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FINAL ENVIRONMENTAL ASSESSMENT

PERIMETER SECURITY FENCE INSTALLATION

UNITED STATES MILITARY ACADEMY
WEST POINT, ORANGE COUNTY, NEW YORK

Contract Number DACW51-01-D-0017
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Prepared for:

U.S. Military Academy
Directorate of Housing and Public Works EP&SD
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New York District (CENAN-PL-E)
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November 2004

DIRECTORATE OF HOUSING AND PUBLIC WORKS
UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK

FINAL
ENVIRONMENTAL ASSESSMENT
APPROVAL SHEET

PERIMETER SECURITY FENCE INSTALLATION
WEST POINT, NEW YORK

NOVEMBER 2004

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UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK

FINDING OF NO SIGNIFICANT IMPACT (FNSI)

PERIMETER SECURITY FENCE INSTALLATION

WEST POINT, NEW YORK

I. NAME OF ACTION

Perimeter Security Fence Installation by the United States Military Academy (USMA) at West Point, Town of Highlands, Orange County, New York.

II. DESCRIPTION OF ACTION

a. Proposed Action: The proposed action consists of the construction of both new and enhanced security measures at the USMA at West Point, to comply with the U.S. Department of Defense's policies and Minimum Antiterrorism Standards for safety and security measures at United States military installations, in response to the Homeland Security Act of 2002. The selected Preferred Alternative includes the construction or implementation of new and enhanced security measures in strategic locations along 5.8 miles of the perimeter of the Main Post/Academic Area, where existing natural or manmade security features do not already occur. Elements of the new and enhanced security measures include: installation of new chain-link and barbed-wire perimeter fencing, including replacement of existing security fencing; installation of modified fencing that is sensitive to architecture and aesthetics in visually sensitive areas; and installation of lockable gates where the fencing would cross existing trails. In addition, supplemental security measures include increased foot and motor patrols and increased gate security and monitoring.

b. Alternatives: Proposed action considerations include three alternatives: (1) No Action, (2) Complete Perimeter Security Fence Alternative (the Original Proposed Action), and (3) Partial Perimeter Security Fence Alternative (the Preferred Alternative). The No Action alternative would not fulfill the Department of Defense directive mandating the installation of a perimeter security fence, and therefore was rejected. The Complete Perimeter Security Fence Alternative (original Proposed Action) would fulfill the Department of Defense directive, but would have significant environmental impacts, and therefore was rejected. The Partial Perimeter Security Fence Alternative (Preferred Alternative) would fulfill the Department of Defense directive, and underwent environmental analysis.

III. ANTICIPATED ENVIRONMENTAL EFFECTS

The principal environmental issues related to the implementation of the Preferred Alternative are:

(1) construction impacts (*e.g.*, soil erosion, traffic, roadway access, utility access, noise, air quality);

(2) vegetation impact as forested and scrub-shrub lands are converted to open areas;

(3) wildlife impacts as the movement of medium- and large-sized animals are restricted;

(4) visual impacts to viewsheds and cultural resources within and outside of the National Historic Landmark District (NHLD) associated with the USMA at West Point; and,

(5) recreational and training impacts to residents and support personnel.

Many of these potential impacts would be mitigated by the use of good management practices and engineering controls. Mitigation measures must be addressed and are included in order to diminish any potential significant adverse effects. Best Management Practice measures would be implemented to remove, handle, transport, and dispose of potentially hazardous materials.

IV. MITIGATION MEASURES

Mitigation measures to be employed to address impacts due to implementation of the Preferred Alternative are:

(1) Developing a project-specific Storm Water Pollution Prevention Plan, incorporating erosion and sediment controls in accordance with USACE specifications and good construction practices. Excavation of material would be controlled by best management practices, design specifications, and engineering practices.

(2) Developing a project-specific revegetation plan, incorporating planting plans and monitoring schedules in accordance with USMA at West Point specifications and USDA NRCS recommendations to minimize erosion, facilitate revegetation, protect any special status species from any indirect effects of project implementation, and minimize the occurrence of invasive species along the approximately 20-foot-wide cleared area adjacent to the proposed alignment.

(3) Designing the proposed alignment to minimize erosion and sedimentation when crossing streams and stream banks, maintain 100-foot-wide riparian buffer zones, avoid subsequent impacts on streams and stream banks, maintain water quality and aquatic life, and retain existing openings along the proposed alignment to facilitate the movement of aquatic and terrestrial wildlife; and performing a formal post-construction survey of the fence to ensure that a

sufficient number of appropriately-sized gaps along the fence are present, constructing small gaps if necessary to allow the passage of turtles and other small animals.

(4) Developing a project-specific Spill Contingency Plan in accordance with USMA at West Point specifications for the identification and regulation of hazardous materials that would be used during construction and maintenance activities, including herbicide application to control undesirable or invasive species, to avoid subsequent impacts on water quality, aquatic life, and human health.

(5) Obtaining all required permits, including NYSDEC Section 401 Water Quality Certification as necessary, to minimize impacts to waterbodies and wetlands.

(6) Performing formal pre-construction field surveys to verify or 'ground truth' all unnamed or previously unidentified intermittent or perennial waterbodies, ravines, drainages, or wetlands along the proposed alignment.

(7) Designing the proposed alignment to follow existing cleared areas to the maximum extent practicable, and limiting new cleared areas along the perimeter fence to a width of 20 feet, to minimize the permanent impact of construction and maintenance on vegetation and wildlife.

(8) Performing all construction activities between April 1 and November 30, as recommended by the USFWS, to avoid disrupting wintering populations of bald eagles.

(9) Performing monitoring for timber rattlesnake activity when construction activities are scheduled between April and September, and limiting construction activities along Segment S-T to April 1 – 15 or October 1 – November 30.

(10) Designing the proposed alignment in the western portion of the proposed alignment with lockable gates at all vehicle-accessible roads and trails, that could be opened for specific uses or at regulated times to facilitate continued use of these areas to the maximum extent practicable for physical and military training activities, and certain recreational activities such as cross-country running and skiing, hiking, and hunting.

(11) Minimizing the permanent and temporary impacts of construction and maintenance on the NHLD, including historic structures, archaeological resources, and on-post visual or aesthetic resources, to the maximum extent practicable, in accordance with the USMA at West Point's historic landscape and cultural resource management plans, and recommendations from the CERL viewshed analysis and the NYSOPRHP. Mitigation measures include: adjusting the alignment of the Preferred Alternative to avoid the archaeological site identified during the Phase I cultural resource investigation for the proposed Project; limiting new cleared areas along the perimeter fence to a width of 20 feet; using fencing designs, colors, and materials that are consistent with the historic and visual context of the NHLD; relocating portions of the proposed project alignment to less obtrusive locations (e.g., within the viewsheds from Redoubts 1 and 2 and their associated batteries, the U.S. Route 9W scenic overlooks, Crows Nest Mountain, and adjacent to the Highland Falls Community Cemeteries); integrating the design of the Preferred

Alternative with the design of two additional projects proposed by the USMA at West Point, the proposed Stony Lonesome Water Tank project, and the Proposed Security Gate Access Upgrade Project; using fencing materials that are consistent with adjacent architecture; and documentation of NRHP-ineligible structures (e.g., the nine dry-stacked stone walls).

(12) Development of a project-specific Construction and Demolition Waste Management plan to address the on-site collection and disposal of construction and demolition debris.

(13) Limiting construction to daylight, weekday hours to minimize temporary project impacts to traffic, roadway access, utility access, and quality of life, and to reduce the impact of temporary increased noise levels.

(14) Requiring contractors to use equipment that meets specific air quality and noise standards to reduce the impact of temporary decreased air quality levels (i.e., ensuring that contractors use construction equipment such as backhoes, bulldozers, and dump trucks that produces the Lowest Achievable Emission Rate) and to reduce the impact of temporary increased noise levels.

V. FACTS AND CONCLUSIONS

Implementation of the mitigation measures previously identified would reduce the potential impacts, resulting in no significant adverse impacts to the environment. An Environmental Impact Statement is, therefore, not required.

VI. DOCUMENT AVAILABILITY AND POINT OF CONTACT

The Final Environmental Assessment (EA) and the Finding of No Significant Impact (FNSI) are available for public review at the following locations:

West Point Community Library
Building 622
U.S. Military Academy
West Point, New York

Village Clerk
Village of Highland Falls
303 Main Street
Highland Falls, New York

Town Clerk
Town of Highlands
254 Main Street
Highland Falls, New York

Highland Falls Public Library
298 Main Street
Highland Falls, New York

The deadline for public comment on this proposed action was April 5, 2004. Responses to comments made during the comment period were incorporated into the Final Environmental Assessment.

The point-of-contact for further information is:

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LIST OF ACRONYMS

ACHP	Advisory Council on Historic Preservation
A.D.	Anno Domini
AR	Army Regulation
B.P.	Before Present
CCTV	Closed Circuit Television
CERL	Construction and Engineering Research Laboratory
CFR	Code of Federal Regulations
cm	Centimeter
CMP	Coastal Management Program
DA	Department of the Army
dbA	A-weighted Decibels
DHPW	Department of Housing and Public Works
DO	Dissolved Oxygen
DODEA	Department of Defense Education Activity
DOD	Department of Defense
DOL	Directorate of Logistics
DPE	Directorate of Physical Education
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EOD	Explosives Ordnance Disposal
ESA	Endangered Species Act
°F	Fahrenheit
FEMA	Federal Emergency Management Act
FY	Fiscal Year
GIS	Geographic Information System
HABS/HAER	Historic American Buildings Survey/ Historic American Engineering Record
HFA	Human Factors Applications, Inc.
HHSASS	Hudson Highlands Scenic Area of Statewide Significance
ICRMP	Integrated Cultural Resource Management Plan
INRMP	Integrated Natural Resource Management Plan
KACH	Keller Army Community Hospital
L_{dn}	Day-Night Noise Level
LZ	Landing Zone
mgd	Million Gallons Per Day
MPs	Military Police
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHLD	National Historic Landmark District
NMFS	National Marine Fisheries Service
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NOT	Notice of Termination
NPS	National Park Service
NRB	Natural Resources Branch

LIST OF ACRONYMS

NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSECL	New York State Environmental Conservation Law
NYSDOT	New York State Department of Transportation
NYSNHP	New York State Natural Heritage Program
NYSOPRHP	New York State Office Parks, Recreation, and Historic Preservation
OCDP	Orange County Planning Department
ODIA	Office of Directorate of Intercollegiate Athletics
O&R	Orange and Rockland Utilities, Inc.
PCBs	Polychlorinated Biphenyls
PEM	Palustrine Emergent
PFO	Palustrine Forested
PIPC	Palisades Interstate Park Commission
ppm	Parts Per Million
PSS	Palustrine Scrub-shrub
PTO	Power-take-off
PVC	Poly-vinyl chloride
REC	Record of Environmental Consideration
RFFAs	Reasonably Foreseeable Future Actions
SASS	Scenic Area of Statewide Significance
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SOP	Standard Operating Procedures
SPDES	State Pollutant Discharge Elimination System
SWPPP	Storm Water Pollution Prevention Plan
TRI	Toxics Release Inventory
USACE	United States Army Corps of Engineers
USDA SCS	United States Department of Agriculture, Soil Conservation Service
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFWS	United States Department of the Interior, Fish and Wildlife Service
USGS	United States Geological Survey
USMA	United States Military Academy
UXO	Unexploded Ordnance
WPA	Works Progress Administration

