeds the GPs commissioning requirement, which is met by EA Prerequisite 1.	Discretionary
2	2			Credit 4	**Enhanced Refrigerant Management:** - The GPs require that ozone depleting compound use is eliminated (during and after construction) where alternative environmentally preferable products are available. - EO 13514 requires 95% of new contract actions for products and services to be energy-efficient, water-efficient, biobased, environmentally preferable, non-ozone depleting, with recycled content, or non-toxic or less-toxic, where such products and services meet agency performance requirements.	Required
3	3			Credit 5	**Measurement & Verification:** - EPAct 2005 and EISA require building-level utility meters and, to the maximum extent practicable, advanced meters that can provide data daily and can measure hourly consumption. (EPAct 2005 requires electricity metering by October 1, 2012, and EISA requires natural gas and steam metering by October 1, 2016.) - The GPs require actual performance data from the first year of operation to be compared to the energy design targets. Also, after one year of occupancy, new major installations shall be measured using the ENERGY STAR Benchmarking Tool. Data and lessons learned shall be entered into the High Performance Buildings Database.	Required

MILCON P635 - Ammunition Supply Point Expansion
LEED 2009 for New Construction and Major Renovations
Attachment 2 - Preliminary Checklist
Marine Corps Base Quantico
Quantico, Virginia

Possible Points	Yes	?	No				
2			2	Credit 6	**Green Power:** - EPAct 2005 sets annual requirements for the amount of renewable energy the federal government shall consume. - EO 13423 requires that half of the renewable energy be "new" renewables and, where feasible, shall be produced onsite.		Discretionary
14	4	5	5	**Materials & Resources (MR)**			**Relevance**
	Y			Prereq 1	**Storage & Collection of Recyclables**		Required
3			3	Credit 1.1	**Building Reuse -** Maintain Existing Walls, Floors & Roof: - EO 13514 requires that DoD promote long-term viability of agency-owned historic buildings by ensuring that rehabilitation utilizes best practices and technologies in retrofitting.		-
(1)						Reuse 55%	Discretionary
(1)						Reuse 75%	Discretionary
(1)						Reuse 95%	Discretionary
1			1	Credit 1.2	**Building Reuse -** Maintain Interior Non-Structural Elements: - No requirement exists.		Discretionary
2	1	1		Credit 2	**Construction Waste Management**:		-
(1)					1	50% Recycled or Salvaged - The GPs require that at least 50% of construction, demolition, and land clearing waste (excluding soil) shall be recycled or salvaged, where markets or onsite recycling opportunities exist. - EO 13514 requires DoD to divert at least 50% of construction and demolition debris by the end of fiscal year 2015.	Required
(1)						75% Recycled or Salvaged - Credit exceeds the GPs requirement, but helps achieve the EO 13514 requirement for DoD agencywide diversion of 50%.	Discretionary
2		2		Credit 3	**Materials Reuse**: - No requirement exists.		-
(1)						Reuse 5%	Discretionary
(1)						Reuse 10%	Discretionary
2	1	1		Credit 4	**Recycled Content:**		-
(1)					1	10% (post-consumer + ½ pre-consumer): - The GPs require that EPA's recycled content recommendations must be met or exceeded for EPA-designated products. "For other products, use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project." - EO 13514 requires 95% of new contract actions for products and services to be energy-efficient, water-efficient, biobased, environmentally preferable, non-ozone depleting, with recycled content, or non-toxic or less-toxic, where such products and services meet agency performance requirements.	Required
(1)						20% (post-consumer + ½ pre-consumer): - Credit exceeds the GPs requirement, but helps achieve the EO 13514 requirement for the acquisition of sustainable goods.	Illustrates Compliance
2	1	1		Credit 5	**Regional Materials**: - EO 13514 requires 95% of new contract actions for products and services to be energy-efficient, water-efficient, biobased, environmentally preferable, non-ozone depleting, with recycled content, or non-toxic or less-toxic, where such products and services meet agency performance requirements.		-
(1)					1	10% of Materials	Illustrates Compliance
(1)						20% of Materials	Illustrates Compliance
1			1	Credit 6	**Rapidly Renewable Materials:** - The GPs require that USDA's biobased content recommendations must be met or exceeded for USDA-designated products. "For other products, use biobased products made from rapidly renewable resources and certified sustainable wood products." - EO 13514 requires 95% of new contract actions for products and services to be energy-efficient, water-efficient, biobased, environmentally preferable, non-ozone depleting, with recycled content, or non-toxic or less-toxic, where such products and services meet agency performance requirements.		Illustrates Compliance
1	1			Credit 7	**Certified Wood:** - EO 13514 requires 95% of new contract actions for products and services to be energy-efficient, water-efficient, biobased, environmentally preferable, non-ozone depleting, with recycled content, or non-toxic or less-toxic, where such products and services meet agency performance requirements.		Illustrates Compliance

MILCON P635 - Ammunition Supply Point Expansion
LEED 2009 for New Construction and Major Renovations
Attachment 2 - Preliminary Checklist
Marine Corps Base Quantico
Quantico, Virginia

Possible Points	Yes	?	No			
15	14	0	1	**Indoor Environmental Quality (IEQ)**		**Relevance**
	Y			Prereq 1	**Minimum IAQ Performance**	Required
	Y			Prereq 2	**Environmental Tobacco Smoke Control**	Required
1	1			Credit 1	**Outdoor Air Delivery Monitoring:** - No requirement exists.	Discretionary
1	1			Credit 2	**Increased Ventilation:** - The GPs require compliance with ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality. IEQ Credit 2 exceeds the GPs' ventilation requirement, which is met by IEQ Prerequisite 1.	Discretionary
1	1			Credit 3.1	**Construction IAQ Management Plan -** During Construction: - The GPs require that the recommendations of Sheet Metal and Air Conditioning Contractor's National Association Indoor Air Quality Guidelines for Occupied Buildings under Construction, 2007 are followed. - The GPs also require that a moisture control strategy to prevent building damage and mold contamination is implemented.	Required
1	1			Credit 3.2	**Construction IAQ Management Plan -** Before Occupancy: - The GPs requires that, after construction and prior to occupancy, a minimum 72-hour flush-out must be conducted with maximum outdoor air consistent with achieving relative humidity no greater than 60%. After occupancy, flush-out must be continued as necessary to minimize exposure to contaminants from new building materials. - IEQ Credit 3.2 exceeds the GPs' flush-out requirement.	Illustrates Compliance
1	1			Credit 4.1	**Low-Emitting Materials -** Adhesives & Sealants: - The GPs requires that materials and products with low pollutant emissions are specified, including adhesives, sealants, paints, carpet systems, and furnishings. - EO 13514 requires a reduction in the acquisition and use of toxic and hazardous chemicals and materials.	Illustrates Compliance
1	1			Credit 4.2	**Low-Emitting Materials -** Paints & Coatings: - The GPs requires that materials and products with low pollutant emissions are specified, including adhesives, sealants, paints, carpet systems, and furnishings. - EO 13514 requires a reduction in the acquisition and use of toxic and hazardous chemicals and materials.	Illustrates Compliance
1	1			Credit 4.3	**Low-Emitting Materials -** Flooring Systems: - The GPs requires that materials and products with low pollutant emissions are specified, including adhesives, sealants, paints, carpet systems, and furnishings. - EO 13514 requires a reduction in the acquisition and use of toxic and hazardous chemicals and materials.	Illustrates Compliance
1	1			Credit 4.4	**Low-Emitting Materials -** Composite Wood & Agrifiber Products: - The GPs requires that materials and products with low pollutant emissions are specified, including adhesives, sealants, paints, carpet systems, and furnishings. - EO 13514 requires a reduction in the acquisition and use of toxic and hazardous chemicals and materials.	Illustrates Compliance
1			1	Credit 5	**Indoor Chemical & Pollutant Source Control:** - No requirement exists.	Discretionary
1	1			Credit 6.1	**Controllability of Systems -** Lighting: - The GPs require automatic dimming controls or accessible manual lighting controls and appropriate glare control.	Discretionary
1	1			Credit 6.2	**Controllability of Systems -** Thermal Comfort: - Individual thermal comfort controls help toward achieving compliance with ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, and IEQ Credit 7.1.	Discretionary
1	1			Credit 7.1	**Thermal Comfort -** Design: - The GPs requires compliance with ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone.	Required
1	1			Credit 7.2	**Thermal Comfort -** Verification: - No requirement exists.	Discretionary
1	1			Credit 8.1	**Daylight & Views -** Daylight: - The GPs require that a minimum daylight factor of 2% (excluding all direct sunlight penetration) is achieved in 75% of all space occupied for critical visual tasks.	Required
1	1			Credit 8.2	**Daylight & Views -** Views: - No requirement exists.	Discretionary

MILCON P635 - Ammunition Supply Point Expansion
LEED 2009 for New Construction and Major Renovations
Attachment 2 - Preliminary Checklist
Marine Corps Base Quantico
Quantico, Virginia

Possible Points	Yes	?	No				
6	1	5	0	**Innovation & Design Process (ID)**			**Relevance**
5		5		Credit 1	**Innovation in Design:**		-
(1)						Innovation or Exemplary Performance: Moisture Control Plan	Discretionary
(1)						Innovation or Exemplary Performance: Bio-Based Products	Discretionary
(1)						Innovation	Discretionary
(1)						Innovation	Discretionary
(1)						Innovation	Discretionary
1	1			Credit 2	**LEED® Accredited Professional**		Discretionary
4	3	0	1	**Regional Priority (RP)**			**Relevance**
4	3		1	Credit 1	**Regional Priority**		
(1)					1	Regional Credit Achieved: WEc1.1	
(1)					1	Regional Credit Achieved: WEc1.2	
(1)					1	Regional Credit Achieved: SS 6.1	
(1)						Regional Credit Achieved:	
Possible Points	Yes	?	No	**Project Totals**			
110	42	14	54	**Certified:** 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ points			

Notes:

1. The credit relevance rating is defined as follows:
Required = The requirements of this LEED-NC credit align with federal, state, or local requirements; therefore, this credit can be achieved if jurisdictional requirements are met.
Illustrates Compliance = The requirements of this LEED-NC credit exceed federal, state, or local requirements but closely align with (and therefore illustrate compliance with) these jurisdictional requirements.
Discretionary = Federal, state, and local requirements do not require any of the requirements of this LEED-NC credit.

2. LEED Silver can be achieved through a combination of credits labeled "Yes" and "?".

Appendix B
Soil Maps

Soil Map—Stafford and King George Counties, Virginia

Map Scale: 1:5,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Stafford and King George Counties, Virginia
Survey Area Data: Version 11, Jan 11, 2010

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

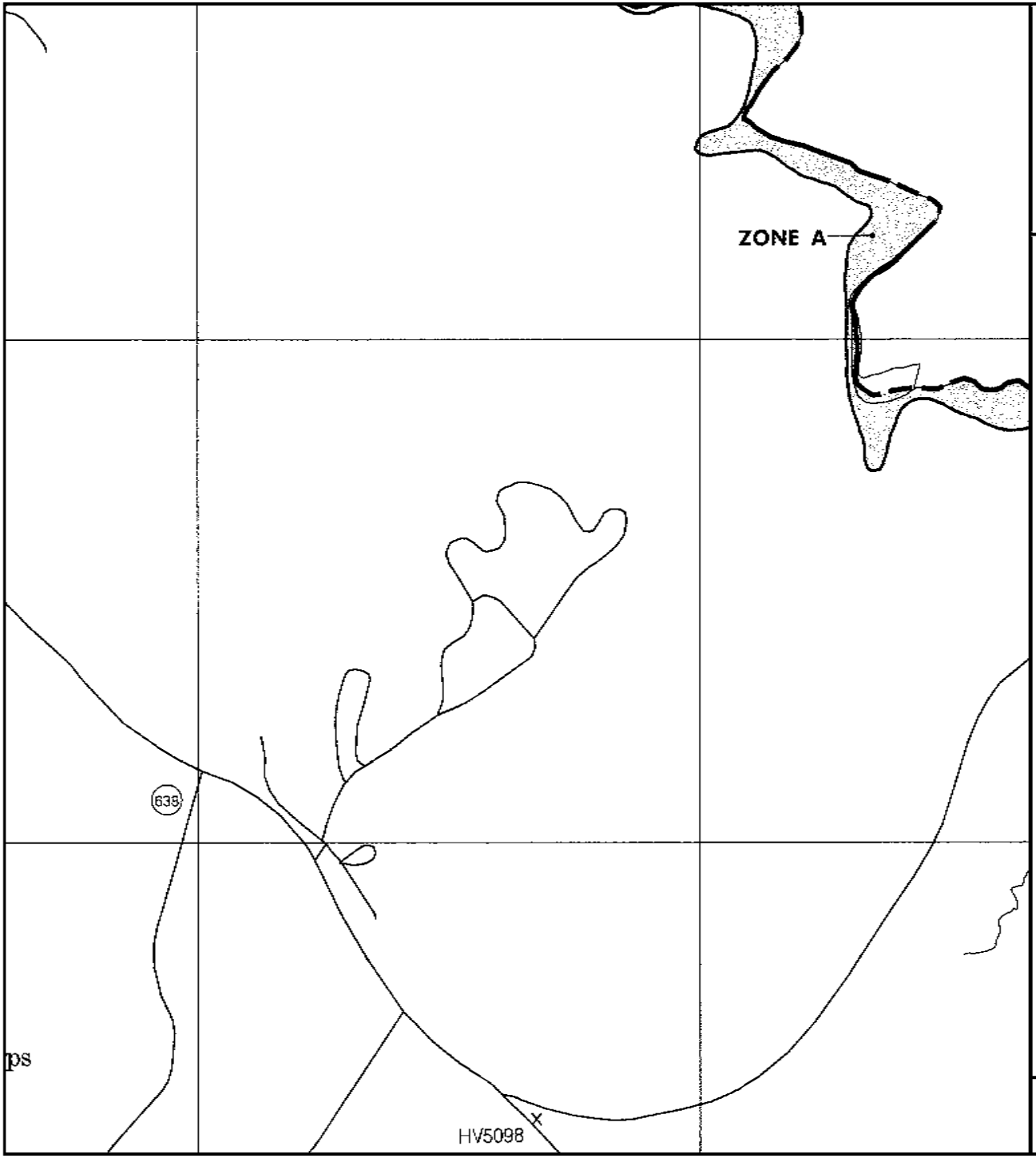
Date(s) aerial images were photographed: Apr 14, 2011—Nov 7, 2011

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

Map Unit Legend

Stafford and King George Counties, Virginia (VA179)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Ae	Alluvial land, wet	3.7	3.9%
AvD2	Aura gravelly fine sandy loam, 10 to 18 percent slopes, eroded	3.3	3.4%
AwD	Aura-Galestown-Sassafras complex, 6 to 15 percent slopes	10.0	10.4%
CaB2	Caroline fine sandy loam, 2 to 6 percent slopes, eroded	23.6	24.7%
CaC2	Caroline fine sandy loam, 6 to 10 percent slopes, eroded	10.4	10.9%
CcC3	Caroline clay loam, 6 to 10 percent slopes, severely eroded	15.4	16.0%
ElC2	Elioak silt loam, 6 to 15 percent slopes, eroded	1.5	1.6%
Iu	Iuka fine sandy loam, local alluvium, 0 to 4 percent slopes	1.3	1.3%
SfB	Sassafras fine sandy loam, 2 to 6 percent slopes	7.4	7.7%
SfC2	Sassafras fine sandy loam, 6 to 10 percent slopes, eroded	0.3	0.3%
TuB	Turbeville loam, 2 to 6 percent slopes	1.2	1.3%
WgD	Watt silt loam, gray surface variant, 10 to 15 percent slopes	1.7	1.8%
WgE	Watt silt loam, gray surface variant, 15 to 35 percent slopes	16.0	16.7%
Totals for Area of Interest		**95.7**	**100.0%**

Appendix C
FEMA FIRMs



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0045E

FIRM

FLOOD INSURANCE RATE MAP

STAFFORD COUNTY, VIRGINIA

PANEL 45 OF 280

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
STAFFORD COUNTY	510154	0045	E

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

MAP NUMBER
5101540045E

MAP REVISED
FEBRUARY 4, 2005

Federal Emergency Management Agency

Appendix D
Detailed Survey for Small Whorled Pogonia (*Isotria medeoloides*), Marine Corps Base Quantico – Ammunition Supply Point Improvement, Stafford County, Virginia

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

July 29, 2013

Mr. David Perry
EML BMAR Joint Venture
National Museum of the Marine Corps
18900 Jefferson Davis Highway
Triangle, Virginia 22172

Re: Detailed Survey for Small Whorled Pogonia (*Isotria medeoloides*)
Marine Corps Base Quantico - Ammunition Supply Point (ASP) Improvement,
Stafford County, Virginia
Latitude: 38°31'32.31"N Longitude: 77°23'17.00"W
WEG Project #4972

Dear Mr. Perry:

This report presents the results of habitat investigations and detailed surveys for the federally threatened and state endangered small whorled pogonia (*Isotria medeoloides*) by Williamsburg Environmental Group, Inc. (WEG), for the Marine Corps Base Quantico ASP Improvement in Stafford County, Virginia. The approximate 22.89-acre site is located within the Chopawamsic Creek drainage basin in Stafford County, Virginia (Figure 1). The site is situated north of Russell Road and south of Chopawamsic Creek and can be accessed via a service road along the perimeter of the existing Marine Corps Base Quantico ASP impoundment (Figure 2).

All detailed surveys for small whorled pogonia (SWP) were coordinated by Jason Mann, who is recognized as a SWP survey contact by the U.S. Fish and Wildlife Service (FWS). The following sections will present a brief description of the plant, the methodology utilized by WEG, and the results of the 2013 survey.

Species Description
SWP is a self-pollinating perennial orchid (Family: Orchidaceae), four to twelve inches in height, with a characteristic whorl of five to seven leaves at the summit of a singular, hollow, pale green stem with one or two pale yellowish-green irregular flowers (Mehrhoff 1983, Gleason and Cronquist 1991, Vitt and Campbell 1997). Morphologically similar species include large whorled pogonia (*Isotria verticillata*) and Indian cucumber root (*Medeola virginiana*), the former distinguished from SWP by a reddish-purple stem and the latter by a wiry stem with cotton-like hairs (Ware 1991).

Habitat Factors
SWP occupies a specific habitat type within its range. In particular, the species seems to require the following conditions: mature, mixed hardwood, upland forests; generally open understory conditions with minimal aggressive ground level species; generally level to moderately sloping land within shallow upland draws often of northerly or easterly exposure; scattered ground-level sunlight; and, acidic, sandy loam soils (Ware 1991, Gleason and Cronquist 1991, Weakley 2006). In addition, many professionals have noted a prevalence of decaying logs and a well-developed detritus layer on the forest floor. These attributes tend to be present with the species when found, although the exact mechanisms associated with each affinity are not understood (Ware 1991).

Certain indicator species may also be helpful in identifying small whorled pogonia habitat, such as large whorled pogonia, strawberry bush (*Euonymus americanus*), tick trefoil (*Desmodium* spp.), and wintergreen (*Chimaphila maculata*). These species may be considered associates, and occur frequently near documented SWP colonies. It should be noted that the absence of one or even several of the above-referenced habitat criteria does not necessarily preclude the species from occurring on a particular site. A habitat determination should therefore be based upon the experience of a qualified professional.

Methodology

A detailed field survey for SWP was conducted on July 10, 2013, a time frame that occurs within the sampling window suggested by the FWS (June 1st through July 20th in Stafford County, Virginia). During this time, the target species may be identified in vegetative phase (i.e. without flower or fruit). The normal vegetative cycle is late spring to mid-summer.

The habitat assessment and detailed SWP survey were conducted using general ground reconnaissance of the property boundary and all interior upland slopes. Notes were taken regarding cover types, community assemblages, slope aspect and grade, associate species, substrate, and other relevant information concerning habitat quality. Such reconnaissance and data collection allows for grouping of various regions into general habitat types: suitable, marginal, or poor, based on the presence of favorable habitat conditions for the target species. These categories represent the relative degree to which areas express favorable site attributes for the target species. Suitable habitat is present in areas that retain most of the habitat factors described above. Marginal habitat occurs in somewhat degraded areas, but based on professional judgment may still support the target species. Poor habitat is not sufficient for SWP colonization.

Detailed survey methods typically include utilization of contour transects. For the survey of potential habitat areas, a baseline is established and transects are walked parallel to the baseline on approximately 15-foot spacing, to ensure that the visual ranges of adjacent transects are overlapping. Each transect set is marked with flagging as it is searched, to ensure that subsequent transects are not established off course from the baseline. In areas determined to have marginal habitat for the species, a combination of transects and spot-checks are employed where topography, canopy density, and understory density reflect improved habitat.

Results

No SWP individuals were found within the Marine Corps Base Quantico ASP Improvement project limits. The attached Small Whorled Pogonia Habitat Map depicts the approximate location of habitat regions as well as the location of representative habitat photographs which are also included with this report.

Areas of marginal habitat were identified within the project limits as depicted on the attached Small Whorled Pogonia Habitat Map. These areas are characterized by semi-mature to mature mixed hardwoods situated on gentle to moderately sloping topography of varied aspect. Common tree species in the canopy include white oak (*Quercus alba*), southern red oak (*Quercus falcata*), northern red oak (*Quercus rubra*), tuliptree (*Liriodendron tulipifera*), and eastern hemlock (*Tsuga canadensis*). The understory is composed of hardwood saplings such as mockernut hickory (*Carya alba*) and American beech (*Fagus grandifolia*), as well as other species such as American holly (*Ilex opaca*) and lowbush blueberry (*Vaccinium pallidum*). Herbaceous groundcover includes wintergreen, strawberry bush, Virginia creeper (*Parthenocissus quinquefolia*), clubmoss (*Lycopodium sp.*), cat greenbriar (*Smilax*

glauca), and partridgeberry (*Mitchella repens*). Areas of marginal habitat contain a moderate duff layer underlain by soils of a loam to clay loam texture. The remainder of the survey area is considered poor SWP habitat due to limiting factors such as immature forest communities containing aggressive understory growth, past land disturbance regimes, and drainageways with evidence of periodic surface flow.

Conclusion

Based on this 2013 detailed survey, no SWP individuals were found within the habitat areas identified within the Marine Corps Base Quantico ASP Improvement project area. This detailed survey is valid, according to FWS guidelines, for a period of two years. If you have any questions regarding the information presented herein, please feel free to call at your convenience. We appreciate the opportunity to provide these environmental services for the Marine Corps Base Quantico ASP Improvement project.

Sincerely,

Jason M. Mann,
Ecologist II

References

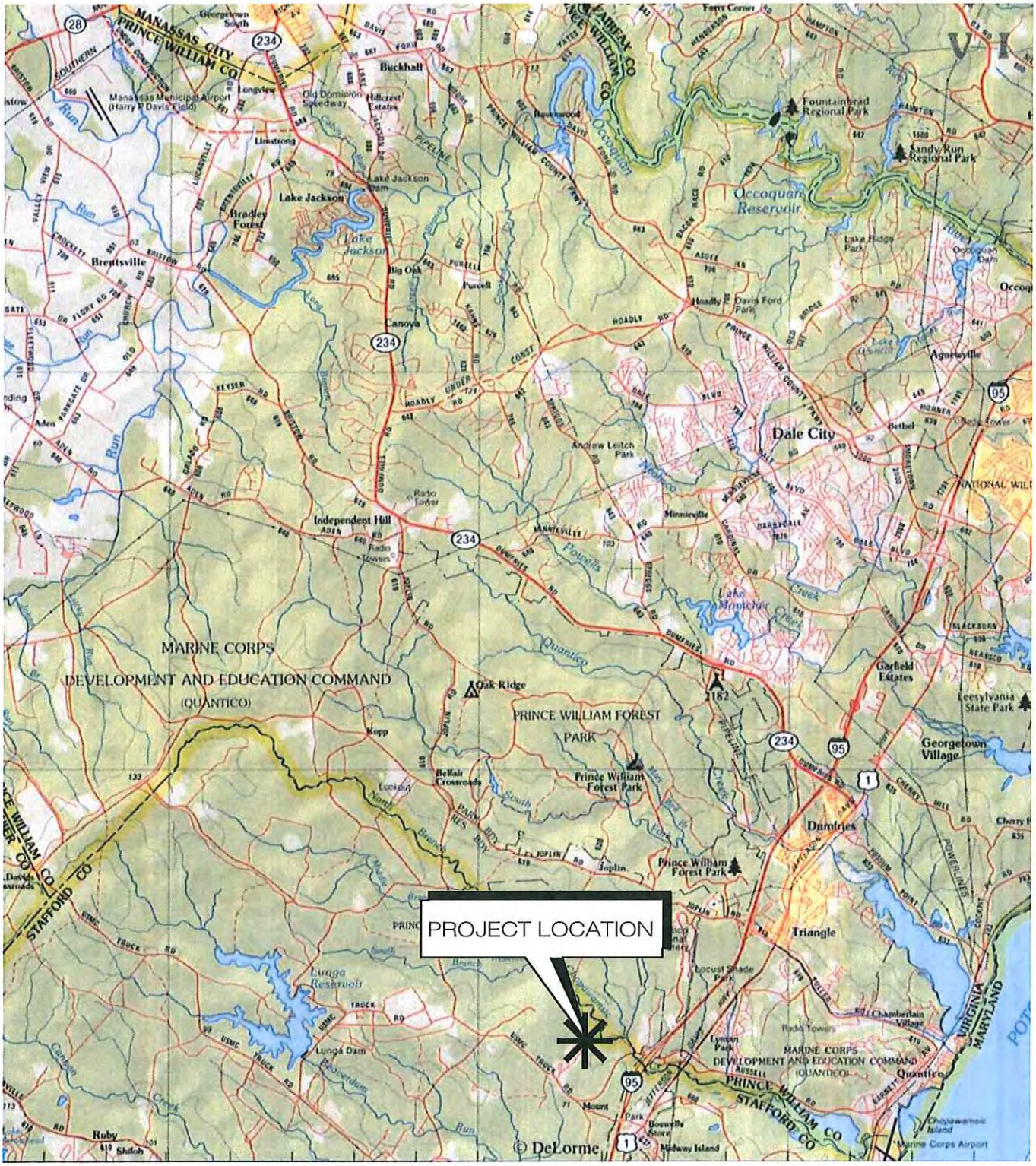
Gleason, H. A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada.* New York Botanical Garden, Bronx, New York.

Mehrhoff, L. A. III. 1983. Pollination in the genus *Isotria* (Orchidaceae). American Journal of Botany 70:1444-1453.

Vitt, P. and C. S. Campbell. 1997. Reproductive biology of *Isotria medeoloides* (Orchidaceae). Rhodora 99:56-63.

Ware, D. M. E. 1991. Small Whorled Pogonia, *Isotria medeoloides* (Pursh) Rafinesque. In *Virginia's Endangered Species*, K. Terwilliger, ed. McDonald and Woodward, Blacksburg, Virginia.

Weakley, A. S. 2006. *Flora of the Carolinas and Virginia*. Working draft. UNC Herbarium, University of North Carolina, Chapel Hill, NC.



2.4 MILES 1.2 0 MILES 2.4 MILES

SCALE: 1 INCH = 2.4 MILES

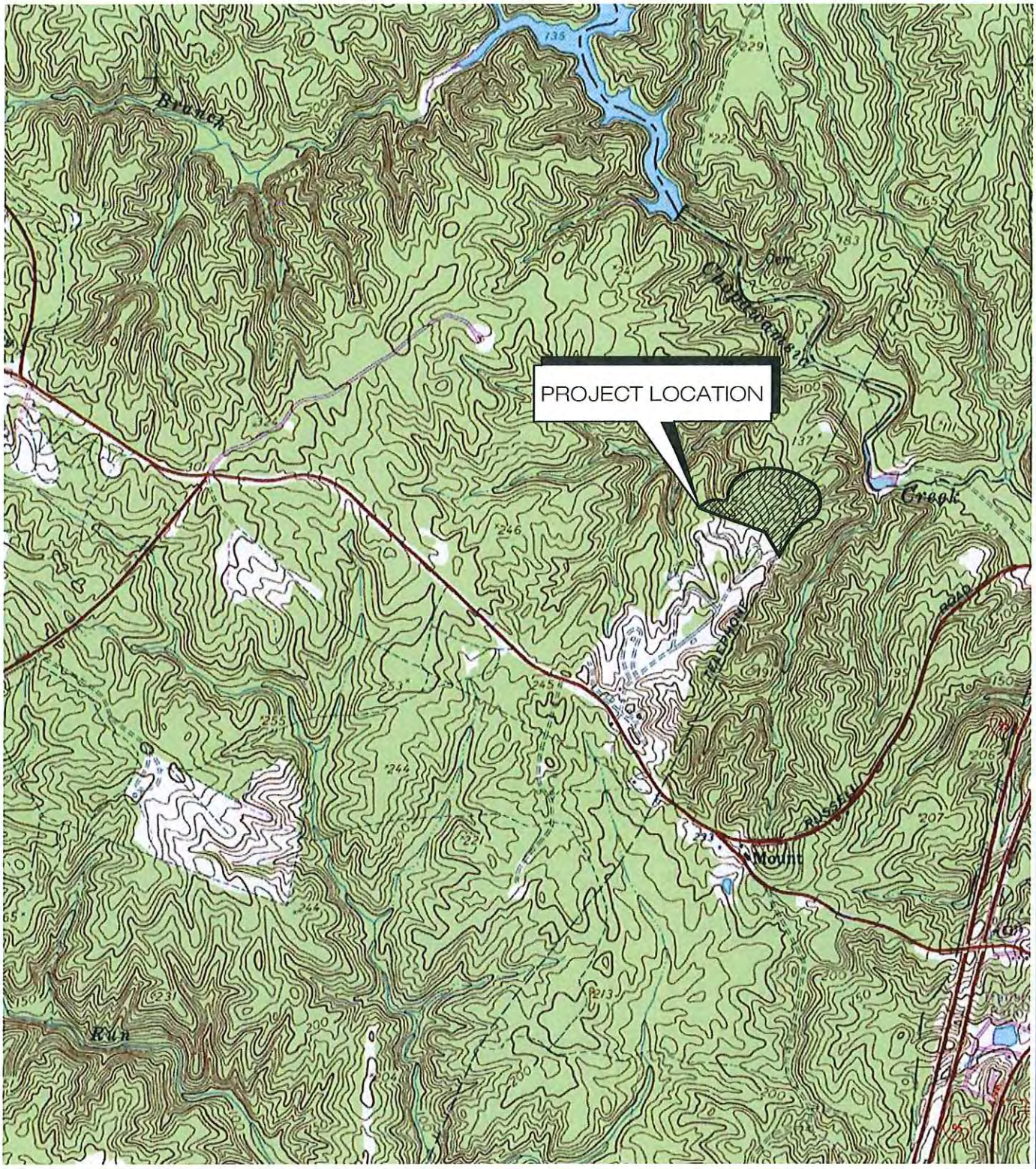
SOURCE: VIRGINIA ATLAS AND GAZETTEER,
DeLORME MAPPING CO., 1995.

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.

FIGURE 1
PROJECT VICINITY MAP

MARINE CORPS BASE QUANTICO
AMMUNITION SUPPLY POINT IMPROVEMENT

STAFFORD COUNTY, VIRGINIA | JULY 2013



2000' 1000' 0' 2000'

SCALE: 1 INCH = 2000 FEET

LATITUDE: 38°31'32.31"N
LONGITUDE: 77°23'17.00"W

SOURCE: USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP, JOPLIN, VA QUADRANGLE, 2000

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.

FIGURE 2
PROJECT LOCATION MAP

MARINE CORPS BASE QUANTICO
AMMUNITION SUPPLY POINT IMPROVEMENT

STAFFORD COUNTY, VIRGINIA | JULY 2013

Photograph 1: View of marginal habitat in the southwest portion of site.

Photograph 2: Marginal habitat within semi-mature to mature mixed hardwoods in the central portion of the site.

Photos taken by: J. Mann
Williamsburg Environmental Group, Inc.
July 2013
WEG Project #4972

Photograph 3: View of poor habitat due to large canopy gaps and aggressive understory growth in the southeast portion of the site.

Photograph 4: View of poor habitat due to dense understory cover, in central portion of the site.

Photos taken by: J. Mann
Williamsburg Environmental Group, Inc.
July 2013
WEG Project #4972

Photograph 5: Immature forest community with dense sapling layer, resulting in poor habitat in eastern portion of the site.

Photograph 6: Marginal habitat within the northeast portion of the site.

Photos taken by: J. Mann
Williamsburg Environmental Group, Inc.
July 2013
WEG Project #4972

Photograph 7: Immature forest community with dense sapling layer, resulting in poor habitat in northern portion of the site.

Photograph 8: Marginal habitat within the northwest portion of the site.

Photos taken by: J. Mann
Williamsburg Environmental Group, Inc.
July 2013
WEG Project #4972

Please provide a clear copy of a USGS topographic map(s), with the survey area(s) clearly indicated on the map(s).

SURVEY SUMMATION FORM		**Year:**	*2013*
Report Title:	*Detailed Survey for Small Whorled Pogonia (Isotria medeoloides) Marine Corps Base Quantico - Ammunition Supply Point Improvement, Stafford, County, Virginia*		
Collector(s):	*J. Mann & B. Jones*		
Quad(s):	*Joplin, VA*		
County / City:	*Stafford County*		
Survey Site Information [(1)]:	*The approximate 22.89-acre site is located within the Chopawamsic Creek drainage basin in Stafford County, Virginia. The site is situated north of Russell Road and south of Chopawamsic Creek and can by accessed via a service road along the perimeter of the existing Marine Corps Base Quantico ASP impoundment.*		
Habitat Type:	● Appropriate ● Not Appropriate ○ Not Definitive		

SPECIES INFORMATION:

Target Species:	*Isotria medeoloides*
Target Species Found?	○ YES ● NO

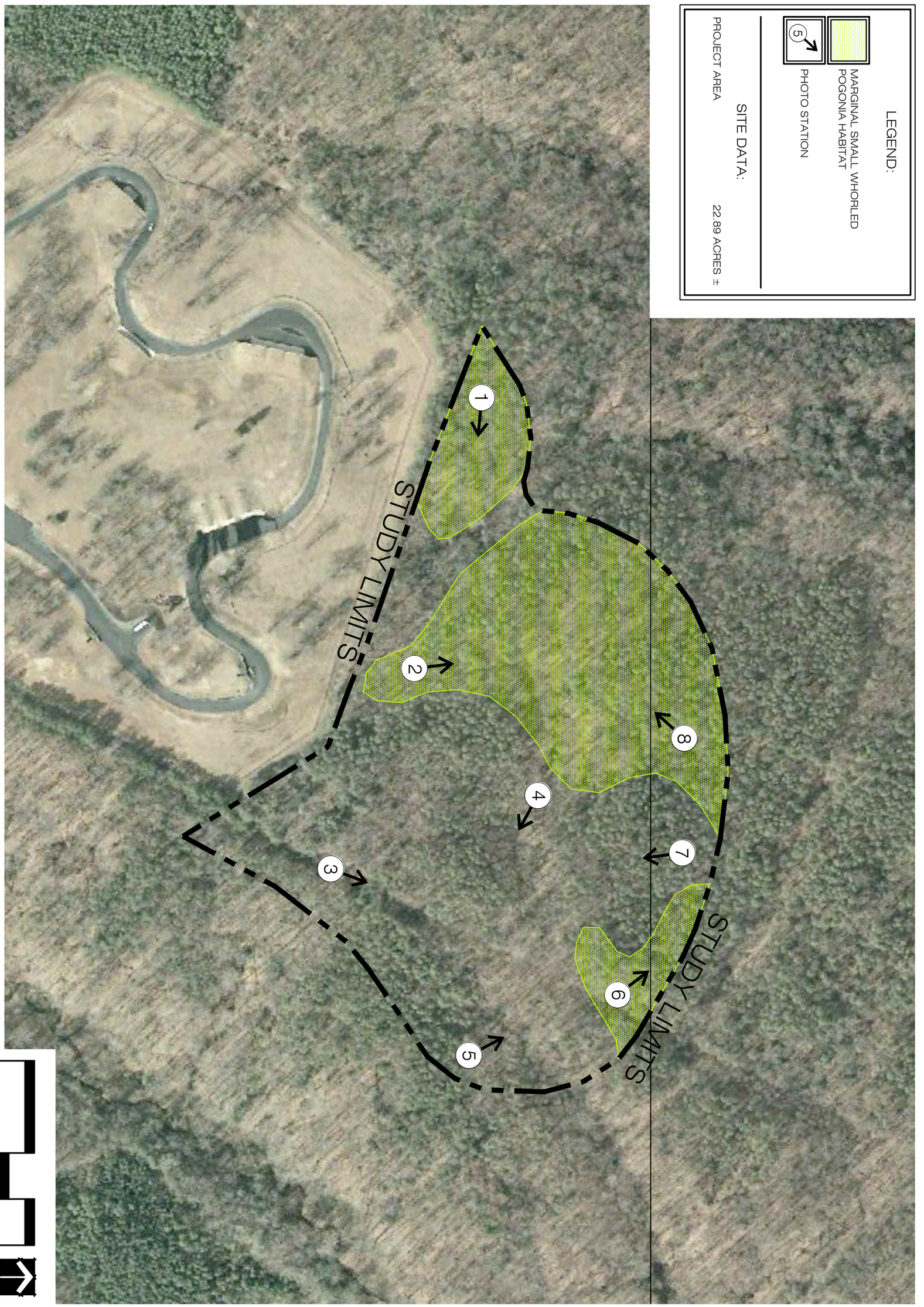
Species (common or scientific name):	**Number of Specimens[(2)]**			
	Live	**Fresh Dead**	**Relic**	**Unspecified**

Comments: Areas of marginal habitat that were identified exist as semi-mature to mature mixed hardwoods situated on gentle to moderately sloping topography of varied aspect with underlying soils of a loam to clay loam texture. Areas of unsuitable habitat exhibit limiting factors such as immature forest communities containing aggressive understory growth, past land disturbance regimes, and drainageways with evidence of periodic of surface flow.

(1) This is detailed information on where the survey was done (Example: 50 yards above, and 200 yards below the Route 623 crossing of the Pamunkey River). This information will assist in mapping of the survey data.

(2) Place a check mark in any of the columns if present but not counted.

W:\FREDcad\4900s\4972 - Marine Corps Base Quantico ASP\Ecology\Habitat Assessment\4972 - SWP habitat map.dwg



DATE: JULY 29, 2013

JOB NUMBER: 4972

SCALE: 1 INCH = 200 FEET

SOURCE: BASE MAP PROVIDED BY VGIN

SMALL WHORLED POGONIA HABITAT MAP

MARINE CORPS BASE QUANTICO AMMUNITION SUPPLY POINT IMPROVEMENT

STAFFORD COUNTY, VIRGINIA

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.

5209 Center Street
Williamsburg, Virginia 23188
(757) 220-6869

1011 Boulder Springs Drive, Suite 225
Richmond, Virginia 23225
(804) 267-3474

150 Riverside Parkway, Suite 301
Fredericksburg, Virginia 22406
(540) 785-5544

Environmental Consultants

Appendix E
Government Estimate for Sale of Timber

GOVERNMENT ESTIMATE FOR SALE OF TIMBER

CONTRACT : Ammunition Supply Point Expansion P-635

INSTALLATION: MCB, Quantico

PRODUCTS FOR SALE

(VOLUMES ESTIMATED USING STANDARD TECHNIQUES)

SPECIES AND PRODUCT	ESTIMATED QUANTITY AND UNIT OF MEASURE		VALUE/ UNIT		TOTAL
Sawtimber					
Yellow Poplar	50.9	MBF	180	$	9,162
White Oak	5.9	MBF	250	$	1,475
Red Oak	14.2	MBF	225	$	3,195
Virginia Pine	99.9	MBF	70	$	6,993
Miscellaneous	6.8	MBF	80	$	544
Pulpwood					
Pine	57	Cords	12	$	684
Hardwood	56	Cords	5	$	280

This estimate is based on the most recent timber sales on MCB Quantico, with value adjustments made based on quality, defect, species of timber, and current market conditions. Volumes are based on the acreage determined from maps and specifications provided for this project. ***Any changes to the tree clearing limits will require changes to the volume and value of this appraisal. This appraisal is valid for 120 days.***

TOTAL GOVERNMENT ESTIMATE: $ 22,333

Submitted By: Ronald R. Moyer/ Ronald R. Moyer
(NAME/SIGNATURE)

Title: Forester

Date: May 30, 2013

Appendix F
Archeological Survey Report

ARCHAEOLOGICAL INVESTIGATION FOR THE MARINE CORPS BASE QUANTICO AMMUNITION SUPPLY POINT OPERATIONS EXPANSION, STAFFORD COUNTY, VIRGINIA

November 2013

MARINE CORPS BASE, QUANTICO

NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS BRANCH
MARINE CORPS COMBAT DEVELOPMENT COMMAND QUANTICO,
VIRGINIA 22134-5001

Prepared By
Kate Roberts

MANAGEMENT SUMMARY

A new building, expansion of the existing perimeter fence, and an access road are planned for the Ammunition Supply Point at Marine Corps Base Quantico. The Area of Potential Effect (APE) is a total of 27 acres. Previous survey had identified a 20th century home site (44ST0992) and Mount Joy Cemetery within the APE for this project. Additional survey was undertaken, including surface reconnaissance, photography, and subsurface testing. Site 44ST0992, which appears to date to only the second quarter of the 20th century, is recommended as ineligible for the National Register of Historic Places due to a lack of significant data present at the site. The site area is extensively disturbed, and the remainder of the project area was found to have been substantially eroded. Twenty-three Shovel Test Pits (STP) were dug within the APE. Eight were disturbed, 15 were negative. No other cultural resources were identified, and no further archaeological work is recommended.

Cover photo: Existing Ammunition Supply Point, facing southwest from site 44ST0992

Contents

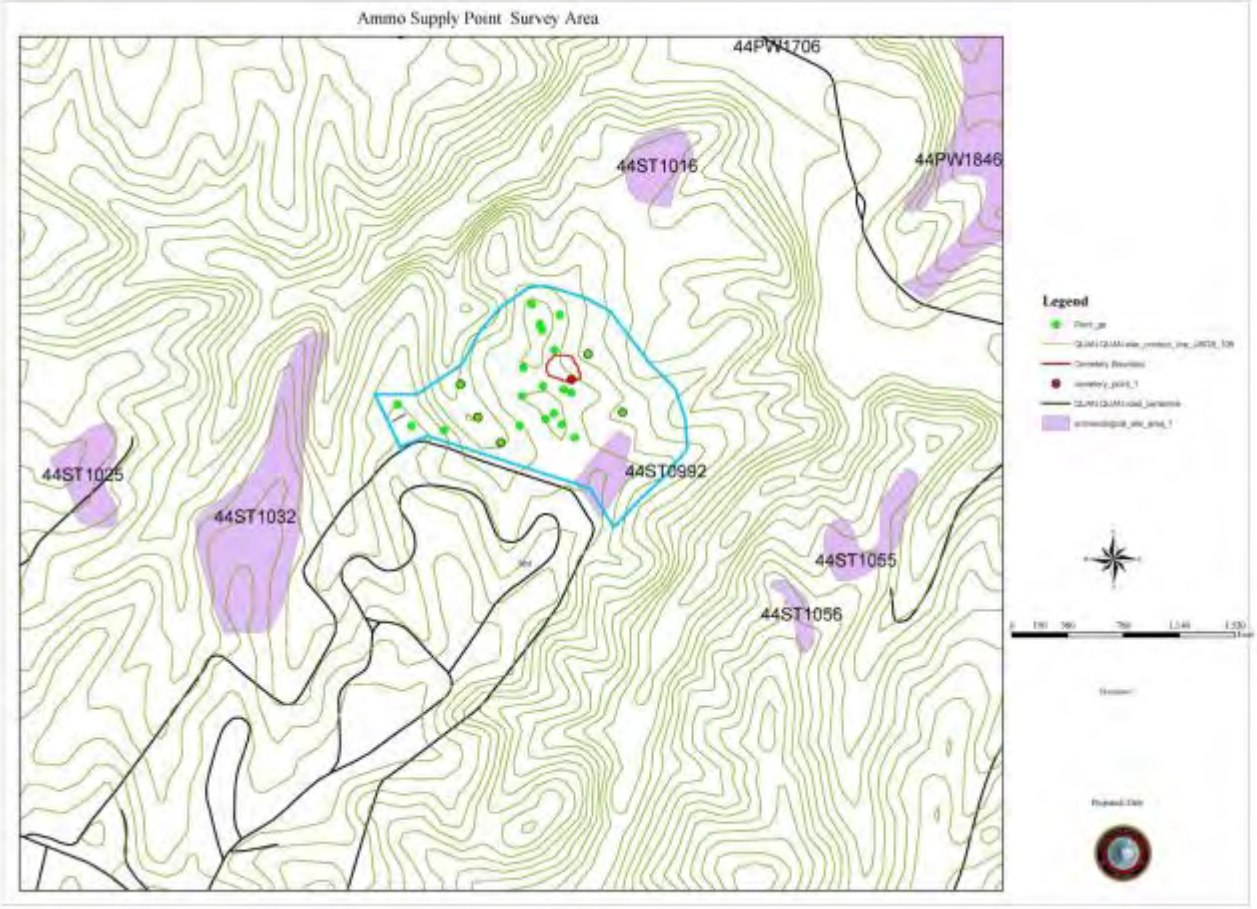
Tables

Maps

Figures

1 Project Description

The proposed undertaking is a new building to house operations supporting the Ammunition Supply Point (ASP) at Marine Corps Base Quantico (MCBQ) in Stafford County, Virginia. The project site is just outside the northern perimeter of the Ammo Supply Point (ASP). The existing perimeter fence will be expanded to enclose the building and road leading to it, which results in an Area of Potential Effect (APE) of 27 acres.

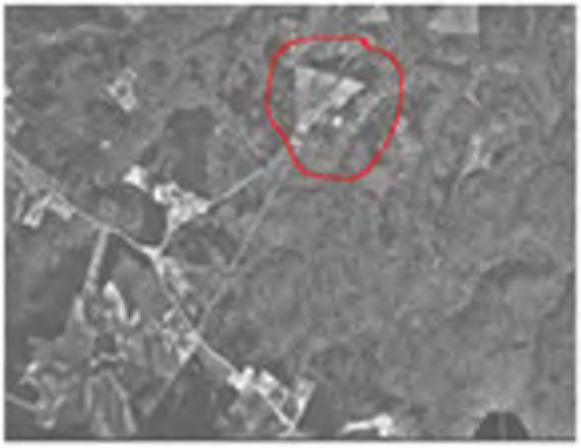


Map 1 Ammo Supply Point, APE

2 Project Area Description

The project area is in northern Stafford County, Virginia in Training Area 6B of MCBQ. It lies within the eastern most edge of the Piedmont geophysical province, although some geological strata in this area are termed 'Coastal Plain.' The immediate area is characterized by steep ridges dissected by narrow stream valleys. The project area and adjacent areas outside of the existing ASP perimeter are wooded. The project APE straddles two ridge fingers, relatively level in the south, which narrows and steepens toward the north (Map 1). Within the project APE, a 20th

century house site (44ST0992) is covered with mixed deciduous trees and cedars, while the remaining areas are covered by Virginia pine with some yellow poplar. Trees in the latter area are of middle age, thus it appears to have been reforested after logging, probably after 1970. Most of that area appears to have been open as shown on the 1937 aerial photograph (Map 2). The Department of Navy acquired the property in this area as part of a 50,000 acre acquisition by court order in 1943. The Ammunition Supply Point was constructed in the early 1950s.



Map 2 1937 Aerial Photo of 44ST0992

3 Previous Research

3.1 Archaeological Surveys

Table 1 Recent Surveys Near the Ammo Supply point APE

Report Number	Title	Author	Date
81	Cultural Resources Investigations of 396.45 Acres of Timber Compartments At Maine Corps Base Quantico	Charles E. Goode	2008

Table 1 Recent Surveys Near the Ammo Supply point APE

Report Number	Title	Author	Date
84	Archaeological Investigations for Marine Corps Base Quantico Ammunition Supply Point Operations Expansion	John Haynes	2008
86	Old House Sites Survey	Joe Balicki	2008
94	Cultural Resources Investigations of Sites 44PW945, 44PW946, 44PW1289 and 219 acres of Timber Compartments at Marine Corps Base Quantico	Charles E. Goode	2009
No Report Number	Marine Corps Base, Quantico Land Survey	Volunteers; Fish, Wildlife, and Agronomy Section, Natural Resources Branch,	1986

3.2 Recent Survey of the Project Area

Between 1986 and 1989 the Conservation Volunteer Program of the Fish, Wildlife, and Agronomy Section of the Natural Resources and Environmental Affairs Branch conducted a survey of "old home sites" on the western 'Guadalcanal' side of the Base, west of Interstate 95. Over three hundred domestic sites and sixty cemeteries were listed in the study, which used the observations of installation personnel and hunters, as well as 1937 aerial photographs to identify locations. No professional archaeologists or historians were involved in the study, and the descriptions of the sites are very brief, focusing on the presence of surface features such as foundations and wells, and artifacts such as pots, pans, and automobile parts, as well as domestic plants, such as daffodils which continue to bloom on many of these sites 65 years after their abandonment. Consequently, no artifact-based chronologies are available from the Conservation Volunteer Program survey. No excavation was undertaken in the study. Although

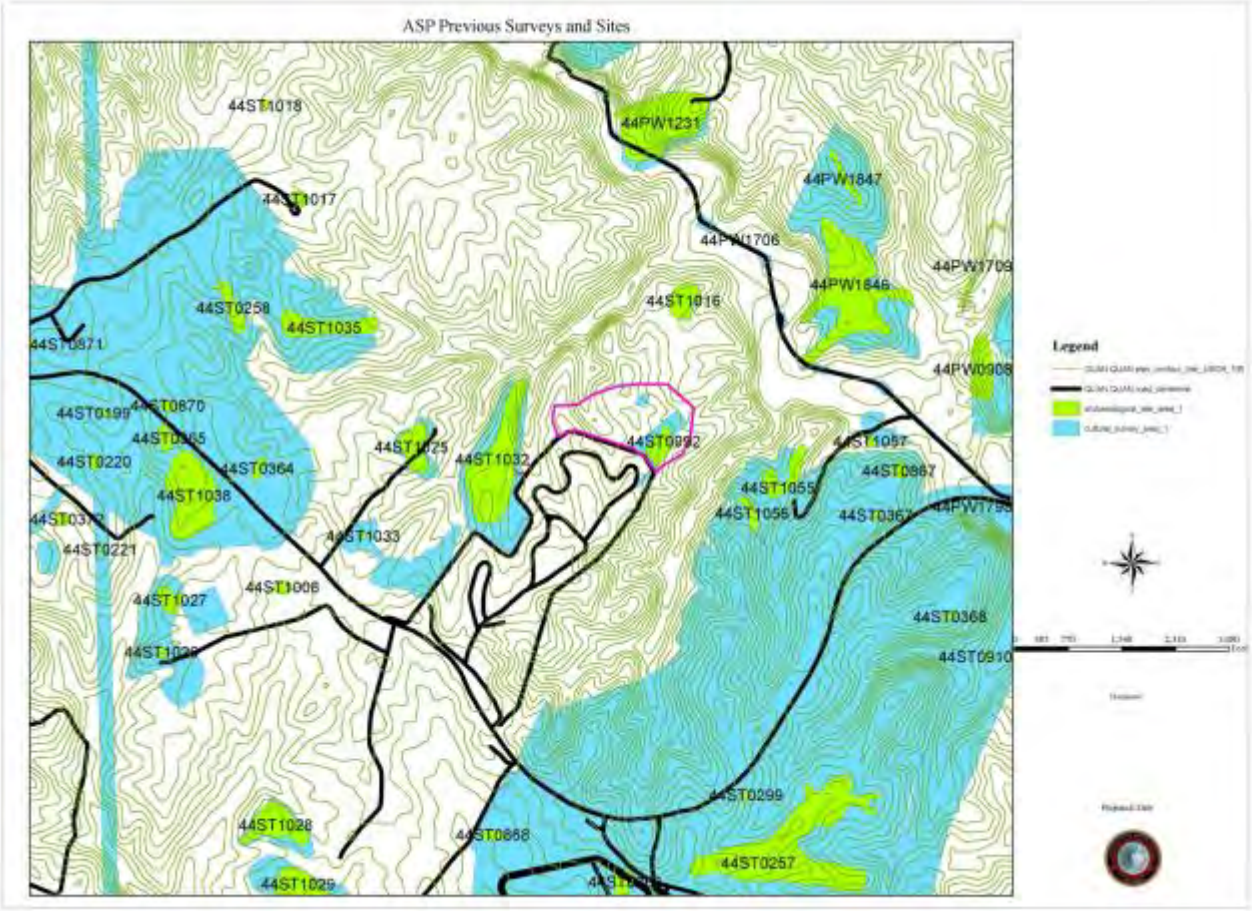
nearly all of these sites were inhabited at the time of the land takeover in January 1943, many have earlier components. While about one third of these sites (referred to as the 'Silverthorne' study in some reports) have been investigated by archaeologists.

John Milner Associates (JMA) was contracted in the fall of 2007 to investigate 50 of these sites which had not fallen within previous archaeological surveys. This was termed a 'reconnaissance survey' since extensive systematic shovel testing required by VDHR standards for Phase I survey would be time consuming and expensive, and the simple location and extent of the homestead sites would be of considerable value in land use planning and prioritizing Section 110 evaluations. The less intensive survey methods JMA employed included walkover, photography, gathering GPS coordinates, and limited shovel testing to obtain an indication of the condition and chronology of the sites. This information is being put into the Virginia Department of Historic Resources Data Sharing System, and the sites will be recorded as archaeological sites.

3.3 Sites Located Near the Ammo Supply Point

Table 2 Sites Near Ammo Supply Point

Site Number	Type	NRHP Status
44ST0868	Prehistoric	Ineligible
44ST1056	Multi-Component	Ineligible
44ST1055	Multi-Component	Ineligible
44ST1016	Homestead	Further Review
44ST1025	Multi-Component	Further Review
44ST1008	Historic	Further Review
44ST1032	Prehistoric	Further Review
44ST1033	Historic	Further Review



Map 3 Previously Recorded Sites Located Near Ammo Supply Point, APE

4 Historic Context

A general discussion of the prehistoric and historic contexts for this Installation, outlined according to the periods defined by the Department of Historic Resources, can be found in Section 3.3 of the Integrated Cultural Resource Management Plan (ICRMP) for Marine Corps Base Quantico. That information will not be repeated for this report. The ICRMP is on file with VDHR, and available from MCB Quantico NREA Branch in print or electronic formats.

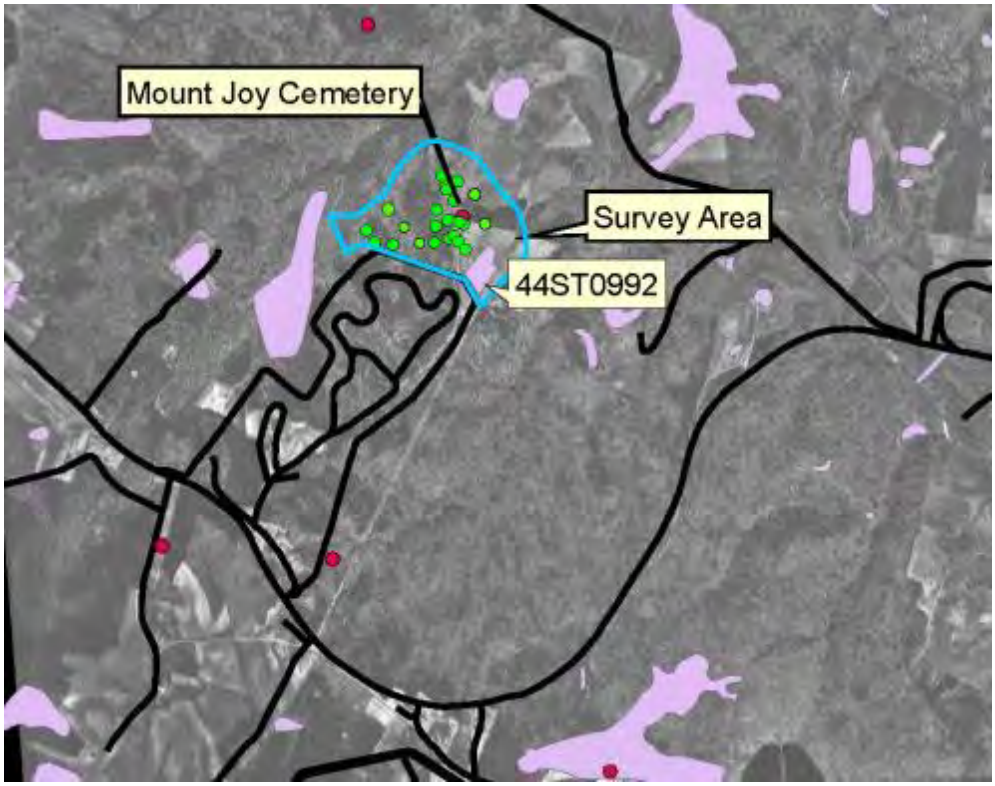
4.1 Specific Historical Background

As most settlements hugged the Potomac River from the initial settlement of Stafford County in the 1650s, the ASPOPS project area, about 8 kilometers (5 miles) from the Potomac; this area was probably not inhabited by colonial settlers until at least late in the 17th century. An exception to this was Brent Town, settled by the 1680s, and located some distance inland, possibly on upper Cedar Run. By end of the first quarter of the 18th century colonial settlement was expanding rapidly in inland areas of Stafford. This trend continued, and the population density of this area, like many rural areas of the Piedmont and Coastal Plain of Virginia, peaked between 1790 and 1810. The subsequent decline can be associated with both soil exhaustion

and erosion from intensive cultivation, and the beckoning of new opportunities for land and minerals in the West and Deep South. Although the area may have lost as much as a third of its population, detailed maps made during the course of the Civil War (e.g. Hotchkiss 1862) show a moderately dense network of roads, along with larger farmsteads, churches, schools, and mills. The project APE is in this context, but does not appear to have been immediate to the marked roads, etc. Similarly, though important movements and actions during the Civil War occurred along the Potomac River (Campaign for the Control of Navigation of the Lower Potomac, or Battle of the Potomac), along Telegraph Road, the Forest Road, (Burnsides' "Mud March" of November 1862, Stuart's raid of December 1862) they would have been removed by a few kilometers from the project area.

Map 4 1862 Hotchkiss Historical Map

At the time of the land acquisition, January 1943, the National Park Service had already purchased property to the north of the site of the existing ASP, including the northern third of the APE, while the rest was owned by Thomas Atchison. Atchison's neighbors were Mrs. Nannie L. Marshall, Richard Mount Joy, and a larger 254 acre tract owned jointly by L.G. Atchison and Carrie Stevens. In comparing the $1900 awarded Atchison for his property with those of the neighboring land owners it might be surmised that he was the only one with a house on property, albeit a modest one. Mount Joy is a name common to the area, and the place name "Mount," referring to a cross-roads community which existed about 2 kilometers south of the APE, is still listed on USGS 7.5 minute maps. Neither Thomas Atchison nor his neighbors are noted as important in history, nor have important events taken place in the immediate vicinity of the APE. A 1937 map of the area shows the homestead and the Mount Joy Cemetery.



Map 5 1937 Aerial Map Mount Joy Cemetery and Homestead

5 Field Methods

Plans for the construction of an operations building to support activity at the ASP have been considered for some time, which led to the inclusion of Mount Joy Cemetery in the recent survey. The survey methodology was limited to surface reconnaissance for artifacts, surface features, and domestic flora, landscape elements for site location and delineation, and limited judgmentally placed shovel testing for site condition and artifact samples to establish chronology. Due to the generally disturbed conditions at 44ST0992, no subsurface testing was conducted at the site.

The author conducted a walk over reconnaissance with photography of the APE in September 2013. Observations confirmed JMA's observations that the site of the homestead was heavily disturbed and associated with 20th century artifacts. Two concrete foundation piers remained in situ at the gate of the cemetery. The remainder of the 44ST0992 site area was heavily disturbed by the original ASP construction in the 1950s, as was all but the northernmost third of the APE. The centerline of the ridge in this apparently undisturbed area was shovel tested.

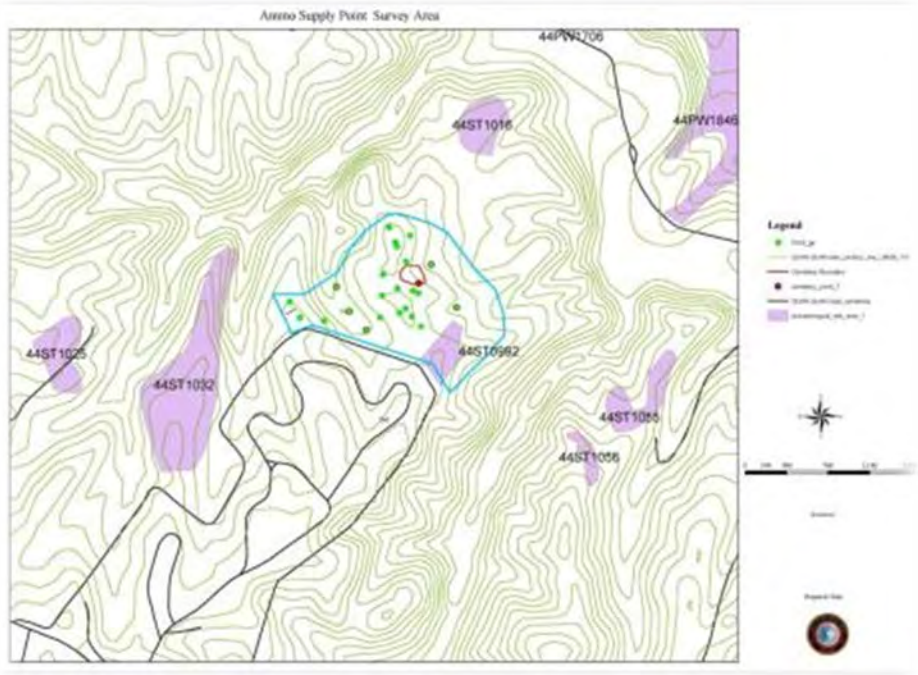
Shovel test pits (STP) were dug every 50 meters across flat area within the APE (150 feet).

STPs averaged 40cm (15.7 inches) in diameter and 10 cm (3.93 inches) deep. A Trimble GPS unit with variance of less than 5 meters (15 feet) was used to record STPs. Soil was placed in a shaker sieve with ¼ inch mesh hardware cloth; however, due to the density of the clay soil, approximately 70% of the soil matrix was troweled in the screen.

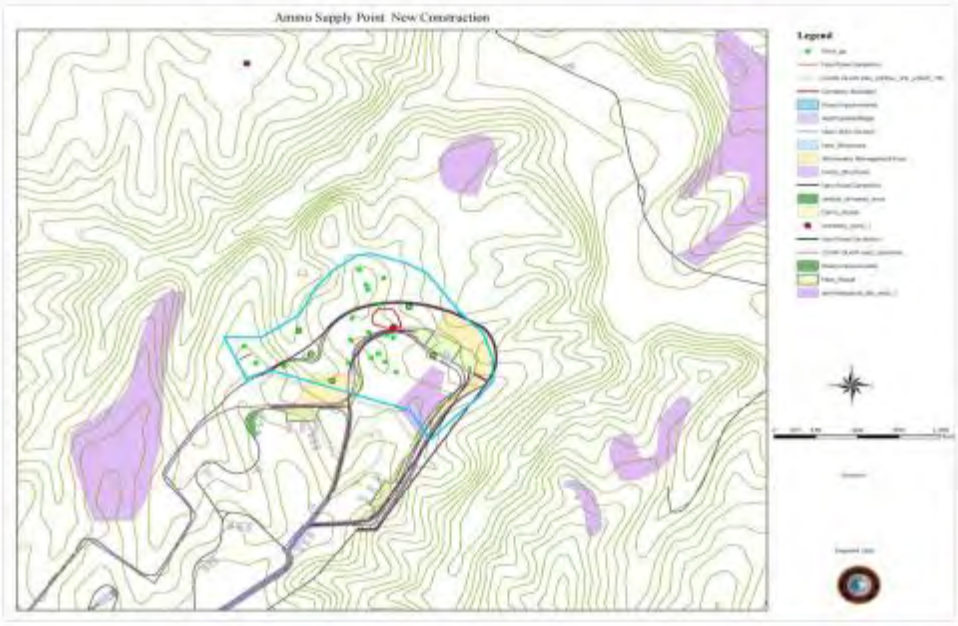
6 Results

Table 3 STP Results

STP Number	Result	Depth
1	Disturbed	0
2	Disturbed	0
3	Disturbed	0
4	Disturbed	0
5	Disturbed	0
6	Disturbed	0
7	Negative	10 cm
8	Negative	8 cm
9	Negative	7 cm
10	Negative	12 cm
11	Negative	10 cm
12	Negative	15 cm
13	Negative	20 cm
14	Negative	18 cm
15	Negative	10 cm
16	Negative	8 cm
17	Negative	10 cm
18	Negative	7 cm
19	Negative	5 cm
20	Negative	6 cm
21	Negative	10 cm
22	Disturbed	0
23	Disturbed	0



Map 6 Ammo Supply Point STPs



Map 7 Ammo Supply Point New Construction

Map 8 Mount Joy Cemetery and New Construction

7 Recommendations

The proposed action will impact 44ST0992 and while Mount Joy Cemetery is within the APE, it will be avoided. None of the artifacts observed at the site, though of considerable number and diversity, were manufactured earlier than the mid-nineteenth century. All of them were of common manufacture and use during the second quarter of the twentieth century. No artifacts were collected from 44ST0992. Such sites are very common in the area, with over 300 examples on MCB Quantico alone. Due to the recent chronology and common type of this site, it is recommended as not eligible for the NRHP, and no further evaluation is recommended.

Table 4 Summary Recommendations

Site	Description	NRHP Status	Project Effects
44ST0992	20th century house site, structure removed, 75% of site destroyed	Recommended Ineligible, a) lack of significant data, b) lack of integrity	Site will be destroyed
Mount Joy Cemetery 6B-3	Large cemetery,40 graves recorded, all appear to have been removed according to MCBQ records.	Potential for unmarked graves remaining	No effect to site

Figure 1 Mount Joy Cemetery- Fence Posts (Haynes 2008).

Mount Joy Cemetery is within the project APE. All graves within the cemetery appear to have been relocated, and it is not active or maintained. MCBQ records show that the graves were moved to Cedar Run Cemetery (Appendix A). The area was flagged off and GPS points of the boundary around the fence posts were recorded during the survey. The contractor will be informed that the cemetery will be avoided, and that if there are any unanticipated discoveries of human remains, construction will stop, then the base archaeologist notified. The cemetery will not be accessable once construction around the area is completed.

Figure 2 Mounty Joy Cemetery, Flagged Fence Posts.

Figure 3 44ST0992 facing north

Figure 44ST0992 foundation piers

Figure 5 44ST0992 well facing north

References

Balicki, Joe, Bryan Corle
2008 Old House Sites Survey, Marine Corps Base Quantico

Conservation Volunteers (Silverthorne)
1986 Marine Corps Base, Quantico Land Survey, Marine Corps Base, Quantico, Fauquier, Prince William, and Stafford Counties, Virginia. Conservation Volunteers; Fish, Wildlife, and Agronomy Section, Natural Resources Branch, Facilities Division, MCB Quantico. Ms. On file, NEPA Coordination Section, Natural Resources and Environmental Affairs Branch, Facilities Division, MCB Quantico.

Haynes, John
2008 Archaeological Investigations for Marine Corps Base Quantico Ammunition Supply Point Operations Expansion, Stafford County, Virginia

Hotchkiss, J.
1862 no. 16 [Preliminary map of northeastern Virginia embracing portions of Prince William, Stafford, and Fauquier counties], Library of Congress, http://hdl.loc.gov/loc.gmd/g3883p.cwh00016.

APPENDIX A CEMETERY RECORDS

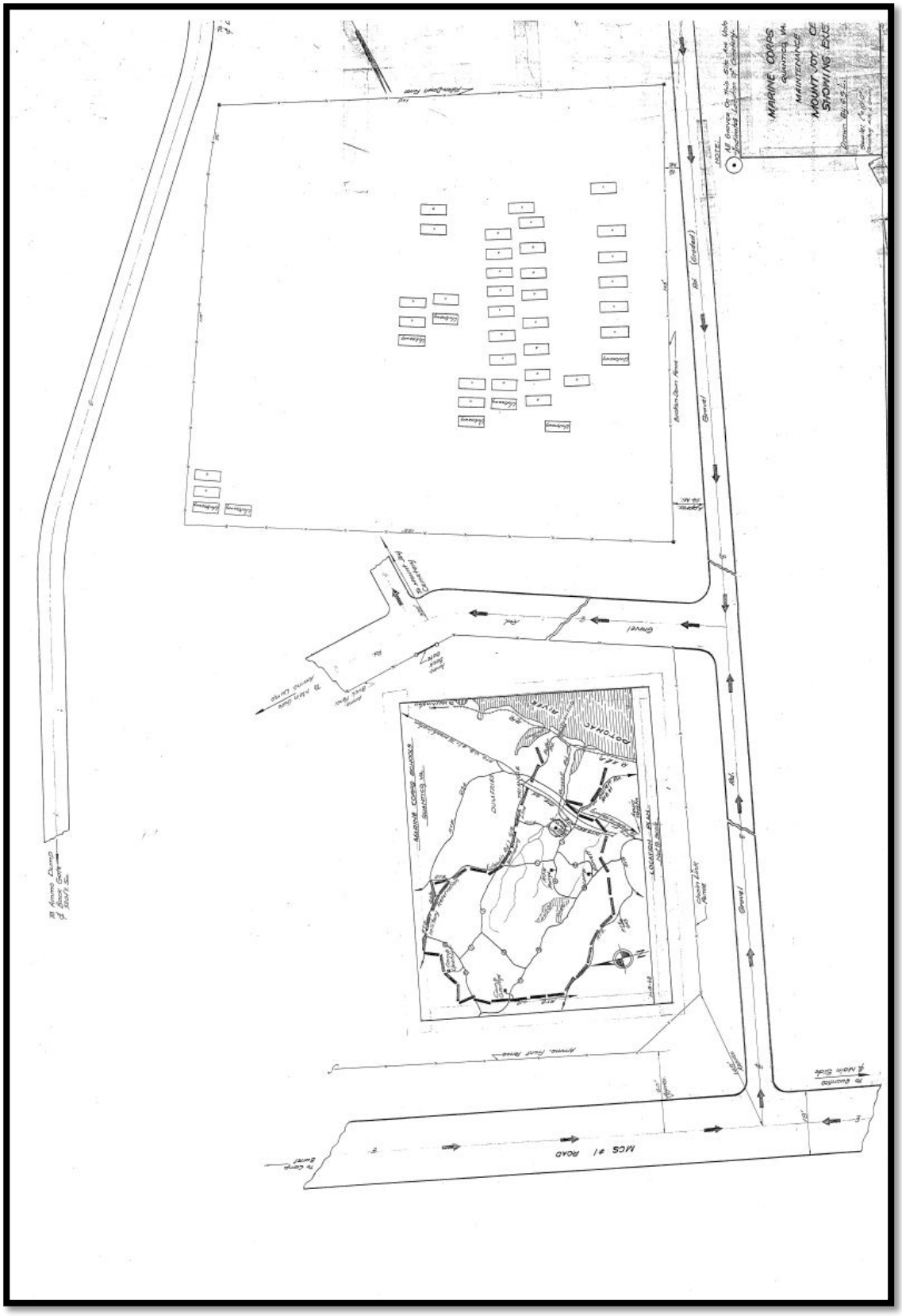


Figure A-4 Mountjoy cemetery map 1941

WEARLY & WASSON
Incorporated

Cemetery Removal Contractors

Muncie, Indiana

Telephone 5262 — 404 Kilgore Ave.

Dec 7 - 1942

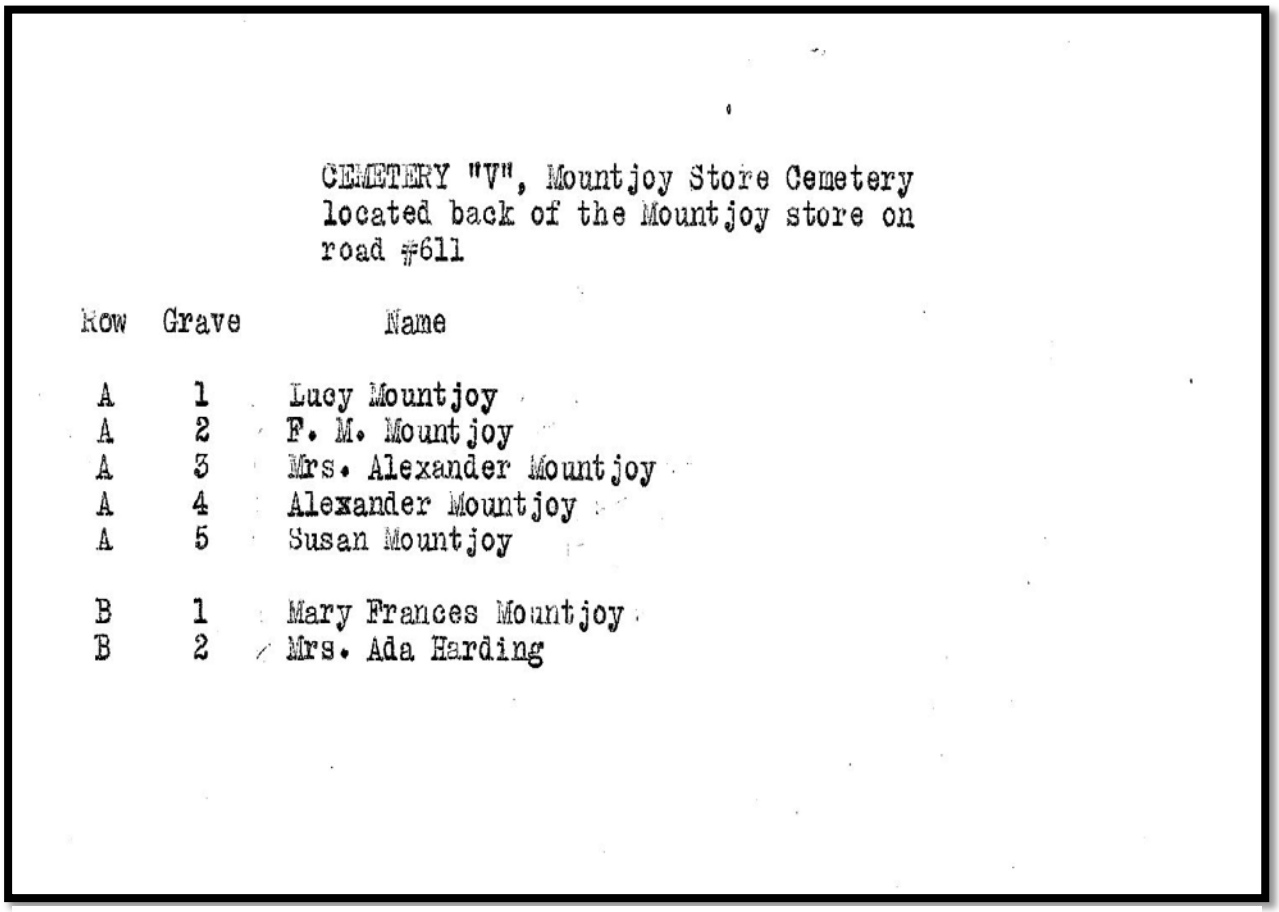
Frank:

This is the final list of cemeteries we removed after the 1228 on your last list:

Key	Name	Location	No	
2T	Henderson, Jas. E.	632	6	White
3J	Andrew Roles	611	2	
3B	Henderson-Nash	641	47	
W	Wheeler	641	2	
3L	Mount Cemetery	608	59	
2Ta	Wallace Perry	611	8	
3E	Cox-Evans & Lynton Davis	641 - 618	12	
S	Bell	641	6	
3A	Stone	641	14	
2W	Katie Jones	632	1	
3N	Arthur Decatur	632	12	
2Z	Shackleford	632	1	
2Sa	Bolan-Thorns	639 & 641	2	1 White 1 Colored
2Y	Baker Bowling	632	9	White
2V	Powers	632	91	Colored
2Q	Bumbray	609	27	Colored
2-O	Clemons	609	11	Colored
			310	
		Already reported	1228	
		Grand total	1538	

Branch Offices: Hartford City, Marion and Montpelier, Indiana

Figure A-5 Cemetery removal list



CEMETERY "V", Mountjoy Store Cemetery
located back of the Mountjoy store on
road #611

Row	Grave	Name
A	1	Lucy Mountjoy
A	2	F. M. Mountjoy
A	3	Mrs. Alexander Mountjoy
A	4	Alexander Mountjoy
A	5	Susan Mountjoy
B	1	Mary Frances Mountjoy
B	2	Mrs. Ada Harding

Figure A-6 Mountjoy known graves

APPENDIX B SITE FORM 44ST0992

Report Generated on:

3/19/2008

City/County: **Stafford**

DEPARTMENT OF HISTORIC RESOURCES
ARCHAEOLOGICAL REPORT

DHR ID#: 44ST0992

DHR Site Number: 44ST0992 **Other DHR Number:**
Resource Name:
Temporary Designation: OH6B5
Site Class: Terrestrial, open air

CULTURAL/TEMPORAL AFFILIATION

Cultural Designation	Temporal Designation
Indeterminate	20th Century: 1st half

THEMATIC CONTEXTS/SITE FUNCTIONS

Thematic Context: Domestic **Example:** Dwelling, single
Comments/Remarks:

Thematic Context: Subsistence/Agriculture **Example:** Farmstead
Comments/Remarks:

LOCATION INFORMATION

USGS Quadrangle(s): JOPLIN **Restrict UTM Data?** No

Center UTM Coordinates (for less than 10 acres): NAD 18/4266703/291916/2

NAD	ZONE	EAST	NORTH

Boundary UTM Coordinates (for 10 acres or more): NAD 18/4266687/291894/2

NAD 18/4266724/291920/2

NAD 18/4266649/291919/2

NAD 18/4266711/291943/2

NAD	ZONE	EAST	NORTH
	18	4266687	291894
	18	4266724	291920
	18	4266649	291919
	18	4266711	291943

City/County: **Stafford**

Physiographic Province: Piedmont
Drainage: Potomac/Shenandoah River
Aspect: Facing east
Nearest Water Source: Unamed tributary to Chopawamsic Creek
Elevation (in feet): 198.00
Distance to Water(in feet): 400
Slope: 2-6%
Site Soils:
Adjacent Soils:
Landform: ridge top

SITE CONDITION/SURVEY DESCRIPTION

Site Dimensions: 200 feet by 150 feet
Acreage: 0.68

Survey Strategy: Informant
Observation

Site Condition: 75-99% of Site Destroyed
Surface Features

Threats to Resource: Demolition

Survey Description:

John Milner Phase I (2008): Reconnaissance involved walk over of area, submeter accuracy GPS mapping, digital photography, and notes recording coditions of the site.

CURRENT LAND USE

Land Use: Military/Defen **Example:** Military base/facility
Dates of Use: 1943/99/99

Comments/Remarks:
Land was acquired by U.S. Marine Corps.