1.0 INTRODUCTION

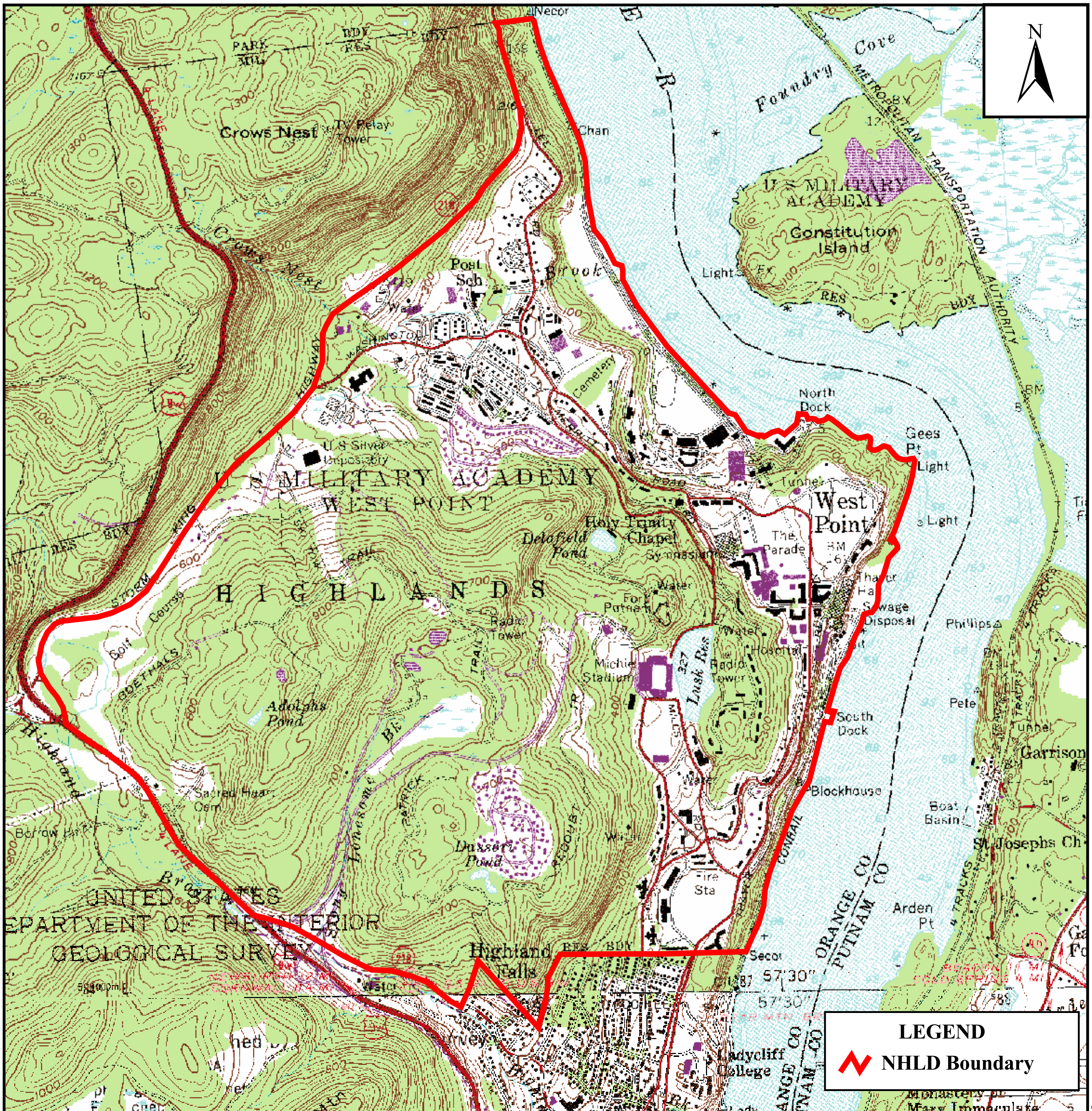
1.1 BACKGROUND

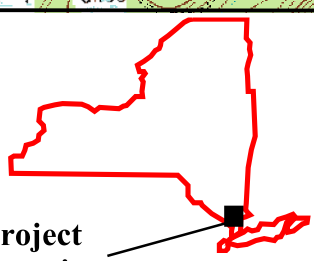
The United States Military Academy (USMA) at West Point is a renowned and historic service academy that graduates and commissions over 900 officers each year. West Point is the Department of the Army's (DA's) oldest and most continuously occupied installation. The USMA at West Point offers a full range of academic, military, and athletic training and activities to almost 4,000 men and women cadets, as well as quality of life and community support services to USMA personnel.

Security measures have always been a priority for the military installation at West Point. Initial selection of West Point as a military installation was based on natural defensive characteristics of the area, including its strategic location along the Hudson River where topography afforded excellent lines of sight upstream and downstream. However, as methods and techniques used to threaten security have changed, the USMA at West Point has recognized the need for increased security measures that would continue to protect the residents and facilities from outside threats, including unauthorized access by individuals or vehicles. The study for the proposed perimeter security fence, including the analysis of various alternative and/or supplemental security enhancement measures, would continue to allow the USMA at West Point to provide the best level of protection available to address the widest number of potential threats to the post and its residents.

1.2 LOCATION AND DESCRIPTION OF FACILITIES

The project area is located at the USMA at West Point, in the Town of Highland, Orange County, New York, approximately 50 miles north of New York City, and approximately 7 miles southeast of Newburgh, New York. The USMA at West Point encompasses approximately 16,000 acres, and is located on the western shore of the Hudson River in Orange County, New York, and on Constitution Island in Putnam County, New York (Figure 1).





1000 0 1000 2000 Feet

300 0 300 600 Meters

Source: USGS 7.5' series Quadrangles West Point and Peekskill, New York, 1957, Photorevised 1981; USMA 2003; Loechi and Weaver 2003.

Figure 1. General Project Area of the Proposed Perimeter Security Fence Alignment USMA, West Point, New York.

Client: U.S. Army Corps of Engineers New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

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The project area at the USMA at West Point consists of the Main Post/Academic Area, an area that encompasses approximately 2,500 acres, including the boundaries of the National Historic Landmark District (NHLD). Although the Main Post/Academic Area also includes Constitution Island, located on the eastern shore of the Hudson River at West Point, the island is not included in the area of potential effect for this project. The South Post area of the USMA at West Point is also not included in the area of potential effect for this project.

Current security measures for the project area consist of controlled access of motorized vehicles at all gates at the USMA at West Point, naturally existing barriers associated with the steeply sloped topographic relief of the project area, and existing fences along portions of the proposed alignment, including the southern portion of the Main Post/Academic Area approximately between Thayer Gate and Mountain Avenue, and the northern portion of the Main Post/Academic Area approximately between the U.S. Treasury Department and the Lumber Storage area.

2.0 PROPOSED ACTION

2.1 PURPOSE AND NEED

The Department of Defense (DOD) has recently reassessed its current policies and guidelines for safety and security measures at all United States military installations in response to the Homeland Security Act of 2002, as well as in response to the increase in potential and realized terrorist threats at United States military installations and facilities around the world. Following this reassessment, the DOD developed Minimum Antiterrorism Standards (UFC 4-010-01, 31 July 2002), in which the implementation of a controlled perimeter was identified as an important step in force protection and meeting security and antiterrorism requirements. In particular, a controlled perimeter, defined as a physical boundary at which vehicle access is controlled at the perimeter of an installation, or an area within an installation, limits the possibility that a vehicle carrying explosives could penetrate an installation undetected. Subsequently, Force Protection Design Standards set forth in the *Army Installation Design Standards* (28 April 2003) indicated that fences can be used to define the boundaries of a secured area, deter penetration of a secured area and, if reinforced, can stop moving vehicles from entering a secured area (Loechl and Tooker 2003). In compliance with these standards, the Vice Chief of the Staff of the DA issued a verbal directive, which mandates all military installations to install security fencing around their perimeter to ensure that the highest possible level of safety and security is provided to residents and critical military facilities.

2.2 DESCRIPTION OF PROPOSED ACTION

The USMA at West Point has begun the implementation of the Vice Chief of Staff of the DA's verbal directive to meet the need for increased security at the USMA at West Point by conducting a study of security measures that protect human health and safety, restrict and monitor vehicular access, and enhance the physical safety of staff, cadets, residents, and critical military facilities on post. As a result of this study, the USMA at West Point has identified a number of existing and proposed alternative security measures, detailed in Section 2.3 and depicted in Figure 2, that would provide increased protection for the health and safety of residents within the Main Post/Academic Area of the USMA at West Point. These existing and proposed security measures include the installation or upgrade of physical barriers such as