SPECIMENS, FIELDNOTES, DEPOSITORIES

Specimens Obtained?
Specimens Depository:

Assemblage Description:

Specimens Reported? Yes

Assemblage Description--Reported:

John Milner Phase I (2008): window glass, milk glass canning lid liner

Field Notes Reported? Yes
Depository: Ft. Lee

REPORTS, DEPOSITORY AND REFERENCES

Report (s) ? Yes
Depository: VDHR, USMC Quantico

DHR Library Reference Number:

Reference for reports and publications:

2008 Corle, Bryan, Charles Goode, Sarah Traum, Joseph Balicki
Cultural Resourses investigations at Multiple Sites, Marine Corps Base Qauntico, VA. Report to EDAW, Inc., Alexandria, VA, from John Milner Associates, Inc., Alexandria, VA

City/County: **Stafford**

PHOTOGRAPHIC DOCUMENTATION AND DEPOSITORY

Photographic Documentation?	Depository	Type of Photos	Photo Date
Yes	VDHR	Digital	2008/02/05

CULTURAL RESOURCE MANAGEMENT EVENTS

Cultural Resource Management Event: Survey:Phase I/Reconnaissance **Date:** 2008/02/05

Organization and Person:
Organization: John Milner Assoc **First:** Kerri **Last:** Holland
Sponsor Organization:
DHR Project Review File No:

CRM Event Notes or Comments:
Site is located a ridge about 50 ft. east of the NE corner of the fenced-in Ammo Dump. It is comprised of foundation and building remains of one structure, probably a homestead; and a 10-ft. diameter, stone-lined well. The foundation was concrete and slate. Structural debris id scattered ove the west portion of the site, but the majority of it is concentrated in an approximate 20-by-30 ft. area within the west portion.Two concrete peirs remain insitu. The well is located about 25 ft. to the north of the concentration of structural debris. The majority of the site, and the west portion of the ridge on which it occurs, has been extensively disturbed by activities associated with the consturction of the Ammo Dump and military training. Push piles occur throughout the site. Approximately 575 ft. to the north of the site is a large 140-by140 ft. cemetary. The cemetary boundary is deliniated by post and contains approximately 41 exhumed plots. Unexhumed burials may remain. The cemetary is not associated with the nearby site.
No additional work on the site is recommended. Aviodance of the cemetery is recommended

INDIVIDUAL/ORGANIZATION/AGENCY INFORMATION

Individual Category Codes:

Honorif: **First:** **Last:**
Suffix:
Title:
Company/
Agency:

Address:

City: **State:** **Zip:**
Phone/Ext:

Notes:

Ownership Type: Public - Federal

Government Agency: U.S. Marine Corp

City/County: **Stafford**

COMMONWEALTH of VIRGINIA

Douglas W. Domenech
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Kathleen S. Kilpatrick
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.virginia.gov

MEMORANDUM

DATE: 3 January 2014 **DHR File #** 2013-3833

TO: Ms Kate Roberts
USMC

FROM: Marc E. Holma, Architectural Historian (804) 482-6090
Office of Review and Compliance

PROJECT: Ammo Supply Point Expansion
Quantico Marine Corps Base

____ This project will have an effect on historic resources. Based on the information provided, the effect will not be adverse.

____ This project will have an adverse effect on historic properties. Further consultation with DHR is needed under Section 106 of the NHPA.

___ Additional information is needed before we will be able to determine the effect of the project on historic resources. **Please see attached sheet.**

__X__ No further identification efforts are warranted. No historic properties will be affected by the project. Should unidentified historic properties be discovered during implementation of the project, please notify DHR.

____ We have previously reviewed this project. Attached is a copy of our correspondence.

___ Other (Please see comments below)

COMMENTS: **Concur that site 44ST0992, including the Mountjoy Cemetery, is not eligible for listing in the National Register of Historic Places; however, the cemetery, which has reportedly been relocated, should be avoided. No further work recommended. Please provide DHR with 2 archival hardcopies and 1 electronic copy of the report.**

Administrative Services
10 Courthouse Ave.
Petersburg, VA 23803
Tel: (804) 862-6416
Fax: (804) 862-6196

Capital Region Office
2801 Kensington Ave.
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Tidewater Region Office
14415 Old Courthouse Way
2nd Floor
Newport News, VA 23608
Tel: (757) 886-2807
Fax: (757) 886-2808

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
P.O. Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Appendix G
Construction Waste Management Report

ISWM Program Manager Rcvd: _____
FY Reporting Period: _____

Construction Waste Management Report
Quantico Marine Corps Base

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

SUBMIT THIS FORM BY FAX TO (703) 784-4953, OR BY EMAIL TO: ronald.king@usmc.mil

Comments: _____
_____

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

CONSTRUCTION & DEMOLITION DEBRIS (C&D).

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

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

Definitions:

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

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

ENVIRONMENTAL ASSESSMENT
FOR
DEVELOPMENT AT
MARINE CORPS UNIVERSITY
AT
MARINE CORPS BASE QUANTICO,
Prince William County, Virginia

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

February 2014

Proposed Agency Action: Development at Marine Corps University, Marine Corps Base Quantico, Virginia

Type of Statement: Environmental Assessment

Lead Agency: United States Marine Corps

For further information on this NEPA document:
Natural Resources and Environmental Affairs Branch (B046)
Attn: Heather McDuff
3250 Catlin Avenue
Marine Corps Base
Quantico, VA 22134
Heather.a.mcduff@usmc.mil
(703) 432-6771

Document Date: February 2014

Abstract: This Environmental Assessment is intended to meet NEPA requirements for Development at Marine Corps University at Marine Corps Base Quantico. The No Action Alternative (Alternative A) and the Action Alternative (Alternative B) were evaluated.

Alternative B would allow for the demolition of several buildings and would constitute an adverse effect on the Quantico Marine Corps Historic District.

There would be no significant impacts to land use, water resources, biological resources, cultural resources, air quality, noise, infrastructure, traffic, socioeconomics, or hazardous waste issues associated with Alternative B. A Memorandum of Agreement is being executed between Marine Corps Base Quantico and the State Historic Preservation Officer to outline mitigation measures for Alternative B's impacts to the Historic District, including required photo and written documentation of the buildings. Temporary water quality impacts associated with soil disturbance resulting from Alternative B demolition activities would be mitigated through appropriate erosion and sediment control measures per the Virginia Erosion and Sediment Control Handbook.

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

Table of Contents

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

This environmental assessment (EA) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969; regulations of the President's Council on Environmental Quality (CEQ) 40 CFR parts 1500-1508; and Marine Corps Order P5090.2A, which documents the U.S. Marine Corps' internal operating instructions on how to implement NEPA. This EA is intended to meet NEPA requirements for the development of the Marine Corps University (MCU) at Marine Corps Base Quantico (MCBQ).

This EA is being executed, in part, to satisfy 36 CFR 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

The purpose of the proposed MCU development is to ensure that future growth is implemented strategically within the context of a specific vision. It would address MCU's identified facility deficiencies by demolishing and replacing inadequate facilities to account for MCU's current and future facility requirements. The Master Plan for development at MCU illustrates future campus development and would implement a strategy to meet identified needs and projected future growth.

Five other installations provide facilities that support the SNCOA. These facilities are located in California (two), North Carolina, Hawaii, and Okinawa, Japan. Available facilities have been provided for SNCOA to occupy at these installations. These facilities are usually poorly suited for their intended use, are in varying states of repair, and are an assortment of architectural styles. None of the facilities are completely adequate for their current use without new construction and/or reconfiguration of existing spaces.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A – No Action

Under the no action alternative, no development would occur on the MCU campus. The existing buildings would remain in place. MCU would continue to operate and provide instruction in existing inadequate facilities.

2.2 Alternative B – Demolition and Construction

Under this alternative, the MCU campus would be developed through the demolition of deteriorated and/or inadequate buildings, and the construction of new buildings to support the educational and administrative needs of MCU.

MCU is comprised of nine schools and directorates. These include the Marine Corps War College (MCWAR), Command and Staff College (CSC), School of Advanced Warfighting (SAW), Expeditionary Warfare School (EWS), School of Marine Air Ground Task Force (MAGTF) Logistics (SOML), and the Enlisted Professional Military Education (EPME), which includes the Staff Non-Commissioned Officer Academies (SNCOAs). There are also three support organizations with facilities at MCU: the History Division, the Lejeune Leadership Institute (LLI)/Professional Development, and the National Museum of the Marine Corps (NMMC).

Buildings that are proposed for demolition are: 2042, 2085, 3078, 3080, 3094, 3034, 710, 709, and 3169. Of these, only building 2042 is considered to be a contributing element to the Historic District. Other buildings are located adjacent to or within the viewshed of the district.

New construction projects proposed for MCU include the EWS Academic Instruction Facility (P-610), the EPME Academic Support Facility (P-676), and the MCWAR College and Student Activity Center (SAC) (P-674). Additional projects proposed for the MCU campus include a second parking deck (as part of P-610), the establishment of walking paths and campus greens, an amphitheater/river overlook, and a parade deck. Breckinridge Hall would also be renovated for adaptive reuse for the activities proposed for that building.

Projects P-610, P-674, and P-676 would include Anti-Terrorism/Force Protection (ATFP) features and comply with ATFP regulations, physical security, and progressive collapse mitigation in accordance with the Department of Defense (DoD) Minimum Anti-Terrorism Standards for Buildings.

Sustainable design principles would be included in the design and construction of these projects in accordance with Executive Order (EO) 13423 and other applicable laws and EOs. Facilities would be designed to meet Leadership in Energy and Environmental Design (LEED) “silver” ratings and comply with the Energy Policy Act of 2005 and Energy Independence and Security Act of 2007.

Low Impact Design (LID) principles would be included in the design and construction of these projects as appropriate.

2.2.1 Project P-610

Project P-610 would construct a 147,000 square foot (SF) Academic Instruction Facility (AIF) with classroom space for the EWS, LLI, Center for Advanced Operational Culture Learning (CAOCL), and the College of Distance Education and Training (CDET). Other construction considered under this project includes a 696-space, 86,400 SF multi-story parking deck.

The AIF would be designed and constructed to meet the requirements of the Unified Facilities Criteria, the MCBQ Base Exterior Architectural Plan (BEAP), the MCU Campus Appearance Plan, the Architectural Barriers Act (ABA), and other applicable development and construction codes. The facility would be constructed of reinforced concrete spread footings with slab on grade foundation, structural steel frame, cast stone and brick veneer on reinforced concrete masonry unit (CMU), and asphalt shingle roof over structural steel framing. The interior would consist of tile, carpet, suspended gypsum board and acoustical ceiling tiles. CMU interior partitions would be used throughout the storage, warehouse, and fitness center, and gypsum wallboard over metal studs at classroom, office, and support areas. Utilities would include information systems (e.g., telephone, computer network, fiber optic, and cable television), fire alarm systems, plumbing, electrical, heating, ventilation, and air conditioning (HVAC), sanitary sewers, and natural gas distribution.

The parking deck would be constructed on the site where a gravel parking lot and buildings 709 and 710 are currently located. The parking deck would be a multi-level structure consisting of reinforced concrete spread footings with slab on grade foundation, structural steel frame, cast stone and brick veneer on reinforced CMU with natural ventilation, and enclosed elevator/stair towers with asphalt shingle roofs. The facility would be designed and constructed to meet the requirements of the ABA and BEAP.

Site improvements would include landscaping with native, drought-resistant plants, installing signage, and constructing stormwater drainage facilities. Exterior lighting with light pollution-reducing fixtures and design would be included.

2.2.2 Project P-674

Project P-674 would construct a 106,140 SF SAC and MCWAR College facility, outdoor amphitheater, park, drivable pedestrian path, tree grove, and additional green space. The SAC/MCWAR facility would include instruction classrooms for use by the SAW and CSC.

The SAC/MCWAR facility would be designed and constructed to meet the requirements of the Unified Facilities Criteria, the MCBQ BEAP, the MCU Campus Appearance Plan, the ABA, and other applicable development and construction codes. The facility would be constructed of reinforced concrete spread footings with slab on grade foundation, structural steel frame, cast stone and brick veneer on reinforced CMU, and asphalt shingle roof over structural steel framing. The interior would consist of tile, carpet, suspended gypsum board and acoustical ceiling tiles. Utilities would include information systems (e.g., telephone, computer network, fiber optic, and cable television), fire alarm systems, plumbing, electrical, HVAC, sanitary sewers, and natural gas distribution.

Primary facility areas within the SAC for MCWAR include administrative/office space, educational space, and conference rooms. The SAC would also include staff offices, family readiness area, multi-purpose room with catering space, student lounge, kitchen, common user computer space, chaplain’s office, a lobby with play area for children, resource library, and storage space for supplies and equipment.

P-674 includes the construction of an outdoor amphitheater. This facility would be a grass-covered, bermed amphitheater located just northeast of Breckinridge Hall, overlooking the Potomac River. The amphitheater would provide a communal gathering place for outdoor events. The amphitheater would be constructed to minimize any environmental impact, staying outside of the floodplain and leaving a buffer between the limits of disturbance and the river.

The tree “grove” proposed under this project would be created along the edge of the campus to serve as both a visual and aural buffer between MCU and the Town of Quantico.

2.2.3 Project P-676

Project P-676 would construct a 59,500 SF Academic Support Facility for the EPME. The EPME facility would be designed and constructed to meet the requirements of the Unified Facilities

Criteria, the MCBQ BEAP, the MCU Campus Appearance Plan, the ABA, and other applicable development and construction codes. The facility would be constructed of reinforced concrete spread footings with slab on grade foundation, structural steel frame, cast stone and brick veneer on reinforced CMU, and asphalt shingle roof over structural steel framing. The interior would consist of tile, carpet, suspended gypsum board and acoustical ceiling tiles. Utilities would include information systems (e.g., telephone, computer network, fiber optic, and cable television), fire alarm systems, plumbing, electrical, HVAC, sanitary sewers, and natural gas distribution.

Primary facility areas within the EPME building would include classrooms and Senior Enlisted Academy workspaces, EPME staff and faculty workspaces, a simulation laboratory, logistics support space with a communications and electronics maintenance shop, loading dock, and storage space.

2.3 Alternatives dropped from further review

Leasing is considered to be a viable alternative dependent upon the existence of available facilities. It is considered viable as a temporary solution only. The MCU mission at MCBQ is expected to be permanent and, as such, permanent facilities are required.

Renovation/modernization of the existing buildings and facilities is not considered to be a viable option. This option would not meet the space requirements needed to incorporate the technological advances required for the schools' coursework.

3.0 Existing Environmental Conditions

CEQ regulations for implementing NEPA (40 CFR 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 of those alternatives in proportion to their significance.

Both alternatives under consideration for this proposal are located within the Mainside at MCBQ, in Prince William County, Virginia. The existing environmental conditions described in this section will be the same for both alternatives.

3.1 Land Use

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1, and Guadalcanal, 53,200 acres west of the same highways. The MCU campus is located on Mainside. The proposed project area is not forested and consists of buildings, maintained grass and landscaping, and parking areas.

The MCU campus serves as an education center and consists of instructional and administrative facilities. MCU is immediately adjacent to the Potomac River with a forested riparian area.

The core of MCU consists of two main buildings: the Alfred M. Gray Research Center (GRC) and Breckinridge Hall. The campus includes a combination of brick and metal buildings, most of which are currently used for functions other than what they were originally designed to accommodate. Temporary structures (trailers) are also in use on the MCU campus. Buildings and trailers are used by MCU, the NMMC, and other organizations. A central campus green with pedestrian pathways leading to other MCU buildings is located immediately east of the GRC. Table 1 details both the existing and required square footage.

Breckinridge Hall, building 2076, and its contiguous wings, Dunlap and Ellis Halls (buildings 2048 and 2082, respectively) serve as administrative space for MCU. The GRC (building 2040) was constructed in 1993 and serves as a library and a conference center for MCU. Geiger Hall, building 2077, while part of MCU, is located off the main campus on a ridge above the Medal of Honor Golf Course, overlooking the Potomac River. Temporary trailers currently house the EPME, the History Division, and the SAW.

The SNCOA utilizes buildings 3078 and 3080 on the main MCU campus. Building 3078, currently used as instructional and administrative space, was originally designed as a barracks. Building 3080’s original purpose was a dining facility. Neither building is adequate or compatible for their current uses.

The NMMC utilizes building 3034 to house curatorial and collection storage activities. Despite some improvements made to the building, it is still not well-suited for its current use, nor is its warehouse appearance compatible with the proposed university campus environment.

Of the existing campus structures utilized by MCU, only the GRC and Breckinridge Hall are recommended for future long term use. Other buildings are either temporary structures, or have been determined to be too costly to repair and/or adapt to MCU's needs.

Table 1. Square Footage – Current and Required

Campus Building	Current	Required
Breckinridge*	128,461	128,461
Academic Support Instructional Facility**	110,000	131,022
GRC Addition**	48,700	48,700
Geiger Hall	93,780	93,780
Gray Research Center	108,260	108,260
Building 3078***	24,460	Demolish
SNCOA**	50,106	50,106
NMMC Support Facility	235,000	235,000
Parking Deck**	63,000	235,000
Total square footage available		**837,307**
Total square footage needed		**1,045,329**

* Includes totals for Dunlap and Ellis Halls
** Proposed/under construction
*** Proposed for demolition

The needs of MCU continue to grow, and the limitations of existing structures continue to become apparent. All areas at MCU are occupied and operating at full capacity, or soon will be. EWS instructional courses have been relocated to the main MCU campus and are currently being conducted in facilities that are inadequate for the number of students, faculty, and supporting staff. The existing MCU campus facilities cannot support future technology needs without substantial upgrades. Currently, there is no space to serve as a SAC, which is needed to provide a space for recreation and to promote teambuilding among the students at MCU. Existing surface parking is

insufficient due to the additional students, faculty, and staff that use it, along with visitors and conference attendees.

3.1.1 Geology

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

3.1.2 Soils

The soils found in the Coastal Plain are the result of the soil formation on the underlying sediments. Soils of the project areas are disturbed due to past construction and development. The soil types at MCU are Alluvial land, wet (Ae), and Tetotum fine sandy loam (TeA) with zero to two percent slopes. The Ae soils are primarily located in a wooded area that would not be disturbed during any future construction activities. The TeA soil type is a partially hydric soil, as component soils Bladen, Fallsington, and Pooler variant are hydric series. This soil type is not prone to severe erosion.

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

3.1.3 Topography

The terrain of the proposed project areas consists of disturbed, man-made landscapes. The areas are flat due to development and are located between elevations of sea level to about 33 feet above sea level.

3.2 Water Resources

Due to the rugged upper Coastal Plain topography and proximity to various water bodies, activities conducted on the Base could potentially affect the water resources of the area.

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:

- Section 404 of the Clean Water Act, which requires a permit from the U.S. 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 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 wetlands in implementing E.O. 11990.
- Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended)

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 Section 401 water quality certification from the Virginia Department of Environmental Quality (VDEQ), and under certain circumstances, the Virginia Marine Resources Commission (VMRC).

In 1988 Virginia enacted the Chesapeake Bay Preservation Act (CBPA). 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. It also included provisions for identifying and accounting for Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) that are of significant importance to the Bay's water quality. As defined by the CBPA, RPAs 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 RMAs. 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 DoD is a signatory to an agreement supporting the CBPA and its associated regulations, and all of its components must comply with CBPA directives to the maximum extent possible consistent with the military mission and budget constraints.

3.2.1 Surface Waters

The MCU campus is located west of and adjacent to the Potomac River. No other surface waters exist in the project area.

3.2.2 Wetlands

A Palustrine Forested Wetland (PFO) is located approximately 800 feet north of building 3074.

3.2.3 Floodplains

Executive Order 11988, *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 MCU campus is depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) number 51153C0318D, panel 318 of 330. The FIRM shows the majority of MCU outside of Flood Zone X (unshaded), which is an area outside of the 500-year floodplain. The FEMA Firm is at Appendix C.

3.2.4 Groundwater

A band along the western edge of the Coastal Plain is the groundwater recharge area for underground aquifers that extend eastward under the Chesapeake Bay. All of MCU lies within the Potomac Aquifer. In this aquifer water can be reached at depths between 200 and 350 feet. One of the largest surface recharge areas for the Potomac Aquifer exists in Stafford County, near Interstate 95. No comprehensive studies of groundwater resources have been conducted at MCBQ to date.

3.2.5 Coastal Zone Management Act

The CZMA provides guidance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. The CZMA states that "the boundary of a State's coastal zone must exclude lands owned, leased, held in trust or whose use is otherwise by law subject solely to the discretion of the Federal Government, its officers, or agents" [16 USC Part 1453 (1)]. According to this statute, MCBQ is not within Virginia's coastal zone.

Section 307 of the CZMA covers coordination and cooperation issues. Section 307 mandates that federal projects that affect land uses, water uses, or other coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally-approved coastal management plan. If a proposed federal project or activity affects coastal resources or uses beyond the boundaries of the federal property, Section 307 of the CZMA applies.

The Commonwealth of Virginia has developed and implemented a federally-approved Coastal Zone Management Program (VCP) describing current coastal legislation and enforceable policies. The Virginia VCP has nine enforceable policies which include: wetlands management, fisheries management, subaqueous lands management, dune management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management.

3.2.6 Stormwater

MCU is located within the Little Creek watershed, which drains into the Potomac River, a significant water resource. The proposed project areas are located upslope from the Potomac River. Stormwater flow on the MCU campus is discharged to the Potomac River via a series of permitted culverted outfalls.

3.3 Biological Resources

3.3.1 Vegetation

There are no existing vegetation resources within the primary footprint of the proposed project area. Land disturbance will be limited to the footprints of the existing buildings and parking lots. The land adjacent to these project areas is a mix of maintained grass, buildings, parking areas, and riparian areas. A swath of mixed hardwood forest exists north of MCU. Vegetation clearing will be limited to what is required for construction activities.

3.3.2 Wildlife and Wildlife Habitat

This portion of 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 found in and around the project area 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.

The Migratory Bird Treaty Act (MBTA) protects all species (and their habitats) covered by the four migratory bird treaties the United States signed with Canada, Mexico, Japan, and Russia. The MBTA prohibits taking, 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,” DoD and USFWS set forth a Memorandum of Understanding (MOU) to promote the conservation of migratory birds. Habitat critical to migratory birds is not located within the proposed development areas of Alternative 2.

Bald eagles, which are protected under the MBTA, are discussed within the threatened and endangered species/species of concern portion (3.3.3) of this EA.

3.3.3 Threatened and Endangered Species/Species of Concern

The Endangered Species Act requires Federal agencies to ensure that their actions will neither jeopardize the continued existence of any threatened or endangered species, nor result in the destruction or adverse modification of its critical habitat.

Three plant species on MCBQ are listed as federally threatened or endangered. These include harperella, small whorled pogonia, and sensitive joint-vetch.

Harperella, *Ptilimnium nodosum*, 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), *Isotria medeoloides*, 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.

Sensitive joint-vetch, *Aeschynomene virginica*, is a federally-listed threatened species. This plant is an annual legume that prefers slightly brackish tidal river systems and exists along the Potomac River.

One animal species, the dwarf wedge mussel (*Alasmidonta heterodon*) is federally endangered. This small bivalve lives in freshwater streams and requires highly oxygenated and silt-free waters.

The bald eagle, *Haliaeetus leucocephalus*, was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The bald eagle is still afforded federal protection under the MBTA (see Section 3.3.2) and the Bald and Golden Eagle Act, and is considered a species of concern. The Bald and Golden Eagle Act requires a buffer of 660 feet around a nesting site. A bald eagle nesting site has historically been observed near the former Whisky Gulch housing area (west of site), which is well outside of the prescribed buffer zone.

It is Navy and Marine Corps policy to cooperate with the Commonwealth of Virginia to protect Virginia-listed rare species and to provide consideration of state listed species during the NEPA process.

The Virginia Piedmont waterboatman, *Sigara depressa*, and the brook floater, *Alasmidonta varicose*, are two listed state 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.

There are two endangered species and one threatened species known to be present at Quantico, these are respectively the dwarf wedge mussel (*Alasmidonta heterodon*), harperella (*Ptilimnium nodosum*), and small whorled pogonia (*Isotria medeoloides*). None of these species are located in the proposed development area or within the vicinity.

3.4 Cultural Resources

Implementation of the proposed action must comply with the National Historic Preservation Act (NHPA) of 1966, as amended. Under the NHPA, consideration of historic preservation issues must be integrated into the early planning stages of project planning by federal agencies. Under Section 106 of the NHPA, 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. Section 110 requires the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP.

Architectural historians with the U.S. Army Construction Engineering Research Laboratory (USCERL) conducted a survey of MCBQ buildings between 1992 and 1994 (USCERL 1994). They identified significant historic buildings and landscapes on the base, including Barrett Hall and Breckinridge Hall (buildings 2042 and 2076 [2048, 2082], respectively). Seven themes forming the historic context for the subsequently nominated NRHP Quantico Marine Corps Base Historic District include: First Permanent Construction, Aviation, Education, Industrial, Naval Clinic, African American Barracks, and Lustron Housing. Barrett Hall and Breckinridge Hall at MCU contribute to the Historic District in respect to Marine Corps Education.

Parts of the MCU campus are located within the NRHP-listed Quantico Marine Corps Base Historic District. Buildings that are proposed for demolition are: 2042, 2085, 3078, 3080, 3094, 3034, 710, 709, and 3169. Of these, only building 2042 (Barrett Hall) is considered to be a contributing element to the Quantico Marine Corps Base Historic District. Other buildings are located adjacent to or within the viewshed of the district.

In addition to the contributing buildings discussed above, the proposed action includes the demolition of buildings that may be 50 years old or older that MCBQ has found to be non-contributing resources, as documented in a Historical Resources Survey and Evaluation Report completed in 2008: buildings 2085 (Edson Hall), 3078 (SNCOA Headquarters), 3080 (SNCOA Classrooms), 3094 (Administration Building), 3034 (Exhibition Fabrication Shop), 709 and 710 (Warehouses), and 3169 (SNCOA Supply). Consultation with the SHPO is required to confirm its concurrence with the determination.

3.5 Air Quality

The U.S. Environmental Protection Agency (EPA) defines ambient air (40 CFR Part 50) as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, the EPA has produced ambient air quality

standards and regulations. The EPA has issued National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, sulfur dioxide (SO2), particulate matter (PM) at two levels (particles with a diameter less than or equal to a nominal 10 micrometers [PM10], and less than or equal to a nominal 2.5 micrometers [PM2.5]), ozone, nitrogen dioxide (NOx), and lead. Areas that do not meet NAAQS are called non-attainment areas, and are prioritized according to the degree to which they are non-compliant. MCBQ is located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a PM2.5 non-attainment area.

Permits are required before constructing or significantly modifying emissions sources of criteria pollutants above certain thresholds within a nonattainment area designated by a state. The requirements for these permits are found within Virginia's New Source Review (NSR) program. Additionally, major sources of criteria pollutants must also operate their emissions sources in accordance with at federal or state operating permits listing all applicable requirements. These requirements are found within Virginia's operating permit program and EPA's Title V operating permit program. Construction permits exist for MCBQ and are obtained on an on-going basis, as needed. The operating permit for MCBQ remains applicable continuously and must be renewed every five years. The effect of these permits is to control the emissions from stationary emissions units throughout MCBQ.

The EPA General Conformity Rule ensures that the actions taken by Federal agencies in non-attainment and maintenance areas do not interfere with a state's implementation plans (SIP) to meet the NAAQS.

Established under the Clean Air Act (section 176[c][4]), the General Conformity Rule plays an important role in helping states improve air quality in those areas that do not meet the NAAQS. Under the General Conformity Rule, federal agencies must work with State, Tribal, and local governments in a non-attainment or maintenance area to ensure that federal actions conform to the air quality plans established in the applicable SIP.

In order to target federal projects which have the greatest impact on regional air quality, EPA established *de minimis* thresholds. *De minimis* thresholds are pollutant-specific and specify the maximum allowable emissions from a project before a formal conformity determination must be prepared. Federal

agencies do not need to prepare conformity determinations for actions that do not exceed these thresholds.

Additionally, several types of federal actions are automatically exempt from the general conformity rule without regards to their emissions. Actions such as routine repair of facilities and roads, routine transport of materiel and personnel, routine movement of mobile assets, and others are listed as exempt in 40 CFR 93.153(c)(2). Any equipment that requires a permit to construct and operate under a state's NSR program is exempt from General Conformity, as well as any other action specifically accounted for in the SIP.

A federal agency must perform a General Conformity applicability analysis prior to initiating any non-exempt action that will cause emissions of criteria pollutants for which the area is designated nonattainment or maintenance. The analysis must include reasonable estimates of direct emissions (caused by the action, occurring at the same time and place) and indirect emissions (caused by the action, occurring later in time or in a different location than the action). The analysis must be performed for each year of the action and one year of typical operations. If the analysis indicates that the emission levels are below *de minimis* thresholds for all years, then no further action is necessary.

The pollutant *de minimis* criteria for General Conformity are 50 tons per year (tpy) for volatile organic compounds (VOC), 100 tpy for NOx, 100 tpy for PM2.5, and 100,000 tpy for CO2.

3.5.1 Climate Change

Greenhouse gases (GHG) are atmospheric compounds that contribute to the greenhouse effect. GHGs include CO2, CH4, and N2O, and fluorinated gases. The greenhouse effect is a natural phenomenon that causes heat to be trapped within the lowest portion of the earth's atmosphere, creating a wide range of environmental conditions often 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).

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, such that 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 from its actions and/or installations. 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.

CEQ's NEPA Guidance on "Consideration of the Effects of Climate Change and Greenhouse Gas Emissions" states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO2-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." These recommendations are consistent with the EPA's Mandatory Reporting of Greenhouse Gases rule (40 CFR Part 98) which applies to all stationary sources emitting 27,563 tpy or more of GHG emissions. The rule allows for data collection to help shape future climate change policies and programs but does not require control of GHGs.

EPA has established applicable thresholds for new source review and operating permit program applicability to GHGs. A construction and/or operating permit may be required from the state or EPA when a project creates or modifies an emission source that exceeds GHG thresholds for those programs.

3.6 Noise

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with military installations. The major sources of noise at MCBQ include aircraft, artillery, small arms, explosives, vehicles, heavy equipment, and machinery.

Existing noise levels in the project area are primarily from air operations at the nearby Marine Corps Air Facility (MCAF). MCU is located within an area designated as Noise Exposure Zone 2. Other noise contributions come from temporary construction activities, but these are minor. Ordnance used in live and simulated fire exercises is generally conducted at ranges on the Guadalcanal side of the base, eight miles or more from the

project area. There would be no additional noise directly associated with the proposed project sites after demolition and construction activities are complete. An additional source of noise affecting the project area is from the railroad tracks bordering the campus to the north and west. The tracks are owned and maintained by CSX, and are used by CSX freight trains, and Virginia Railway Express commuter trains and Amtrak trains through agreement with CSX. The proposed actions at MCU will have no impact on the existing levels of noise generated from this source.

3.7 Infrastructure, Utilities, and Transportation

The proposed sites are located within the Mainside of MCBQ and are surrounded by a well-developed infrastructure; utilities and services are readily available.

3.7.1 Infrastructure and Utilities

Utilities such as water, electrical, natural gas, and fiber optic communication cable are readily available within the MCU campus. Potable water is supplied from Gray's Reservoir via MCBQ Water Treatment Plant; sanitary service (sewer) is provided by the MCBQ Mainside Wastewater Treatment Plant; electricity via contract with Dominion Power; natural gas via contract with Columbia Gas Company, Inc.; and communications from Verizon, Inc. and through internal government networks. No known underground storage tanks for fuel are located in the immediate project areas.

3.7.2 Transportation

MCU is accessed via Martin Street, Broadway Street, and Epperson Avenue. Other roads serving MCU are Morrell Avenue, Upshur Avenue, South Street, Summer Avenue, Fardy Avenue, and Broadway Avenue. Two large lots (totaling four acres) provide parking for MCU students and support personnel. Additional parking in the form of reserved spaces is located along the secondary streets of the campus.

Roads, parking lots, and parking structures would be reconfigured and/or constructed as a part of the proposed action alternative. The proposed action alternatives would not create a significant increase in daytime traffic during the work week. Demolition crews associated with this project would not create a significant impact on traffic or parking availability.

3.8 Environmental Justice

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, was issued in 1994. This EO directs Federal agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these groups. The proposed action will not involve effects specific to minority or low-income populations.

EO 13045, Protection of Children from Environmental Health and Safety Risk, was issued in 1997 to account for impacts to children, which are more likely than adults to be adversely affected by environmental contaminants. This order requires agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks from Federal actions that might disproportionately affect children. There is no notable child population potentially affected by the project alternative, therefore, the proposed action will not involve effects specific to children or their health.

3.9 Hazardous Materials/Waste

Due to the ages of buildings 2042, 2085, 3078, 3080, 3094, 3034, 710, 709, and 3169, asbestos containing materials, Polychlorinated biphenyls (PCBs), and lead-based paints could be present. A Hazardous Materials Report for the buildings is at Appendix E.

There is no impact from hazardous materials and/or waste anticipated with these projects. The MCU campus is not a known unexploded ordnance (UXO) site. It is not a known munitions response site or former impact area. Many portions of MCBQ consist of historic munitions impact sites. The proposed action would not take place within or near a known Munitions Response Site. Excavation activities may expose lead or other munitions constituents during excavating activities.

3.10 Non-Hazardous Materials/Waste and Solid Waste

EO 13514, Leadership in Environmental, Energy, and Economic Performance calls for meeting or exceeding fifty percent diversion of non-hazardous solid waste and construction and materials and debris from landfills by fiscal year 2015. MCBQ programs are in place to implement this EO and other solid waste

requirements, and apply to the MCU area. All buildings and trash generated as a result of the action alternative would be covered by existing waste diversion/solid waste management requirements at MCBQ.

3.11 Recreation

The areas surrounding MCU are within no hunting zones, and no trails or other recreation areas are adjacent to these areas. There is a boat launch located along Epperson Avenue, south of the MCU campus, which is maintained by the base Natural Resources and Environmental Affairs (NREA) Branch Fish, Wildlife, and Agronomy Section. The boat launch would not be directly affected by demolition or construction activities at MCU.

3.12 Military Training

MCU is located on the Mainside of MCBQ and within an area used for administrative and educational facilities. The MCAF resides approximately 0.5 mile southwest of MCU. The site of MCU borders the 7:1 Transitional Surface zone for the MCAF. Certain height restrictions are enforced within this zone so that structures do not interfere with flight paths during training or operational use.

4.0 ENVIRONMENTAL CONSEQUENCES

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

This section describes the anticipated direct, indirect, and cumulative environmental impacts of the no action alternative and the action alternative for the development of MCU.

Alternative A is no action and Alternative B is the proposed action.

4.1 Land Use

Impact of Alternative A: The no action alternative would result

in a continuation of limited land use at MCU. No action, Alternative A, would not be expected to impact the current geologic, topographic, or soils conditions at MCBQ or the surrounding area.

Impact of Alternative B: Alternative B would allow for the development of MCU to accommodate ongoing and future growth and technological needs. This alternative would not affect the land use in the adjacent Mainside administrative areas. No major land clearing activities would be conducted as a part of the proposed development projects.

Alternative B would not be expected to significantly change or affect the geology of the area nor impact the topography of the base. The majority of the construction activities would involve surface impacts.

To prevent the loss or movement of soils from the disturbed areas, erosion and sediment control measures would be implemented and maintained during construction. With implementation of proper erosion and sediment control measures, the action alternative is not expected to significantly impact on-site or area soils. Erosion and sediment control (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 projects to identify the appropriate erosion and sediment control measures to be incorporated during construction. These plans ensure that the loss or movement of soils during land disturbance is minimized within the requirements of applicable laws and regulations.

4.2 Water Resources

Potential impacts to the water resources were assessed based on the water quality, hydrology, surface water and wetlands, groundwater, and flooding potential in the project area. Alternative B would not adversely affect wetlands, surface waters, groundwater, Chesapeake Bay Protection Act requirements, or floodplain areas.

Impact of Alternative A: It is expected that impacts to water resources would remain the same if no action is taken. Area stormwater flows discharge to Quantico Creek and Potomac River.

Impact of Alternative B: The proposed action, Alternative B, would provide for the development of MCU. The addition of

vegetation would reduce impervious surfaces at MCU, resulting in slower stormwater velocity and protecting water quality. Implementation of LID to comply with statutory mandates will ensure that developed areas appropriately retain/restore the site's historical stormwater runoff volume and velocity.

No wetlands or surface waters will be directly affected through filling or alteration of hydrology. Potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices (BMPs) per the Virginia Erosion and Sediment Control Handbook (1992). The demolition projects will require installation of proper E&SC measures (such as proper silt fence and storm drain inlets) prior to the onset of land disturbing activities.

The proposed location of the P-610 AIF is adjacent to a drainage swale leading into the floodplain of the Potomac River. Construction of the AIF would take place outside of the swale and floodplain in accordance with the applicable EO. Additionally, E&SC/LID measures will ensure that no indirect impacts to the floodplain or drainage swale will occur through filling or alteration of the area hydrology.

The proposed action alternative would require no fill within the 100-year floodplain, which is considered an RMA under the CBPA. None of the alternatives would adversely affect an RPA or RMA as defined under the CBPA.

The proposed demolition and construction projects are consistent to the maximum extent practicable with the enforceable policies of Virginia's Coastal Management Plan. The proposed project is not expected to directly affect water resources (including wetlands) and not expected to have adverse effects on fisheries, shorelines, subaqueous lands, dunes, or coastal lands.

4.3 Biological Resources

The proposed action will not have significant impacts on threatened and endangered species, migratory birds, or habitats used by these species.

Impact of Alternative A: Implementation of the no action alternative would not have a significant impact on vegetation, wildlife, or threatened or endangered species.

Impact of Alternative B: The action alternative is compliant with the MBTA and the Bald and Golden Eagle Act to the extent

that no birds covered by those acts are expected to be impacted, and no critical habitat exists within the project area. The nearest historical bald eagle nest is located in the former Whisky Gulch housing area, which is outside of the 660 foot buffer required under the Bald and Golden Eagle Act.

Potential SWP habitat does not exist within the project areas. Vegetation within the MCU campus consists of maintained (mowed) grass and small areas of trees, habitats which are not conducive to the growth of SWP. Sensitive habitats will not be removed as a part of this project.

Water resources that support the dwarf wedge mussel, harperella, sensitive joint-vetch, waterboatman, and brook floater are not located within the proposed project areas and therefore will not be affected. BMPs to avoid water quality degradation during construction will be followed to avoid downstream sediments (see Section 4.2).

4.4 Cultural Resources

Implementation of the proposed action must comply with the NHPA. Under the NHPA, consideration of historic preservation issues must be integrated into the early stages of project planning by federal agencies. Under Section 106 of the NHPA, 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.

Section 110 requires the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP.

The proposed action is not expected to impact archaeological resources. Ground disturbing activities will be limited to an area which has little to no potential to contain significant archaeological resources. The area is severely disturbed.

Impact of Alternative A: Alternative A would have no effect upon the Historic District as existing buildings would remain in place. Any buildings currently in poor condition would remain so under this alternative.

Impact of Alternative B: Development of MCU would require the demolition of certain buildings, which would constitute an

adverse effect on the NRHP eligible Quantico Marine Corps Base Historic District. Per a draft Memorandum of Agreement (MOA) to be negotiated with the SHPO, the removal of building 2042 from the Historic District would be mitigated by photo and written documentation of the building prior to demolition. The SHPO has requested to be consulted on the individual projects as they are designed, in order to make better informed decisions.

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 contractor should contact the Base Archaeologist/NEPA Section (703-432-6781) immediately if artifacts (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, 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 8.0 of this EA
- Redesign project to avoid remains, if possible
- Base Archaeologist/NEPA Section will contact the VA SHPO, and if remains are Native American will contact tribe(s)
- Removal of remains requires a permit from the VA 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 guidelines

4.5 Air Quality

The General Conformity Rule ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state’s plans to meet the National Ambient Air Quality Standards (NAAQS).

A federal agency must perform a General Conformity applicability analysis prior to initiating any non-exempt action that will cause emissions of criteria pollutants for which the area is designated nonattainment or maintenance. The analysis must include reasonable estimates of direct emissions (caused by the action; occur at the same time and place) and indirect emissions (caused by the action; may occur later in time or in a different location than the action). The analysis must be performed for each year of the action and one year of typical operations. If the analysis indicates that the emission levels are below *de minimis* thresholds for all years, then no further action is necessary.

No new air emissions sources are proposed with Alternative B. The action alternative would not significantly impact the current air quality conditions at MCBQ or the Metropolitan Washington non-attainment area. The proposed action would have minor emissions resulting from the use of construction equipment.