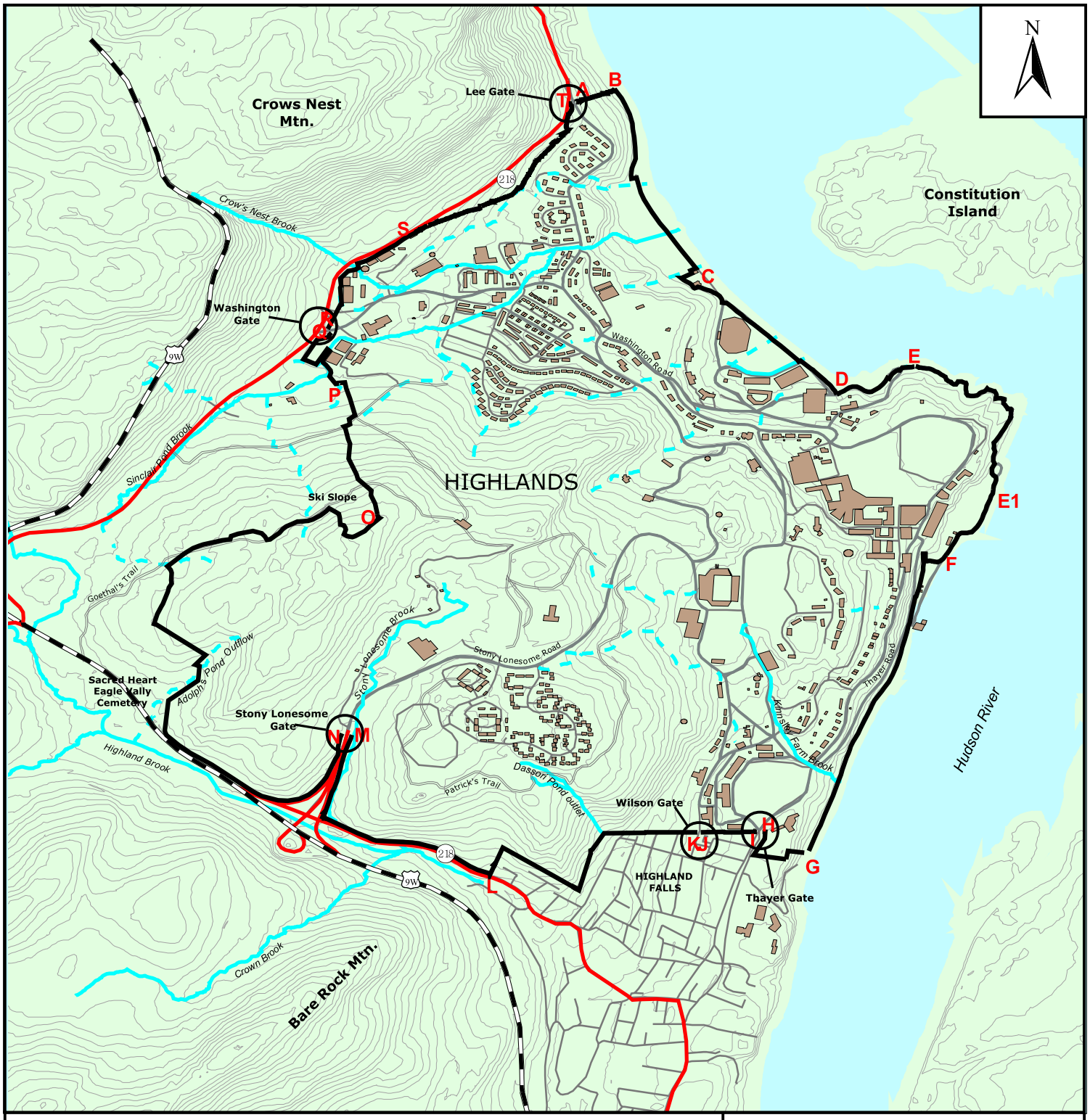

Figure 2. Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

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perimeter security fencing around the Main Post/Academic Area of West Point at every feasible location. For those areas along the perimeter of the USMA at West Point that are not suitable for perimeter security fencing, the USMA has developed a range of supplemental or alternative security enhancement measures, including increased foot and motor patrols, electronic surveillance, and increased gate security and monitoring.

Throughout the project planning process, the USMA at West Point has consulted and coordinated its project planning efforts with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), the New York State Department of Environmental Conservation (NYSDEC), and the United States Department of the Interior (USDI), United States Fish and Wildlife Service (USFWS) (Appendix A). Emphasis was placed on avoidance and minimization of environmental impacts, and mitigation was included as necessary to compensate for unavoidable impacts. The USMA at West Point has formulated alternative designs for security measures to meet project planning objectives while considering the preferences of various interested parties with regard to project design. These alternative designs are discussed in greater detail in Section 2.3 (Alternatives).

2.3 ALTERNATIVES

2.3.1 No-Action Alternative

In accordance with regulations promulgated by the Council on Environmental Quality, 43 Code of Federal Regulations (CFR), Part 1500, Section 1502.14(d), a No-Action Alternative must be considered. The No-Action Alternative would involve using and maintaining the current security measures that exist at the USMA at West Point. This alternative would avoid both minor temporary and permanent impacts to environmental resources resulting from construction and operation of the proposed security fence alignment, as described in Section 4.0 (Environmental Consequences). However, this alternative would not ensure compliance with Minimum Antiterrorism Standards, Force Protection Design Standards, or the Vice Chief of Staff's verbal directive or address the current need for upgrading the existing security measures for the Main Post/Academic Area at the USMA at West Point. In particular, the No-Action Alternative has strong potential for significant adverse effects to public health and safety at the

USMA at West Point, due to potential terrorist threats that would be possible because of existing security measures for the Main Post/Academic Area.

Because the No-Action Alternative has strong potential for significant adverse effects, the USMA at West Point has determined that the No-Action Alternative would not be viable.

2.3.2 Complete Perimeter Security Fence Alternative (Original Proposed Action)

The Complete Perimeter Security Fence Alternative (which was developed as the original Proposed Action for the project) would be located entirely within the boundaries of the USMA at West Point property, and would follow an approximately 9.1-mile alignment that roughly corresponds to the boundaries of the NHLD at the USMA at West Point, and includes the Main Post/Academic Area of the USMA at West Point (Figure 2). The general alignment of the Proposed Action begins at Lee Gate at the northern end of the USMA at West Point, continues east to the west shore of the Hudson River, then south along the western shore of the Hudson River to Thayer Gate, north and west along the boundary between the USMA at West Point and the Town of Highland to Stony Lonesome Gate, then north along U.S. Route 9W to the vicinity of the Sacred Heart/Eagle Valley Cemetery, then east along Goethal's Trail to the eastern edge of the ski slope, then north to Washington Gate, then east along New York State (NYS) Route 218 back to Lee Gate.

The original Proposed Action would consist of the use of structural measures to enhance security along the proposed alignment, including the use of existing security fencing along NYS Route 218, between NYS Route 218 and the USMA at West Point, and along the property boundary between the USMA and the Village of Highland Falls, as well as the installation of new security fencing in areas that are currently unsecured by structural means.

Structural security measures identified for the Complete Perimeter Security Fence Alternative would consist of a 6-foot-high, chain-link fence, topped by three strands of barbed wire on a double outrigger apron (interior and exterior facing) that extends an additional one foot in height. The 7-foot-high fence would be installed using heavy wheeled equipment such as backhoes, which would carry power-take-off (PTO-) driven augers to install the fence posts. Chain-link

fencing fabric would be stretched along these fence posts, such that at least a 2-inch gap would be left between the bottom of the fence and the ground surface, with larger gaps present between the bottom of the fence and the ground surface at topographic depressions, and the double outrigger apron would be installed along the tops of the fence posts and fencing fabric. The 7-foot-high fence would be located within a 45-foot-wide permanently cleared area that would be 30 feet wide within the interior of the project alignment (i.e., on the USMA at West Point side), and 15 feet wide on the outside of the project alignment. A motor patrol road, which would also be used as a maintenance access road, would be constructed around the entire perimeter of the Main Post/Academic Area, within the 30-foot-wide cleared area on the inside of the security fence.

Fencing fabric would consist of galvanized, 2-inch mesh chain-link for those portions of the security fence that would be located in non-visible areas. Fencing fabric would consist of black, poly-vinyl chloride (PVC)-coated, 2-inch mesh chain-link for those portions of the security fence that would be located in visible areas, including areas along roads leading to the five security gates that provide access to the Main Post/Academic Area, the western shoreline of the Hudson River, the southern boundary of the Main Post/Academic Area, along NYS Route 218 and U.S. Route 9W, Stony Lonesome Road, Sacred Heart/Eagle Valley Cemetery, and the ski slope. Fencing fabric would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post, for those portions of the security fence that would be located in highly visible areas adjacent to both sides the five security gates for the Main Post/Academic Area.

Although security measures for the Complete Perimeter Security Fence Alternative would be primarily structural, consisting of new and existing perimeter security fencing, non-structural security measures would also be implemented for the Complete Perimeter Security Fence Alternative. These non-structural security measures would consist of the installation of electronic surveillance using closed circuit television (CCTV) cameras at the northern and southern railroad entry/exit points of the railroad tracks along the eastern edge of the project area, and increased foot and motor patrols along the motor patrol/maintenance road access on the interior of the perimeter security fence.

Portions of the Complete Perimeter Security Fence Alternative would be located adjacent to both sides of the five security gates that control vehicular access to the Main Post/Academic Area at the USMA at West Point. The Complete Perimeter Security Fence Alternative has been designed to complement additional future actions that would enhance existing security at the three open and active security gates for the Main Post/Academic Area at the USMA at West Point (Thayer, Stony Lonesome, and Washington gates). These additional future actions are considered a reasonably foreseeable future action that is discussed in further detail in Section 5 (Reasonably Foreseeable Future Actions [RFFAs]). The cumulative impacts associated with these proposed security gate upgrades are discussed in further detail in Section 6 (Cumulative Effects), and a separate National Environmental Policy Act (NEPA) analysis will be performed for the proposed security gate upgrades once project-specific design, construction, and mitigation plans have been prepared by the USMA at West Point. The remaining two security gates, Wilson and Lee, are inactive security gates that are currently closed to both vehicular and pedestrian traffic, and are expected to remain closed for the foreseeable future. The existing security measures associated with the Wilson and Lee gates would not require additional modification as part of the Complete Perimeter Security Fence Alternative or as part of the RFFA proposed for future security gates upgrades.

Portions of the Complete Perimeter Security Fence Alternative would cross at least seven vehicular accessible trails: the unnamed road southeast of Stony Lonesome Family Housing along Segment L-M; the unnamed trail south of Sacred Heart/Eagle Valley Cemetery along Segment N-O; two locations along the unnamed trail northeast of Sacred Heart/Eagle Valley Cemetery along Segment N-O; the unnamed trail north of Sacred Heart/Eagle Valley Cemetery along Segment N-O; the unnamed trail north of Building 1209 along Segment O-P; the Goethal's Trail along Segment O-P; and the Pipeline Trail along Segment O-P. Lockable vehicle gates, which match the chain-link fence fabric used along these portions of this alternative, would be installed where the proposed perimeter security fence alignment would cross these vehicular trails.

Portions of the Complete Perimeter Security Fence Alternative would cross 13 known surface water bodies at 14 locations. Five of these known water bodies have already been culverted at

five crossing locations: the unnamed drainage ditch at the north end of Target Field, Crows Nest Brook, and the unnamed drainage ditch draining the old Post Exchange along Segment B-C; the Dassori Pond outlet along Segment K-L; and Sinclair Pond Brook along Segment P-Q. Because these surface waterbodies have already been culverted, additional culverts for the fence crossing would not be installed.

Simple culverts would be installed where the proposed perimeter security fence would cross the following nine surface waterbodies at the remaining nine locations: the unnamed drainage ditch at the north end of the North Athletic Field and the North Athletic Field drainage ditch (also known as Delafield Pond outlet) along Segment C-D; Kinsley Farm Brook along Segment F-G; Stony Lonesome Brook along Segment L-M; Adolph's Pond outflow, the intermittent headwater to Sinclair Pond, and the intermittent drainage on the east side of the ski slope along Segment N-O; and Crows Nest Brook and an unnamed tributary to Crows Nest Brook along Segment R-S. These culverts would not have security measures installed, and would remain open to facilitate drainage of water.

Portions of the Complete Perimeter Security Fence Alternative would be located in areas where a 45-foot-wide cleared area would not be feasible. Portions of this alternative would be located where property boundary lines and existing buildings or other structures are in close proximity to the alignment of the project, including areas adjacent to the Village of Highland Falls along segments I-L, the Sacred Heart/Eagle Valley Cemetery along Segment N-O, and the ski slope along Segment O-P. In each of these areas, the exterior cleared area associated with the perimeter security fence would be reduced from 15 feet to 5 feet, so that the total width of the cleared areas along these portions of the Completer Perimeter Security Fence Alternative would be 35 feet. Portions of this alternative would also be located within an established unexploded ordnance (UXO) area along segments S-B. UXO clearance for health and safety reasons has been performed only for the alignment of the proposed perimeter security fence, and there would be no interior or exterior cleared areas, or a motor patrol/maintenance access road along the interior of the fence along the portions of this alternative that are located within an established UXO area.

As discussed above, the Complete Perimeter Security Fence Alternative would involve enclosing the Main Post/Academic Area with perimeter security fencing, and would enhance the current security measures that exist at the USMA at West Point. This design alternative would ensure compliance with the Vice Chief of Staff's verbal directive to install security fencing around the entire perimeter of the USMA at West Point, and would reduce the potential for significant adverse effects to public health and safety at the USMA at West Point resulting from potential terrorist threats. However, this design alternative would result in significant temporary and permanent adverse effects to the project area resulting from construction and operation of the Proposed Action, including costs associated with constructing a complete perimeter security fence, creating and permanently maintaining a 45-foot-wide cleared area around the perimeter security fence, constructing a motor patrol/maintenance access road along the interior of the perimeter security fence, and performing additional UXO clearance for portions of the 45-foot-wide cleared area that are located in known UXO areas. This design alternative would also result in significant adverse effects on wildlife due to vegetation clearing and fence erection, on the accessibility to a wide variety of recreational and physical training areas by cadets, staff, and residents, and on the aesthetic qualities of scenic viewsheds associated with the USMA at West Point.

Although the Complete Perimeter Security Fence Alternative would meet the intent of the DOD Minimum Antiterrorism Standards, Force Protection Design Standards, and the verbal directive by the Vice Chief of Staff of the DA, the USMA at West Point has determined that selection of this alternative would result in significant impacts, and would require the preparation of an Environmental Impact Statement (EIS). Because the Complete Perimeter Security Fence Alternative would be too costly to construct and has strong potential for significant adverse effects, the USMA at West Point has determined that the Complete Perimeter Security Fence Alternative would not be viable.

2.3.3 Partial Perimeter Security Fence Alternative (Preferred Alternative)

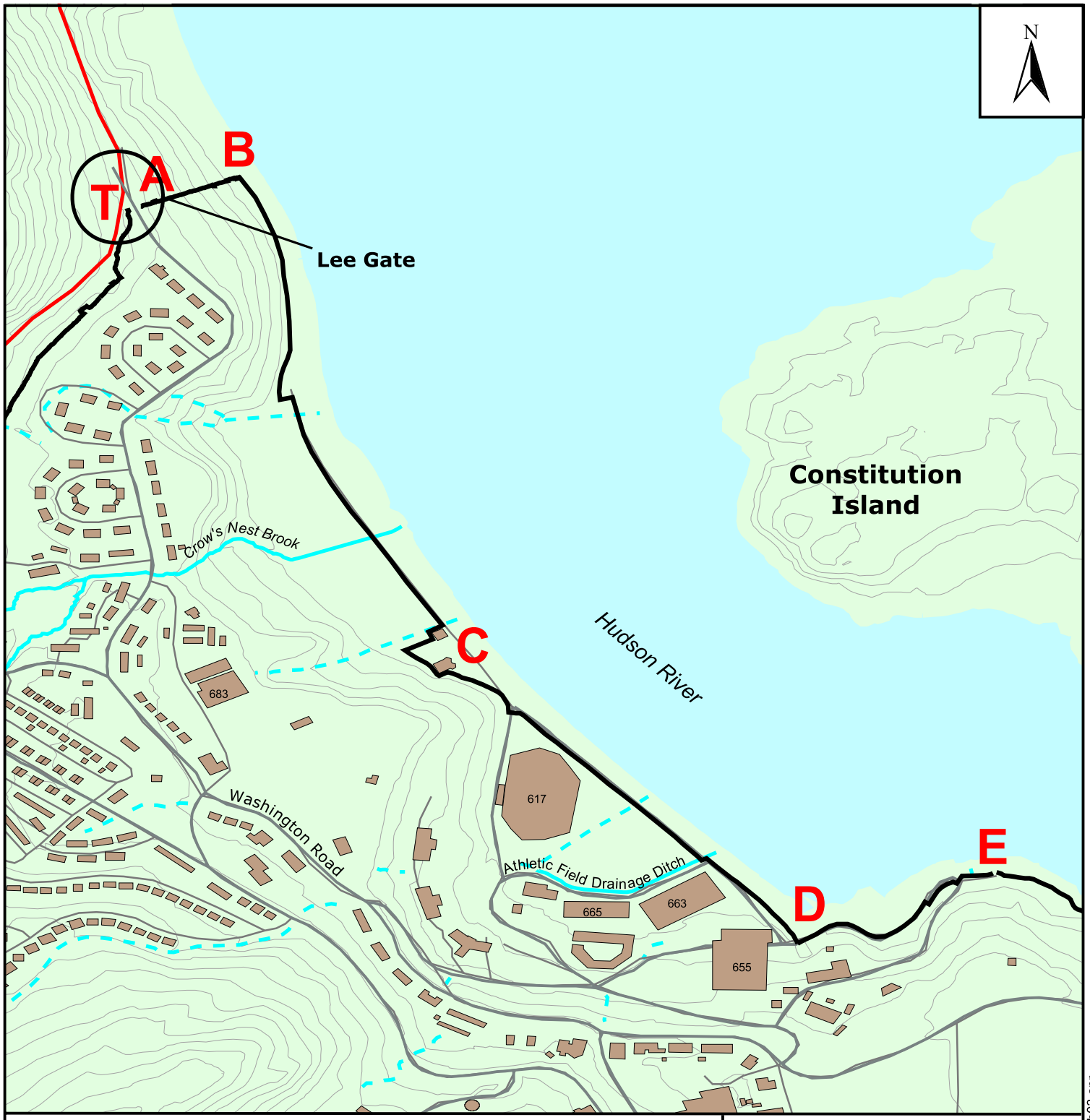
The Partial Perimeter Security Fence Alternative, which was developed as a Preferred Alternative to the Complete Perimeter Security Fence Alternative (the original Proposed Action), would consist of measures to enhance security along the interior (i.e., non-riverfront) portion of

the proposed alignment (corresponding to segments A-B and G-T) to avoid or minimize significant adverse effects on environmental conditions. Structural measures would consist of the installation of new security fencing in areas that are currently unsecured by structural means, as well as the use of existing security fencing along NYS Route 218, between NYS Route 218 and the USMA at West Point, and along the property boundary between the USMA and the Village of Highland Falls.

New security fencing would consist of a 6-foot-high, chain-link fence, topped by three strands of barbed wire on an exterior facing, single outrigger apron that extends an additional one foot in height. The 7-foot-high fence would be located within a permanently cleared area that would be no more than 15 feet wide within the interior (i.e., on the USMA at West Point side) of the project alignment, sufficient for mechanical equipment that will control vegetation growth, and no more than five feet wide on the outside of the project alignment. A motor patrol/maintenance access road would not be included in the Partial Perimeter Security Fence Alternative, and would not be constructed within interior cleared areas of the security fence.

The specific proposed structural security measures recommended for the Partial Perimeter Security Fence Alternative are discussed below by alignment segment, as shown on Figures 3 through 7.

Segment A-B: Security measures along this portion of the project alignment would consist of utilizing the naturally occurring barriers of wooded vegetation and steep terrain to deter unauthorized vehicular access to the Main Post/Academic Area (Figure 3). Utilization of existing steep terrain in this area as a naturally occurring security measure would provide a level of security that is comparable to a perimeter security fence in this same area, at a significantly reduced cost. Unauthorized vehicular access to the Main Post/Academic Area would be deterred by the existing wooded vegetation and steep terrain. Use of existing terrain would not incur additional construction costs associated with construction of the perimeter security fence in an area of steep slope, and would not incur additional costs associated with UXO clearance along this portion of the project alignment.



LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- Gate Location
- G Segment

500 0 500 1000 Feet

Source: USMA 2003.

Figure 3. Segments T-E of the Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

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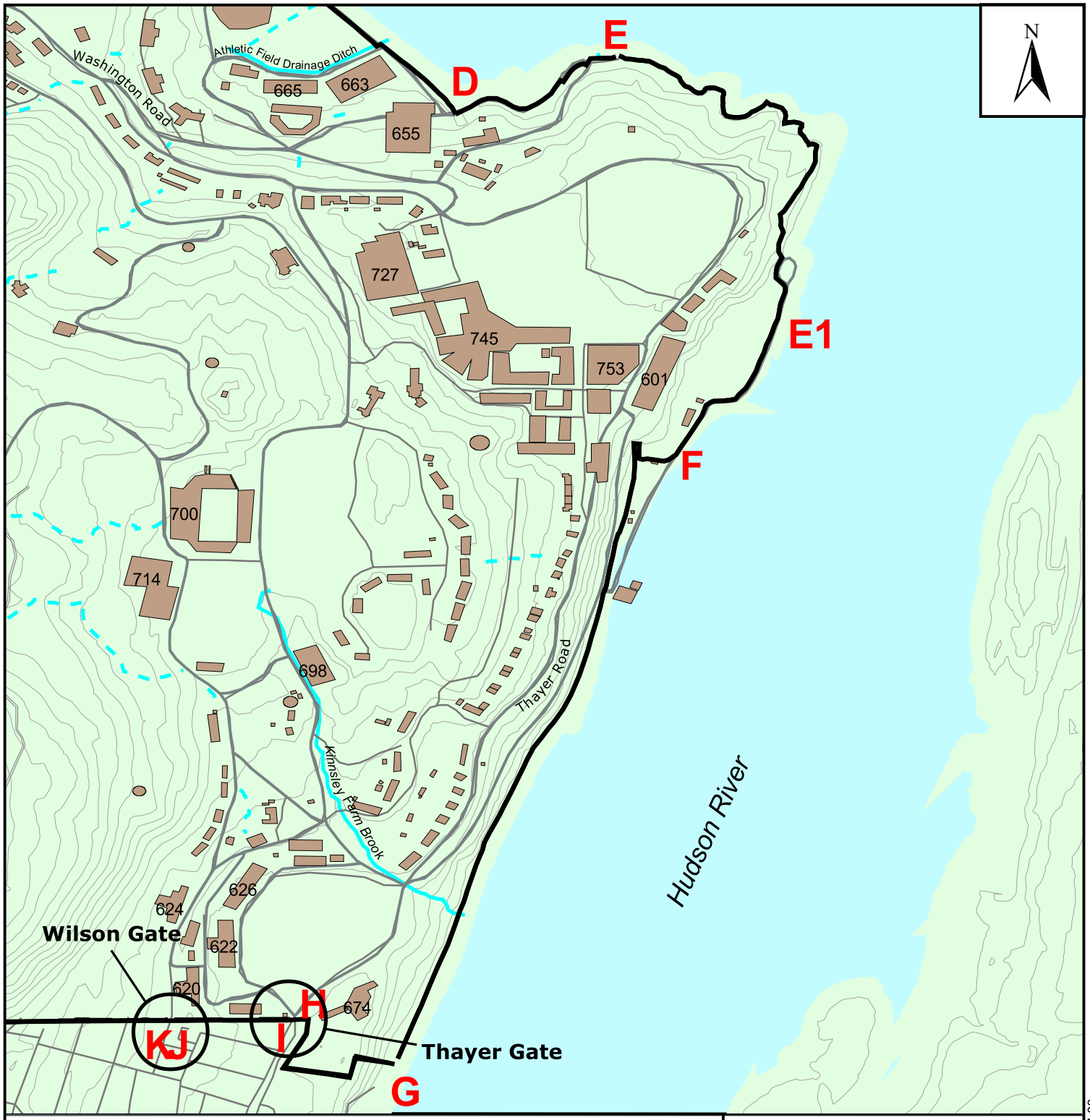


LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- Gate Location
- G Segment

700 0 700 1400 Feet

Source: USMA 2003.