Impact of Alternative A: The no action alternative would not have an impact on air quality.

Impact of Alternative B: MCBQ is located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a $PM_{2.5}$ non-attainment area. The pollutant *de minimis* criterion is 50 tons per year (tpy) for volatile organic compounds (VOC), 100 tpy for NO_x, 100 tpy for $PM_{2.5}$, and 100,000 tpy for CO_2. Sources of these pollutants associated with Alternative B would include emissions from construction equipment, crew commuting vehicles, fugitive dust, and from use of other fuel-burning equipment. Projected emission from the action alternative will fall within the *de minimis* levels.

4.5.1 Climate Change

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO_2-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." These recommendations are consistent with the EPA's Mandatory Reporting of Greenhouse Gases rule (40 CFR Part 98) which applies to all stationary sources emitting 27,563 tpy or more of GHG emissions. The rule allows for data collection to help

shape future climate change policies and programs but does not require control of GHGs.

Impact of Alternative A: The no action alternative would not cause an increase in greenhouse gas emissions and would not have new effects on climate change.

Impact of Alternative B: The proposed project will not add new emission sources. This project will not encourage a use change; the proposed construction projects support current MCU mission activities within the MCU campus. Construction emissions are short in duration and are not covered by the Mandatory Reporting of Greenhouse Gases rule as the intent is to track and regulate stationary sources. This project would not have any long term changes in stationary or mobile emission sources or landfill operations. In compliance with CEQ's and the EPA's guidance, quantitative analysis of CO_2 equivalents is not required for the proposed action.

No other large-scale projects or proposals have been identified that, when combined with the proposed action, would threaten the attainment status of the region, would have substantial GHG emissions, or would lead to a violation of any Federal, state, or local air regulation. The proposed action would not significantly contribute to cumulative impacts to air quality, GHGs, or climate change.

4.6 Noise

Impact of Alternative A: There would be no new noise impacts with this alternative. Noise levels would remain the same from both existing MCBQ sources and the CSX railroad.

Impact of Alternative B: Implementation of the proposed action would generate short-term, temporary noise from demolition and construction operations (i.e., noise from construction equipment, supply trucks, and worker vehicles). There are no sensitive receptors that will be impacted by these temporary increases in noise, and the proposed action alternative would not have a permanent increase on noise levels once construction is complete.

Given the type and duration of the noise to be generated, lack of sensitive receptors near the project area, and the ambient noise level adjacent to the project site, noise generated by demolition and construction activities is not expected to result

in significant noise impacts. No post demolition/construction noise is expected at the site.

4.7 Infrastructure, Utilities, and Transportation

Impact of Alternative A: Implementing Alternative A would not alter the existing infrastructure or utilities within MCU and will not affect traffic patterns.

Impact of Alternative B: The Action Alternative includes plans to modify existing traffic patterns and parking spaces, and would have a temporary impact on traffic or parking space availability.

Alternative B includes the creation of traffic circles at the intersections of Martin Street and Broadway Street, and Broadway Street and South Street. Several existing roads would be eliminated to encourage increased pedestrian activity. These include Fardy Avenue, Morrell Avenue, Summer Avenue, Upshur Avenue, and a portion of South Street. A vehicle-rated pedestrian path ("Breckinridge Walk") would be constructed around the perimeter of the campus to provide access for emergency, delivery, and maintenance vehicles, and transit between buildings and parking facilities.

4.8 Environmental Justice

Impact of Alternative A or B: Implementing either of the proposed alternatives would not be expected to significantly impact the socioeconomics or create disproportionately high and adverse human health or environmental effects to minority, low-income populations, or children at MCBQ or in the surrounding area.

This project will have temporary minor impacts such as noise created by construction activities and these impacts will not disproportionately affect children. Best management practices such as dust management would also be employed to eliminate or keep temporary environmental nuisances to a minimum.

4.9 Health/Safety and Munitions Response Program

Impact of Alternative A: This alternative would maintain the status quo and would not have effects on health and safety.

Impact of Alternative B: MCBQ includes active and former ranges and there is the potential to encounter unexploded military

munitions, discarded military munitions, and/or munitions and explosives of concern during excavating activities. The project area is not within any known Munitions Response Sites or former impact area, therefore the risk of encountering UXO is minimal. Potential land disturbances associated with this project would include, but not be limited to, grading for building foundations, trenching for utilities, and landscape plantings. There are minimal subsurface activities that are likely to encounter unknown UXO.

4.10 Hazardous Materials/Waste/Solid Waste

There is no impact from hazardous materials and/or waste anticipated with these projects. The MCU campus is not a UXO site. It is not a known munitions response site or former impact area. There is the possibility of UXO being discovered during excavation and earth disturbing activities.

Impact of Alternative A: This alternative would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ.

Impact of Alternative B: The Action Alternative would result in construction waste that will be handled appropriately in accordance with the law and internal MCBQ requirements. Reports of waste generated (including recycling) including material type (Construction Demolition Debris, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported 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 F). All spoils and debris generated by the contractor’s operation shall be transported off base and disposed of in accordance with all federal, state, and local regulations.

The contractor is responsible for coordinating all solid waste disposals at a landfill that meets all Federal, State, and local regulatory standards. The contractor will support the solid waste diversion procedure outlined in EO 13514 by recovering/recycling in accordance with MCBQ policies and procedures.

The proposed no action or action alternatives would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ.

Due to their age, it is possible that asbestos, lead, or PCB containing materials exist within buildings that will be demolished under the action alternative. No hazardous materials would be introduced under any of the alternatives.

Reports of waste generated (including recycling) including material type (construction/demolition debris, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported on the attached Waste Management Plan and submitted to the NREA Branch within 30 days of the close of the project, and no later than October 15 of the respective calendar year to be included in annual report submissions.

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

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

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

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

4.11 Recreation

Impact of Alternative A: There would be no site work with this Alternative and no impact to recreation aboard MCBQ.

Impact of Alternative B: The MCU campus is located within a no hunting zone, therefore the proposed action alternative would not have an adverse effect on hunting opportunities aboard MCBQ. Demolition and construction activities would not affect MCBQ fishing or hiking opportunities.

4.12 Military Training

The action alternative would not have adverse effects on military training.

Impact of Alternative A: This alternative does not involve any new construction. Instructional activities at the MCU campus would continue in the existing inadequate facilities which, over time, could have a negative effect on military training.

Impact of Alternative B: Alternative B could possibly affect military training via demolition and construction activities, particularly increased noise, road closures, traffic rerouting, and airspace encroachment from demolition/construction equipment. These effects are considered temporary in nature, would not be significant, and can be adequately mitigated through proper coordination before and during construction (i.e., coordination with MCAF for airspace encroachment).

In the event mechanical crane usage is needed for demolition or construction, the MCAF must be informed prior to crane erection as coordination with the Federal Aviation Administration (FAA) may be required.

4.13 Cumulative Impacts

For NEPA analysis, a cumulative impact is defined as the impact on the environment, which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The proposed action alternative (Alternative B) will not have significant cumulative impacts when considered with past, present, and foreseeable future projects. Appropriate avoidance

and mitigation measures will occur throughout project implementation.

The following actions are either recent past, ongoing, or future projects adjacent to MCU or the Historic District in general:

- Demolition of Larson Gym, building 2112. This building is a contributing building to the Historic District. This building is badly deteriorated and not compliant with the air installation compatible use zone/land use.
- Construction of a barracks and dining facility at the MCAF (P-611 and P-612).
- Demolition of building 3074 at MCU. This building is a contributing building to the Historic District.
- Construction of a third rail along the VDoT railroad tracks
- Construction of additions to the Academic Instruction Facility for SNCOA (P-615).
- Construction of an addition to the GRC and a parking garage (P-541 and P-632).

Mitigation measures similar to those outlined in this EA for building 2042 will be or have been completed for the above mentioned projects. SHPO consultation is also completed as required for all demolition projects at MCBQ.

4.14 Unavoidable Adverse Impacts

The primary adverse impact associated with this action is the impact to the Quantico Marine Corps Base Historic District, avoided only in the no action alternative, Alternative A.

Measures to mitigate this impact to the Historic District are detailed in section 4.14.1.

4.15 Mitigation Measures

4.15.1 Mitigation of Effects to Historic Resources

An MOA between MCBQ and the VA SHPO will be prepared for the demolition of building 2042. The MOA will stipulate that photographic and written documentation of the affected buildings is required prior to commencing demolition activities.

4.15.2 Cultural Resources and Unexpected Discoveries

The contractor should contact the Base Archaeologist/NEPA Section (703-432-6781) immediately if artifacts (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, 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 the Base Archaeologist/NEPA Section per Section 8.0 of this EA
- Redesign project to avoid remains, if possible
- 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 guidelines.

4.15.3 Mitigation of Effects to Water Quality

The implementation of basic erosion and sediment control practices would be required during demolition as specified in the Virginia Erosion and Sediment Control Handbook (Virginia Department of Conservation and Recreation 1992). The proper installation and maintenance of erosion and sediment control measures would minimize the movement of disturbed soils off-site and into the Potomac River watershed. Following demolition, the disturbed areas will be seeded and returned to pervious surfaces.

4.15.4 Coordination Regarding Munitions Response Site

If unexpected munitions or UXO are encountered during project demolition/construction, the project proponent is responsible for coordinating with Marine Corps Systems Command’s Project Manager for Ammunition (703-432-8787) regarding the Explosive Safety Determination Request and any subsequent site clearance,

monitoring by a UXO technician, Explosive Ordnance Disposal unit briefing, or other similar prescribed safety mitigations.

Additionally, the DoD Explosives Safety Board and MCBQ Explosive Safety Officer siting and safety requirements must be followed where unexpected munitions or UXO are encountered.

5.0 CONCLUSION

Two alternatives regarding the development of MCU have been evaluated. Alternative A is infeasible because it will not accomplish the desired outcome of updating and preparing MCU for future needs. Alternative B does meet the mission needs, and though there are unavoidable adverse effects associated with it due to the demolition of certain buildings within the Historic District. Mitigation measures would be implemented to minimize the adverse impact to the Historic District. Other suspected impacts from Alternative B would be minor and/or appropriately mitigated through the application of statutory and regulatory requirements.

The project proponent has determined that Alternative B is the preferred alternative, and that the impacts are insignificant or may be appropriately mitigated.

6.0 LIST OF PREPARERS

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7.0 LIST OF AGENCIES AND PERSONS CONTACTED

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- Ms. Amy Denn, Head
- Major Peter Baker, Deputy
- Ms. Stacey Rosenquist, Environmental Compliance Section Head
- Mr. Frank Duncan, Environmental Planning Section Head
- Mr. Robert Stamps, Fish and Wildlife Section Head
- Mr. John Giannico, Forestry Section Head
- Ms. Catherine Roberts, Cultural Resources Manager

Office of Counsel (C 050), Marine Corps Base Quantico, VA 22134
Mr. Nathan Stokes, Associate Counsel

Marc Holma, Architectural Historian

8.0 REFERENCES

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

Natural Resources and Environmental Affairs Branch (NREA) Integrated Natural Resources Management Plan for Marine Corps Base, Quantico, Virginia (2001).

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

Erosion and Sediment Control Regulations (VR 625-02-00) Erosion and Sediment Control Law, Article 4, Chapter 5 of Title 10.1 of the Code of Virginia.

Intergovernmental Panel on Climate Change (IPCC). Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007).

VA Chesapeake Bay Preservation Act, VA Code 10.1-2100–2115.

Clean Air Act of 1970, as Amended 42 USC Part 7401 et seq.

Coastal Zone Management Act of 1972, as Amended 16 USC Part 1451, et seq.

Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks.

Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance.

Erosion and Sediment Control, Storm Water Pollution Prevention and Low Impact Development (LID) on MCB Quantico Application and Design Guidance (2013).

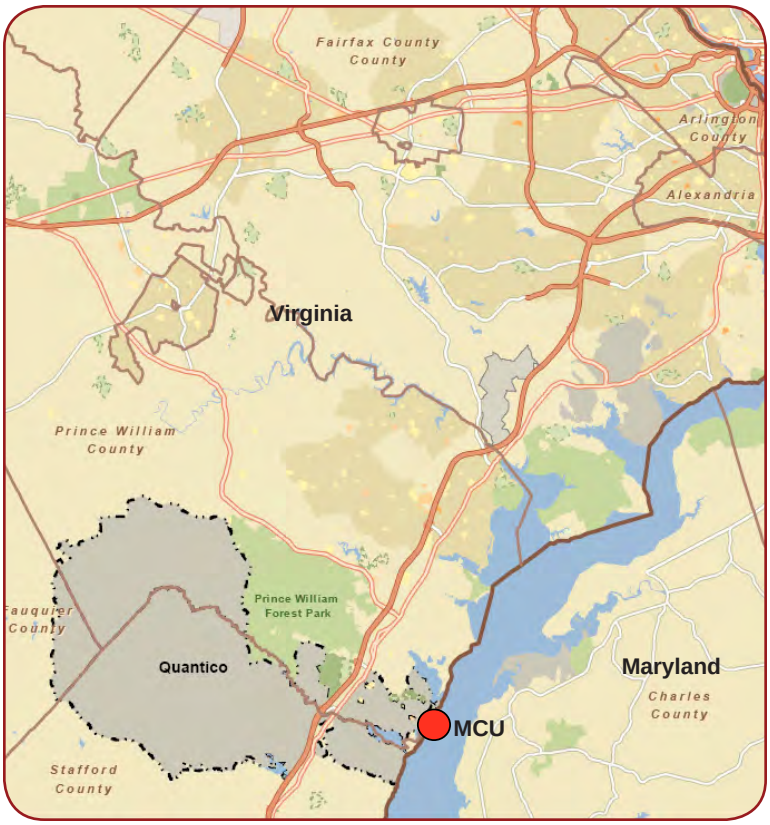
National Historic Preservation Act, Public Law 89-665; 16 U.S.C. 470 et seq.

U.S. Migratory Bird Treaty Act, 16 USC 701-712.

U.S. Endangered Species Act, 16 USC 1531-1544.

U.S. Clean Water Act, 33 USC 1344.

APPENDIX A
Project Plans



MCB Quantico regional map

1.2 Study Area

MCU (MCU) is located in Quantico, Virginia and provides accredited degree programs for Commissioned Officers. MCU is located on the Mainside of MCB Quantico in Quantico, VA. Located about 35 miles southwest of Washington, DC, the site is bounded by natural and man-made features, see Figure 1.1. The Potomac River serves as the eastern and southern boundary; the Town of Quantico serves as the northern boundary; and the Richmond, Fredericksburg, and Potomac (RF&P) Railroad line serves as the north-western boundary.

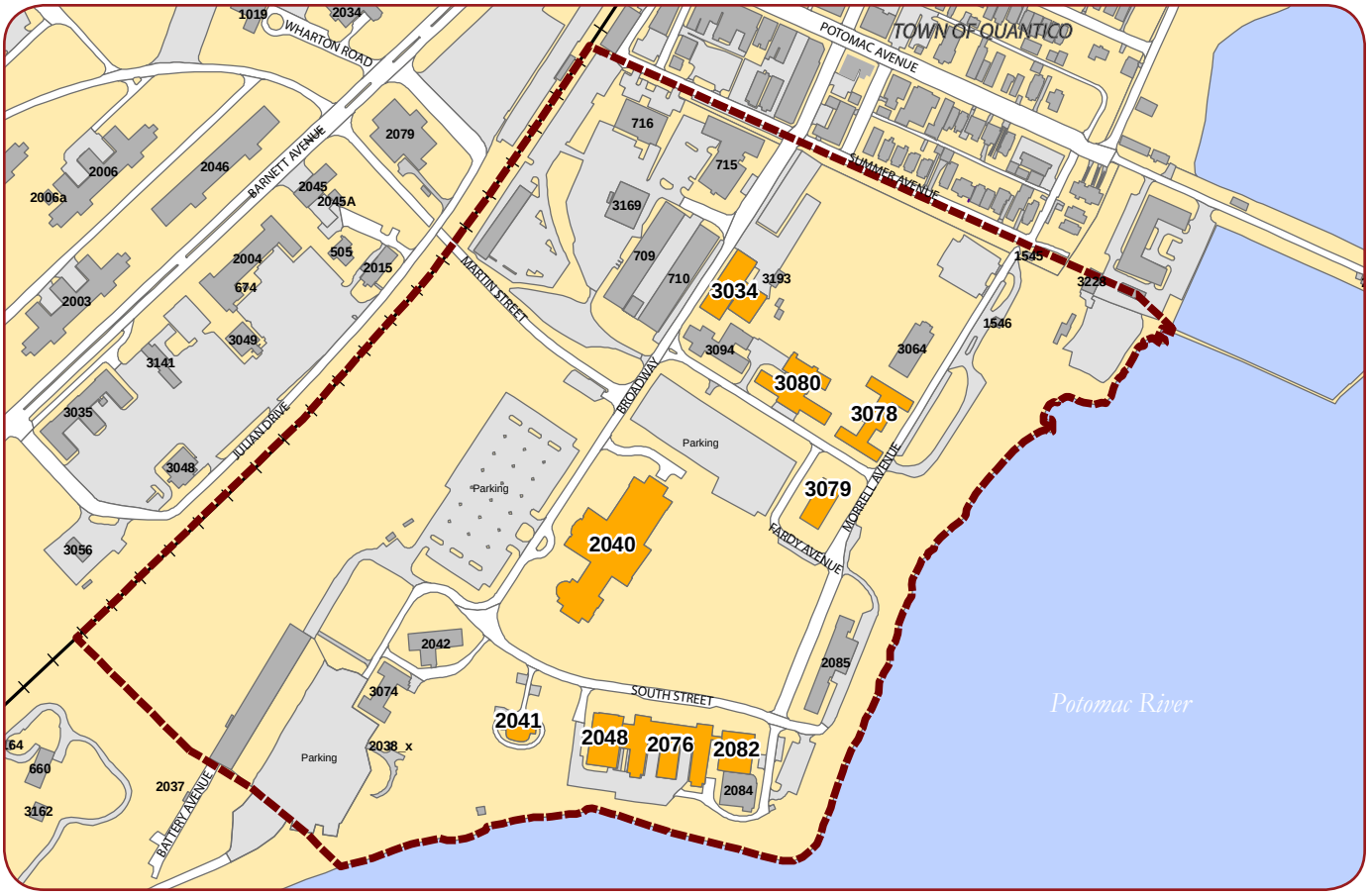


FIGURE 1.1 Study Area

Date Generated: 28 September 2012
Time Generated: 12.31.45
Version: ECONPACK 4.0.5

MCB Quantico P610
Economic Analysis

Executive Summary Report

Project Title : The Expeditionary Warfare School (EWS)
Type of Analysis : Mission Requirement - Full
Discount Rate : X%
Period of Analysis : 30 years
Start Year : 2016
Base Year : 2013
Dollar Analysis : Current Dollars
Project Objective : The newly constructed Expeditionary Warfare School facility provides career-level, professional military education and training to select officers in order to prepare them to serve as commanders and staff officers in the operating military forces.

Background:

The project site consists of approximately 5.15 acres located on the eastern portion of the MCB Quantico Main Side.
Broadway Street, a north south street which connects the University to the town of Quantico bisects the project site. The project site includes multiple buildings scheduled for demolition to make way for a 21 Century Training Center.
This project is Phase 6 of the Marine Corps University Master Plan dated June 2009.
This project constructs a Marine Corps University (MCU) Academic Instruction Facility for the Expeditionary Warfare School (EWS), Lejeune Leadership Institute, The Center for Advanced Operational Culture Learning (CAOCL), and The College of Distance Education and Training (CDET), a MCU warehouse, and a 700-space parking garage.

Alternatives Considered for this Analysis:

Status Quo (Current Operations) - Current facilities are located in a deteriorated facility scheduled for demolition and will result in severely diminished capability to conduct superior academic and training operations if not redeveloped.
This alternative is nonviable.

Renovation - Current facilities are deteriorating and is beyond its service life, improving through renovation to an operable state is not a viable option.
This alternative is nonviable.

Renovation/New Construction Mix - Current facilities are undersized and outdated and do not contain the physical infrastructure to support renovations that would bring the facilities to a current operational standards.
This alternative is nonviable.

New Construction - This option constructs new facilities and is the only alternative capable of meeting the requirements needed for the specific functions.

1.A Discount Rate of X% is applied per OMB Circular No. A-94 Revised December 2011.

2.Period of analysis is 30 years (28 year mission life + 2 years lead time).

3.Utility costs are not considered, assumed cost applies to New Construction only.

4.All costs/benefits except the residuals occur throughout the year and will be discounted using the "middle-of-year" discounting convention.

5.Beneficial Occupancy Date (BOD) will be 7/2017 for New Construction.

6.Physical life of the New Construction alternative is 50 years and the facility will depreciate accordingly to a straight-line schedule.

7.The 2012 General inflation schedule will be used for all expenses and residuals other than Construction costs.
This is a viable alternative.

Variable Housing Allowance/Basic Allowance for Quarters (VHA/BAQ) (barracks only) - This alternative is nonviable.

Leasing - There are no assets available for leasing in the local community that would meet the needs of the various users.
This alternative is nonviable.

Other Facilities on Base; As Is, Renovation, or Renovation/New Construction Mix - This alternative is nonviable.

Other DOD or Federal Agency Facilities - This alternative is nonviable.

Contracting Services Out - This alternative is nonviable.

Innovative Alternatives or Combinations of the Above Alternatives - This alternative is nonviable.

Assumptions of the Analysis:

Bituminous Index ($, ton)

Oil based commodity such as asphalt has a track record of flucuating upward and downward in pricing.

In 2011 FY from January to December price per ton increased 23% per ton.

Now in 2012 from January to February, price per ton had increased 4% per ton.

It’s very likely since the price per ton increased 6% in the first quarter of 2013 and currently at 4% increase at the end of February, we can only anticipate considerable increases in 6/2015 construction start date.

This is not considering further into the construction schedule as to when the asphalt phase of construction would begin.

Economic Indicators:

Alternative	***NPV***
New Construction	$ X

Results and Recommendations:

Action Officer : Cleve A. Stover, III
Phone Number : 240-764-4089
Email Address : cstover@gsipt.com
Organization : Government Services IPT (GSIPT)

Date Generated: 28 September 2012
Time Generated: 12.48.43
Version: ECONPACK 4.0.5

MCB Quantico P674
Economic Analysis

Executive Summary Report

Project Title : Student Activities Center/MCWAR Building
Type of Analysis : Mission Requirement - Full
Discount Rate : X%
Period of Analysis : 30 years
Start Year : 2016
Base Year : 2013
Dollar Analysis : Current Dollars
Project Objective : The project site consists of approximately 15.3 acres located on the eastern portion of the MCB Quantico Main Side.
Due to anticipated growth in student population along with a goal of a reduced instructor/student ratio, there is a significant need for space beyond what has been provided for been previously planned. A development stategy to support this growth includes reuse of existing building for planning for shared spaces among academic departments and construction of new facilities.

Background:

The University currently does not have a Student Activities Center on campus. The Master Plan provides an activity center in Phase 4 of the plan.
A Student Activities Center is needed at MCU to promote teambuilding and recreation, provide a central location to meet, display awards, celebrate successes, discuss issues, seek guidance, and store household supplies for international students living on Base.
In addition to the purposes assigned to the Student Activities Center, Building P-674 will also serve as a training center for students in essential Marine Corps programs that are currently housed in temporary structures and cramped quarters on campus. The new building will be known as the Student Activities Center / MCWAR College.

Alternatives Considered for this Analysis:

Status Quo (Current Operations) - Current facilities are located in a deteriorated facility scheduled for demolition and will result in severely diminished capability to conduct superior academic and training operations if not redeveloped.
This alternative is nonviable.

Renovation - Current facilities are deteriorating and is beyond its service life, improving through renovation only to an operable state is not a viable option. This alternative is nonviable.

Renovation/New Construction Mix - Current facilities are undersized and outdated and do not contain the physical infrastructure to support renovations that would bring the facilities to a current operational standards.
This alternative is nonviable.

New Construction - This project is considered as Phase 4 of the MCU Campus Master Plan.
This option constructs new facilities and is the only alternative capable of

meeting the requirements needed for the specific functions.

1.A Discount Rate of ~~X%~~ is applied per OMB Circular No. A-94 Revised December 2011.

2.Period of analysis is 30 years (28 year mission life + 2 years lead time).

3.Utility costs are not considered, assumed cost applies to New Construction only.

4.All costs/benefits except the residuals occur throughout the year and will be discounted using the "middle-of-year" discounting convention.

5.Beneficial Occupancy Date (BOD) will be 7/2017 for New Construction.

6.Physical life of the New Construction alternative is 50 years and the facility will depreciate accordingly to a straight-line schedule.

7.The 2012 General inflation schedule will be used for all expenses and residuals other than Construction costs.
This is a viable alternative.

Variable Housing Allowance/Basic Allowance for Quarters (VHA/BAQ) (barracks only) - This alternative is nonviable.

Leasing - There are no assets available for leasing in the local community that would meet the needs of the various users.
This alternative is nonviable.

Other Facilities on Base; As Is, Renovation, or Renovation/New Construction Mix - This alternative is nonviable.

Other DOD or Federal Agency Facilities - This alternative is nonviable.

Contracting Services Out - This alternative is nonviable.

Innovative Alternatives or Combinations of the Above Alternatives - This alternative is nonviable.

Assumptions of the Analysis:

Bituminous Index ($, ton)

Oil based commodity such as asphalt has a track record of flucuating upward and downward in pricing.

In 2011 FY from January to December price per ton increased 23% per ton.

Now in 2012 from January to February, price per ton had increased 4% per ton.

It’s very likely since the price per ton increased 6% in the first quarter of 2013 and currently at 4% increase at the end of February, we can only anticipate considerable increases in 6/2015 construction start date.

This is not considering further into the construction schedule as to when the asphalt phase of construction would begin.

Economic Indicators:

Alternative	***NPV***
New Construction	$ X

Results and Recommendations:

Action Officer : Cleve A. Stover, III
Phone Number : 240-764-4089
Email Address : cstover@gsipt.com
Organization : Government Services IPT (GSIPT)

Date Generated: 28 September 2012
Time Generated: 13.08.20
Version: ECONPACK 4.0.5

MCB Quantico P676
Economic Analysis

Executive Summary Report

Project Title :EPME Academic Support Facility
Type of Analysis :Mission Requirement - Full
Discount Rate :X%
Period of Analysis :30 years
Start Year :2016
Base Year :2013
Dollar Analysis :Current Dollars
Project Objective :This project constructs an Enlisted Professional Military Education Academic Support Facility. The EPME ASF will be constructed and will offer enlisted Marines progressive and career-level educational opportunities to improve their leadership, critical thinking capability, and sound tactical skills in an increasingly distributed and joint environment.

Background:

The EPME ASF will be constructed in Phase 5 for the Marine Corps University which is comprised of nine schools and directorates.
The P-676 facility in Phase 5 of the MCB Master Plan is intended for use by the Enlisted Professional Military Education Academic Support Facility (EPME ASF). The EPME is for training and administration of Enlisted Officers (E8-E9).
The branch's goal is to provide current operational information allowing Marines to contribute their excellence in war fighting and to operate at their specific level of the MAGTF as well as maintain the Marine Corps' time-honored traditions. Its approach utilizes traditional resident courses as well as nontraditional methods such as correspondence and interactive nonresident programs.

Alternatives Considered for this Analysis:

Status Quo (Current Operations) - Current facilities are located in a deteriorated facility scheduled for demolition and will result in severely diminished capability to conduct superior academic and training operations if not redeveloped.
This alternative is nonviable.

Renovation - Current facilities are deteriorating and is beyond its service life, improving through renovation only to an operable state is not a viable option. This alternative is nonviable.

Renovation/New Construction Mix - Current facilities are undersized and outdated and do not contain the physical infrastructure to support renovations that would bring the facilities to a current operational standards.
This alternative is nonviable.

New Construction - This project is considered as Phase 5 of the MCU Campus Master Plan.
This option constructs new facilities and is the only alternative capable of meeting the requirements needed for the specific functions.

1.A Discount Rate of X% is applied per OMB Circular No. A-94 Revised December 2011.

2.Period of analysis is 30 years (28 year mission life + 2 years lead time).

3.Utility costs are not considered, assumed cost applies to New Construction only.

4.All costs/benefits except the residuals occur throughout the year and will be discounted using the "middle-of-year" discounting convention.

5.Beneficial Occupancy Date (BOD) will be 7/2017 for New Construction.

6.Physical life of the New Construction alternative is 50 years and the facility will depreciate accordingly to a straight-line schedule.

7.The 2012 General inflation schedule will be used for all expenses and residuals other than Construction costs.
This is a viable alternative.

Variable Housing Allowance/Basic Allowance for Quarters (VHA/BAQ) (barracks only) - This alternative is nonviable.

Leasing - There are no assets available for leasing in the local community that would meet the needs of the various users.
This alternative is nonviable.

Other Facilities on Base; As Is, Renovation, or Renovation/New Construction Mix - This alternative is nonviable.

Other DOD or Federal Agency Facilities - This alternative is nonviable.

Contracting Services Out - This alternative is nonviable.

Innovative Alternatives or Combinations of the Above Alternatives - This alternative is nonviable.

Assumptions of the Analysis:

Bituminous Index ($, ton)

Oil based commodity such as asphalt has a track record of flucuating upward and downward in pricing.

In 2011 FY from January to December price per ton increased 23% per ton.

Now in 2012 from January to February, price per ton had increased 4% per ton.

It’s very likely since the price per ton increased 6% in the first quarter of 2013 and currently at 4% increase at the end of February, we can only anticipate considerable increases in 6/2015 construction start date.

This is not considering further into the construction schedule as to when the asphalt phase of construction would begin.

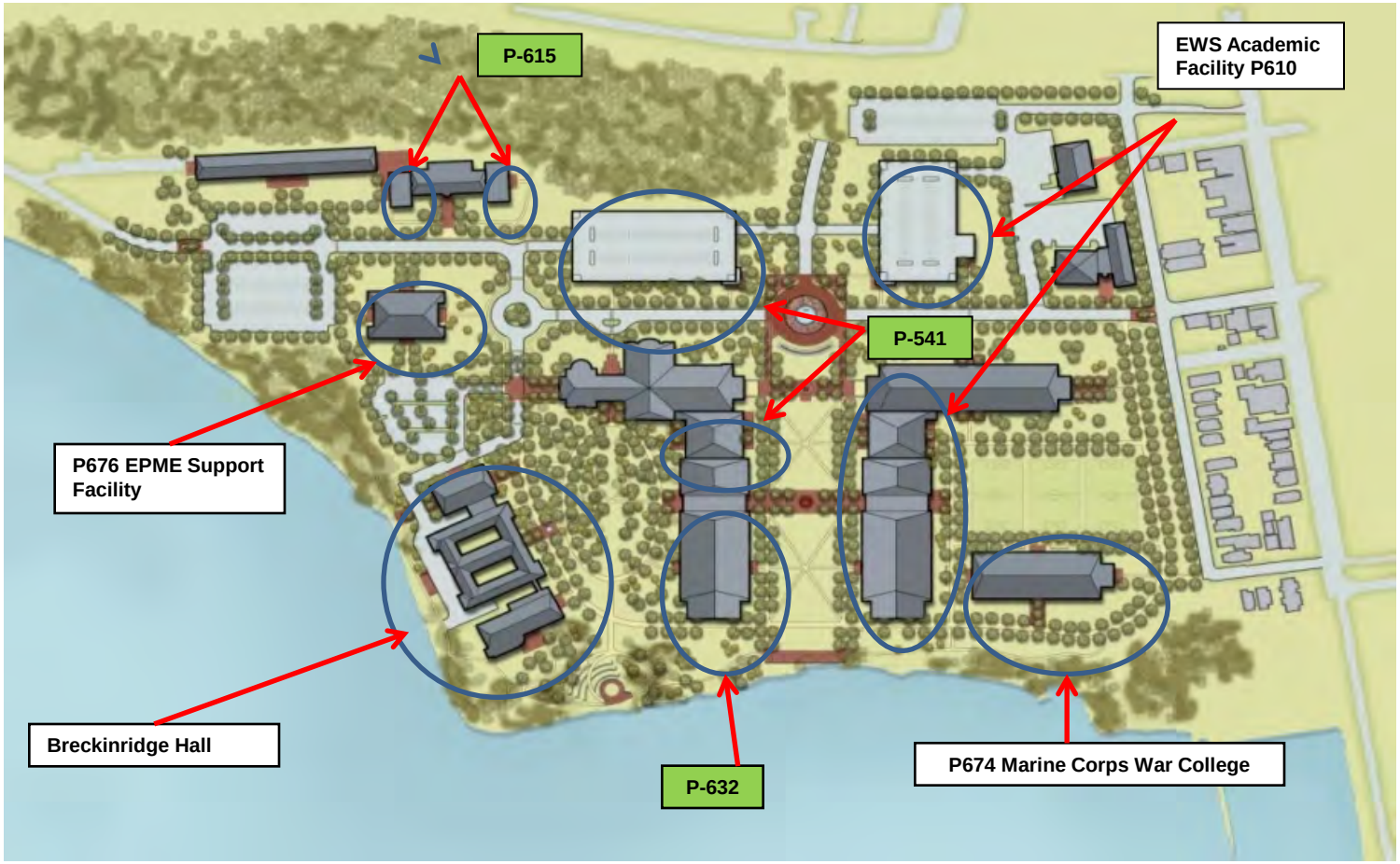
Economic Indicators:

Alternative	***NPV***
New Construction	$ X

Results and Recommendations:

Action Officer : Cleve A. Stover, III
Phone Number : 240-764-4089
Email Address : cstover@gsipt.com
Organization : Government Services IPT (GSIPT)

MCU MILCON Build-out



Appendix B
Soil Maps


77° 18' 1" W
77° 17' 13" W
38° 31' 17" N
38° 30' 53" N
299500
299600
299700
299800
299900
300000
300100
300200
300300
300400
300500
300600
4266100
4266000
4265900
4265800
4265700
4265600
4265500
Barnett
Artisan St
Broadway St
Alley
Martin St
Julian Dr
Morrell Ave
Battery Ave
South St
TeA
Ae
W
W
Map Scale: 1:5,280 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:15,800.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Charles County, Maryland
Survey Area Data: Version 7, Dec 11, 2013

Soil Survey Area: Prince William County, Virginia
Survey Area Data: Version 12, Dec 13, 2013

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

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

Date(s) aerial images were photographed: Apr 14, 2011—Nov 7, 2011

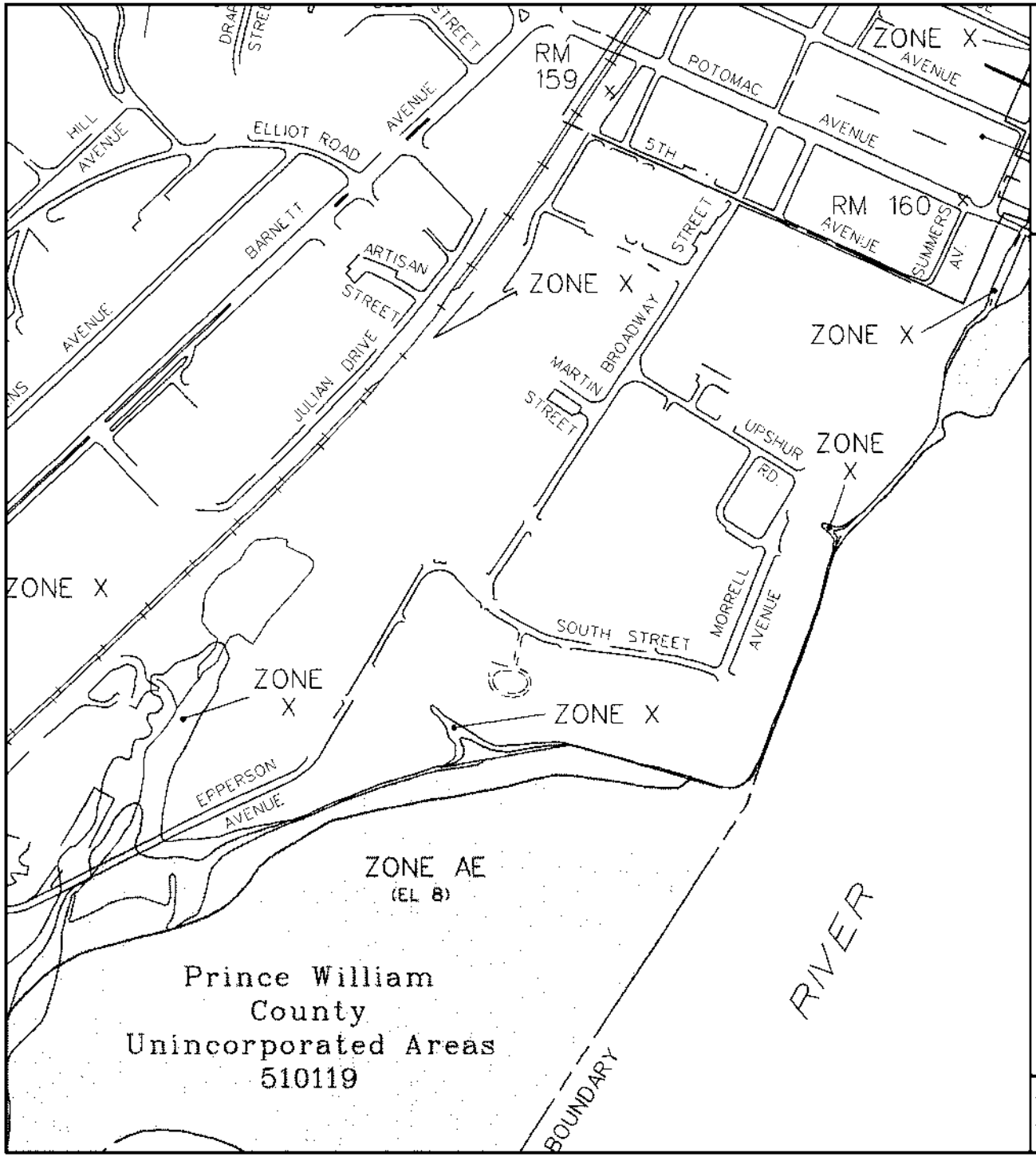
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Charles County, Maryland (MD017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
W	Water	0.7	0.8%
Subtotals for Soil Survey Area		**0.7**	**0.8%**
Totals for Area of Interest		**88.7**	**100.0%**

Prince William County, Virginia (VA153)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Ae	Alluvial land, wet	7.4	8.3%
TeA	Tetotum fine sandy loam, 0 to 2 percent slopes	74.8	84.3%
W	Water	5.9	6.6%
Subtotals for Soil Survey Area		**88.0**	**99.2%**
Totals for Area of Interest		**88.7**	**100.0%**

Appendix C
FEMA FIRMs



APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PRO

FIRM

FLOOD INSURANCE RATE MA

PRINCE WILLIAM COUN
VIRGINIA
AND INCORPORATED AREA

PANEL 318 OF 330

(SEE MAP INDEX FOR PANELS NOT PRI

CONTAINS

COMMUNITY	NUMBER	PANEL
QUANTICO, TOWN OF	5[illegible]	0[illegible]
UNINCORPORATED AREAS	5[illegible]	318

MAP NUME
5115J0318

EFFECTIVE DA
JANUARY 5, 1

Federal Emergency Management A

Appendix D
Correspondence Between the
Virginia State Historic Preservation Officer and
the United States Marine Corps
Regarding Development at Marine Corps University
Marine Corps Base Quantico, Virginia

23 October 2013

COMMANDING GENERAL
NREA BRANCH B 046
MARINE CORPS BASE QUANTICO
3250 CATLIN AVENUE
QUANTICO, VIRGINIA 22134-5001

Re: Marine Corps University Master Plan
Quantico Marine Corps Base, Prince William County
DHR File No. 2013-3693

Dear Ms Roberts:

The Department of Historic Resources (DHR) has received for our review and comment the above referenced project. The implementation of the Marine Corps University Master Plan has the potential to affect historic properties listed in or eligible for listing in the National Register of Historic Places. It is our experience that master plans, although effective tools to identify current and future organizational and program requirements, assess the ability of existing infrastructure and facility capabilities to meet those needs, and to propose solutions if necessary, that the visions outlined in such documents often are not realized for a variety of reasons such as changes in mission or funding issues. Therefore, it is not useful for DHR to address specific aspects of the Master Plan as it may implemented only in parts, not at all or in a manner completely different from what is anticipated. Therefore, we request that Quantico Marine Corps Base consult with DHR pursuant to Section 106 of the National Historic Preservation Act, as amended, and its implementing regulation 36 CFR Part 800 on individual aspects of the Master Plan as necessary.