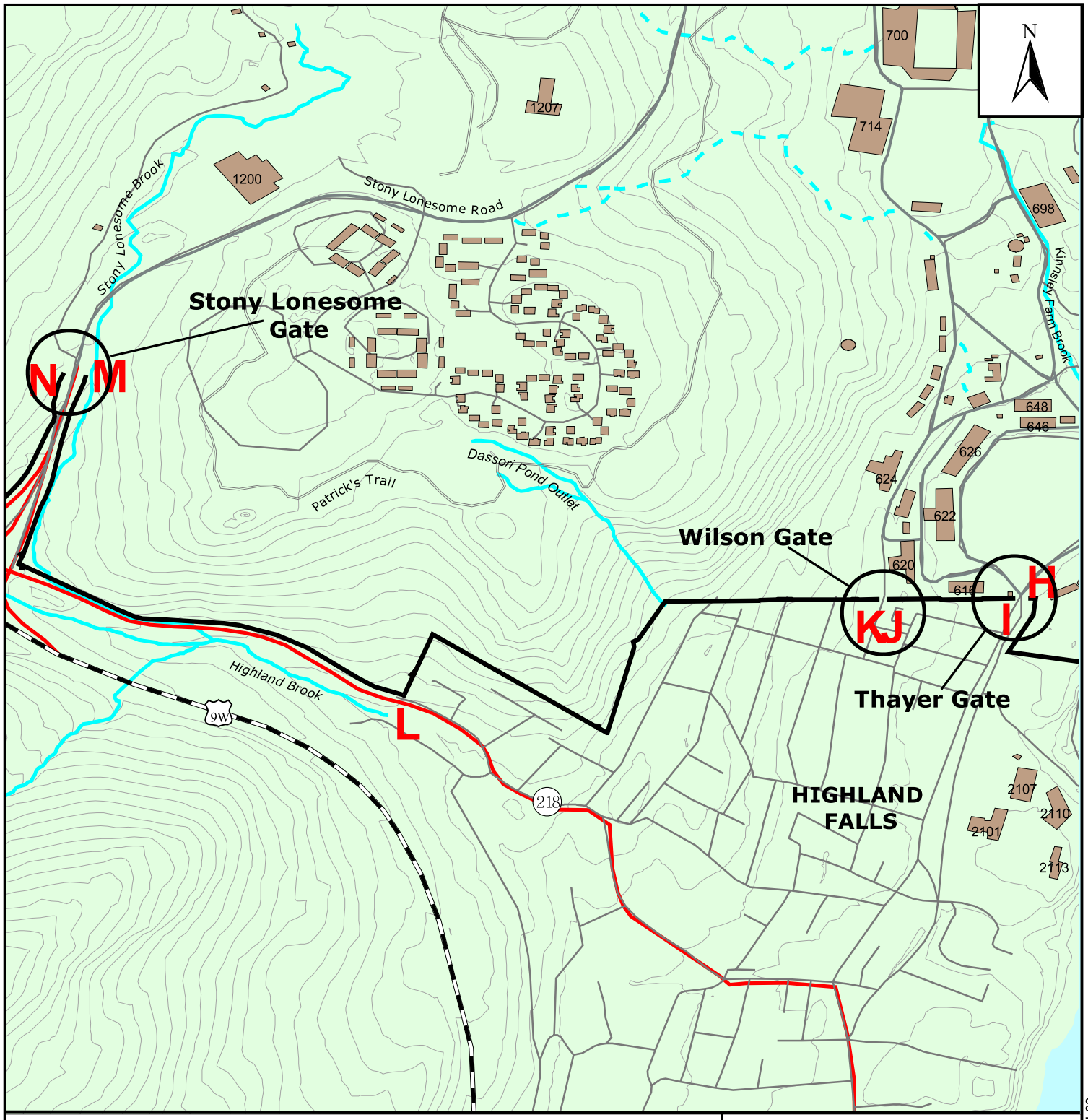
Figure 4. Segments D-I of the Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr



LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- Gate Location
- G Segment

500 0 500 1000 1500 Feet

Source: USMA 2003.

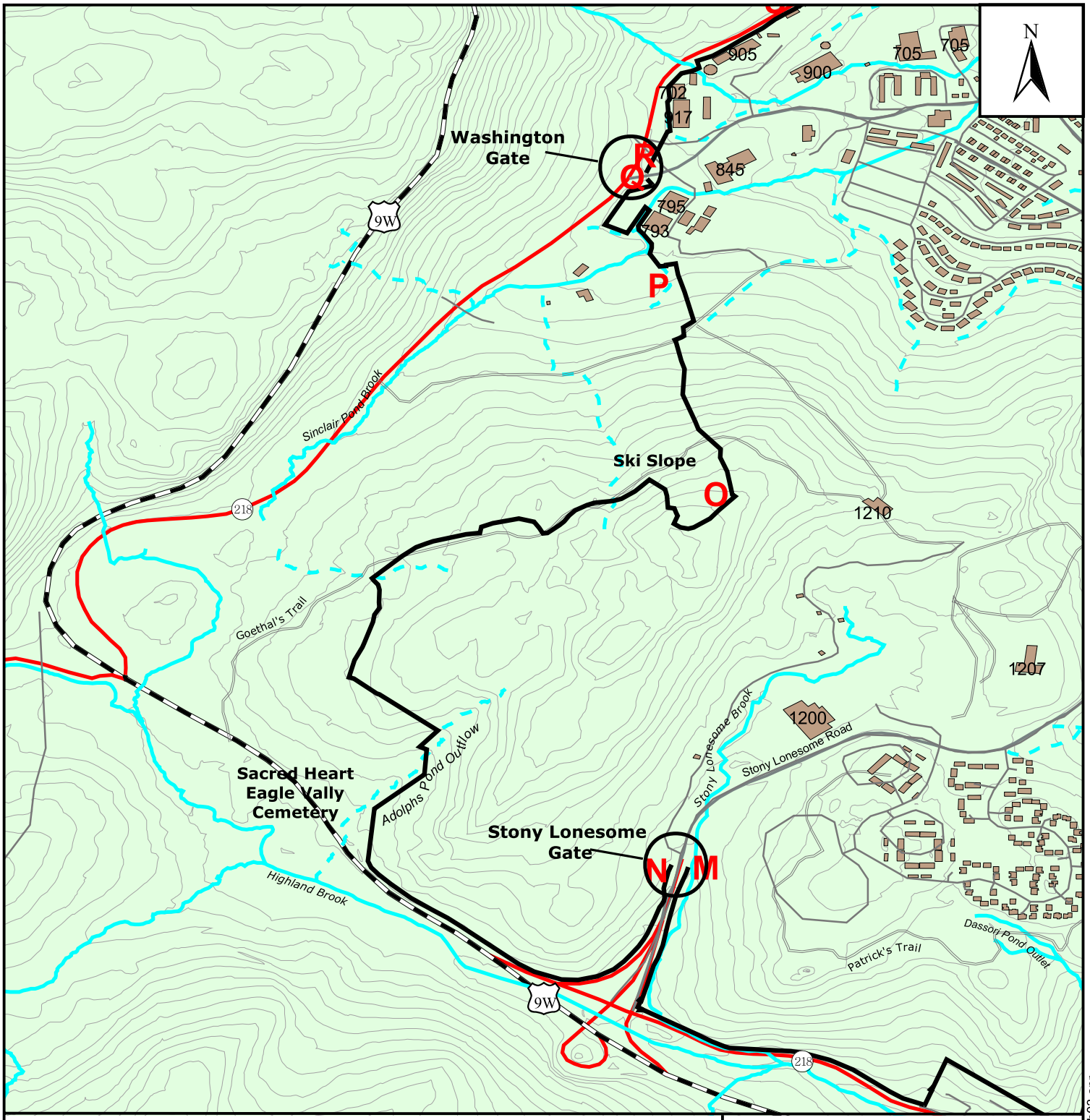
Figure 5. Segments H-N of the Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr



LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- Gate Location
- G Segment

500 0 500 1000 1500 Feet

Source: USMA 2003.

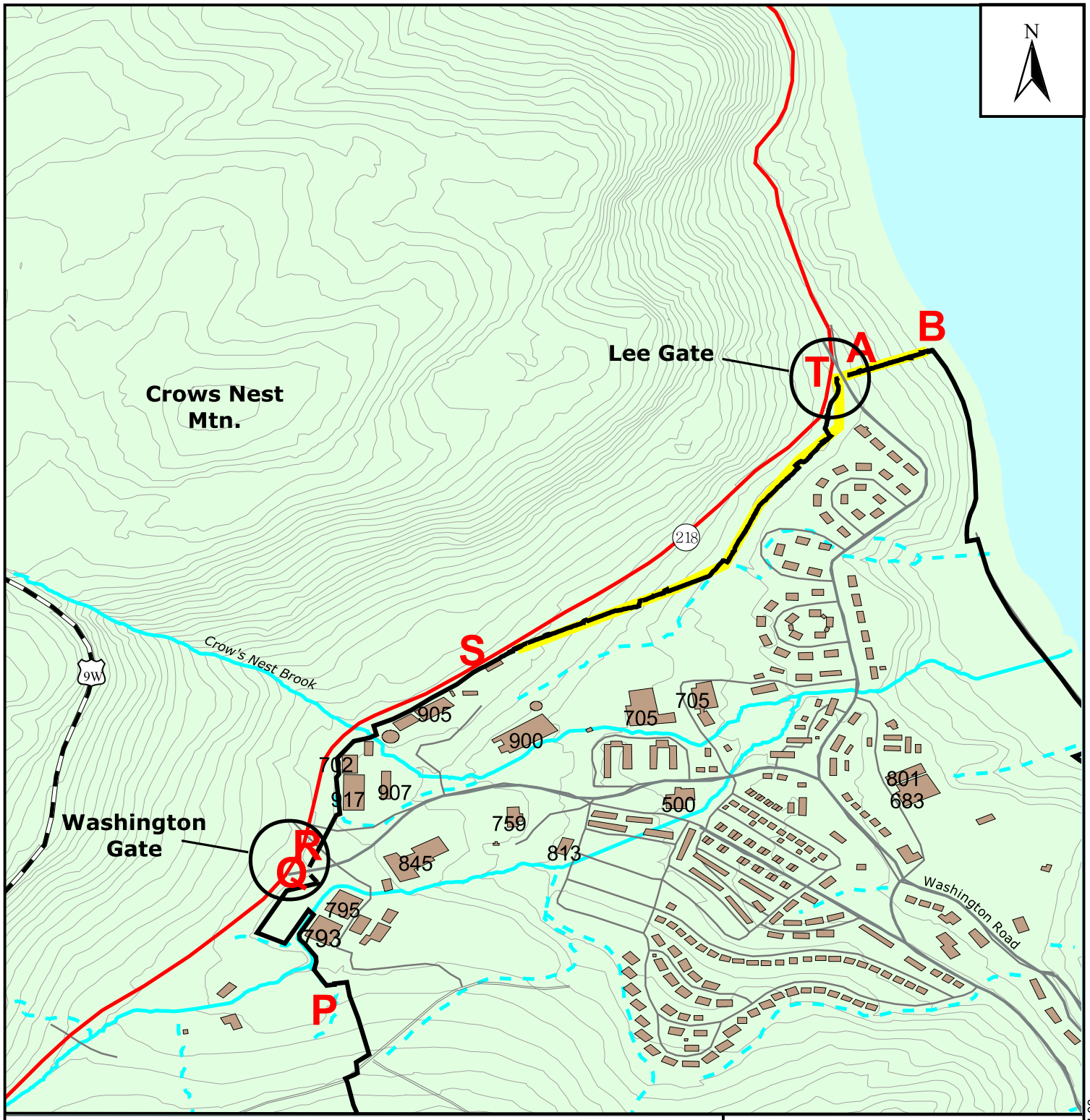
Figure 6. Segments M-R of the Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr



LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- UXO Area
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- Gate Location
- G Segment

500 0 500 1000 Feet

Source: USMA 2003.

Figure 7. Segments Q-A of the Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr

Segment B-G: No structural or non-structural security measures would be implemented along this segment as part of the Preferred Alternative (Figures 3 and 4). Enhanced security measures along this portion of the project alignment would be installed as a follow-on project, as discussed in detail in Section 5.1.8 (Reasonably Foreseeable Future Actions-Alternative Security Measures along the Hudson River Shoreline). Enhanced security measures along this portion of the project alignment are still conceptual in nature, and this follow-on project is not currently funded. At this time, the projected construction date for this follow-on project would be fiscal year (FY) 2007 or later, approximately three years after the Preferred Alternative is initiated.

Segment G-H: Security measures along that portion of the project alignment close to the Hudson River would consist of utilizing the naturally occurring barriers of wooded vegetation and steep terrain to prevent and/or deter unauthorized vehicular access to the Main Post/Academic Area (Figure 4). Utilization of existing steep terrain in this area as a naturally occurring security measure would provide a level of security that is comparable to a security fence in this same area, at a significantly reduced cost. Unauthorized vehicular access to the Main Post/Academic Area would be deterred by the existing wooded vegetation and steep terrain. Use of existing terrain would not incur additional construction costs associated with construction of the security fence in an area of steep slope.

Security measures along that portion of the project alignment close to Thayer Gate would consist of replacing the existing chain-link fence with new fabric only, using existing fence posts (Figures 3 and 4). Portions of the security fence that are adjacent to Thayer Gate would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. Because remaining portions of the security fence along this segment would be located in a visible area, fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. An approximately 15-foot-wide cleared area that is sufficient for mechanical equipment that will control vegetation growth would be maintained inside the fence, on the USMA at West Point's main cantonment side, and an approximately 5-foot-wide cleared area would be maintained outside the fence.

Segment H-I: Enhanced security measures along this portion of the project alignment would be installed as part of the Access Gates Security Upgrade Project (Figure 4), which is anticipated to be designed during FY 2004, approximately one year after the Preferred Alternative is initiated. Pre-10% design concepts for the Thayer Gate as part of the Access Gates Security Upgrade Project are discussed in Section 5.1.1 (Reasonably Foreseeable Future Actions-Access Gates Security Upgrades).

Segment I-J: Security measures along this portion of the project alignment would consist of replacing the existing fence fabric with new security fence fabric along the existing fence line that extends from Thayer Gate west to Wilson Gate, using the existing fence posts (Figure 5). Portions of the security fence that are adjacent to the Thayer and Wilson gates would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. For remaining portions of the security fence along this segment, fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. The exterior facing, single outrigger apron designed for the top of the perimeter security fence would be replaced with a vertical top guard along this portion of the project alignment for community relations purposes. Because of restrictions imposed by proximity of the project alignment to property boundary lines and existing buildings along this segment, there would be no cleared area on either side of the security fence along this portion of the project alignment because of proximity of this portion of the project alignment to private property boundary lines and existing buildings. The security fence would be set back five feet from the USMA property line along this segment, open areas associated with the existing fence would continue to be maintained along this segment, and there would be no additional new clearing on either side of the fence. Thus, an existing approximately 15-foot-wide cleared area would be maintained inside the security fence along this segment, on the USMA at West Point's main cantonment side, that is sufficient for mechanical equipment that will control vegetation growth, and an approximately 5-foot-wide cleared area would be maintained outside of the fence.

Segment J-K: Security measures along this portion of the project alignment are associated with the Wilson Gate, an unmanned gate that is permanently locked, and protected by concrete "Jersey barriers" to prevent vehicle access (Figure 5). Because the Wilson Gate is currently

closed to both vehicular and pedestrian traffic, and is expected to remain closed for the foreseeable future, the security measures associated with the Wilson Gate currently meet the purpose and need of the project without additional modification.

Segment K-L: Security measures along this portion of the project alignment would consist of replacing the existing fence with new security fence along the existing fence line, and installing new security fence along the existing boundary line that extends north and west from Wilson Gate to Mountain Avenue (Figure 5). Portions of the security fence that are adjacent to the Wilson Gate would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. For remaining portions of the security fence along this segment fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. An approximately 15-foot-wide cleared area would be maintained inside the security fence, on the USMA at West Point's main cantonment side, which is sufficient for mechanical equipment that will control vegetation growth. Because of restrictions imposed by proximity of the project alignment to property boundary lines and existing buildings along this segment, an approximately 5-foot-wide cleared area would be maintained outside the fence. The project alignment will cross one stream, the Dassori Pond Outlet. The Dassori Pond Outlet is culverted at this crossing location, so that the stream can pass beneath an existing vehicular accessible trail. Because the Dassori Pond Outlet passes through an existing culvert at this crossing location, there would be no break in the fence at this stream crossing. Because no new structures would be installed within the banks or bed of this stream, no NYSDEC permit would be required, pursuant to Article 15 (Protection of Waters) of the New York State Environmental Conservation Law (NYSECL), for construction adjacent to and within this waterbody.

Segment L-M: Security measures along this portion of the proposed project alignment would consist of replacing the existing fence with new security fence along the existing fence line, and installing new security fence along the edge of NYS Route 218, then north from NYS Route 218 to Stony Lonesome Road, then east along the southern edge of Stony Lonesome Road to Stony Lonesome Gate (Figure 5). Portions of the security fence that are adjacent to the Stony Lonesome Gate would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. For remaining portions of the security fence along

this segment, fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. An approximately 15-foot-wide cleared area would be created inside the security fence, on the USMA at West Point's main cantonment side, that is sufficient for mechanical equipment that will control vegetation growth, and an approximately 5-foot-wide cleared area would be maintained outside the fence. Because the proposed project alignment would traverse one unnamed trail that is considered a vehicular accessible trail (the unnamed road southeast of Stony Lonesome Family Housing), a lockable vehicle gate that matches the chain-link fence would be installed where this trail crosses the proposed project alignment. The proposed security fence would not be constructed across Stony Lonesome Brook, such that security fencing ends above the top of the bank on both sides of this waterbody, no fencing would be installed across the stream, and no culvert would be installed within the stream, thereby reducing construction costs, and avoiding the need for a NYSDEC permit, pursuant to Article 15 (Protection of Waters) of the NYSECL, for construction adjacent to and within this waterbody.

Segment M-N: Enhanced security measures along this portion of the project alignment would be installed as part of the Access Gates Security Upgrade Project (Figure 6), which is anticipated to be designed during FY 2004, approximately one year after the Preferred Alternative is initiated. Pre-10% design concepts for the Stony Lonesome Gate as part of the Access Gates Security Upgrade Project are discussed in Section 5.1.1 (Reasonably Foreseeable Future Actions-Access Gates Security Upgrades).

Segment N-O: Security measures along this portion of the project alignment would consist of installing a new security fence along the northern edge of Stony Lonesome Road, and then along the edge of U.S. Route 9W, excluding the Sacred Heart/Eagle Valley Cemetery, to Goethal's Trail, then east following Goethal's Trail to the eastern edge of the top of the ski slope (excluding the ski slope) (Figure 6). Portions of the security fence that are adjacent to the Stony Lonesome Gate would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. For remaining portions of the security fence along this segment, fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. An approximately 15-foot-wide cleared area that is sufficient for mechanical equipment that will control vegetation growth will be created inside the fence, on the USMA at West Point's main

cantonment side, and an approximately 5-foot-wide cleared area would be created outside the fence. Because the proposed project would traverse at least four trails that are considered vehicular accessible trails (the unnamed trail south of Sacred Heart/Eagle Valley Cemetery, two locations along the unnamed trail northeast of Sacred Heart/Eagle Valley Cemetery, and the unnamed trail north of Sacred Heart/Eagle Valley Cemetery), lockable vehicle gates that match the chain-link fence would be installed at all locations where these trails cross the proposed project alignment. The proposed security fence will not be constructed across Adolph's Pond outflow, the intermittent headwater to Sinclair Pond, or the intermittent drainage on the east side of the ski slope, such that security fencing would end above the top of the bank on both sides of these waterbodies, no fencing would be installed across these streams, and no culverts would be installed within these streams, thereby reducing construction costs, and avoiding the need for a NYSDEC permit, pursuant to Article 15 (Protection of Waters) of the NYSECL, for construction adjacent to and within these waterbodies.

Segment O-P: Security measures along this portion of the project alignment would consist of installing a new security fence inside the tree line along the eastern edge of the ski slope, then north along the clearing for the utility power line along the perimeter of the Motor Pool parking area (Figure 6). Fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. An approximately 15-foot-wide cleared area that is sufficient for mechanical equipment that will control vegetation growth will be created inside the fence, on the USMA at West Point's main cantonment side, and an approximately 5-foot-wide cleared area would be created outside the fence. Because the proposed project alignment would traverse at least three trails that are considered vehicular accessible trails (the unnamed trail north of Building 1209, the Goethal's Trail, and the Pipeline Trail), lockable vehicle gates that match the chain-link fence would be installed at all locations where these trails cross the proposed project alignment.

Segment P-Q: Security measures along this portion of the project alignment would consist of incorporating the existing 8-foot-high security fence around the Motor Pool into the project alignment without replacement, as it exceeds the requirement for security fencing around the Main Post/Academic Area, and replacement would be redundant and would not meet security requirements of the Motor Pool. Security measures for remaining portions of the project

alignment along this segment would consist of replacing the existing fence that extends south and west from the Motor Pool (Figure 7). Portions of the existing security fence that are adjacent to the Washington Gate would be replaced with wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. Because remaining portions of the security fence along this segment would be located in a visible area, fencing material would consist of black, PVC-coated chain-link, which is considered to be a non-intrusive color. Because open areas associated with the existing fence are already maintained along this segment, no new clearing would be required on either side of the fence. Thus, an existing approximately 15-foot-wide cleared area that is sufficient for mechanical equipment that will control vegetation growth would be maintained inside the fence, on the USMA at West Point's main cantonment side, and an approximately 5-foot-wide cleared area would be maintained outside the fence. The project alignment will cross one stream, Sinclair Pond Brook, within the existing raised roadbed for the access road for the Motor Pool. Because this access road crosses over an existing culvert that allows Sinclair Pond Brook to pass beneath the access road, there would be no break in the fence at this stream crossing. Because no new structures would be installed within the banks or bed of this stream, a NYSDEC permit would not be required, pursuant to Article 15 (Protection of Waters) of the NYSECL, for construction adjacent to and within this waterbody.

Segment Q-R: Enhanced security measures along this portion of the project alignment would be installed as part of the Access Gates Security Upgrade Project (Figure 7), which is anticipated to be designed during FY 2004, approximately one year after the Preferred Alternative is initiated. Pre-10% design concepts for the Washington Gate as part of the Access Gates Security Upgrade Project are discussed in Section 5.1.1 (Reasonably Foreseeable Future Actions-Access Gates Security Upgrades).

Segment R-S: Security measures along this portion of the project alignment would consist of replacing the existing chain-link fence fabric only, using existing fence posts, along the existing fence line that extends east from the Washington Gate to the Directorate of Logistics (DOL) Warehouse, Roads and Grounds, and the Department of Housing and Public Works (DHPW) Lumber Storage Yard (Figure 7). However, portions of the security fence that are adjacent to the Washington Gate would consist of wrought iron, set in granite pedestals, similar to the fence

currently under construction at South Post. Because portions of the security fence along this segment would be located in a visible area, fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. Because open areas associated with the existing fence are already maintained along this segment, there would be no additional new clearing on either side of the fence. An approximately 15-foot-wide cleared area that is sufficient for mechanical equipment that will control vegetation growth would be maintained inside the fence, on the USMA at West Point's main cantonment side, and an approximately 5-foot-wide cleared area would be maintained outside the fence between approximately Washington Gate and the DHPW Lumber Storage Yard. However, the remaining portion of this segment of the project alignment is located within an established UXO area, and no cleared areas would be maintained on either side of the security fence, thereby reducing construction costs, and avoiding the need for additional UXO clearance surveys for health and safety reasons. The proposed perimeter security fence would not be constructed across the unnamed tributary to Crows Nest Brook and Crows Nest Brook such that security fencing would end above the top of the bank on both sides of these waterbodies, no fencing would be installed across these streams, and no culverts would be installed within either of these streams, thereby reducing construction costs, and avoiding the need for NYSDEC permits, pursuant to Article 15 (Protection of Waters) of the NYSECL, for construction adjacent to and within these waterbodies.

Segment S-T: Security measures along this portion of the project alignment would consist of installing a new security fence from the DHPW Lumber Storage Yard east along the back of the Lee Housing Area to the Lee Gate (Figure 7). Portions of the security fence that are adjacent to the Lee Gate would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. Because remaining portions of the security fence along this segment would be located in a visible area, fencing material would consist of black, PVC-coated, 2-inch mesh chain-link. Because this segment of the project alignment is located within an established UXO area, this portion of the project alignment would have no cleared areas on either side of the security fence because this segment of the project alignment is located within an established UXO area, thereby reducing construction costs, and avoiding the need for additional UXO clearance surveys for health and safety reasons.

Segment T-A: Security measures along this portion of the project alignment are associated with the Lee Gate (Figure 7), and currently meet the purpose and need of the project without additional modification. Furthermore, the Lee Gate is currently closed to both vehicular and pedestrian traffic, and is expected to remain closed for the foreseeable future.

As discussed above by segment, the Partial Perimeter Security Fence Alternative would provide a high level of safety and security for residents and critical military facilities at the USMA at West Point, while reducing construction costs and minimizing potentially significant adverse effects from construction and maintenance activities on existing environmental conditions compared to the original Proposed Action. Although the Partial Perimeter Security Fence Alternative would only partially comply with the Vice Chief of Staff of the DA's verbal directive, this alternative would be the most cost-effective means of providing enhanced security to the Main Post/Academic Area of the USMA at West Point, by allowing the USMA at West Point to selectively focus the implementation of a variety of security measures to provide enhanced security in those areas of the Main Post/Academic Area that would result in the greatest overall benefits. Furthermore, the Partial Perimeter Security Fence Alternative would reduce both temporary and permanent impacts associated with implementation of the project as described in Section 4.0 (Environmental Consequences), including the effects of vegetation clearing and fence erection on wildlife; the accessibility to recreational and physical training areas by students, staff, and residents; and the aesthetic qualities of scenic viewsheds associated with the USMA at West Point.

Because the Partial Perimeter Security Fence Alternative would meet the intent of the DOD Minimum Antiterrorism Standards, Force Protection Design Standard, and the verbal directive by the Vice Chief of Staff of the DA, and would reduce temporary and permanent adverse effects on environmental conditions within the project area, the USMA at West Point has determined that selection of this alternative would be the most viable. Accordingly, the USMA at West Point considers the Partial Perimeter Security Fence Alternative to be the Preferred Alternative for the project, and has conducted environmental analyses of this Preferred Alternative in support of this determination.

2.4 PERMITS AND APPROVALS

Any proposed action funded, authorized, or carried out by a federal agency must comply with NEPA. The Proposed Action would be carried out by a Federal Entity, the DA, and must comply with the DA's implementing regulations for NEPA, Army Regulation (AR) 200-2, Environmental Effects of Army Actions. Specifically, AR 200-2, Chapter 5-3, Paragraph b, specifies that an Environmental Assessment (EA) is required for the construction of new facilities. Accordingly, this EA fulfills the NEPA requirements for the Proposed Action.

The USMA would coordinate with the NYSOPRHP, State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP) to finalize a project-specific Programmatic Agreement to ensure compliance with Section 106 of the National Historic Preservation Act (NHPA). The USMA would coordinate with the NYSDEC to obtain state-issued permits for construction and maintenance of the project, including Article 15 (Protection of Waters) permits, Section 401 Water Quality Certification permits, and a State Pollutant Discharge Elimination System (SPDES) General Construction Permit GP-02-01 (Storm Water Discharges from Construction Activities), as necessary. The USMA would coordinate with the United States Army Corps of Engineers (USACE) to obtain the necessary federally-issued permits for construction and maintenance of the project, including Section 404 Clean Water Act permits, as necessary.

The project is located within the West Point Military Academy and Contemporary West Point Military Academy subunits of the Hudson Highlands Scenic Area of Statewide Significance (HHSASS), which is administered by the New York State Department of State (NYSDOS), Coastal Management Program (CMP). Pursuant to 15 CFR Part 930.34(b), the USMA must notify the NYSDOS CMP of project conformance with State Coastal Policies at least 90 days prior to project implementation. Accordingly, the USMA would coordinate with the NYSDOS CMP through the submittal and review of the Draft EA by the NYSDOS CMP, to identify potential impacts of the Proposed/Preferred Action on State Coastal Policies or the HHSASS.

3.0 AFFECTED ENVIRONMENT

This section describes the existing natural, social, and cultural environmental resources in the project area associated with the Preferred Alternative at the USMA at West Point.

3.1 GEOLOGY AND TOPOGRAPHY

The USMA at West Point is located in eastern Orange County, New York, in the New England Upland Section of the New England Physiographic Province (USDI, Geological Survey 1995). The landscape consists of steep, rocky hillsides typically created through the physical and chemical alteration of metamorphic rocks. Bedrock in this area primarily consists of Precambrian metamorphic rock (gneiss, quartzite, marble, and anorthositic rocks) and some igneous rock formed during the Middle Proterozoic (Helikan) period (more than 570 million years ago) of the Paleozoic era and Phanerozoic eon (New York State Museum, Geologic Survey 1986). The bedrock is exposed in many areas, such as the steep rock faces and cliffs fronting the Hudson River, and there are many large boulders exposed on the ground surface throughout the USMA at West Point.

3.2 SOILS

The Hollis-Rock Outcrop Association is the dominant soil association for the project area at the USMA at West Point. These soils are derived from glacial deposits of schist, gneiss, and granite, and are found on mountainous uplands that are characterized by steep slopes, and areas of peaked elevation (United States Department of Agriculture [USDA], Soil Conservation Service [SCS] 1981). In general, soils in this association are medium-textured soils overlying crystalline bedrock, are excessively drained and well-drained, and have a low water capacity (USMA 1998a). This soil association has been identified as poorly suited to urban and recreational uses due to shallowness over bedrock and associated dryness (USDA SCS 1981), although these are two of the predominant land uses in the project area. Soil structures include sandy loams, gravelly loams, gravelly sandy loams, silt loams, and gravelly silt loams, as well as several stony and extremely stony soil types (USMA 1998a).

Seven soil series have been identified in the project area. Table 1 summarizes characteristics of each soil series and identifies associated hazards or limitations. There are no Agricultural Districts, hydric soils, state-designated Unique Farmlands, or additional Farmlands of Statewide Importance located at the proposed project site (Cabrera 2003).

Table 1. Characteristics of Soil Series in the Project Area.

Soil Series Name	Soil Series Code	Soil Structure	Percent Slope	Hazards or Limitations
Rock Outcrop	RO	Exposed bedrock	15-60%	Slope, shallowness over bedrock, dryness, erosion
Charlton	Ch	Fine sandy loam	8-15%	Slope, summer dryness
Hollis	HL	Gravelly loam	3-35%	Shallowness over bedrock, dryness, slope
Hoosic	Ho	Gravelly sandy loam	0-25%	Gravel fragments, dryness, erosion
Swartswood	Sw	Gravelly loam, gravelly fine sandy loam	3-8%	Temporary spring wetness, small stones, erosion
Udorthents	U	Very gravelly loamy sand to silty clay loam	0-10%	Manmade cut and fill areas
Erie	E	Extremely stony	3-8%	Large surface stones, seasonal wetness

Source: USDA SCS 1981.