If you have any questions, please contact me at (804) 482-6090.

Sincerely,

Marc Holma, Architectural Historian
Office of Review and Compliance

Appendix E
Hazardous Materials Report

TABLE OF CONTENTS

QUANTICO - BUILDING 709

Building 709 is a one-story, warehouse structure of approximately 18,120 square feet. The building is constructed slab-on-grade with steel framing and wooden posts. The warehouse has a loft or mezzanine level and is enclosed by metal panel roofing and siding. The building was unoccupied and used for storage at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 709 was available for review.

During the Building 709 walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment, no asbestos-containing materials were identified associated with Building 709.

LEAD-CONTAINING PAINT

Based on the age of the building (pre-1920s construction), painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs). It is possible that some older (pre-1979) fluorescent lighting remains in the building, including abandoned lighting fixtures in inaccessible areas. The PCB-containing ballasts may be associated with such older fixtures. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations.

At the time of the survey, the north end of the building was being used to store out-of-service transformers. Approximately 50 transformer carcasses, of various sizes and configurations, were being stored on wooden pallets in this area. Most of the transformers were labeled with "No PCBs" decals; however, some were not labeled. At least one transformer was leaking fluid onto the concrete slab beneath the pallet on which it rested. General staining and discoloration of the concrete slab was observed in the building. Additionally, a few transformer carcasses were present outside the building on the east side. It could not be determined when the practice of storing and/or servicing out-of-service transformer equipment in and around Building 709 started. Based on the current observations and available information, the potential for PCB contamination of the concrete slab and/or the ground beneath and adjacent to the building is a concern. Further evaluation may be warranted prior to building demolition to determine proper disposal requirements and/or recycling limitations for concrete and the possible need for site remediation.

OTHER REGULATED WASTES

- Approximately 450 mercury vapor-containing fluorescent lamps are present in Building 709.
- Flammable liquids are stored in two flammable storage cabinets in the southern portion of the building. Paints and related chemicals are stored in small quantity containers in the center portion of the warehouse. It is assumed that these materials are in use and do not represent wastes that will require disposal in connection with building demolition.

PHOTOGRAPHS

Photograph 1 – East side of Building 709, facing north.

Photograph 2 – North end of Building 709, facing west.

Photograph 3 – Out-of-service transformers in storage in northern portion of warehouse.

Photograph 4 – Staining on concrete from leaking transformer on wooden pallet.

Photograph 5 – Mechanical equipment in storage in center portion of warehouse.

Photograph 6 – Flammable materials storage cabinets in southern portion of warehouse.

QUANTICO - BUILDING 710

Building 710 is a one-story, warehouse structure of approximately 18,120 square feet. The building is constructed slab-on-grade with a steel frame. The warehouse is enclosed by metal panel roofing and siding. The building was unoccupied and used for storage at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 710 was available for review.

During the Building 710 walk-through no suspect asbestos-containing materials were identified. No bulk samples were collected.

LEAD-CONTAINING PAINT

Based on the age of the building (pre-1920s construction) painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs).

It is possible that some older (pre-1979) fluorescent lighting remains in the building, including abandoned lighting fixtures in inaccessible areas. The PCB-containing ballasts may be associated with such older fixtures. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations.

Power is fed to the building from pole mounted transformers southwest of the building. No decals or information pertaining to PCBs was observed on the transformers.

OTHER REGULATED WASTES

- Approximately 450 mercury vapor-containing fluorescent lamps are present in Building 710.

PHOTOGRAPHS

Photograph 1 – East side of Building 710, facing northwest.

Photograph 2 – Large exhibits in storage warehouse of Building 710.

Photograph 3 – Original structural steel framing for Building 710.

Photograph 4 – Newer fluorescent lighting fixtures in warehouse of Building 710.

Photograph 5 – Fiberglass insulated piping in ceiling space of warehouse.

Photograph 6 – Pole mounted transformers at southwest corner of Building 710.

QUANTICO - BUILDING 2042

Building 2042 (Barrett Hall) is a two-story structure with full basement of approximately 23,518 square feet. The building is constructed of concrete, brick and steel. The building was occupied at the time of the assessment. The eastern portion of the basement level is a classified information vault. Government Services IPT was not authorized to access this area and therefore this portion of the building was not assessed for the presence of hazardous materials.

Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 2042 was available for review.

During the Building 2042 walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment, the following asbestos-containing materials and estimated quantities are present in Building 2042:

- Friable magnesia asbestos pipe insulation was identified on risers behind wall paneling and above suspended ceilings in Room 1 and Room 3. The asbestos pipe insulation is present along the north and east walls in Room 1 and along the north wall of Room 3. A total of approximately 50 linear feet of asbestos pipe insulation is present in these areas.
- A few asbestos mud fittings were identified on exposed fiberglass insulated pipes on the basement level. An estimated total of 10 mud fittings were identified in basement Rooms 3, 7, and 9. The asbestos mud fittings were observed to be in good condition.
- 9"x9" floor tile is present beneath carpet throughout the first and second floors and some portions of the basement. The 9" x 9" is apparently not homogenous for all areas because asbestos was identified in some samples but not others. A thorough examination of the slab and comprehensive sampling of floor tile types throughout the building would have required extensive damage to carpeting in finished office areas and therefore was not authorized. For the purposes of this survey all 9" x 9" floor tile should be assumed to contain asbestos until further confirmatory sampling can be performed. Based on this assumption, an estimated total of approximately 16,000 square feet of asbestos floor tile and mastic is present beneath carpeted areas throughout Building 2042. Asbestos was not detected in 12" x 12" floor tile, nor associated mastics for the second floor Men's Head and the first floor Copier Room.
- Asbestos-containing materials could potentially be associated with non-friable asphaltic roof materials, including felts and/or shingles. Sampling of roofing materials was not included in the scope of the inspection.

Prior to Building 2042 demolition, asbestos-containing materials should be removed and disposed by a licensed asbestos abatement contractor in accordance with State of Virginia

and federal regulations. An Operations and Maintenance Program should be implemented to manage asbestos-containing materials until abatement is completed.

LEAD-CONTAINING PAINT

Based on the age of the building (1940s construction) painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs). It is possible that some older (pre-1979) fluorescent lighting remains in the building, including abandoned lighting fixtures in inaccessible areas. The PCB-containing ballasts may be associated with such older fixtures. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations.

OTHER REGULATED WASTES AND/OR ENVIRONMENTAL CONCERNS

- Approximately 600 mercury-containing fluorescent lamps are present in Building 2042.
- Suspect mercury pipe thermometers were identified in corridor areas for piping associated with ceiling mounted air handling units outside Room 4, Room 206 and Room 215. A total of approximately 10 mercury pipe thermometers were identified.
- Evidence of active mold growth was identified in the eastern portion of the basement. Mold growth was observed on masonite/cellulose wall panels, ceiling tiles and pipe insulation in this area.

PHOTOGRAPHS

Photograph 1 – Front (north) side of Building 2042.

Photograph 2 – Asbestos mud fittings on fiberglass insulated pipe in basement Room 7.

Photograph 3 – Asbestos pipe insulation above suspended ceiling in Room 1.

Photograph 4 – 9”x9” floor tile beneath carpet in corridor (typical).

Photograph 5 – Second floor corridor area, facing, facing west.

Photograph 6 – Mold growth on insulation and HVAC equipment on basement level.

Photograph 7 – Suspect mercury-containing thermometers for AHU piping in first floor corridor.

Photograph 8 – Suspect lead-based paint on exterior wood trim for original window.

QUANTICO - BUILDING 2085

Building 2085 (Edson Hall) is a two-story, brick, concrete and steel structure of approximately 26,097 square feet. The building was occupied at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 2085 was available for review.

During the Building 2085 walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment, the following asbestos-containing materials and estimated quantities are present in Building 2085:

- Friable asbestos pipe insulation was identified exposed along the west wall of Room 107 (Server Room) with pipes extending into the adjoining security vault. Although the security vault could not be accessed, the asbestos pipe insulation is suspected to be present in the vault. The material is damaged in localized areas of Room 107. Approximately 40 linear feet of asbestos pipe insulation, including mud fittings, is present in Room 107 and the adjacent vault area.
- Friable asbestos pipe insulation was identified on a riser at the southeast corner of the Publications Storage Room (adjacent to the large Second Floor Classroom). Approximately 20 linear feet of asbestos pipe insulation is exposed in this area. The insulation appears to be in good condition and is painted black.
- Friable asbestos pipe insulation was identified in the Mop Sink portion of Room 214 (Men's Head). Approximately seven linear feet of asbestos pipe insulation is exposed. The insulation is damaged.
- Asbestos-containing insulation debris is present in a steam valve pit outside the (west) front entrance of the building. Approximately two square feet of asbestos insulation debris is present on the ground below un-insulated steam pipes and valve.
- Approximately 560 square feet of 9" x 9" black floor tile and mastic are present in Room 107 (server room) and the adjacent security vault. The floor tile is present beneath carpet in Room 107 and is assumed to be present (based on interviews) in the security vault.
- Asbestos-containing materials could potentially be associated with non-friable roofing materials associated with the flat, built-up roofs for Building 2085. Such materials could include roof membranes, felts, flashings and/or mastics. Sampling of roofing materials was not included in the scope of the inspection.

Prior to demolition of Building 2085, asbestos-containing materials should be removed and disposed by a licensed asbestos abatement contractor in accordance with State of Virginia and federal regulations. An Operations and Maintenance Program should be implemented to manage asbestos-containing materials until abatement is completed.

LEAD-CONTAINING PAINT

Based on the age of the building (1950s construction) painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs). It is possible that some older (pre-1979) fluorescent lighting remains in the building, including abandoned lighting fixtures in inaccessible areas. PCB-containing ballasts may be associated with such older fixtures. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations.

One suspected oil-filled transformer was identified on a concrete pad on the east side of the building. The transformer does not have any labeling pertaining to PCB content in transformer fluid. The transformer appeared to be in good condition. No stains or evidence of fluid leakage in the vicinity of the pad was noted.

OTHER REGULATED WASTES

- Approximately 600 mercury vapor-containing fluorescent lamps are present in Building 2085.

PHOTOGRAPHS

Photograph 1 – Front (west) entrance of Building 2085, facing southeast.

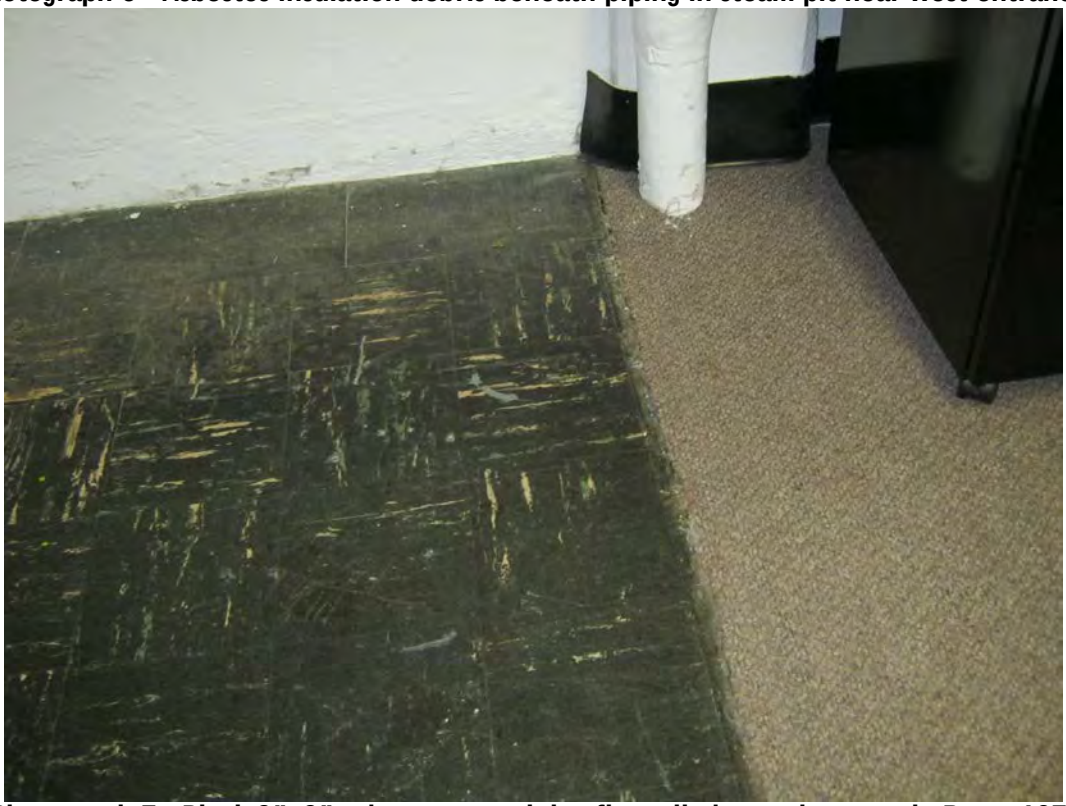
Photograph 2 – North end of Building 2085, facing south.

Photograph 3 – Damaged asbestos pipe insulation in Room 107.

Photograph 4 – Damaged asbestos pipe insulation in mop sink portion of Room 214.

Photograph 5 – Exposed asbestos pipe insulation in 2nd Floor Publications Storage Area

Photograph 6 – Asbestos insulation debris beneath piping in steam pit near west entrance.



Photograph 7 – Black 9”x9” asbestos-containing floor tile beneath carpet in Room 107.

Photograph 8 – Fluid-filled transformer on concrete pad outside east side of building.

QUANTICO - BUILDING 3034/3034A

Building 3034/3034A consists of two adjacent warehouse structures which are physically attached at the roof line. The combined area of the building complex is approximately 17,490 square feet. The slab-on-grade warehouses have steel columns, beams, and roof trusses with corrugated metal panel siding and roofing. A wooden loft or mezzanine level is present in Building 3034A.

At the time of the assessment, portions of the building complex were occupied. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 3034/3034A was available for review. During the Building 3034/3034A walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment, the following asbestos-containing materials and estimated quantities are present in Building 3034/3034A:

- Corrugated metal panels for exterior siding and roofing of Building 3034 have a black, asbestos-containing bituminous coating. The non-friable material is covered with aluminized paint and only exposed at areas of damage. Approximately 17,000 square feet of asbestos-containing corrugated metal panels is present. The asbestos-containing coating was not identified on similar corrugated metal panels for the exterior siding and roofing of Building 3034A.
- The 12" x 12" green floor tile in the storage room on the west side of Building 3034A is asbestos-containing. Approximately 300 square feet of non-friable floor asbestos-containing floor tile is present. The black mastic associated with the floor tile is assumed to contain asbestos.
- Asbestos-containing window glazing compound is present for wood windows throughout Building 3034 and 3034A. The material is brittle and dislodged from window panes in some areas. Approximately 200 square feet of asbestos window glazing is present.

Prior to demolition of Building 3034/3034A, asbestos-containing materials should be removed and disposed by a licensed asbestos abatement contractor in accordance with State of Virginia and federal regulations. An Operations and Maintenance Program should be implemented to manage asbestos-containing materials until abatement is completed.

LEAD-CONTAINING PAINT

Based on the age of the building (1940s construction) painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs). It is possible that some older (pre-1979) fluorescent lighting remains in the building, including abandoned lighting fixtures in inaccessible areas. PCB-containing ballasts may be associated with such older fixtures. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations.

Power is fed to the building complex via transformers on utility poles located adjacent to the building. The transformers did not have any labeling pertaining to PCB content but appeared to be in good condition. No stains or evidence of fluid leakage associated with the transformers was noted.

OTHER REGULATED WASTES

- Approximately 300 mercury-containing fluorescent lamps are present in Building 3034/3034A.
- Wall-mounted mercury thermostats were identified in the warehouse area of Building 3034. Approximately four suspect mercury thermostats are present.
- Any residual waste within the cyclone duct collector system apparatus and receptacles on the east side of the building is assumed to consist of sawdust and other non hazardous waste.
- Building 3034B is a small concrete block flammable materials storage building located immediately east of Building 3034A. This building could not be accessed but is reported to contain small quantities of flammable materials in storage for use by the National Marine Corps Museum.

PHOTOGRAPHS

Photograph 1 – Building 3034, facing south.

Photograph 2 – West side of Building 3034 along Broadway.

Photograph 3 – Building 3034A, facing south.

Photograph 4 – Warehouse and shop area in southern portion of Building 3034.

Photograph 5 – Mercury-containing thermostat on column in Building 3034.

Photograph 6 – Asbestos-containing 12”x12” green floor tile in Building 3034A.

Photograph 7 – Asbestos-containing window glazing/caulk (typical) for windows in Building 3034.

Photograph 8 – Asbestos-containing corrugated metal siding panels for Building 3034.

Photograph 9 – Abandoned dust collection system at east side of Building 3034.

Photograph 10 – Flammable material storage building east of Building 3034A.

QUANTICO - BUILDING 3074

Building 3074 is a one-story, concrete block structure of approximately 7,705 square feet. The building was occupied at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 3074 was available for review.

During the Building 3074 walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment, the following asbestos-containing materials and estimated quantities are present in Building 3074:

- The ceiling throughout the interior of the building is constructed of non-friable asbestos cement panels. The asbestos cement panel ceiling is exposed in most areas and present above a suspended acoustical tile ceiling in a few rooms. In addition, asbestos cement panels are assumed to be present for the underside of the roof overhang at the front entrance. Approximately 8,500 square feet of asbestos cement panels are estimated to be present.
- Asbestos cement exterior siding is present for two attic dormers in the center section of the building. Approximately 120 square feet of asbestos cement siding is present.
- Non-friable 9" x 9" black floor tile and mastic is present (or assumed to be present) on the concrete floor slab throughout the building. The asbestos-containing floor tile is exposed in the mechanical room and was identified beneath the carpet throughout other areas of the building. Approximately 7,700 square feet of asbestos-containing floor tile is present.
- Asbestos-containing materials could potentially be associated with non-friable roofing materials associated with Building 3074. Such materials may include roof felts, flashings and/or shingles. Sampling of roofing materials was not included in the scope of the inspection.

Prior to demolition of Building 3074, asbestos-containing materials should be removed and disposed by a licensed asbestos abatement contractor in accordance with State of Virginia and federal regulations. An Operations and Maintenance Program should be implemented to manage asbestos-containing materials until abatement is completed.

LEAD-CONTAINING PAINT

Based on the age of the building (1940s construction) painted surfaces are presumed to contain lead. Deteriorated paint on exterior windows and wood trim is very likely to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout Building 3074. The majority of the fixtures appear to be older (pre-1979) throughout the building interior. The PCB-containing ballasts are likely to be associated with these older fixtures. Approximately 150 ballasts which are assumed to contain PCBs are present in the older fluorescent lighting. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations. Some of the fluorescent fixtures in the center portion of the building are of newer manufacture and do not have PCB ballasts.

A transformer was identified on a concrete pad at the northeast end of the building. The transformer does not appear to be fluid filled (although this could not be confirmed) and is not suspected of containing PCBs. The transformer appeared to be in good condition. No stains or evidence of fluid leakage in the vicinity of the pad was noted.

OTHER REGULATED WASTES

- Approximately 300 mercury vapor-containing fluorescent lamps are present in Building 3074.

PHOTOGRAPHS

Photograph 1 – Building 3074 at front entrance.

Photograph 2 – Building 3074 facing northeast from South Street.

Photograph 3 – Asbestos-containing 9”x9” floor tile exposed in mechanical room.

Photograph 4 – Asbestos cement panel ceiling and older fluorescent lighting (typical).

Photograph 5 – Asbestos cement panels (assumed) for roof overhang at front entrance.

Photograph 6 – Presumed lead paint on exterior window surfaces and wood trim.

Photograph 7 – Asbestos cement exterior siding for attic dormers in center section.

Photograph 8 – Non asbestos (fiberglass) insulation for exposed exterior steam piping.

QUANTICO - BUILDING 3078

Building 3078 is an H-shaped, two-story structure of approximately 24,460 square feet. The north and south wings of the building have an unexcavated crawlspace. The building was occupied at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 3078 was available for review.

During the Building 3078 walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment, no asbestos-containing materials were identified associated with Building 3078.

LEAD-CONTAINING PAINT

Based on the age of the building (1940s construction) painted surfaces are presumed to contain lead. Peeling and deteriorated paint was observed on some exterior wood trim. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs). It is possible that some older (pre-1979) fluorescent lighting remains in the building, including abandoned lighting fixtures in inaccessible areas. The PCB-containing ballasts may be associated with such older fixtures. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations.

The building receives power via a pad-mounted transformer at the west side entrance. Although no label information was observed on the transformer, the equipment appeared to be of fairly recent installation and is not suspected of containing PCBs. No stains or evidence of fluid leakage in the vicinity was noted.

OTHER REGULATED WASTES

- Approximately 330 mercury vapor-containing fluorescent lamps are present in Building 3078.

PHOTOGRAPHS

Photograph 1 – West side and front entrance for Building 3078.

Photograph 2 – Signage at southwest corner of Building 3078.

Photograph 3 – East side of Building 3078 facing north.

Photograph 4 – Pad mounted transformer near front entrance.

Photograph 5 – Peeling paint on exterior wood trim.

Photograph 6 – Fiberglass insulated pipes and ductwork in south wing crawlspace.

QUANTICO - BUILDING 3094

Building 3094 is a one-story, brick, concrete and steel structure of 10,593 square feet. The building was occupied at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 3094 was available for review.

During the Building 3094 walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment no asbestos-containing materials were identified in Building 3094.

LEAD-CONTAINING PAINT

Based on the age of the building (1940s construction) painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Based on visual inspection, the ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs).

The building is fed from pole mounted transformers adjacent to the northwest of the building. The transformers appeared to be in good condition. No markings or labels pertaining to potential PCBs content were evident.

OTHER REGULATED WASTES

- Approximately 500 mercury-containing fluorescent lamps are present in Building 3094.
- Two mercury-containing, pressure control switches were identified in the boiler room.

Prior to building demolition, mercury-containing switches and fluorescent lamps should be removed for recycling.

PHOTOGRAPHS

Photograph 1 – Building 3094 front entrance, facing northeast.

Photograph 2 – Building 3094 west side, facing east.

Photograph 3 – Asbestos free insulation (fiberglass) on pipes and valves in boiler room.

Photograph 4 – Asbestos free insulation beneath aluminum cover for exterior piping.

Photograph 5 – Pole mounted transformer south of Building 3094.

Photograph 6 – Mercury-containing switch in boiler room.

QUANTICO - BUILDING 3169

Building 3169 is a one-story, high-bay warehouse structure of approximately 8,100 square feet. The building is constructed slab-on-grade with steel framing and metal siding and roof panels. The building was occupied at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 3169 was available for review.

During the Building 3169, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy.

Based on Government Services IPT's assessment, no asbestos-containing materials were identified associated with Building 3169.

LEAD-CONTAINING PAINT

Based on the age of the building (1940s construction) painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs). It is possible that some older (pre-1979) fluorescent lighting remains in the building, including abandoned lighting fixtures in inaccessible areas. The PCB-containing ballasts may be associated with such older fixtures. All ballasts without "No PCBs" labeling should be assumed to be PCB-containing and handled in accordance with applicable regulations.

The building receives power via transformers mounted to a utility pole southeast of the building. The transformers did not have any labeling pertaining to PCB content in transformer fluid. The transformers appeared to be in good condition. No stains or evidence of fluid leakage in the vicinity was noted.

OTHER REGULATED WASTES

- Approximately 200 mercury vapor-containing fluorescent lamps are present Building 3169.

PHOTOGRAPHS

Photograph 1 – Building 3169 at south entrance.

Photograph 2 – Exterior of Building 3169 at northeast corner.

Photograph 3 – Open warehouse interior with overhead fluorescent lighting.

Photograph 4 – Restroom and storage area in northeast portion of warehouse.

QUANTICO - BUILDING 3193

Building 3193 is a metal Quanset hut of approximately 2,200 square feet, which is used for storage. The building was occupied at the time of the assessment. Government Services IPT reviewed existing survey information (if available) prior to performing a walk-through of the building to assess the potential presence of hazardous materials which could impact the demolition cost and/or schedule.

ASBESTOS

No record of prior asbestos identification survey for Building 3193 was available for review.

During the Building 3193 walk-through, limited sampling of suspect asbestos-containing materials was performed by a Virginia-licensed inspector to determine existing conditions. Samples of suspect asbestos-containing materials were submitted to Environmental Hazards Services, LLC, in Richmond, Virginia for analysis of asbestos content by polarized light microscopy. The report of laboratory analysis of bulk samples is attached.

Based on Government Services IPT's assessment, no asbestos-containing materials were identified remaining in Building 3193.

LEAD-CONTAINING PAINT

Based on the age of the building (1940s construction) painted surfaces are presumed to contain lead. Contractors must comply with Occupational Safety & Health Administration (OSHA) requirements and assess the potential for worker exposure to lead from demolition activities. Engineering controls and personal protective equipment may be required as necessary.

POLYCHLORINATED BIPHENYLS (PCBS)

Fluorescent light fixtures are found throughout the building and appear to be of relatively recent age. Based on visual inspection, the ballasts associated with these fixtures are free from Polychlorinated Biphenyls (PCBs).

One small electrical transformer was identified outside the south end of the building. This transformer does not appear to be fluid filled and is not suspected of containing PCBs.

OTHER REGULATED WASTES

- Approximately 32 mercury-containing fluorescent lamps are present in Building 3193.
- Approximately three mercury-containing, wall-mounted thermostats were identified.

Prior to building demolition, mercury-containing thermostats and fluorescent lamps should be removed for recycling.

PHOTOGRAPHS

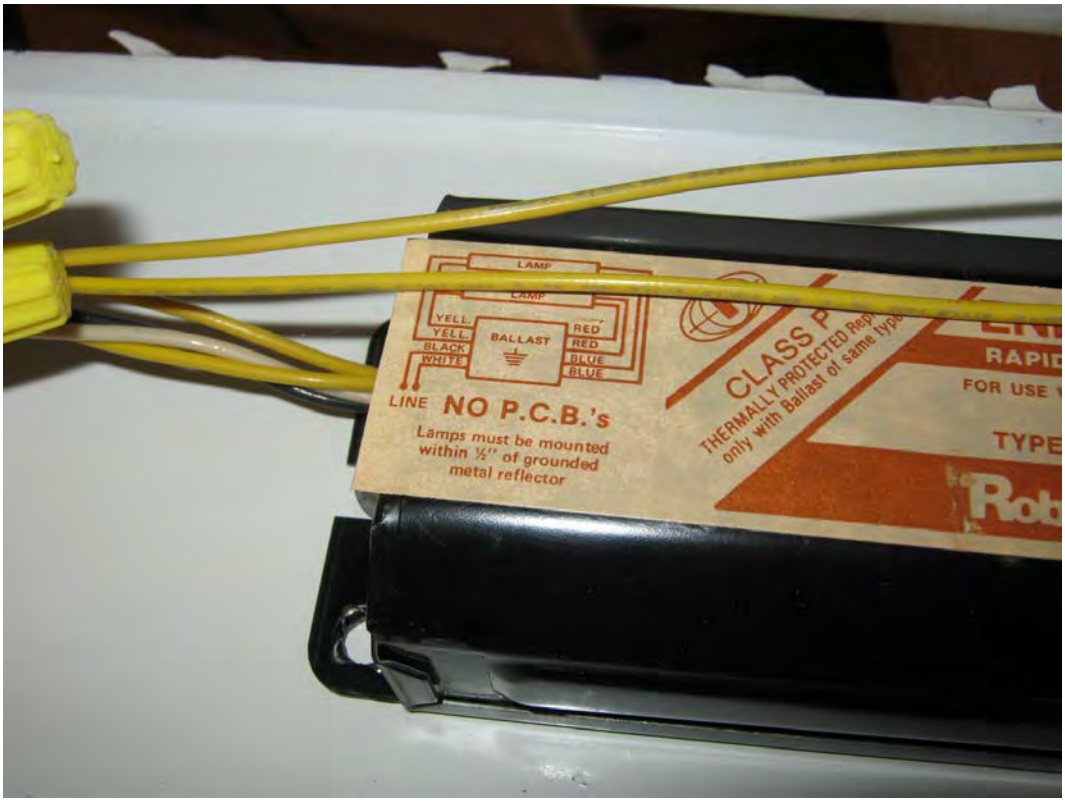
Photograph 1 – South entrance of Building 3193.

Photograph 2 – Exterior of Building 3193, facing southeast.

Photograph 3 – Building 3193 interior, facing north.

Photograph 4 – Suspect mercury-containing thermostat on south wall.

Photograph 5 – Fiberglass (asbestos free) insulation for ceiling mounted space heater.



Photograph 6 – PCB free ballasts associated with fluorescent lighting.

Appendix F
Construction Waste Management Report

ISWM Program Manager Rcvd: _____
FY Reporting Period: _____

Construction Waste Management Report
Quantico Marine Corps Base

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

SUBMIT THIS FORM BY FAX TO (703) 784-4953, OR BY EMAIL TO: ronald.king@usmc.mil

Comments: _____
_____

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

CONSTRUCTION & DEMOLITION DEBRIS (C&D).

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

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

Definitions:

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

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

ENVIRONMENTAL ASSESSMENT
FOR
MONTFORD POINT MARINES MEMORIAL:
THE BASIC SCHOOL DIVERSITY PROJECT
AT
MARINE CORPS BASE QUANTICO,
Stafford County, Virginia

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

February 2014

Proposed Agency Action: The Montford Point Marines Memorial: The Basic School Diversity Project, Marine Corps Base Quantico, Virginia

Type of Statement: Environmental Assessment

Lead Agency: United States Marine Corps

For further information on this NEPA document:
Natural Resources and Environmental Affairs Branch (B046)
Attn: Heather A. McDuff
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Marine Corps Base
Quantico, VA 22134
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(703) 432-6771

Document Date: December 2013

Abstract: This Environmental Assessment is intended to meet NEPA requirements to establish a memorial trail and park at the Basic School, as part of a project to celebrate diversity in the Marine Corps. The No Action Alternative (Alternative A) and one Action Alternative (Alternative B) were evaluated. Alternative A would have no adverse effects on cultural/natural resources or the human environment as the status quo would be maintained.

Alternative B would allow for the construction of a pavilion, wooden bridges, walkways, and a fishing pier at Barrett Pond to promote diversity awareness and provide recreational opportunities in the Barret Pond vicinity. An eight kilometer wooded walking/running trail would be established to provide additional training and educational opportunities for students and personnel assigned to The Basic School. The creation of recreational space in an area currently used for military training constitutes a change in use. There would be no significant impacts to land use, water resources, biological resources, cultural resources, air quality, noise, infrastructure, traffic, socioeconomics, or hazardous waste issues. Temporary water quality impacts associated with soil disturbance resulting from demolition activities would be mitigated through appropriate Erosion and Sediment Control measures per the Virginia Erosion and Sediment Control Handbook. Alternative B is the preferred action and, if the stated mitigation measures are executed, would not have significant impacts on the human environment.

Table of Contents

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

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 CFR parts 1500-1508; and Marine Corps Order P5090.2A, which documents the US Marine Corps' internal operating instructions on how to implement NEPA. This EA is intended to meet NEPA requirements to create a Montford Point Marines (MPM) memorial for diversity awareness at The Basic School (TBS), Marine Corps Base Quantico (MCBQ).

President Franklin D. Roosevelt established a presidential directive in 1942 that gave African Americans the opportunity to join the Marine Corps. These recruits came from all over the country, but due to racial segregation, they were not given their basic training at Parris Island or San Diego. Instead, they trained at Montford Point, part of Camp Lejeune. Between 1942 and 1949, approximately 20,000 African American recruits went through boot camp at Montford Point. In July of 1948 President Harry S. Truman signed an Executive Order that ended segregation in the armed forces, and in September 1949, Montford Marine Camp was deactivated.

This EA is being executed, in part, to satisfy 36 CFR 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."

This EA was originally presented for review in January 2014. Questions and concerns were raised regarding authorized users and potential conflicts with military training. This EA updates the original document through the inclusion of the new information.

1.1 Current conditions and work completed

The proposed project area lies entirely within the TBS compound of the Guadalcanal area, or Westside of MCBQ. Portions of the project lie within the cantonment area of Camp Barrett. The proposed eight kilometer (8km) trail lies almost exclusively within the Ranges and Training Area Complex. Ramer Hall gymnasium and the Martial Arts Center for Excellence are located to the northwest of Barrett Pond, and a parade deck/parking lot is located to the southwest. Barrett Pond is a manmade

impoundment pond with a dam and spillway along its southeast edge. The proposed 8km running trail is located in Training Areas 8A and 8B (TA-8A and TA-8B), a wooded area north/northeast of MCB-2 which also contains Application Trail and the TBS Endurance ("E") Course.

Some work associated with this project was done prior to environmental analysis being complete (Figures 1 through 3, below). In April 2013, lengths of 2"x4" lumber were installed as edging for the trail in the MPM memorial park area, and weedblock cloth was laid down. Concrete footers for a footbridge were poured in the immediate vicinity of the Barrett Pond dam and spillway. Wooden footbridges were installed at several stream crossings along the proposed 8km trail, and there was evidence of tree removal in the proposed park area and along the 8km trail. All work was halted upon discovery to permit the completion of required NEPA documentation. The bridge footing on the dam was filled in with dirt and soil, and the timber edging and weedblock cloth on the memorial park trail were removed.

Figure 1. Trail with timber edging and weedblock fabric

Figure 2. Bridge footers on either side of spillway

Figure 3. Bridge footer on Barrett Pond dam

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A – No Action

Under the no action alternative, the memorial park and trails for the MPMs would not be established. Any work already done would be completely dismantled and demolished, and the sites returned to their previous state. The recognition of the MPMs and the opportunity for additional educational and recreational activities at TBS would not occur.

2.2 Alternative B – Montford Point Marines Memorial

Under this alternative, a MPM memorial park and educational trail would be constructed at TBS. The MPM memorial park, with walking trail, picnic pavilion, fishing pier, and interpretive signs and placards is proposed for the area immediately adjacent to Barrett Pond. Authorized users of the memorial park would include active duty and retired military, their dependents, Department of Defense civilians, and participants in base-sponsored events.

A six foot wide mulched trail would be constructed around the circumference of the pond. One pavilion would be constructed on a concrete pad roughly north of Barrett Pond. Grills and picnic tables would be provided at the pavilion. A T-shaped wheelchair-accessible fishing pier would be constructed adjacent to the parade deck/parking lot and dam, on the south side of the pond. The pier would be supported by pylons of the appropriate dimensions and load-bearing strength driven into the pond bottom. A footbridge would be constructed over the spillway at the northern end of the Barrett Pond dam. The concrete footers already poured would be demolished to make way for the new footbridge and footers. The proposed bridge and fishing pier designs are at Appendix A. Final pavilion, bridge, and fishing pier design plans shall be submitted to PWB and NREA for review and approval prior to construction commencing or resuming on these project elements.

An 8km natural trail would be established in Training Areas (TA) 8A and 8B, north/northeast of MCB-2. This trail would be left mostly unimproved, with most work consisting of leaf raking, and fallen tree and brush removal. Use of the 8km trail would be limited to students and military personnel assigned to TBS. The trail would be used for training and educational purposes, and only foot traffic would be allowed. Signs would be installed at the trailheads and major trail intersections identifying the

authorized users. No bikes or off-road vehicles (ORVs) would be allowed. Users would also be directed to stay on the established trail, to avoid entering nearby surface danger zones (SDZs). Footbridges would be constructed over streams along the trail to facilitate crossing. The bridges would be sited, designed, and constructed in coordination with a structural engineer from MCBQ Public Works Branch to the specifications recommended for that site. The bridges would be installed to avoid impacting streams and potential flood damage.

Waterbars composed of timber and/or logs would be installed in steep areas of the trail to deflect the flow of rainwater, thus minimizing erosion of the trail. Wood chips/mulch may be placed on the trail surface to minimize erosion from rainfall. Trail identification and distance markers, as shown at Figure 4, would be placed at trail intersections and other points to assist users in ensuring they are on the desired route. Future plans include the establishment of extension trails on existing paths branching off from the 8km trail. Operation and maintenance of the memorial park and trail would be accomplished by TBS staff. The draft maintenance plan is at Appendix B.

Figure 4. Example of trail distance marker/educational sign

2.3 Alternatives dropped from further review

An additional alternative considered but eliminated from further review included a version of Alternative B with the construction of a wetland boardwalk across the northern portion of Barrett Pond. This project option was eliminated due to the potential for impacts to wetland areas around Barrett Pond. Construction of a children's playground in the Memorial Park area was also considered. This option was eliminated from further review due to safety and liability concerns.

3.0 EXISTING ENVIRONMENTAL CONDITIONS

CEQ regulations for implementing NEPA (40 CFR 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.

All of the alternatives under consideration for this proposal are located within TBS at MCBQ, in Stafford County, Virginia. The existing environmental conditions described in this section will be the same for all alternatives.

3.1 Land Use

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1 and Guadalcanal, 53,200 acres west of the same highways. The proposed project would occur within the Guadalcanal area.

The proposed project area is located within the cantonment area of Camp Barrett and TA-8A and TA-8B. The proposed MPM park area is mostly forested with maintained grass and parking areas, and is bordered by a manmade pond. Nearby buildings serve administrative, instructional, residential, and support functions for Marines assigned to TBS. The proposed 8km trail would be established in a wooded area currently used for military training (including, but not limited to, patrolling, land navigation, helicopter operations, smoke grenades, signaling devices, tactical riot control agents, artillery simulators, and a variety of other items) and physical fitness. The trail area falls under the purview of Range Management Branch (RMB).

3.1.1 Geology

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

3.1.2 Soils

The soils found in the Coastal Plain are the result of the soil formation on the underlying sediments. Several soil types can be found in the proposed project areas. A map and description of the soil types can be found at Appendix C.

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

3.1.3 Topography

The terrain of the proposed project areas consists of both wooded and man-made landscapes. The project areas are mostly gently rolling hills, and are located at elevations between 160 and 290 feet above sea level.

3.2 Water Resources

Due to the rugged upper Coastal Plain topography and proximity to various water bodies, activities conducted on the Base could potentially affect the water resources of the area.

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:

- Section 404 of the Clean Water Act, which 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 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 Section 401 water quality certification 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). 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 is a signatory to an agreement supporting the CBPA and its associated regulations, and all of its components must comply with CBPA directives to the maximum extent possible consistent with the military mission and budget constraints.

3.2.1 Surface Waters

The proposed MPM memorial park project area is adjacent to Barrett Pond. Other surface waters located in the proposed 8km project area are Beaverdam Run and Justice Run, which drain into Smith Lake to the southeast of the project area.

3.2.2 Wetlands

Wetlands exist in the proposed project areas. The nearest wetland is located immediately adjacent to the proposed MPM park project area. A Palustrine Forested Wetland (PFO) is located approximately 800 feet north.

3.2.3 Floodplains

Executive Order 11988, *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 proposed MPM park is depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) number 5101540131E, panel 131 of 280, and 5101540040E, panel 40 of 280 (shown at Appendix D). The Barrett Pond spillway drains into Aquia Creek. Beaverdam Run, located in the vicinity of the 8km trail, is depicted on FIRM number 5101540040E, panel 40 of 280, and 5101540045E, panel 45 of 280. The proposed construction areas are located within both Flood Zone A (shaded) and Flood Zone X (unshaded). Flood Zone A is defined as "Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies." Flood Zone X is an area outside of the 500-year floodplain. Justice Run does not have any floodplains associated with it.

3.2.4 Groundwater

A band along the western edge of the Coastal Plain is the groundwater recharge area for underground aquifers that extend eastward under the Chesapeake Bay. All of MCBQ lies within that aquifer. In this aquifer water can be reached at depths between 200 and 350 feet. One of the largest surface recharge areas for the Potomac Aquifer exists in Stafford County, near Interstate 95. No comprehensive studies of groundwater resources have been conducted at MCBQ to date.

3.2.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended) provides guidance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. The CZMA states that "the boundary of a State's coastal zone must exclude lands owned, leased, held in trust or whose use is otherwise by law subject solely to the discretion of the Federal Government, its officers, or agents" (16 USC § 1453 [1]). According to this statute, MCBQ is not within Virginia's coastal zone.

Section 307 of the CZMA covers coordination and cooperation issues. Section 307 mandates that federal projects that affect

land uses, water uses, or other coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally-approved coastal management plan. If a proposed federal project or activity affects coastal resources or uses beyond the boundaries of the federal property, Section 307 of the CZMA applies.

The Commonwealth of Virginia has developed and implemented a federally-approved coastal resources management program (CRMP) describing current coastal legislation and enforceable policies. The Virginia CRMP has nine enforceable policies which include: wetlands management, fisheries management, subaqueous lands management, dune management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management.

3.2.6 Stormwater

The proposed project areas are located upslope from Aquia Creek and Beaverdam Run, which are significant water resources. Justice Run is also located in the 8km trail vicinity. Stormwater runoff from the MPM park area is discharged into Aquia Creek via drainage outlets. Sheet flows from the area can also reach Aquia Creek.

3.3 Biological Resources

3.3.1 Vegetation

The land adjacent to these project areas is forested woodlands, buildings, parking areas, and riparian areas. Land disturbance will be limited to the construction of the Barrett Pond footbridge, trails, and pavilions, and major vegetation clearing will not be required. Vegetation associated with wetlands and the shoreline of Barrett Pond will not be disturbed.

3.3.2 Wildlife

This portion of 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.

The Migratory Bird Treaty Act (MBTA) protects all species covered by the four migratory bird treaties the United States signed with Canada, Mexico, Japan, and Russia. The MBTA prohibits taking, 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 DOD and USFWS set forth a Memorandum of Understanding (MOU) to promote the conservation of migratory Birds. Habitat critical to migratory birds are not located within the proposed development areas of Alternative 2.

Bald eagles, which are protected under the MBTA, are discussed within the threatened and endangered species/species of concern portion (3.3.3) of this EA.

3.3.3 Threatened and Endangered Species/Species of Concern

The Endangered Species Act 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.

Three plant species on MCBQ are listed as federally threatened or endangered and include Harperella, small whorled pogonia, and sensitive joint-vetch.

Harperella, ***Ptilimnium nodosum***, 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), ***Isotria medeoloides***, 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.

Sensitive joint-vetch, ***Aeschynomene virginica***, is a federally listed threatened species. This plant is an annual legume that prefers slightly brackish tidal river systems and exists along

the Potomac River.

One animal species, the dwarf wedge mussel (*Alasmidonta heterodon*) is federally endangered. This small bivalve lives in freshwater streams and requires highly oxygenated and silt-free waters.

The bald eagle, *Haliaeetus leucocephalus*, was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The bald eagle is still afforded federal protection under the Migratory Bird Treaty Act (see Section 3.3.2) and the Bald and Golden Eagle Act and considered a species of concern. The Bald and Golden Eagle Act requires a buffer of 660 feet around a nesting site. No nesting sites have been observed in the project area.

It is Navy and Marine Corps policy to cooperate with the Commonwealth of Virginia to protect Virginia-listed rare species and to provide consideration of state listed species during the NEPA process.

The Virginia Piedmont waterboatman, *Sigara depressa*, and the brook floater, *Alasmidonta varicose*, are two listed state endangered faunal species. Both species are water dependant. 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.

There are two endangered species and one threatened species known to be present at Quantico, these are respectively the dwarf wedge mussel (*Alasmidonta heterodon*), harperella (*Ptilimnium nodosum*), and small whorled pogonia (*Isotria medeoloides*). None of these species are located in the proposed development area or within the vicinity.

3.4 Cultural Resources

Implementation of the proposed action must comply with the National Historic Preservation Act (NHPA) of 1966, as amended. Under the NHPA, consideration of historic preservation issues must be integrated into the early planning stages of project planning by federal agencies. Under Section 106 of the NHPA, 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. Section 110 requires the

identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP.

No buildings listed in the NRHP as contributing elements of the Quantico Marine Corps Base Historic District have been identified at TBS. No contributing buildings would be affected by this project.

An archeological survey was conducted in the proposed MPM park project area on February, 2013. Shovel tests performed to the southeast of the proposed MPM memorial park did not contain artifacts. A pedestrian survey was conducted along the 8km trail. It was determined that the ground disturbance required to construct the footbridges at the stream crossings would be limited and have no adverse effect on cultural or archeological resources. The report of the archeological survey for the proposed project is at Appendix E.

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

3.5 Air Quality

The Environmental Protection Agency (EPA) defines ambient air (40 CFR Part 50) as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, the EPA has produced ambient air quality standards and regulations. The EPA has issued National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, sulfur dioxide (SO2), particulate matter (PM) at two levels- particles with a diameter less than or equal to a nominal 10 micrometers (PM10) and less than or equal to a nominal 2.5 micrometers (PM2.5), ozone, nitrogen dioxide (NOx), and lead. Areas that do not meet NAAQS are called non-attainment areas. MCBQ is located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a PM2.5 non-attainment area. The General Conformity Rule ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state’s plans to meet the NAAQS.

Established under the Clean Air Act (section 176(c)(4)), the General Conformity Rule plays an important role in helping states improve air quality in those areas that do not meet the NAAQS. Under the General Conformity Rule, federal agencies must work with State, Tribal, and local governments in a nonattainment or maintenance area to ensure that federal actions conform to the air quality plans established in the applicable implementation plan.

In order to target federal projects which have the greatest impact on regional air quality, EPA established ***de minimis*** thresholds. ***De minimis*** thresholds are pollutant specific and specify the maximum allowable emissions from a project before a formal conformity determination must be prepared. Federal agencies do not need to prepare conformity determinations for actions that do not exceed these thresholds.

Additionally, several types of federal actions are automatically exempt from the general conformity rule without regards to their emissions. Actions such as routine repair of facilities and roads, routine transport of materiel and personnel, routine movement of mobile assets, and others are listed as exempt in 40 CFR 93.153(c)(2). Any equipment that requires a permit to construct and operate under a state's New Source Review program is exempt from General Conformity, as well as any other action specifically accounted for in the state's SIP.

A federal agency must perform a General Conformity applicability analysis prior to initiating any non-exempt action that will cause emissions of criteria pollutants for which the area is designated nonattainment or maintenance. The analysis must include reasonable estimates of direct emissions (caused by the action; occur at the same time and place) and indirect emissions (caused by the action; may occur later in time or in a different location than the action). The analysis must be performed for each year of the action and one year of typical operations. If the analysis indicates that the emission levels are below ***de minimis*** thresholds for all years, then no further action is necessary.

The pollutant ***de minimis*** criterion is 50 tons per year (tpy) for volatile organic compounds (VOC), 100 tpy for NOx, 100 tpy for PM2.5, and 100,000 tpy for CO2.

3.5.1 Climate Change

Greenhouse gases (GHG) are atmospheric compounds that contribute to the greenhouse effect. GHGs include CO2, CH4, and N2O, and fluorinated gases. The greenhouse effect is a natural phenomenon that causes heat to be trapped within the lowest portion of the earth's atmosphere creating 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 (IPCC 2007).

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 Environmental Protection Agency, to develop climate change assessment tools.

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO2-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." These recommendations are consistent with the EPA's Mandatory Reporting of Greenhouse Gases rule (40 CFR Part 98) which applies to all stationary sources emitting 27,563 tpy or more of GHG emissions. The rule allows for data collection to help shape future climate change policies and programs but does not require control of GHGs.

3.6 Noise

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with military

installations. The major sources of noise at MCBQ include aircraft, artillery, small arms, explosives, vehicles, heavy equipment, and machinery.

Existing noise levels in the project area are primarily from ordnance used in live and simulated fire exercises, generally conducted at ranges on the Guadalcanal side of the Base. There would be no additional noise associated with the site after construction activities.

3.7 Infrastructure, Utilities, and Transportation

3.7.1 Infrastructure and Utilities

Utilities will not be removed or installed as a result of the proposed construction activities.

3.7.2 Transportation

No roads, parking lots, or parking structures will be demolished as a part of the proposed alternatives. The proposed action alternatives would not create a significant increase in daytime traffic during the work week.

3.8 Environmental Justice

Executive Order (EO) 12898, Federal Actions to address Environmental Justice in Minority Populations and Low-income Populations, was issued in 1994. This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these groups. The proposed action will not involve effects specific to minority or low-income populations.

EO 13045, Protection of Children from Environmental Health and safety Risk, was issued in 1997. This order requires agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. Children are more likely than adults to be adversely affected by environmental contaminants.

3.9 Hazardous Materials/Waste

There is no impact from hazardous materials and/or waste anticipated with this project. The proposed locations of the

Memorial Park and trail are not unexploded ordnance (UXO) sites. They are not known munitions response sites or former impact areas.

3.10 Hazardous Materials/Waste and Solid Waste

Many portions of MCBQ consist of historic munitions impact sites. The proposed action would not take place within or near a known Munitions Response Site. However, excavation activities may expose lead or other munitions constituents during excavating activities.

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

3.11 Recreation

The proposed project area is currently used for military training (including, but not limited to, patrolling, land navigation, helicopter operations, smoke grenades, signaling devices, tactical riot control agents, artillery simulators, and other items), physical training on the "E" Course, and intermittently for hunting. The proposed project would create walking/running trails with educational plaques containing information on the MPM, picnic pavilion, and a fishing pier, increasing the recreational opportunities for personnel assigned and visitors to TBS, thus changing the use of the Barrett Pond area.

3.12 Military Training

The proposed project area is within the Guadalcanal area of MCBQ, and within areas used for military training of Marines. Examples of training that occur in the vicinity include, but are not limited to, helicopter operations, smoke grenades, signaling devices, tactical riot control agents, land navigation, patrolling, use of simulation devices (i.e. artillery simulators, booby traps, etc.), martial arts instruction, military flight operations, and physical training. Drop Zone (DZ) Raven lies in close proximity to the northwest of the 8km trail and is one of the landing zones approved for MV-22 Osprey operations.

4.0 ENVIRONMENTAL CONSEQUENCES

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

This section describes the anticipated direct, indirect, and cumulative environmental impacts of the no action alternative and one action alternative for establishing a MPM memorial park and educational trail.

Alternative A is no action and Alternative B is the proposed action.

4.1 Land Use

Impact of Alternative A: The no action alternative would result in a continuation of the wooded area surrounding Barrett Pond remaining unused. No action, Alternative A, would not be expected to impact the current geologic, topographic, or soils conditions at MCBQ or the surrounding area.

Impact of Alternative B: Alternative B could affect the land use of TA-8A and 8B. The intended land use for both areas is military training, and they are designated range areas in the USMC Range Inventory. Introduction of the 8km trail within those training areas that is not prohibited for recreational use would require a change to the land use and compensatory reduction of range area at HQMC.

Minor land clearing activities would be conducted as a part of the proposed trail and pavilion construction.

Neither of the alternatives would be expected to significantly change or affect the geology of the area, nor would they impact the topography of the base.

To prevent the loss or movement of soils from the disturbed areas, erosion and sediment control measures would be implemented during construction. Approximately 0.5 acre of land would be disturbed to implement Alternative B. With implementation of proper erosion and sediment control measures,

the action alternative is not expected to significantly impact on-site or area soils.

4.2 Water Resources

Potential impacts to the water resources were assessed in the context of water quality, hydrology, surface water and wetlands impacts, groundwater, and flooding potential in the project areas.

Impact of Alternative A: It is expected that impacts to water resources would remain the same if no action is taken.

Impact of Alternative B: The action alternative, Alternative B, would provide walking trails, a pavilion, a footbridge and fishing pier in the MPM park area, and footbridges along the 8km trail. The removal of vegetation associated with this project is minimal and any additional impervious surfaces would be negligible.

No wetlands or surface waters will be directly affected through filling or alteration of hydrology. Potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices per the Virginia Erosion and Sediment Control Handbook (1992). The construction projects will require installation of proper erosion and sediment Control (E&SC) measures (such as proper silt fence and storm drain inlets) prior to the onset of land disturbing activities.

The proposed action alternative would require no fill within the 100-year floodplain, which is considered an RMA under the CBPA. None of the alternatives would adversely affect an RPA or RMA as defined under the CBPA.

The proposed construction projects are consistent to the maximum extent practicable with the enforceable policies of Virginia's CRMP. The proposed project is not expected to directly affect water resources (including wetlands) and not expected to have adverse effects on fisheries, shorelines, subaqueous lands, dunes, or coastal lands.

Alternative B would not adversely affect wetlands, surface waters, groundwater, CBPA requirements, or floodplain areas.

4.3 Biological Resources

Impact of Alternative A: Implementation of the no action alternative, Alternative A, would not have a significant impact on vegetation, wildlife, or threatened or endangered species.

Impact of Alternative B: Establishing a MPM memorial park and 8km walking/running trail would have no adverse effects on wildlife (including migratory birds) or wildlife habitat.

Suitable habitat for the SWP was identified during a site visit on 23 April 2013. These sites were surveyed for SWP in June 2013. No colonies of SWP were identified during the survey of the proposed project area. The report of the survey is at Appendix F. The dwarf wedge mussel and harperella are not found in areas that would be affected by implementation of Alternative B.

Due to the scope of work and the required Best Management Practices to protect water quality, there is no potential for the action alternative to adversely affect threatened and endangered species, or habitats used by these species.

4.4 Cultural Resources

Impact of Alternative A: The no action alternative would not have an effect upon the Base Historic District. Archeological resources would not be impacted.

Impact of Alternative B: The proposed action alternative is not expected to have an impact on archaeological resources. Ground disturbing activities will be limited to areas which been determined to have no potential for significant archaeological resources. These areas have been previously disturbed.

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 contractor should contact the Base Archaeologist/NEPA Section (703-432-6781) immediately if artifacts (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, 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 8.0 of this EA
- Redesign project to avoid remains, if possible
- Base Archaeologist/NEPA Section will contact State Historic Preservation Office (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 guidelines

4.5 Air Quality

The General Conformity Rule ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet the National Ambient Air Quality Standards (NAAQS).

A federal agency must perform a General Conformity applicability analysis prior to initiating any non-exempt action that will cause emissions of criteria pollutants for which the area is designated nonattainment or maintenance. The analysis must include reasonable estimates of direct emissions (caused by the action; occur at the same time and place) and indirect emissions (caused by the action; may occur later in time or in a different location than the action). The analysis must be performed for each year of the action and one year of typical operations. If the analysis indicates that the emission levels are below ***de minimis*** thresholds for all years, then no further action is necessary.

Impact of Alternative A: The no action alternative would not have an impact on air quality.

Impact of Alternative B: MCBQ is located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a

$PM_{2.5}$ non-attainment area. The pollutant ***de minimis*** criterion is 50 tons per year (tpy) for volatile organic compounds (VOC), 100 tpy for NO_x, 100 tpy for $PM_{2.5}$, and 100,000 tpy for CO_2. Sources of these pollutants associated with Alternative B would include emissions from construction equipment, crew commuting vehicles, fugitive dust, and from use of other fuel-burning equipment. Projected emission from the action alternative will fall within the ***de minimis*** levels.

No new air emissions sources are proposed with Alternative B.

The action alternative would not significantly impact the current air quality conditions at MCBQ or the Metropolitan Washington non-attainment area. The proposed action would have minor emissions resulting from the use of construction equipment.

4.5.1 Climate Change

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO_2-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." These recommendations are consistent with the EPA's Mandatory Reporting of Greenhouse Gases rule (40 CFR Part 98) which applies to all stationary sources emitting 27,563 tpy or more of GHG emissions. The rule allows for data collection to help shape future climate change policies and programs but does not require control of GHGs.

Impact of Alternative A: The no action alternative would not cause an increase in greenhouse gas emissions and would not have new effects on climate change.

Impact of Alternative B: The proposed project will not add new emission sources. This project will not encourage a use change; the proposed project supports the current TBS mission activities within the TBS training area. Construction emissions would be short in duration and are not covered by the Mandatory Reporting of Greenhouse Gases rule as the intent is to track and regulate stationary sources. This project would not have any long term changes in stationary or mobile emission sources or landfill operations. In compliance with CEQ's and the EPA's guidance,

quantitative analysis of CO_2 equivalents is not required for the proposed action.

By directly inventorying all emissions in a nonattainment region and monitoring concentrations of criteria pollutants in attainment regions, the Commonwealth of Virginia takes into account the effects of all past and present emissions in the state. This is done by putting a regulatory structure in place designed to prevent air quality deterioration for areas that are in attainment with the NAAQS and to reduce common or criteria pollutants emitted in nonattainment areas to levels that will achieve compliance with the NAAQS. This structure of rules and regulations applies either specifically or indirectly to all activities in the region and all activities associated with the proposed action alternative. No other large-scale projects or proposals have been identified that, when combined with the proposed action, would threaten the attainment status of the region, would have substantial GHG emissions, or would lead to a violation of any Federal, state, or local air regulation. The proposed action would not significantly contribute to cumulative impacts to air quality, GHGs, or climate change.

4.6 Noise

Existing noise at and around the project area is largely attributed to operations associated with operations at Murphy and Charlie Demolition Ranges, flight operations at DZ Raven, military training, and vehicle traffic.

Impact of Alternative A: The no action alternative would not impact existing noise levels on the base or the surrounding area.

Impact of Alternative B: Implementation of the proposed action would generate short-term, temporary noise from demolition and construction operations (i.e., noise from construction equipment, supply trucks, and worker vehicles). The proposed action alternative would not have a permanent increase on noise levels.

Noise associated with construction activities under Alternative B would be temporary. Given the type and duration of the noise to be generated, lack of sensitive receptors near the project area, and the ambient noise level adjacent to the project site, noise generated by construction activities is not expected to result in significant noise impacts. No post-construction noise is expected at the site.

4.7 Infrastructure, Utilities, and Transportation

Impact of Alternative A or B: Due to the scope of the proposed work, implementation of either of the alternatives would not be expected to alter the existing infrastructure or utilities within MCBQ and will not affect traffic patterns. Construction crews would not have a significant impact on traffic or parking space availability.

4.8 Environmental Justice

Impact of Alternative A or B: Implementing either of the proposed alternatives would not be expected to significantly impact the socioeconomics or create disproportionately high and adverse human health or environmental effects to minority, low-income populations, or children at MCBQ or in the surrounding area.

This project will have temporary minor impacts such as noise created by construction activities and these impacts will not disproportionately affect children. Best management practices such as dust management would also be employed to eliminate or keep temporary environmental nuisances to a minimum.

4.9 Health/Safety and Munitions Response Program

Impact of Alternative A: This alternative would maintain the status quo and would not have effects on health and safety.

Impact of Alternative B: MCBQ includes active and former ranges and there is the potential to encounter unexploded military munitions, discarded military munitions, and/or munitions and explosives of concern during excavating activities. The project area is not within any known Munitions Response Sites. Potential land disturbances associated with this project would include, but not be limited to, grading for pavilion foundations, and installation of footbridges and signs.

The proposed locations of the Memorial Park and trail are not unexploded ordnance (UXO) sites. They are not known former impact areas. There is the possibility of UXO being discovered during excavation and earth disturbing activities.

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

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

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

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

4.10 Hazardous Materials/Waste

Impact of Alternative A: This alternative would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ.

Impact of Alternative B: The Action Alternative would result in construction waste. Reports of waste generated (including recycling) including material type (Construction Demolition Debris, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported 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 F). All spoils and debris generated by the construction operation shall be transported off base and disposed of in accordance with all federal, state, and local regulations.

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

The proposed no action or action alternatives would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ.

There is no impact from hazardous materials and/or waste anticipated with this project. No hazardous materials would be introduced under any of the alternatives.

Reports of waste generated (including recycling) including material type (construction/demolition debris, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported on the attached Waste Management Plan and submitted to the NREA Branch within 30 days of the close of the project, and no later than October 15 of the respective calendar year to be included in annual report submissions.

4.11 Recreation

Hunting areas exist within the proposed project areas. It is not anticipated that construction of the MPM memorial park or 8km trail would have an adverse effect on hunting opportunities aboard MCBQ. Construction activities would not affect MCBQ fishing or hiking opportunities.

4.12 Military Training

Impact of Alternative A: This alternative does not involve any construction and would not have any effects on military training.

Impact of Alternative B: Alternative B could affect the military training within TA-8A and 8B. Patrolling, land navigation, helicopter operations, use of smoke grenades, signaling devices, tactical riot control agents, artillery simulators, and other items occur routinely within those training areas.

Alternative B could possibly affect military training via construction activities. These effects are considered temporary in nature and would not be significant. The proposed 8km trail intersects with the “E” Course trail at several points. Users

training on the 8km trail would be informed of possible activity on the "E" Course through warnings on the informational trailhead signs. Potential conflicts with military training in the vicinity of the 8km trail would be mitigated by prohibiting the recreational use of the 8km trail.

4.13 Safety

Impact of Alternative A: Implementation of the no action alternative would not have an impact on safety.

Impact of Alternative B: Alternative B could potentially affect the military training in the adjacent Guadalcanal training areas. Training activities that are potentially hazardous to non-participating personnel could require severe restrictions, or may need to be prohibited, particularly if the 8km trail is open for recreational use. MV-22 Osprey operations create considerable heat and rotor wash upon hovering. Many pyrotechnics and signaling devices create missile hazards, and tactical riot control agents could drift from adjacent areas.

Alternative B may affect the use of Murphy Demolition (Demo) Range, which supports explosives training for numerous users. The close proximity of the trail to the range could limit future range use expansion through encroachment on the SDZs. Current SDZs from Murphy Demo Range are within 100m of the proposed 8km trail.

Additionally, Alternative B could affect the land use in the adjacent Guadalcanal training areas. Training activities that are potentially hazardous to non-participating personnel may require severe restrictions, or may need to be prohibited, particularly if the 8km trail is open for recreational use. MV-22 Osprey operations create considerable heat and rotor wash upon hovering. Many pyrotechnics and signaling devices create missile hazards, and tactical riot control agents may drift from adjacent areas.

The action alternative would not be expected to have a significant impact on safety. Signs informing users of the 8km trail of personal risk and/or closures due to training evolutions would be posted to avoid personal injury. The potential for safety impacts would be mitigated by prohibiting recreational use of the 8km trail.

4.14 Cumulative Impacts

For NEPA analysis, a cumulative impact is defined as the impact on the environment, which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future action. Impacts can result from individually minor but collectively significant actions taking place over a period of time.

The following actions are either recent past, ongoing, or future projects adjacent to the Barrett Pond vicinity or TBS in general:

- Construction of Student Barracks (Westside Development)
- Replacement of Water/Sewer Lines Along Application Trail

Mitigation measures similar to those outlined in this EA for construction of an MPM park and trail will or have been completed for the above mentioned projects. SHPO consultation is also completed as required for all demolition projects at MCBQ.

4.15 Mitigation Measures

4.15.1 Mitigation of Effects to Water Quality

The implementation of basic erosion and sediment control practices would be required during construction of facilities at the MPM park and the 8km trail footbridges, as specified in the Virginia Erosion and Sediment Control Handbook (VDCR 1992). The proper installation and regular maintenance of erosion and sediment control measures would minimize the movement of disturbed soils off-site and into the Potomac River watershed. Following construction, the disturbed areas will be seeded and landscaped. Final pavilion, bridge, and fishing pier design plans shall be submitted to PWB and NREA for review and approval prior to construction commencing on these project elements.

4.15.1 Mitigation of Effects to Military Training

The installation of signs at the trailheads to the 8km trail would identify the approved use of the trail as “training only”. Notices would be posted to warn of trail closures due to military training evolutions to avoid potential conflicts with the TBS mission.

4.15.2 Mitigation of Effects to Safety

Prohibiting the recreational use of the 8km trail would minimize the potential for safety impacts and personal injury of trail users due to military training evolutions.

5.0 CONCLUSION

Two alternatives regarding the construction of a Montford Point Marine memorial park and 8km trail have been evaluated. The no action alternative, Alternative A, will not have adverse effects on the human environment, health or safety. The adverse effects of Alternative B to Marine Corps Base Quantico are minor, and mitigation measures would be implemented.

The project proponent has determined that Alternative B is the preferred alternative. Alternative B would not have significant impacts on the human environment and is the environmentally preferred option.

6.0 LIST OF PREPARERS

Heather A. McDuff
Head, NEPA Coordination Section
Natural Resources and Environmental Affairs Branch
Installation and Environment Division (GF)
Marine Corps Base Quantico, VA 22134
(703) 432-6771

7.0 LIST OF AGENCIES AND PERSONS CONTACTED

Natural Resources and Environmental Affairs Branch, Installation and Environment Division, Marine Corps Base Quantico, VA 22134
- Ms. Amy P. Denn, Head
- Major Peter Baker, Deputy
- Mr. Frank Duncan, Head, Environmental Planning Section
- Ms. Stacey Rosenquist, Head, Environmental Compliance Section
- Mr. Robert Stamps, Head, Natural Resources Program
- Mr. John Giannico, Head, Forestry Section
- Mrs. Catherine Roberts, Cultural Resources Manager

Office of Counsel (C 050), Marine Corps Base Quantico, VA 22134
- Mr. Nathan Stokes, Associate Counsel

Logistics Support Group, The Basic School, Marine Corps Base Quantico, VA 22134
- Major Erik Tyler

Range Management Branch, Operations Division, Marine Corps Base Quantico, VA 22134
Mr. Chris Thompson, Range Safety Specialist

Marc Holma, Architectural Historian

8.0 REFERENCES

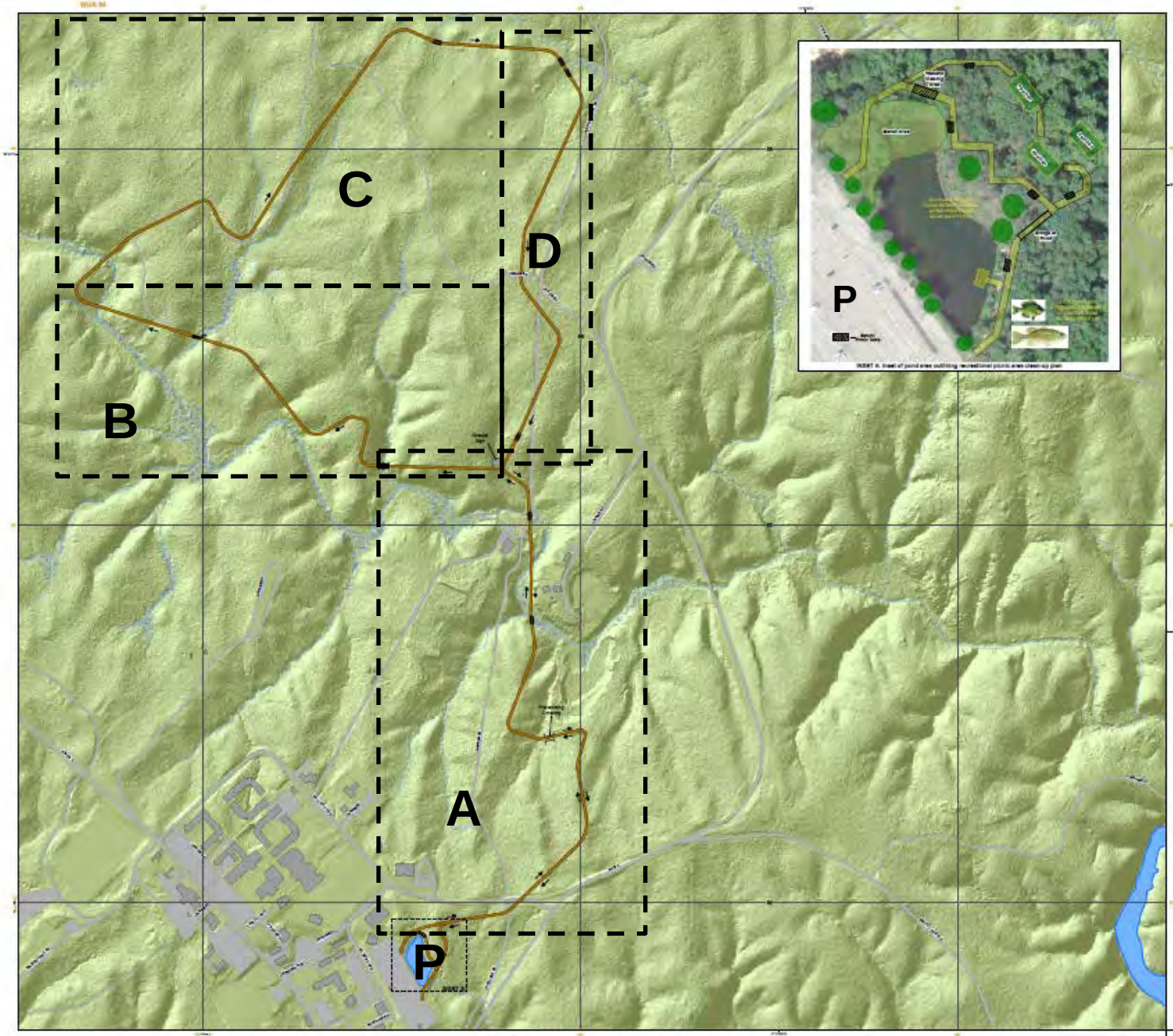
Natural Resources and Environmental Affairs Branch (NREA)
2007 Integrated Cultural Resource Management Plan for Marine Corps Base, Quantico, Virginia. Natural Resources and Environmental Affairs Branch, Marine Corps Base Quantico, VA.

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

Montford Point Marines Association, Inc.,
http://www.montfordpointmarines.com/

APPENDIX A
Project Plan, Maps, and Photographs

TBS MONTFORD POINT TRAIL PROJECT



Directional_Flow
Proposed Bridge Placement
Montford Trail
Roads
Surface Water
Wetlands
Structures
Parking Area
Streams

0 400 800 1,600 Feet

Scale: 1in = 300ft at Sheeet size 44 x 34

General Notes

1. Introduction. The Montford Point Trail will be designed and maintained in order to provide a recreational, outdoor, educational and experience that visitors will support and preserve the legacy of the Montford Point Marines. The trail will be designed in order to facilitate minimal impact on the surrounding environment. Trail blend with the natural surroundings by not maintaining continuity and regularity. The trail will be designed so that it will be compliant with and first investment in design and construction will be suitable list to ensure that the trail continue to be safe, enjoyable, and environmentally stable.

2. Trail Access. Public access will be provided from the event parking lot located at Barrell Pond.

3. Trail Layout. The trail will be approximately 0.7 miles/kms in length and will consist of primarily, but unused, trails as well as newly cleared trails. The specific objectives of trail location are to design a trail that produces minimal impacts on the land, is naturally pleasing, uses natural terrain and vegetation to enhance the trail experience. Creation use of the vegetative character of the trail will be an important part in the trail maintenance plan. The trail routes will be cognizant of the terrain, vegetation, soil types, weather, drainage patterns, and natural resource areas. All trail construction. Preserving diversity of vegetation as well as ensuring a professionally constructed trail network accessible to provide user interest and satisfaction. The Trail head will be located at Barrell Pond to allow adequate parking, parking area as well as giving access to the educational area around the pond. Ample options will be provided for users to vary the length of their trip. When roads are crossed adequate sign caching and visibility will be provided. Additionally, when the carving out of a slope is necessary it will be done in a natural manner.

4. Trail Clearing. A trail will be cleared 2 to 4 meters/ft to allow an appropriate corridor for the expected traffic. The trail will be clear and easy to follow with all stumps, shrubs, and holes removed from the path and will be kept cleared to allow line of sight. All the trees that are to be cut down will be marked in a way that will be visible to the person responsible for the removal. Branches of felled/dead vegetation will be cut flush with the parent branch or stem, leaving no stubs and allowing for natural healing to take place. Trees that are to be removed will be cut down to the ground as possible leaving no steep pointed stumps or stems. Branches and trees that are removed will be scattered naturally in the woods or will be chipped and reused as mulch.

5. Trail Marking. The trail will be marked with the normal trail signage. These red and yellow signs will be placed to prevent any confusion that might arise at the Rt Course crossing. These signs will alert users and confirm to them that they are on the appropriate trail.

6. Signs. Signs along the trail will be both recreational and educational in nature. The Montford Point Marines Association (MPMA) will provide for historic interpretive signs along the way. These placements will commemorate the rich history and tradition of the Montford Point Marines. There will also be signs with cultural/plant awareness as well as markers at trail ends and at intersections along the trail. The MPMA Forestry Department will be contacted to provide additional signs identifying local vegetation and wildlife along the trail.

7. Environmental Considerations.

a. Topography. Dips, changes in grade, or appearance of an approaching feature will keep trailers and unwanted activities/dogs. The trails will take every advantage of dramatic topography existing as it does not cause an erosion or safety problem.

b. Erosion Control. Proper drainage is an essential element of this trail construction. Diverting surface water through outsloping, grade dips, water bars, culverts, ditches and grade changes will help preserve the trail. The existing ground surface will not be unnecessarily disturbed to reduce the potential for erosion. The construction and implementation of erosion control devices will be implemented in every trail best preserves the natural state of the area. Wetlands and slopes are the two most sensitive areas in erosion control. The trail will be designed to avoid these areas as much as possible. Rocks can be used where steep exists to retain soil stabilize the soil. Additionally in vicinity of the pond significant erosion has occurred on the water's edge. In order to preserve the pond and maintain its current condition proper erosion control will be established.

c. Hardening Trails in Wet Areas. There are several ways to protect the trails in flat, low lying, wet terrain in order to prevent erosion problems and keep the terrain dry. If the area is to low to be drained then trail hardening techniques can be used. Rip rap, rock hardening or log bridges made of wood can be used. These structures should generally be of quality material to prevent long term deterioration into the environment.

d. Stream Crossings. The trail will cross streams at several points. Some form of bridge construction is required to provide safe and convenient passage over these streams. Due to the expected frequent public use of these trails it is necessary to provide for the safest crossings. Wooden bridges will be built of treated material approved from the NCRC/DT. These bridges should be of solid construction with hand railings and will require an annual safety inspection for safety purposes.


EXAMPLE OF CROSSING AT POND ACTUAL CROSSING WILL VARY


WETLAND MARSH AREA w/ 2 -3 WOOD DUCK BOXES TO BE PLACED IN MARSH AREA


GRILLS 2 PER PAVILLION


MULCHED PATH PATH AROUND POND AREA ONLY


SURFACE PLACED WALK WIDTH 2 TRAILWATCH POLES TOPPED W/ DUB BOARDS TRAIL CROSSINGS


WETLAND VIEWING AREA (ACTUAL DECK WILL VARY)


WOUNDED WARRIOR ACCESSIBLE FISHING AND VIEWING PIER

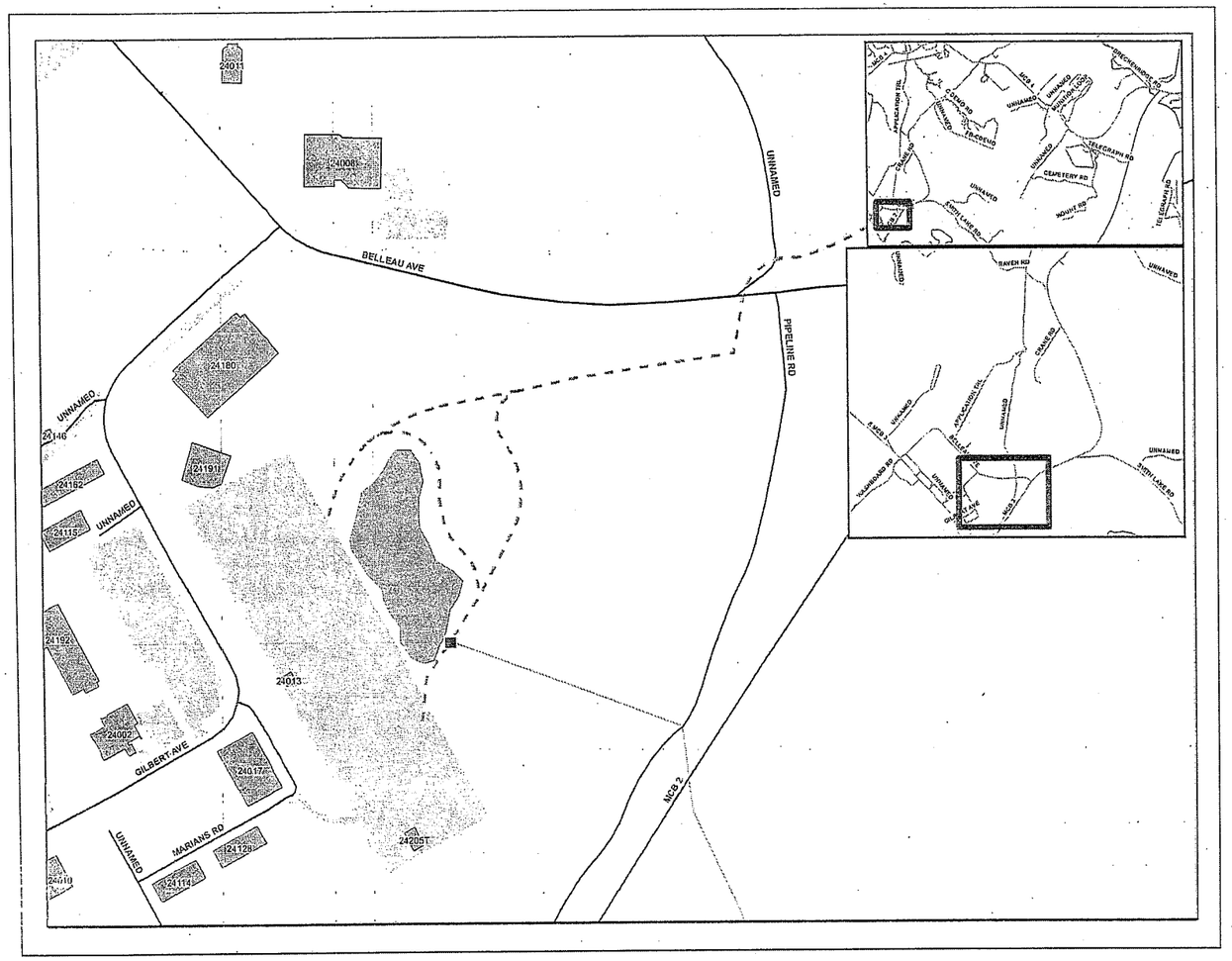

BASIC PARK TYPE CABANA SIMILAR TO LUNGA PARK

Disclaimer

Although every effort has been made to ensure the accuracy of the information, errors and conditions originating from physical sources to develop the database may be reflected in the data supplied. The user must be aware of data conditions and ultimately bear responsibility for the appropriate use of the information with respect to specific applications. No warranty is made by the author concerning the currency of the data, and other conditions specific to certain data.

Prepared: Dave Foxworth, GISP
Contractor, DECP/Admin
Date: May 2, 2014


Play ground
Main Pavilion
Park
Exit Bridge
Pier
Bridge
Walking Trail
Entrance



BRIDGE LOCATION & VICINITY MAP

NOT TO SCALE

MONTFORD POINT SPILLWAY BRIDGE

SHEET INDEX

APPROVALS

(NREA)	(DATE)
(CUSTOMER)	(DATE)
(BASE SAFETY)	(DATE)
(FIRE INSPECTOR)	(DATE)
(PWO)	(DATE)
(DIRECTOR OF ENGINEERING)	(DATE)

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO

EIC: JMC	PROJECT NAME: MONTFORD POINT SPILLWAY BRIDGE	G-1
DRAWN BY: SRS	DRAWING NAME: TITLE SHEETS	SHEET 1 OF 4
CONTRACT NUMBER:	PWB NUMBER: 2013083	DATE: 12/6/13

STRUCTURAL NOTES:

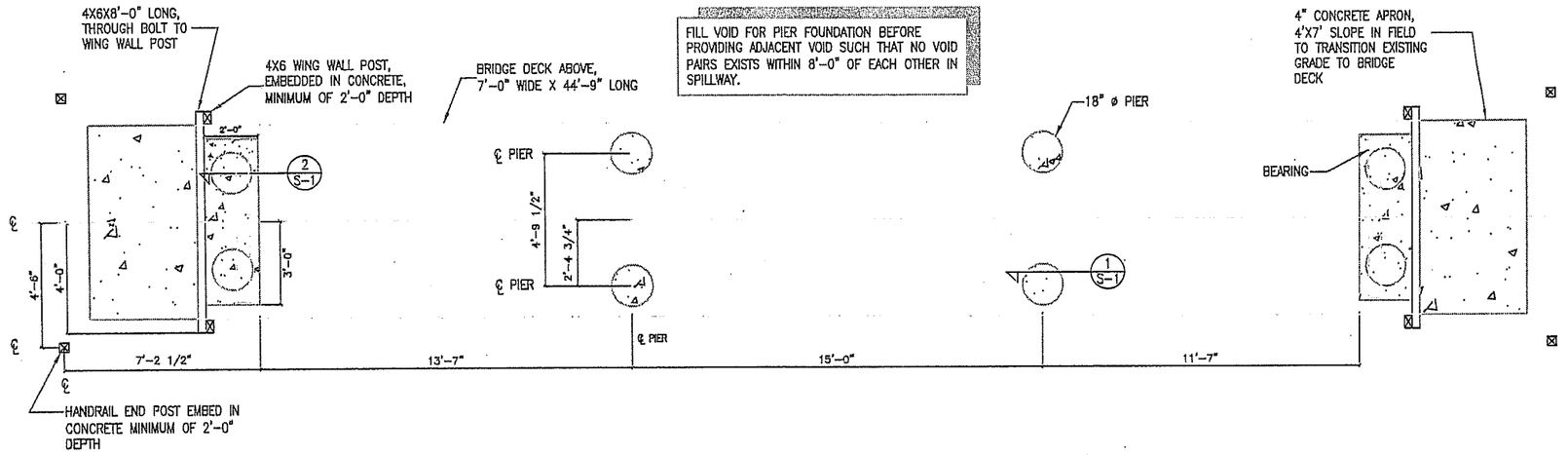
1. STRUCTURAL LOADS ARE IN ACCORDANCE WITH THE IBC–BUILDING CODE AND ASCE 7.
2. ALL BOLTED CONNECTIONS TO BE ½"ø UNLESS OTHERWISE NOTED

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL BEAMS ARE AS PROVIDED (S10X35)
2. ALL STEEL ANGLES AND PLATES SHALL BE ASTM A–36, UNLESS OTHERWISE NOTED.
3. NON–SHRINK GROUT SHALL BE IN ACCORDANCE WITH COE CRD–C621 SPECIFICATIONS, AND SHALL BE A NON–CORROSIVE, NON–STAINING, NON–METALLIC, PREMIXED PRODUCT.
4. ALL STRUCTURAL STEEL WORK SHALL BE IN ACCORDANCE WITH THE NINTH EDITION OF THE "MANUEL OF STEEL CONSTRUCTION ALLOWABLE STRESS DESIGN", OF THE AMERICAN INSTITUE OF STEEL CONSTRUCTION.,
5. ALL FIELD–BOLTED SHEAR CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS (THREADS INCLUDED IN THE SHEAR PLANE) WITH ½" DIAMETER ASTM A–325 HIGH–STRENGTH BOLTS UNLESS OTHER WISE NOTED. SLIP–CRITICAL TYPE CONNECTIONS ARE IDENTIFIED ON THE DRAWINGS THUS: "(SC)"
6. ALL WELDED CONNECTIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUEL OF STEEL CONSTRUCTION" AND THE LATEST EDITION OF THE "CODE FOR WELDING IN BUILDING CONSTRUCTION" OF THE AMERICAN WELDING SOCIETY. USE E7018 LOW–HYDROGEN WELDING ELECTRODES. ALL WELDERS SHALL BE AWS CERTIFIED.

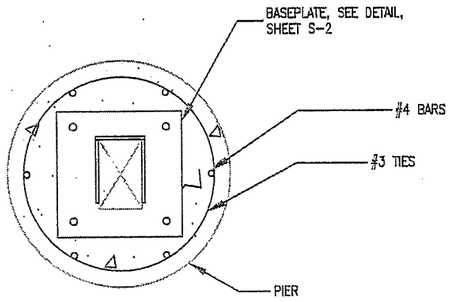
CONCRETE CONSTRUCTION NOTES:

1. ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", (ACI 318) AND ITS LATEST AMENDMENTS AND THE SPECIFICATION FOR STRUCTUAL CONCRETE FOR BUILDINGS (ACI 301)
2. UNLESS OTHERWISE NOTED, ALL CONCRETE SHALL OBTAIN A 28–DAY COMPRESSIVE STRENGTH OF 3000 PSI. ALL CONCRETE EXPOSED TO WEATHER SHALL CONTAIN AIR–ENTRAINING ADMIXTURE TO OBTAIN AN AIR CONTENT OF 6%, PLUS–OR–MINUS 2%.
3. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM–615 GRADE 60 SPECIFICATIONS.
4. ALL WELDED WIRE FABRIC SHALL BE IN ACCORDANCE WITH ASTM–A–185.
5. CONCRETE PROTECTION OF REINFORCING AND OTHER GENERAL DETAILS OF FABRICATION AND PLACING OF REINFORCING SHALL BE IN ACCORDANCE WITH ACI 318.
6. ALL REINFORCING STEEL SHALL BE TIED SECURELY IN PLACE TO PREVENT DISLOCATION DURING THE CONCRETE PLACING OPERATIONS.
7. CONCRETE REINFORCING STEEL MARKED STANDARD HOOK SHALL HAVE A 90 DEGREE HOOK A MINIMUM OF 12 BAR DIAMETERS IN LENGTH, UNLESS OTHERWISE NOTED. STIRRUP, TIE, AND 180–DEGREE HOOKS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318



BRIDGE FOUNDATION PLAN

SCALE: 3/16" = 1'–0"



PIER FOUNDATION PLAN

SCALE: 1" = 1'–0"

1 S–1

PIER FOUNDATION SECTION

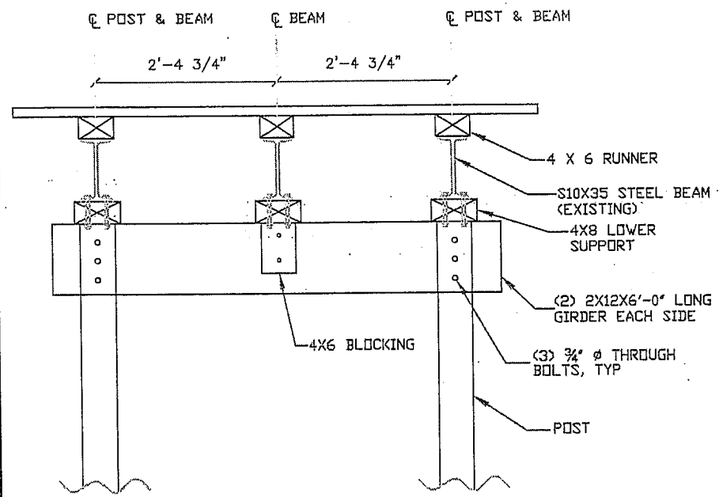
SCALE: 1/2" = 1'–0"

2 S–1

ABUTMENT FOUNDATION DETAIL

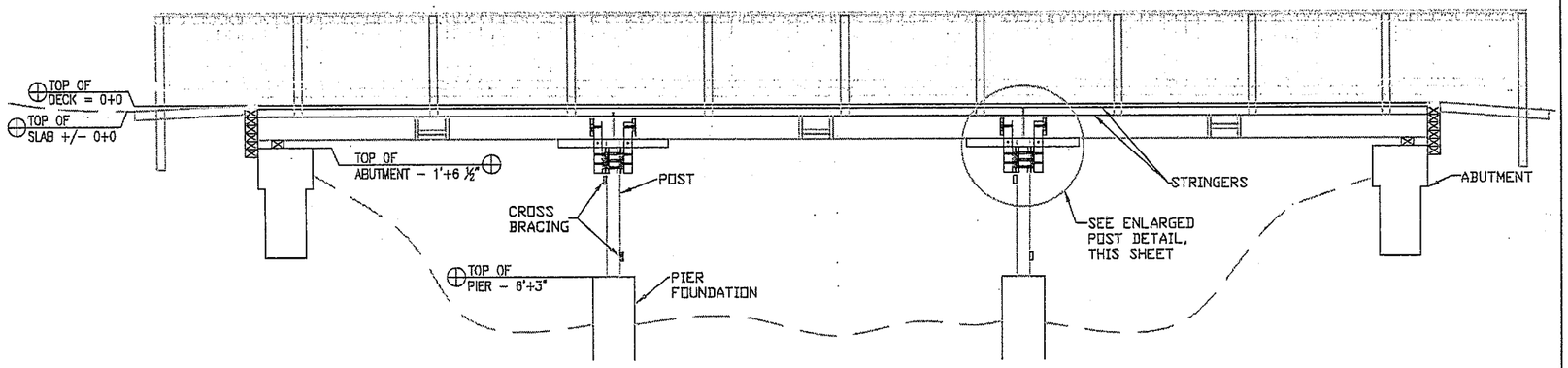
SCALE: 1/2" = 1'–0"

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO		
EIC: JMC	PROJECT NAME: MONTFORD POINT SPILLWAY BRIDGE	S–1
DRAWN BY: SRS	DRAWING NAME: FOUNDATION DETAILS	SHEET 2 OF 4
CONTRACT NUMBER:	PWB NUMBER: 2013083	DATE: 12/6/13



POST ELEVATION (BRACING NOT SHOWN)

SCALE: 1/2" = 1'-0"



BRIDGE ELEVATION

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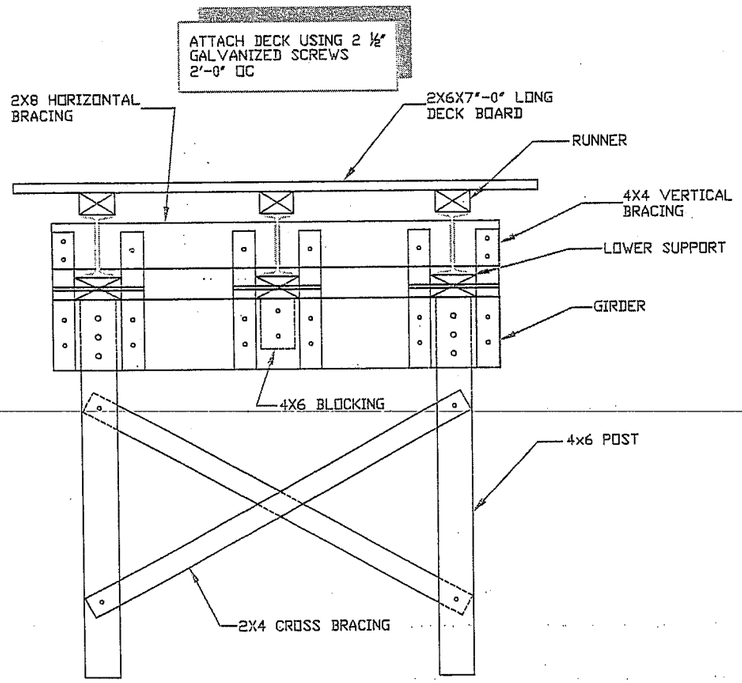

POST BRACING ELEVATION

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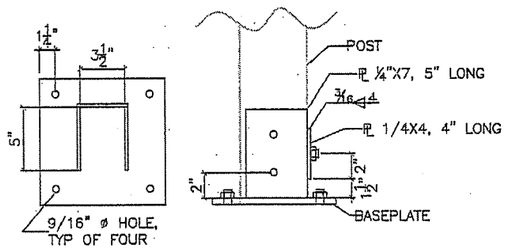
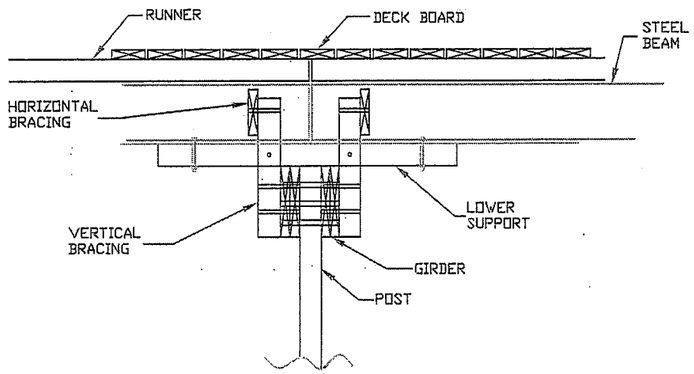


BASE PLATE DETAIL

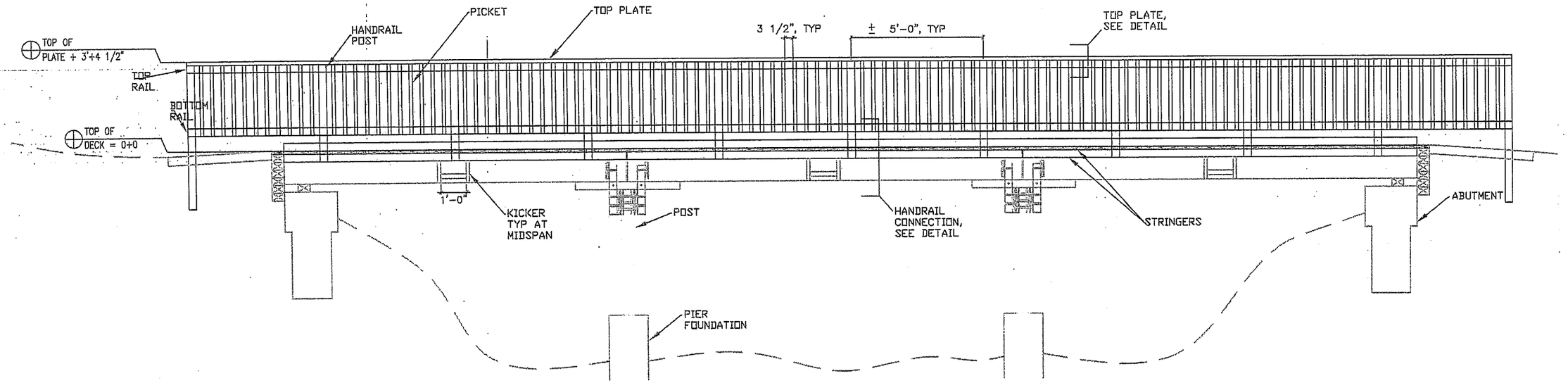
SCALE: 1" = 1'-0"



POST DETAIL

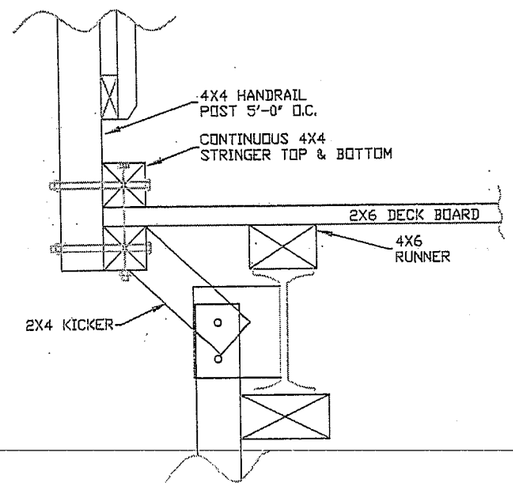
SCALE: 1/2" = 1'-0"

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO		
EIC: JMC	PROJECT NAME: MONTFORD POINT SPILLWAY BRIDGE	S-2
DRAWN BY: SRS	DRAWING NAME: DETAILS	SHEET 3 OF 4
CONTRACT NUMBER:	PWB NUMBER: 2013083	DATE: 12/6/13



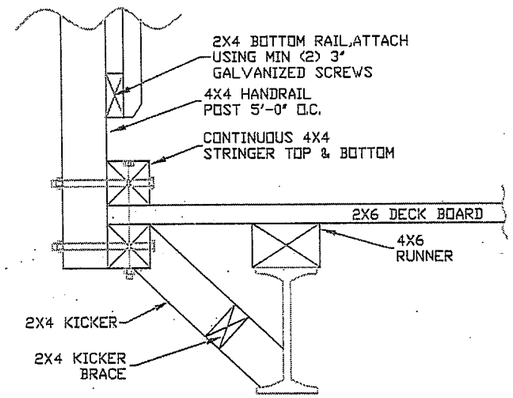
BRIDGE ELEVATION

SCALE: 1/4" = 1'-0"



HAND RAIL CONNECTION DETAIL (AT POST)

SCALE: 1" = 1'-0"



HAND RAIL CONNECTION DETAIL

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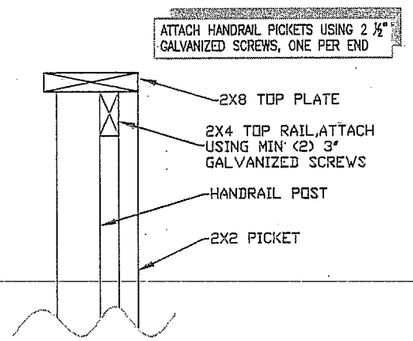
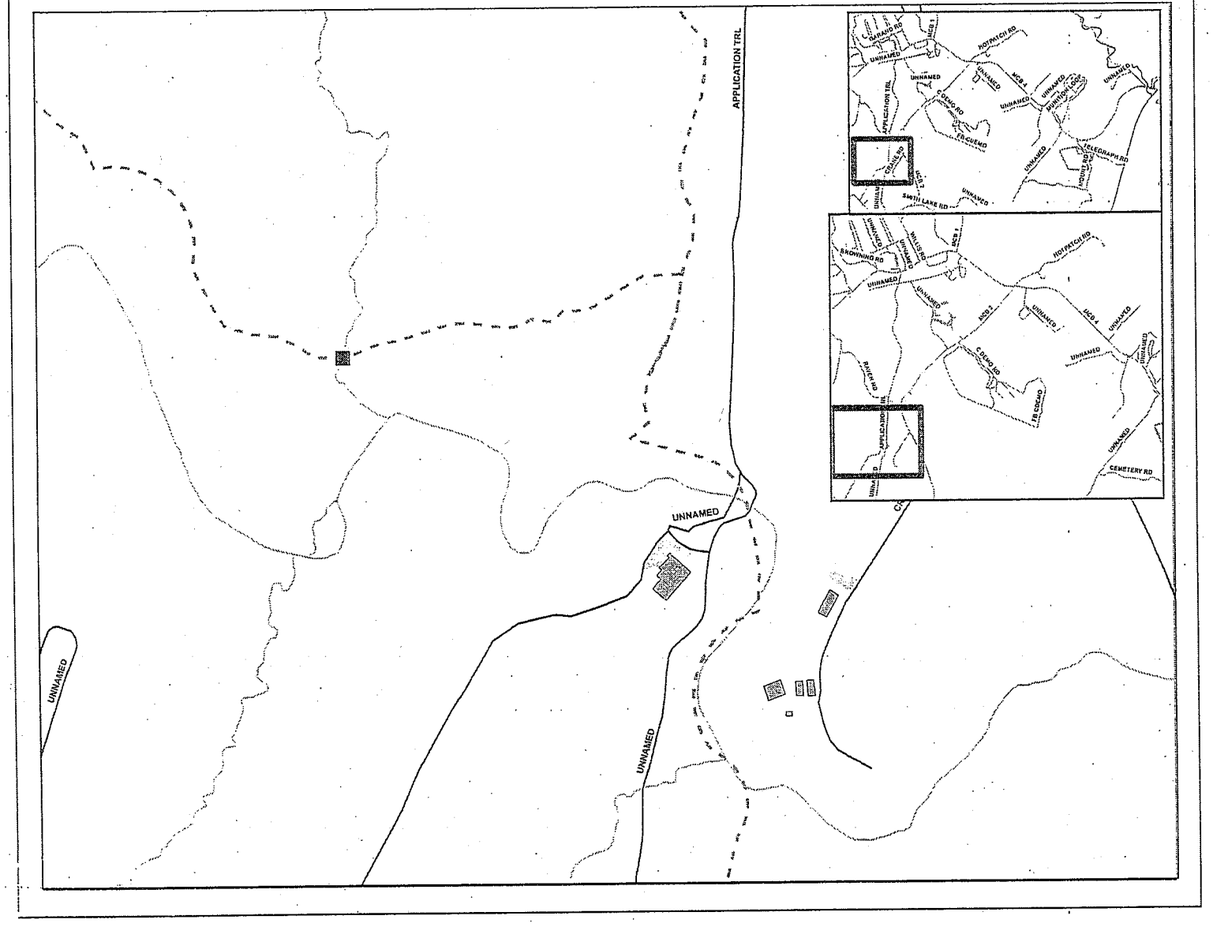


HAND RAIL DETAIL

SCALE: 1" = 1'-0"

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO		
EIC: JMC	PROJECT NAME: MONTFORD POINT SPILLWAY BRIDGE	S-3
DRAWN BY: SRS	DRAWING NAME: HANDRAIL DETAILS	SHEET 4 OF4
CONTRACT NUMBER:	PWB NUMBER: 2013083	DATE: 12/6/13



BRIDGE LOCATION & VICINITY MAP

NOT TO SCALE:

MONTFORD POINT BRIDGE 2

SHEET INDEX		APPROVALS	
G-1	TITLE SHEETS	(NREA)	(DATE)
S-1	FOUNDATION DETAILS	(CUSTOMER)	(DATE)
S-2	DETAILS	(BASE SAFETY)	(DATE)
S-3	HANDRAIL DETAILS	(FIRE INSPECTOR)	(DATE)
		(PWD)	(DATE)
		(DIRECTOR OF ENGINEERING)	(DATE)

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO

EIC: JMC	PROJECT NAME: MONTFORD POINT BRIDGE 2	G-1
DRAWN BY: SRS	DRAWING NAME: TITLE SHEETS	SHEET 1 OF 4
CONTRACT NUMBER:	PWB NUMBER: 2013083	DATE: 12/6/13

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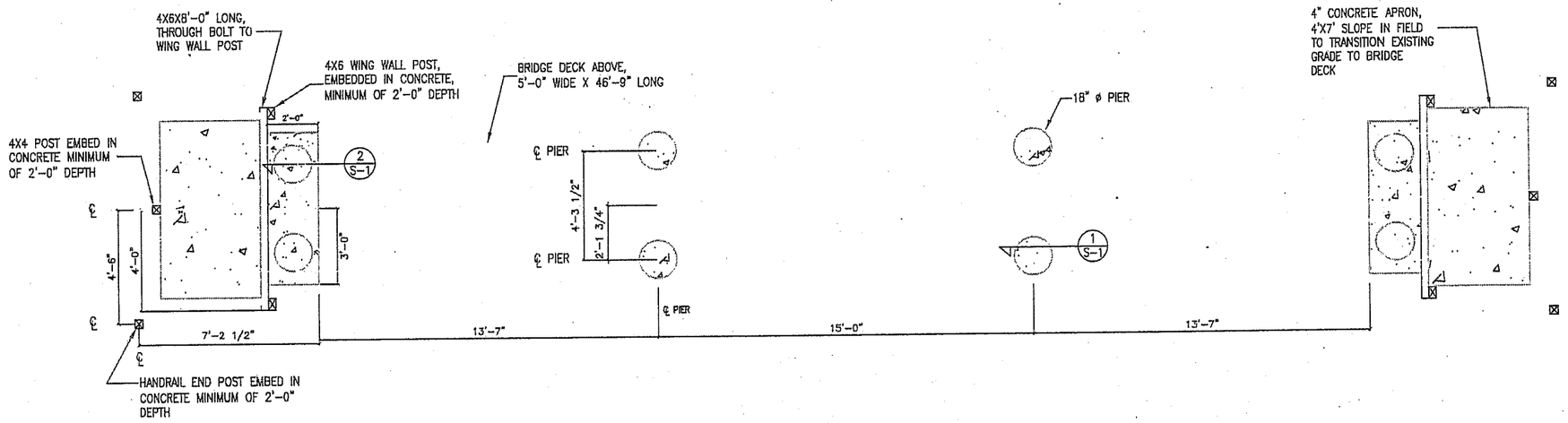
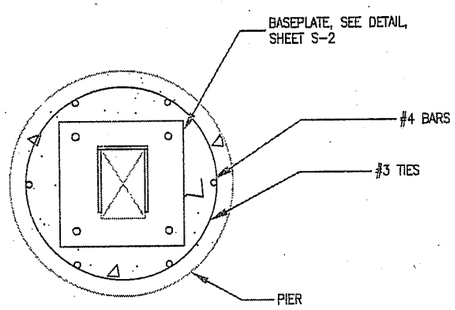


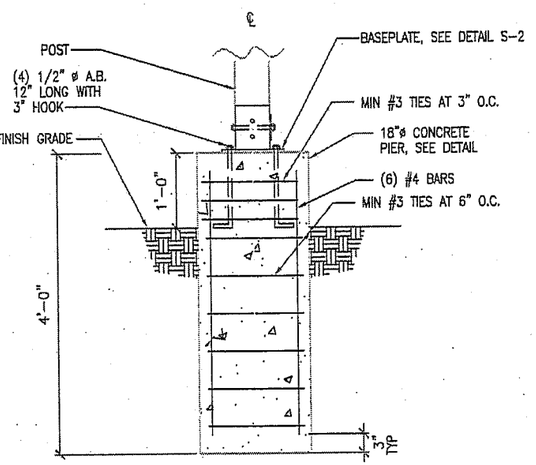
BRIDGE FOUNDATION PLAN

SCALE: 3/16" = 1'–0"



PIER FOUNDATION PLAN

SCALE: 1" = 1'–0"



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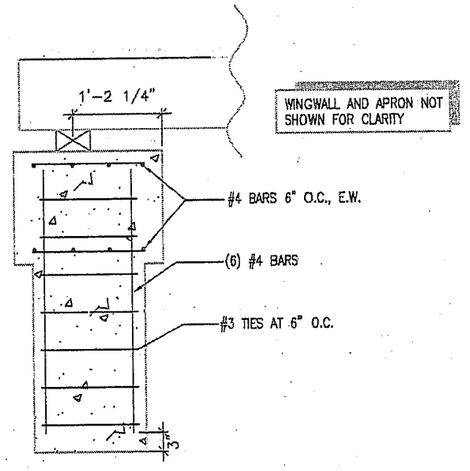
PIER FOUNDATION SECTION

SCALE: 1/2" = 1'–0"

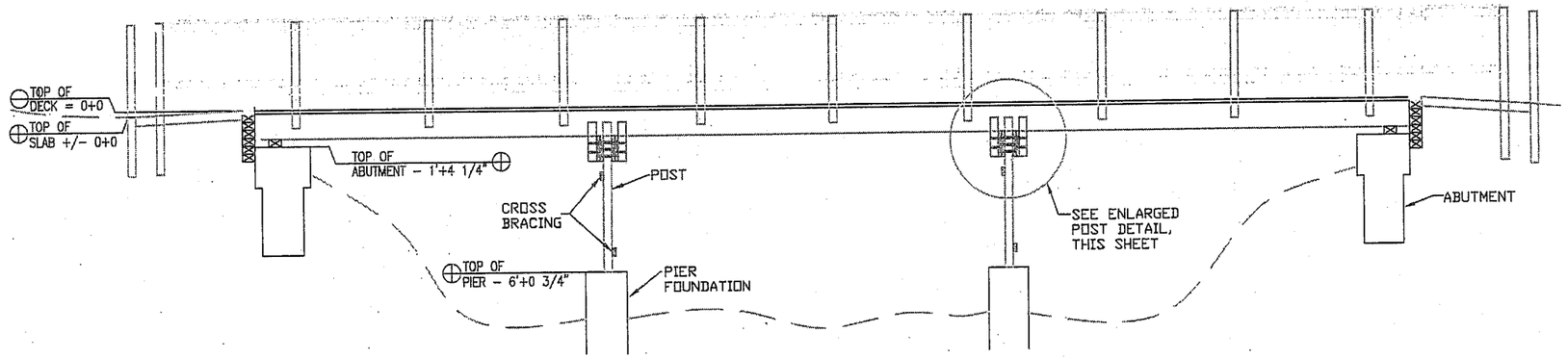


2 / S–1

ABUTMENT FOUNDATION DETAIL

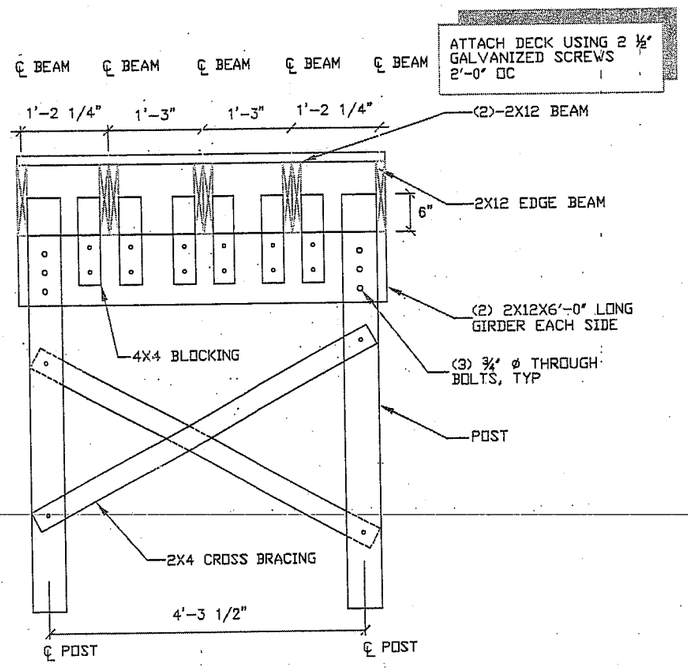
SCALE: 1/2" = 1'–0"

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO		
EIC: JMC	PROJECT NAME: MONTFORD POINT BRIDGE 2	S–1
DRAWN BY: SRS	DRAWING NAME: FOUNDATION DETAILS	SHEET 2 OF 4
CONTRACT NUMBER:	PWB NUMBER: 2013083	DATE: 12/6/13



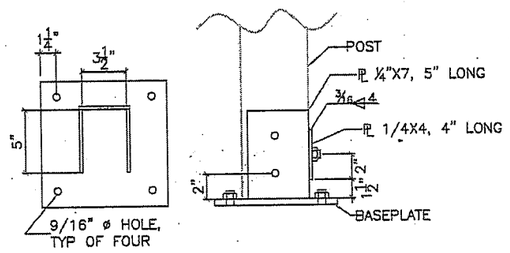
BRIDGE ELEVATION

SCALE: 3/16" = 1'-0"



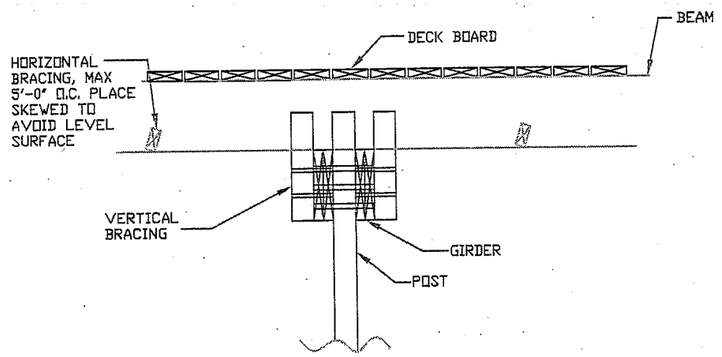
POST BRACING ELEVATION

SCALE: 1/2" = 1'-0"



BASE PLATE DETAIL

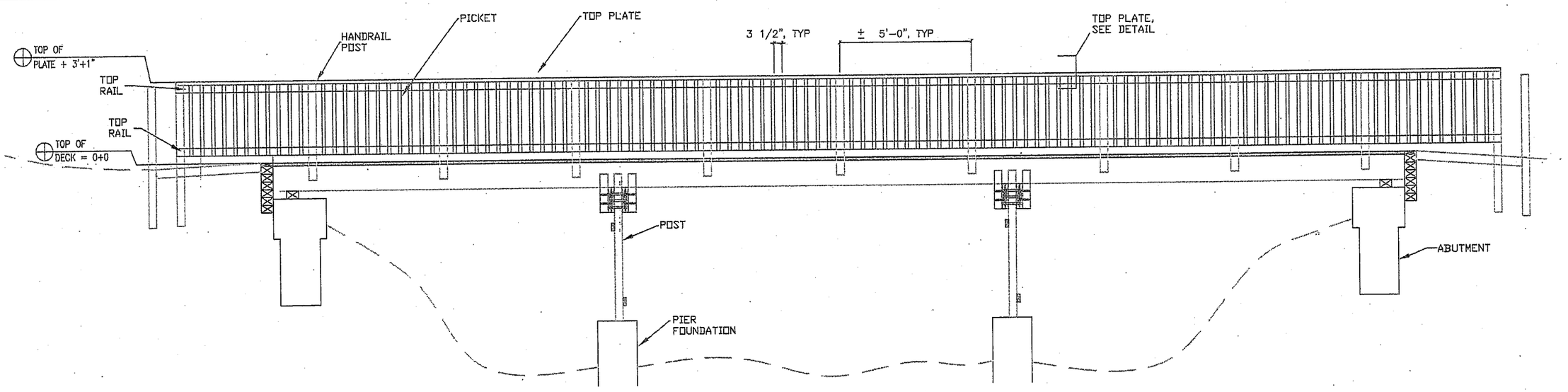
SCALE: 1" = 1'-0"



POST DETAIL

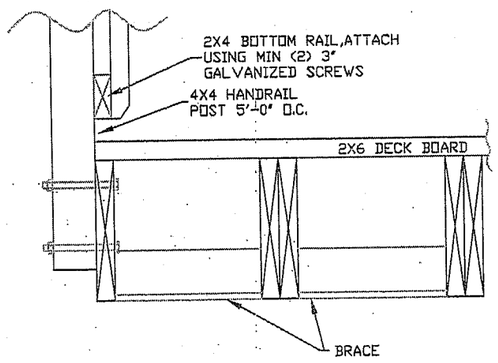
SCALE: 1/2" = 1'-0"

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO		
EIC: JMC	PROJECT NAME: MONTFORD POINT BRIDGE 2	S-2
DRAWN BY: SRS	DRAWING NAME: DETAILS	SHEET 3 OF 4
CONTRACT NUMBER:	PWB NUMBER: 2013083	DATE: 12/6/13



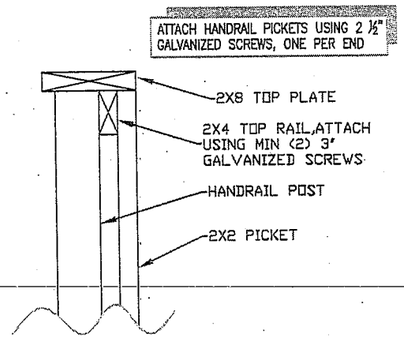
BRIDGE ELEVATION

SCALE: 1/4" = 1'-0"



HAND RAIL CONNECTION DETAIL

SCALE: 1" = 1'-0"



HAND RAIL DETAIL

SCALE: 1" = 1'-0"

PUBLIC WORKS BRANCH – MARINE CORPS BASE QUANTICO		
EIC: JMC	PROJECT NAME: MONTFORD POINT BRIDGE 2	S-3
DRAWN BY: SRS	DRAWING NAME: HANDRAIL DETAILS	SHEET 4 OF 4
CONTRACT NUMBER: NAME	PWB NUMBER: 2013083	DATE: 12/6/13

Appendix B
Draft Maintenance Plan for Montford Point Park and Trail

UNITED STATES MARINE CORPS
THE BASIC SCHOOL
TRAINING COMMAND
24164 BELLEAU AVENUE
QUANTICO, VIRGINIA 22134-5086

IN REPLY REFER TO:
11017
C 474-LSG
18 Nov 13

From: Commanding Officer, Logistics Support Group
To: Head, National Environmental Policy Act Coordination Section, Natural Resources and Environmental Affairs Branch, Marine Corps Base Quantico

Subj: MAINTENANCE PLAN FOR THE MONTFORD POINT PARK & TRAIL

1. Basic Tasks

   a. Clean drainage structures; including water-bars, check-dams, grade dips, drainage ditches, and culverts.
   b. Cut plant growth along the trail; including woody growth such as branches, saplings, and soft annual growth. Trees, 2" in diameter at chest-height and 3-4" in diameter at ground level, that require removal will be done so with approval from the Marine Corps Base Quantico Forestry section.
   c. Remove fallen trees that block the trail.
   d. Renew or replace blazes, signs, and/or trail markings.
   e. Remove litter, garbage and any other training residue.
   f. Reduce/eliminate shortcuts, walk-arounds, and unauthorized trail extensions.
   g. Remove loose rocks or roots from the trail treadway; bury solid exposed roots in the trail treadway to prevent tree damage, erosion, and tripping.

2. Monthly Maintenance

   a. February – March: Clear deadfalls and clean out water-bars, check-dams, and culverts in preparation for spring rain.
   b. April – May: Check blazes, signs, and/or trail markings. Trees have not leafed out, ground cover is minimal, and poison ivy and nettles are not yet a problem. Trim back any vegetation that might obscure blazes or signs during the coming season. Check erosion and build or repair water-bars and check-dams as required.
   c. June – July: Weed the trail. Some trail sections may need to be weeded three or four times during the growing season. Different sections within TBS will be tasked to maintain certain segments of the trail and park.

d. August: Check for erosion problems; repair as necessary.
e. September – October: Check erosion. Clean drainage structures; including water-bars, check-dams, grade dips, drainage ditches, and culverts.

3. Annual Maintenance: Inspect fishing pier, pavilion, and bridges; repair/replace as necessary.

4. Special Maintenance: Inspect trail, and all associated structures, immediately, or as soon as practical, following destructive weather; including high winds, heavy snow, or heavy rains. Fallen trees will be most common following destructive weather but particular attention should be paid to erosion problems.

5. For maintenance purposes, the trail has been divided into four separate sections. See diagram 1.

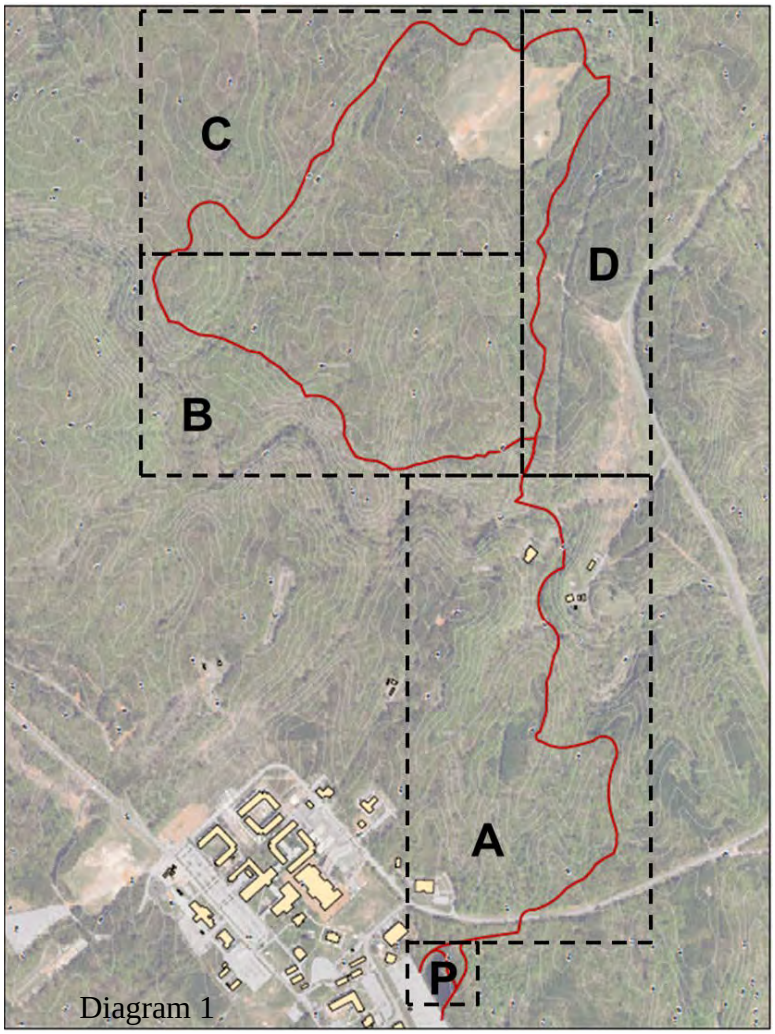


Diagram 1

6. The park is its own separate section. See diagram 2.

Diagram 2

7. For all questions and concerns, contact Maj Erik Tyler at (703) 784-1186 or erik.k.tyler@usmc.mil

C. M. CLIFTON

Appendix C
Soil Maps

Map Scale: 1:9,060 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Stafford and King George Counties, Virginia
Survey Area Data: Version 11, Jan 11, 2010

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

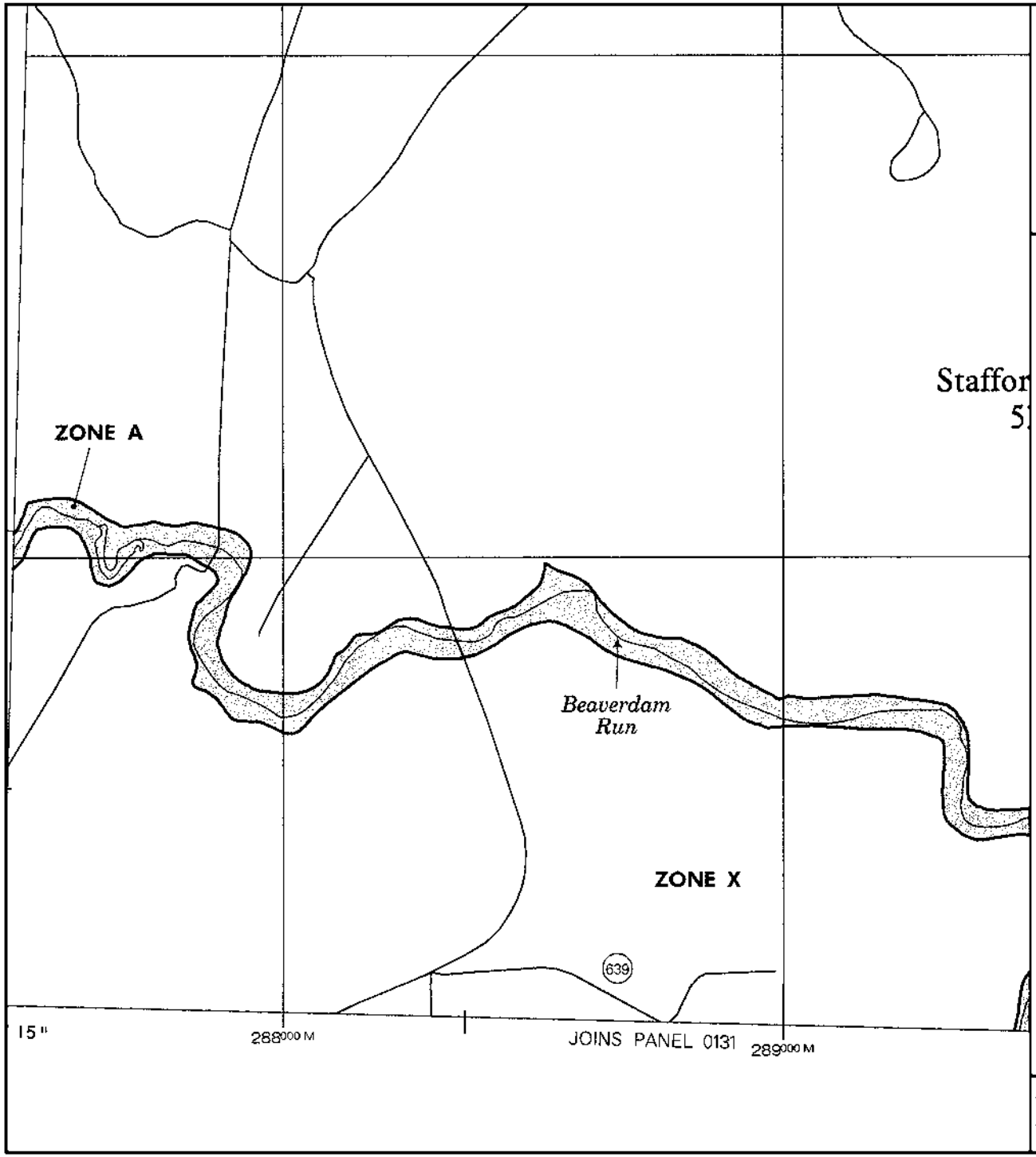
Date(s) aerial images were photographed: Apr 14, 2011—Nov 7, 2011

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

Map Unit Legend

Stafford and King George Counties, Virginia (VA179)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Ae	Alluvial land, wet	6.2	2.1%
AlB	Appling fine sandy loam, 2 to 6 percent slopes	25.5	8.5%
AlC2	Appling fine sandy loam, 6 to 15 percent slopes, eroded	38.3	12.7%
ApC3	Appling clay loam, 6 to 15 percent slopes, severely eroded	25.6	8.5%
AsD	Ashlar fine sandy loam, 6 to 15 percent slopes	24.2	8.1%
AsE	Ashlar fine sandy loam, 15 to 25 percent slopes	27.9	9.3%
Ce	Cartecay fine sandy loam	17.9	6.0%
CfB2	Cecil fine sandy loam, 2 to 6 percent slopes, eroded	3.1	1.0%
CgB2	Cecil gravelly fine sandy loam, 2 to 6 percent slopes, eroded	21.1	7.0%
ChC3	Cecil clay loam, 6 to 15 percent slopes, severely eroded	0.0	0.0%
CmB	Colfax fine sandy loam, gravelly subsoil variant, 2 to 6 percent slopes	0.4	0.1%
Cw	Cut and fill land	86.1	28.7%
Sn	State fine sandy loam, local alluvium	17.9	6.0%
W	Water	1.4	0.5%
Wh	Wehadkee very fine sandy loam, 0 to 2 percent slopes	4.8	1.6%
Totals for Area of Interest		**300.3**	**100.0%**

Appendix D
FEMA FIRMs



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0045E

FIRM

FLOOD INSURANCE RATE MAP

STAFFORD COUNTY, VIRGINIA

PANEL 45 OF 280

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

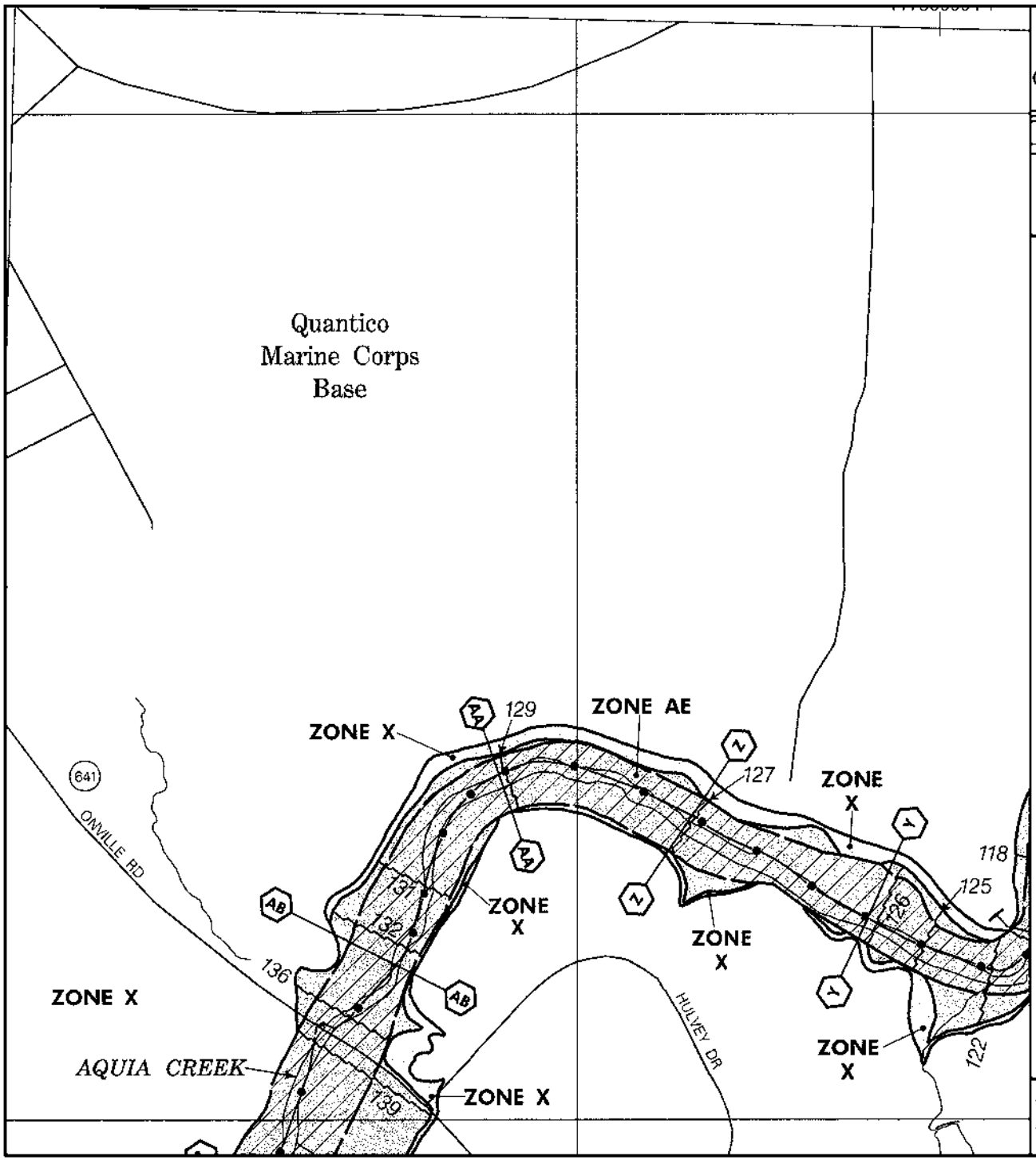
COMMUNITY	NUMBER	PANEL	SUFFIX
STAFFORD COUNTY	510154	0045	E

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

MAP NUMBER
5101540045E

MAP REVISED
FEBRUARY 4, 2005

Federal Emergency Management Agency



CALE 1" = 500'

500 1000 FEET

METERS

PANEL 0131E

FIRM

FLOOD INSURANCE RATE MAP

STAFFORD COUNTY,
VIRGINIA

PANEL 131 OF 280

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

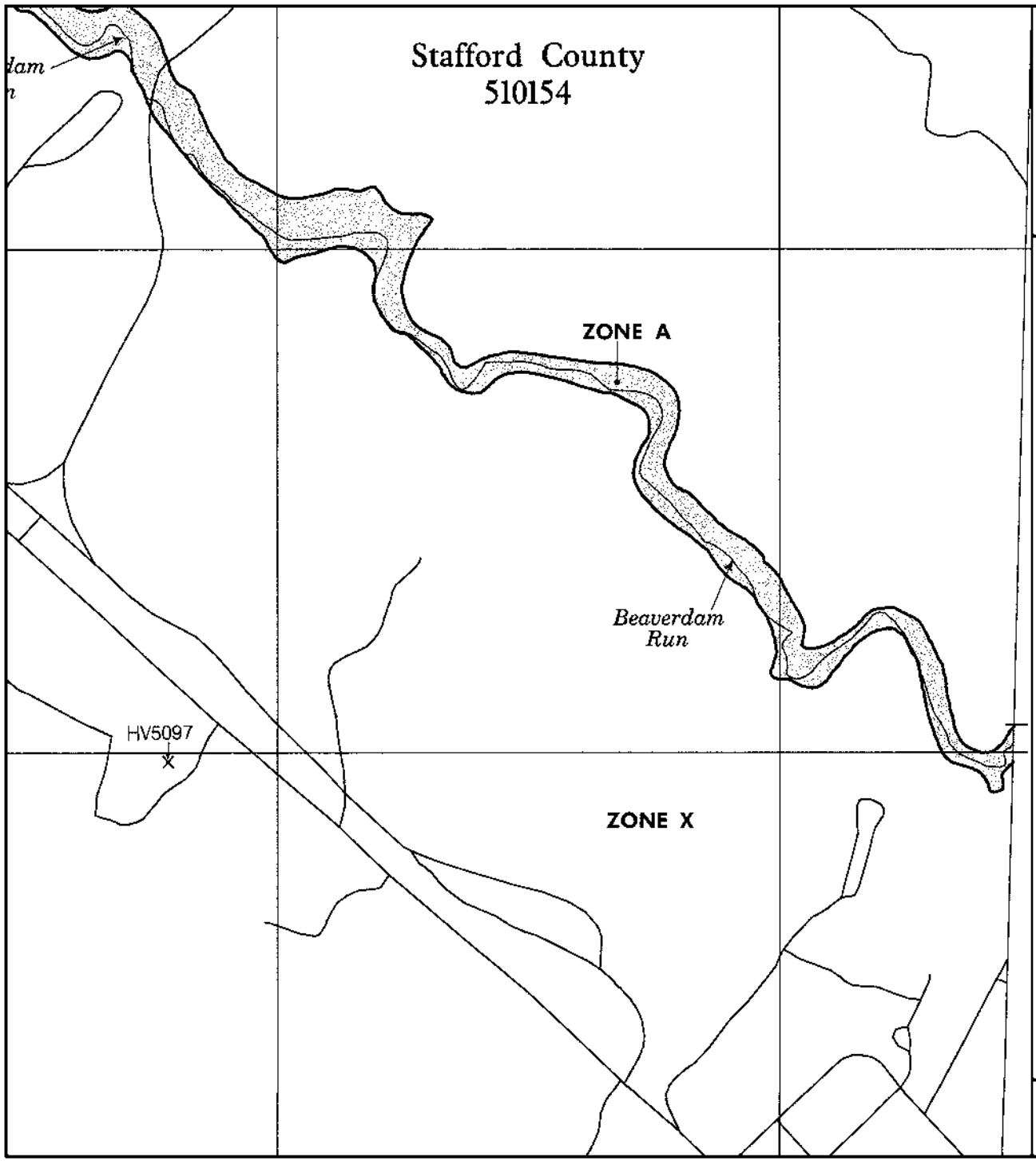
COMMUNITY	NUMBER	PANEL	SUFFIX
STAFFORD COUNTY	510154	0131	E

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

MAP NUMBER
5101540131E

MAP REVISED
FEBRUARY 4, 2005

Federal Emergency Management Agency



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0040E

FIRM

FLOOD INSURANCE RATE MAP

STAFFORD COUNTY, VIRGINIA

PANEL 40 OF 280

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
STAFFORD COUNTY	510154	0040	E

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

MAP NUMBER
5101540040E

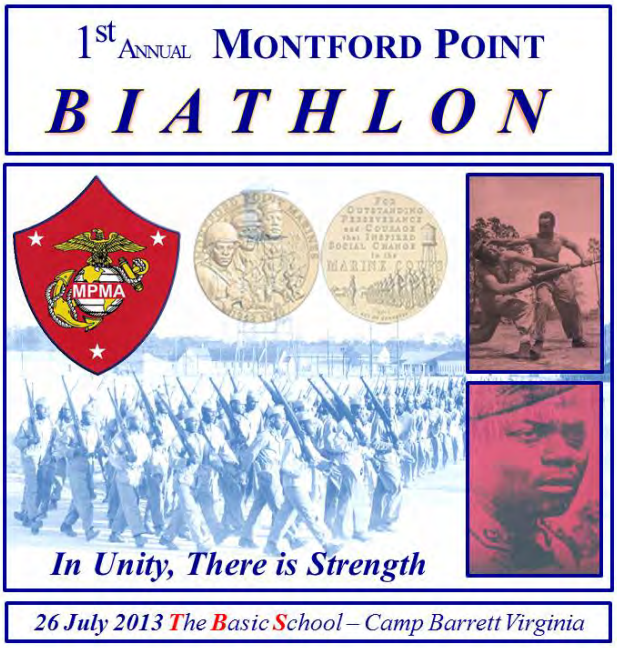
MAP REVISED
FEBRUARY 4, 2005

Federal Emergency Management Agency

Appendix E
Archeological Survey For
Montford Point Trail
Marine Corps Base, Quantico,
Stafford County, Virginia

Archaeological Survey For Montford Point Trail Marine Corps Base Quantico, Stafford County, Virginia

July 2013



Kate Roberts

MCBQ Archaeologist

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

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Management Summary

Commandant of the Marine Corps tasked Commanders to explore ways to recognize the role of the Montford Point Marines, promote the idea of diversify among Marines, and integrate the achievement of African-American marines into the 237 year history of the Marine Corps. Marine Corps Base Quantico developed a plan to install a picnic area and a running trail at TBS to recognize Montford Point Marines and promote diversity in the Marine Corps. The area southeast of Camp Barrett would be picnic area with cement platforms, metal grills, and a section of the running trail. The trail, in general, would have signs along it that would explain the role of Montford Marines and high light members and their accomplishments.

1.0 Project Description

The project as originally planned would construct a 5-7K running trail with nine bridges that cross small streams along the trail. East of Camp Barrett a picnic area to include four pavilions, with 2 metal grills per pavilion, a section of the running trail, restocking of the pond, and a wood pier for handicap accessible fishing.

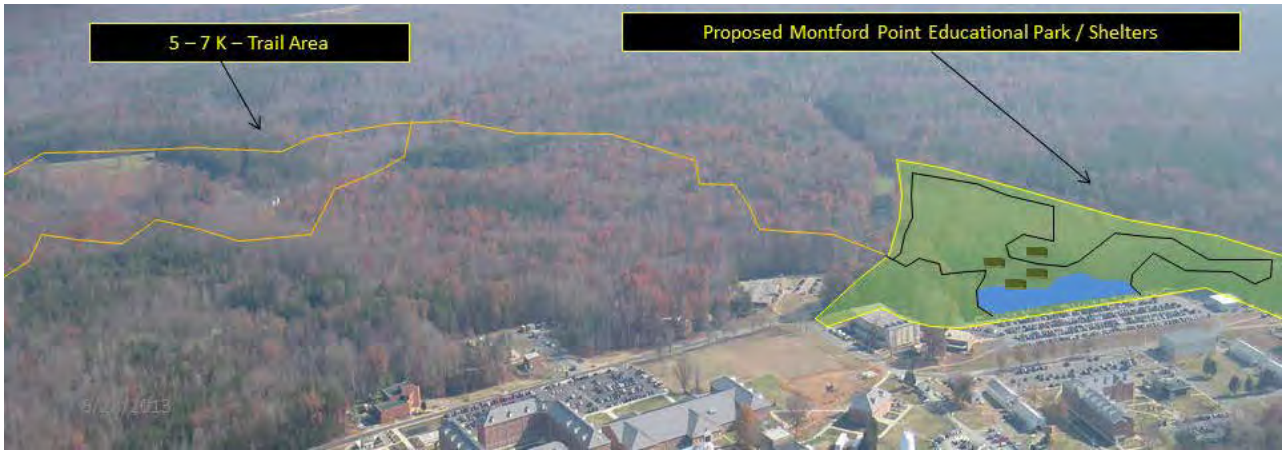


Figure 1. Proposed Park and Running Trail.

2.0 Historical Context

A general overview of the history and prehistory for the MCBQ installation area is given in the Integrated Cultural Resources Management Plan (NREA 2013) and in the scores of cultural resource survey reports. Given the scope of this study this will not be reiterated here.

3.0 Previous Research

Report Number	Year	Title	Author
90	2009	Archaeological Survey for the FBI Bypass Road (Camp Barrett)	John Haynes
81	2008	Cultural Resource Investigation of 396.45 Acers of Timber Compartments at Marine Corps Base Quantico, Prince William and Stafford Counties, Virginia	Charles E. Goode

Figure 2. Previous Surveys

Site	Description	NRHP Status
44ST0649	Prehistoric - Unidentified - FCR,Quartz Shatter, one quartz FF	Not Eligible
44ST0849	Debitage, FCRs, utilized flake – prizmatic; quartz, black chert; investigated at Phase II level	Not Eligible
44ST1039	Lithic Scatter	Not Eligible
44ST0799	Stone Piles, Possible Cabin Site	Not Eligible

Figure 3. Previously Recorded Sites

Background study and pedestrian surveys identified areas within the project area with the potential to contain archaeological resources. Two of these areas, one on a ridge and the other on a ridge toe above a Rank 1 stream flowing across the middle of the project APE contained prehistoric artifacts, and were designated 44ST0649 and 44ST0849.

Sufficient information was obtained at the Phase I level to show 44ST0649 lacks integrity to yield important data in prehistory. Additional information was needed to evaluate 44ST0849, where artifacts were found within a relatively undisturbed soil matrix. John Milner Associates was contracted to conduct a Phase II survey at 44ST0849 in 2006, and concluded that the site lacked sufficient quantity and diversity of information to be eligible for the NRHP. 44ST1039 is a Late Archaic temporary prehistoric campsite. Two isolated locations containing prehistoric artifacts were also identified in Timber Compartment 5C-4. Two quartz flakes were recovered 75 m (246 ft.) southwest of the site, and 1 quartz shatter was recovered 260 m (853 ft.) to the southeast. The site's location on the highest point of the ridge would allow prehistoric hunters to observe game within the stream valley to the west. The low artifact density at the site suggests that the occupation was brief and did not result in the accumulation of significant amounts of artifacts that could be used to address research questions pertaining to the prehistory of Virginia. The site is recommended as not eligible for the NRHP, and no further archeological investigations are warranted.

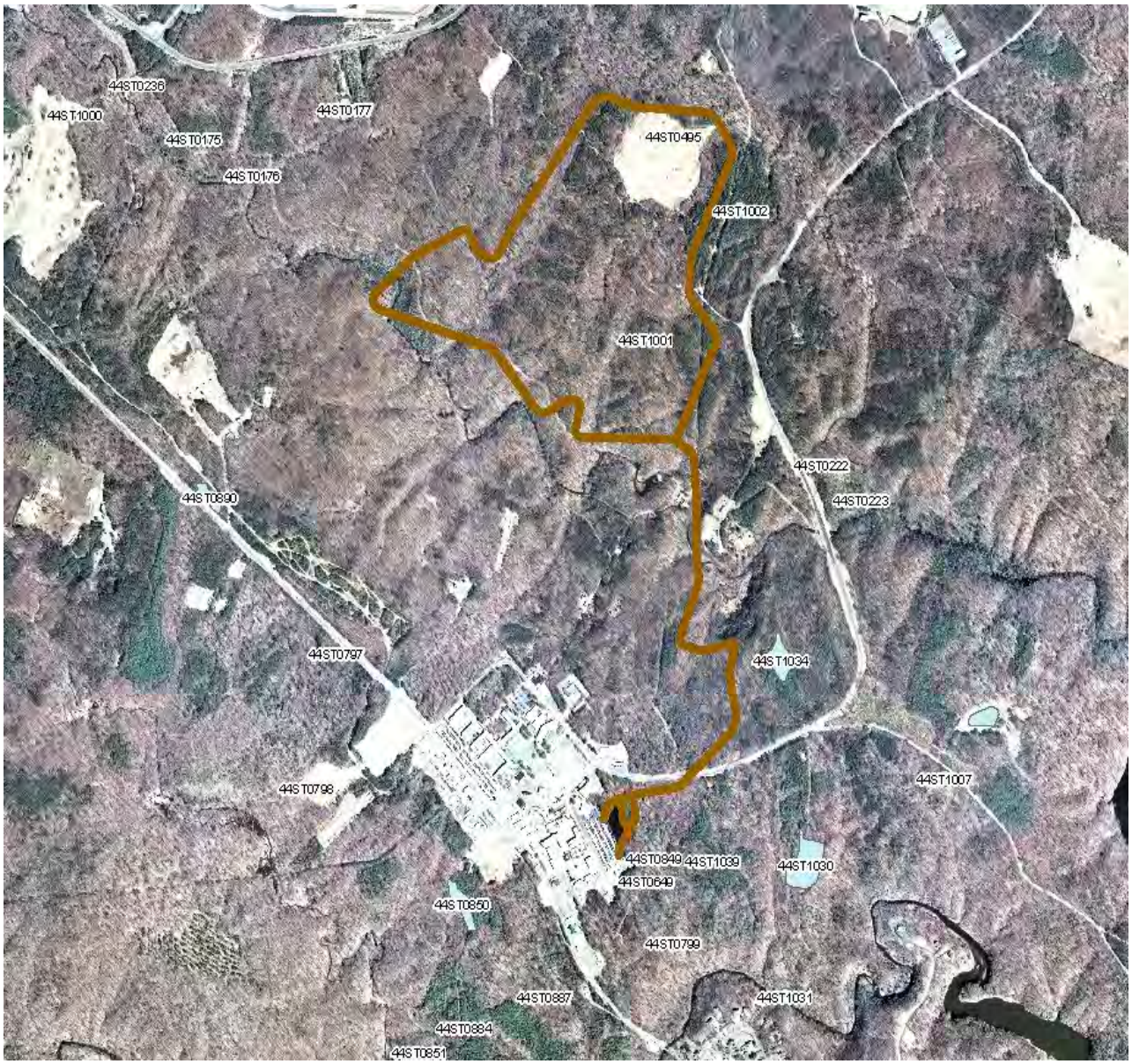


Figure 4. Previously Recorded Sites Map

3.1 Current Survey

Four STPs were excavated within the foundation and within the surrounding area of 44ST0799. The STPs were very shallow with little or no topsoil. STPs range from 1 centimeter (0.39 inches) to 5 centimeters (1.96 inches).

The area southeast of Camp Barrett was tested for additional sites. STPs were placed along the path of the running trail every 50 meters. There were no positive STPs and all were very shallow with little or no top soil. STPs depth ranges from 1 centimeter (0.93 inches) to 10 centimeters (3.9 inches).

Figure 5. Montford Point Trail Survey Area.

4.0 Field Methods

Fieldwork was conducted in February 2013. Surface reconnaissance was undertaken over the APE for the initially planned running trail and the picnic area. STPs were excavated in areas that had previously recorded sites and the potential to contain sites. STPs were excavated every 50 meters in areas of the trail and the pavilions.

5.0 Survey Results

5.1 Survey Areas and Finds

The shovel testing on the southeast side from Camp Barrett did not contain artifacts. No artifacts were recovered in the shovel tests around the stone foundation.

A pedestrian survey was conducted along the running trail area nort of Camp Barrett. There will be limited ground disturbance to anchor nine bridges across small streams. There is an existing trail that will be cleared of down tress and debris and used as part of the 7K Montford trail. Signs placed along the trail will have limited ground disturbance. There will no adverse effect to any sites in the area due to ground disturbance of signs or bridges. No further work is needed for this project.

Appendix F
Threatened Species Survey for the Montford Point Trail Project

UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO:
11015/1
B 046
18 Jul 13

MEMORANDUM FOR THE RECORD

From: Head, Natural Resources Section, Natural Resources and Environmental Affairs Branch
To: File

Subj: THREATENED SPECIES SURVEY FOR THE MONTFORD POINT TRAIL PROJECT

Encl: (1) Map of TBS Montford Point Trail Project

1. Per the Marine Corps Base, Quantico (MCBQ) Integrated Natural Resources Management Plan, surveys are conducted prior to land disturbance to determine the presence of any federally listed species. This ensures compliance with the Endangered Species Act and provides survey documentation required for environmental review per the National Environmental Policy Act.

2. The Basic School proposed the development of a park area around Barrett Pond and an eight kilometer fitness trail located within Training Area 8. The park will commemorate the Montford Point Marines and provide learning and fitness opportunities for Marines and visitors. The location of the park and trail route is shown at the enclosure.

3. On 19 - 20 June 2013, the park area near Barrett Pond and the route of the proposed trail were surveyed for the presence of the federally listed threatened plant species, the small whorled pogonia, *Isotria medeoloides* (SWP). Survey personnel were Brad Watkin and Matthew Dye on 19 June, and Tim Stamps, John Rohm, Courtney Kipp and Jeffrey Partee on 20 June.

4. The trail route traverses Virginia pine forests on highly disturbed sites as well as through mature hardwood forests that are typical of good SWP habitat. The proposed trail system was marked with temporary signs and some litter had been raked to delineate the route. A significant amount of the trail follows existing trails and therefore does not involve alteration of suitable natural habitat for the SWP. Mr. Watkin and Mr. Dye inspected the entire trail corridor on 19 June and did not detect any stems of the SWP. They did identify some high quality habitat along the northernmost section of the trail near Landing Zone Raven. This

habitat is along a north facing slope adjacent to an unnamed tributary of Beaverdam Run.

5. The high quality habitat was surveyed again on 20 June with a 4-person crew. Indian cucumber root, a plant commonly found in association with SWP at MCBQ, was very abundant. The area between the floodplain and trail corridor was intensively searched but no SWP stems were located.

6. The area adjacent to Barrett Pond had evidence of numerous past disturbances to include an old homesite, fighting hole excavations, and trails. The upland Virginia pine habitat along with the previous land disturbances were not typical habitat for SWP. The forested slopes along the floodplain east of Barrett Pond were more suitable in terms of habitat conditions. No SWP stems were located in the proposed park area near Barrett Pond.

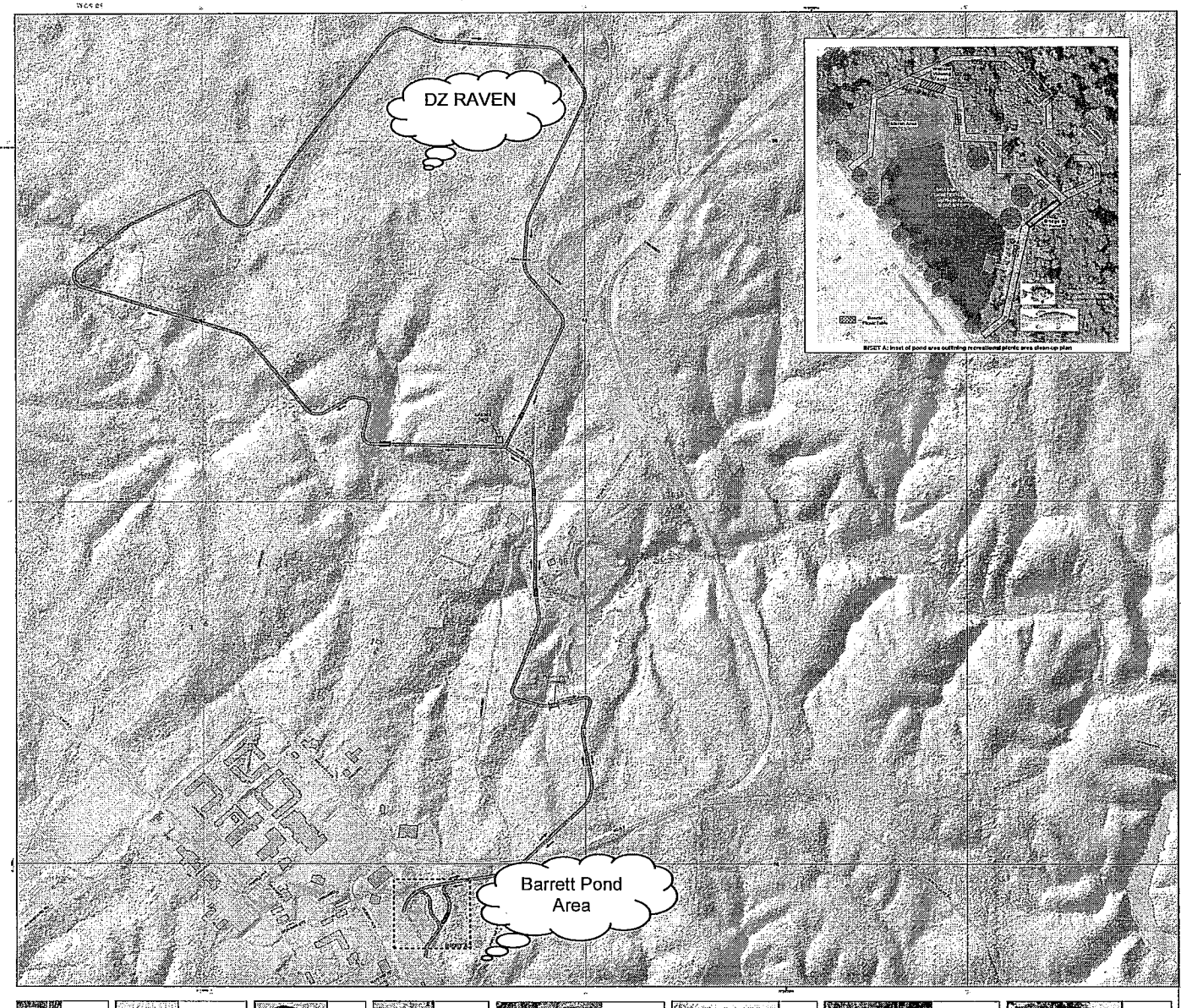
7. On the basis of these surveys, the completion of the Montford Point Trail should not impact any federally listed threatened or endangered species.

R. J. Stamps

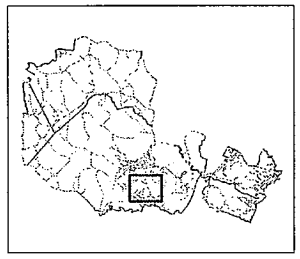
R. T. STAMPS

Copy to:
Head, NEPA Section

TBS MONTFORD POINT TRAIL PROJECT



INSET A: Inset of pond area outlining recreational picnic area close-up plan



Directional_Flow
Proposed Bridge Placement
Montford Trail
Roads
Surface Water
Wetlands
Structures
Parking Area
Streams

N
W E
S

0 400 800 1,600
Feet

Scale: 1in = 300ft at Sheeet size 44 x 34

General Notes

1. Introduction. The Montford Point Trail will be designed and maintained in order to provide a multi-sensual, outdoor educational and recreational experience which will protect and preserve the legacy of the Montford Point Marines. The trail will be comprised of pervious pathways that will be constructed with the least amount of environmental impact. Trail construction methods will comply with any and all regulations and permitting requirements. Trail construction will be completed by any individual, community and organization who wishes to help build the trail. The DPR will be responsible for all the maintenance tasks and construction of new sections of the trail. Trail maintenance will be done manually, mechanically, and environmentally sound.

2. Trail Access. Public access will be provided at the trailhead at the Montford Point.

3. Trail Layout. The trail will be approximately 5.7 kilometers in length and will consist of pervious, but unpaved, trails as well as newly planted trails. The specific guidelines of trail location are to preserve as well as promote diverse vegetation in the forest, as visually interesting, and to create an even and non-problematic, environmentally friendly trail experience. Creative use of non-pervious alternatives of the trail will be an important part of the trail maintenance plan. The trail location will be comprised of the terrain, vegetation, soil types, wetlands, drainage patterns, and cultural features existing and adjacent to the trail corridor. Ensuring diversity of vegetation as well as ensuring a path that is visually constructive and pleasant to promote users interest and participation. The Trail head will be located at the end of Montford Point Road and will be a meeting point for the hiking group as well as giving access to the educational area around the pond. Ample parking will be provided for all users to view the beauty of the trail. Within trails, are proposed Educational Stations where educational information will be provided. Additionally, where the Leaning out of a stone will necessitate a safety barrier, an educational element.

4. Trail Clearing. A cleared tread width of 2 to 4 meters will be allowed to allow an appropriate corridor for the proposed distance. The trail head will be 6 meters and will be cleared of all plants, shrubs, and trees that will block the path and will be cleared to allow lines of sight. Additional clearing of trees, foreground over the trail, or hazardous trees will be removed. Standards of pruning and removal will be carried out in accordance with the general standards of silviculture, ensuring no injury and allowing for natural healing to take place. Trees and brush outside the tread should be cut as close to the ground as possible leaving no stump greater than one inch in diameter. Branches and trees that are removed shall be scattered naturally in the woods or cut into short lengths and removed as mulch.

5. Trail Marking. The trail will be marked with the common blaze marking. These red and white blazes will be consistently placed every 100 feet and will be placed on trees, signs, and other natural features. The blazes will be placed at eye level so that they are visible to all users on the trail.

6. Signs. Signs along the trail will be both interpretational and educational in nature. The Montford Point Marines Association (MPMA) will provide content and placement for signs along the trail. These signs will be approved with the Montford Point Marines Association and the Montford Point Museum. The trail will display signs with names of streets, numbers as well as interpretive information along the trail. The MPMA Partnership Agreement will be completed to provide additional information and service along the trail.

7. Environmental Considerations.

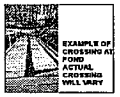
a. Topography. Topographical conditions in the landscape such as hills, knolls, and valleys are elements of a spectacular and interesting trail design. If the trail is flat like the Montford Point Marine Memorial, it will have a greater sense of adventure and exploration. Some terrains, changes in grades, or accessories of surrounding features will provide variety and diversity of activities on the trail. The trail's natural topography allowing us to direct trail water away from any erosion or safety problem.

b. Erosion Control. Proper drainage is an essential element of the trail construction. Diverting trail tread water through trail sloping, grade dips, water bars, culverts, ditches and grade changes will help prevent water trail. The following guidelines will help to adequately distribute water across the trail. The compacted dry and well-worn bottom of the trail should be kept free of loose soil and vegetation. Trail drainage will be designed to minimize the natural state of the area. Waterbars and ditches are the most used erosion control measures. The trail can be maintained as a preventive measure to divert water. Water can be diverted when there is a need to divert the trail. Additionally, many of the areas significant erosion issues occurred at the water's edge. The trail has proven to be a good and successful trail system and erosion will be minimized.

c. Hardening Trails in Wet Areas. There are several ways to prevent the trails in the low-lying wet areas in order to prevent the trail from deteriorating and become impassable. If the area is to be trailed around then a hardening system can be used. Small streams, such as ditches or creeks, should be crossed. The re-routing of trails to avoid problem areas will be maintained.

d. Stream Crossings. The trail will cross streams at several points. Some forms of bridge construction are used to provide safe trail crossings over these streams. Due to the moderate flow and quiet use of the streams at most times, a standard bridge design would be built of these streams. Bridges will be built to approximately 10 feet to 12 feet wide.

e. Trail Maintenance. The trail will be maintained by the Montford Point Marines Association (MPMA) and the Montford Point Museum. The trail will be inspected annually by the MPMA and the Montford Point Museum. The trail will be inspected annually by the MPMA and the Montford Point Museum. The trail will be inspected annually by the MPMA and the Montford Point Museum.


EXAMPLE OF CROSSING AT POND ACTUAL CROSSING WILL VARY

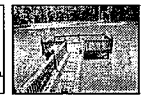

WETLAND MARSH AREA w/ 2 -3 WOOD DUCK BOXES TO BE PLACED IN MARSH AREA


GRILLS 2 PER PAVILLION


MULCHED PARK PATH AROUND POND AREA ONLY


SURFACE PLACED WALK BRIDGE 2 TELEPHONE POLES TOPPED W/ 2x6 BOARDS (TRAIL CROSSING)


WETLAND VIEWING AREA (ACTUAL DECK WILL VARY)


WOUNDED WARRIOR ACCESSIBLE FISHING AND VIEWING PIER


BASIC PARK TYPE CABANA SIMILAR TO LUNGA PARK

Disclaimer

Although every attempt has been made to ensure the accuracy of the information, errors and omissions may exist in the data acquired by, developed, or otherwise held or published in this data resource. The user must be aware of data conditions, and is solely responsible for representations made and for interpretations derived from its use. Any use of the information and data contained herein, regardless of its source, including methodology, currency of the data, and other conditions specified herein is at the user's risk.

Prepared: Drew Fiorentti, GISP
Contractor, GEOFidelis
Date: May 2, 2013