3.3 WATER RESOURCES

3.3.1 Groundwater Resources

The project area at the USMA at West Point is located within the New England Upland Section of the New England Physiographic Province. The underlying aquifers associated with the New England Physiographic Province are crystalline-rock aquifers consisting of a variety of igneous and metamorphic rocks. Aquifers within this province are locally confined, with a common well depth ranging from 25 to 400 feet, and a common well yield ranging from 1 to 120 gallons per minute. Groundwater quality in the crystalline-rock aquifers is generally characterized as suitable for most uses, although there can be areas of localized large iron concentrations (Olcott 1995).

No federally-designated Sole Source Aquifers exist within or near the project area (U.S. Environmental Protection Agency [USEPA] 1996). Additionally, no state-designated Primary or Principal Aquifers exist within the project area (Stegville 1999). The closest such aquifer, the Fishkill and Sprout Creeks Area, is located approximately 5.2 miles northeast of the project area, on the eastern side of the Hudson River (Bugliosi and Trudell 1988). The only productive alluvial aquifers at the USMA at West Point are associated with the Hudson River or Popolopen Brook (Bjornsen 2001b).

3.3.2 Surface Water Resources

Based on review of pertinent United States Geological Survey (USGS) topographic quadrangle maps and the USMA at West Point's *Protected Surface Waters and Wetlands* map (USMA-Natural Resources Branch [NRB] 2003), the proposed project alignment traverses a total of 13 waterbodies at a total of 14 locations (Table 2; Figure 8). The USMA at West Point complies with the NYSDEC's Use and Protection of Waters regulatory program and requirements, including statutory authority pursuant to Article 15, Title 5 of the NYSECL and implementing regulations pursuant to 6 New York Codes, Rules and Regulations (NYCRR) Part 608. Pursuant to 6 NYCRR Part 608.2(a) (Disturbance of Protected Streams), a permit is required to ensure

Table 2. Waterbodies Traversed by the Proposed Project Alignment.

Segment	Stream Name	NYSDEC Protected Stream	Flow Type	State Water Quality Classification[a]	Fishery Type
B-C	Unnamed drainage ditch at north end of Target Field	No	Intermittent	N/A	N/A
B-C	Crows Nest Brook[b]	Yes	Perennial	C(ts)	Coldwater
B-C	Unnamed drainage ditch draining old PX	No	Intermittent	N/A	N/A
C-D	Unnamed drainage ditch at north end of North Athletic Field	No	Intermittent	N/A	N/A
C-D	North Athletic Field drainage ditch (also known as the Delafield Pond outlet)	Yes	Perennial	B	Warmwater
F-G	Kinsley Farm Brook	Yes	Perennial	B	Coldwater
K-L	Dassori Pond outlet	Yes	Perennial	B	Coldwater
L-M	Stony Lonesome Brook	Yes	Perennial	A(t)	Coldwater
N-O	Adolph's Pond outflow	No	Intermittent	U	N/A
N-O	Intermittent headwater to Sinclair Pond	No	Intermittent	N/A	N/A
N-O	Intermittent drainage on east side of Ski Slope	No	Intermittent	N/A	N/A
P-Q	Sinclair Pond Brook	No	Perennial	C	Coldwater
R-S	Tributary to Crows Nest Brook	No	Intermittent	U	N/A
R-S	Crows Nest Brook[b]	No	Perennial	C	Coldwater
N/A	Highland Brook[c]	Yes	Perennial	A(t)	Coldwater
N/A	Crown Brook[c]	Yes	Perennial	C(t)	Coldwater

Sources: USMA 1998a, NRB 2003, compiled by Northern Ecological Associates, Inc. 2004.

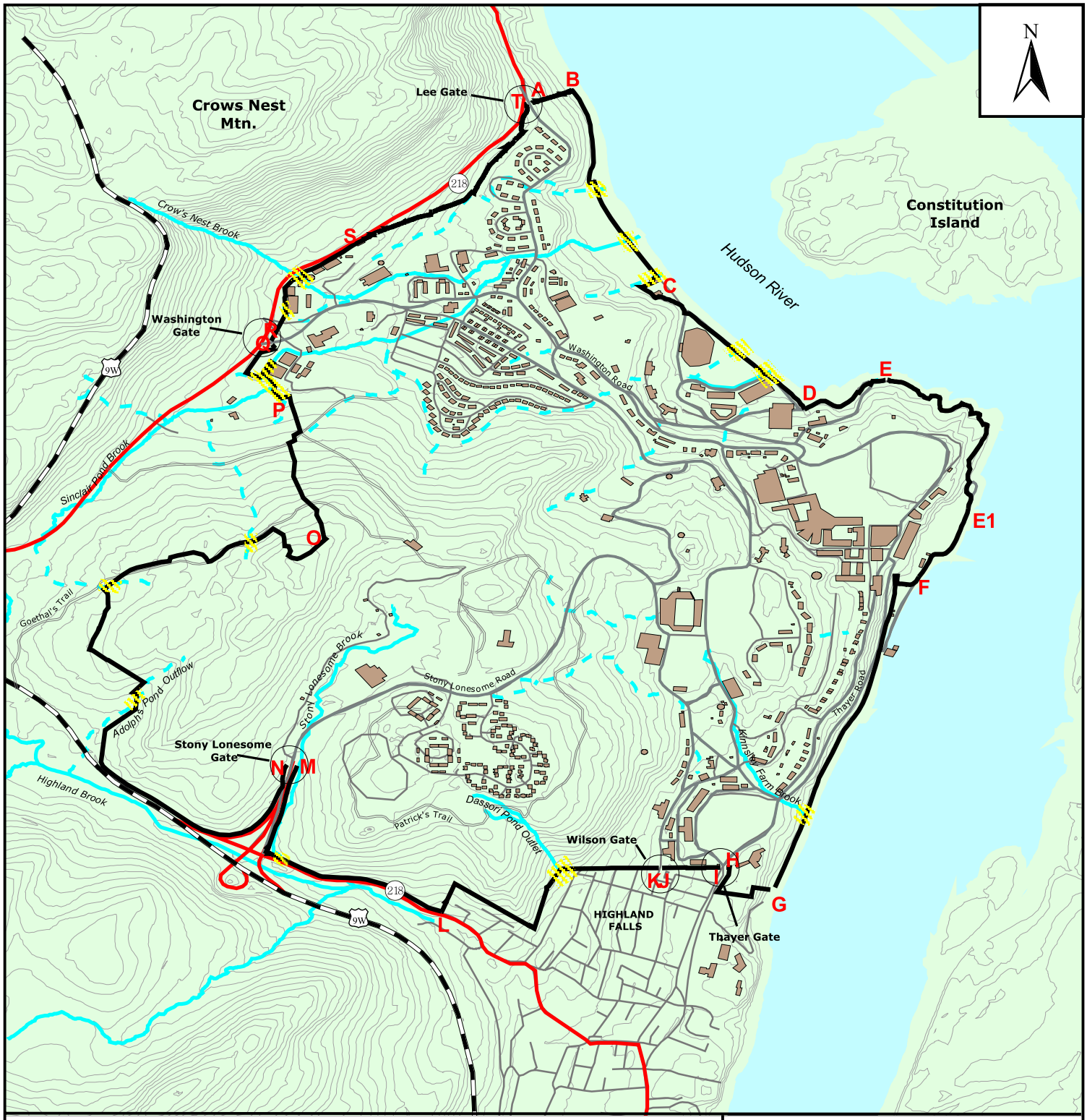
Key:

[a] = NYSDEC water quality classification:

Class A water – source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. Suitable for fish propagation and survival.
Class B water – primary and secondary contact recreation and fishing. Suitable for fish propagation and survival.
Class C water – suitable for primary and secondary recreation, other factors may limit the use for these purposes. Suitable for fish propagation and survival.
Class U water – unknown.
(t) – trout.
(ts) – trout spawning.

[b] = Crows Nest Brook is crossed twice by different segments of the proposed project alignment.

[c] = Stream would not be crossed by, but is located within 2,000 feet of, the proposed project alignment.



LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- G Segment
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- Gate Location
- Stream Crossing

1000 0 1000 2000 3000 Feet

Source: USMA 2003.

Figure 8. Approximate Stream Crossing Locations, for the Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr

that, “no person or local public corporation may change, modify or disturb any protected stream, its bed or banks, nor remove from its bed or banks sand, gravel or other material, without a permit issued pursuant to this Part” (NYSDEC 1994).

Pursuant to 6 NYCRR Part 608.1(p) (Definitions), the NYSDEC defines a protected stream as “any stream or particular portion of a stream for which there has been adopted by the department or any of its predecessors any of the following classifications or standards: AA, AA(t), A, A(t), B, B(t), or C(t). Streams designated (t) (trout) also include those more specifically designated (ts) (trout spawning)”. Therefore, portions of five of the 13 affected surface waterbodies (Table 2) have been identified as NYSDEC Protected Streams: Crows Nest Brook (at the crossing location along Segment B-C), an Athletic Field drainage ditch (also known as the Delafield Pond outlet), Kinsley Farm Brook, the Dassori Pond outlet, and Stony Lonesome Brook (NRB 2003, Pray 2004). All of these five protected waterbodies are perennial streams that support either warmwater or coldwater fisheries, where crossed by the proposed project.

Portions of two affected surface waterbodies, Sinclair Pond Brook and Crows Nest Brook (at the crossing location along Segment R-S) are not NYSDEC Protected Streams (both are classified as Class C streams), but are protected under the USMA at West Point’s good stewardship directive because they are perennial streams which flow into the Hudson River, a federally-protected surface water under Section 404 of the Clean Water Act (Pray 2004). The remaining seven waterbodies are intermittent streams that do not support fisheries, are not considered NYSDEC Protected Streams, and are not protected under the USMA at West Point’s good stewardship directive (Pray 2004).

Two additional NYSDEC Protected Streams, Highland Brook and Crown Brook, which is a tributary to Highland Brook, are located outside of the project area and would not be crossed by the project alignment, as listed at the end of Table 2 (NRB 2003).

Streams within the project area can be grouped into five surface drainage systems within the USMA at West Point property. The five drainages are: the Crows Nest Brook drainage, located along the northern boundary of the project area; the North Athletic Field drainage ditch (also

known as the Delafield Pond outlet) drainage, which drains the eastern portion of the project area; the Kinsley Farm Brook drainage, an unconsolidated system located along the eastern portion of the project area; the Dassori Pond outlet drainage, located along the southeastern portion of the project area; and the Highland Brook drainage, which drains the western and southern portions of the project area (USMA 1998a, NRB 2004). Two of these surface drainage systems, the Kinsley Farm Brook and Highland Brook drainages, drain much of the Main Post/Academic Area. All surface drainage systems on the USMA at West Point property ultimately discharge into the Hudson River.

The USMA at West Point's Integrated Natural Resource Management Plan (INRMP), provides waterbody-specific descriptions, including physical, chemical, and biological parameters, for four of the 13 surface waterbodies crossed by the proposed project alignment: Crows Nest Brook, the Dassori Pond outlet, Stony Lonesome Brook, and Highland Brook (USMA 1998a). These four waterbody-specific descriptions are summarized below.

Crows Nest Brook is both a first-order and second-order stream that is located in the northern portion of the Main Post/Academic Area of the USMA at West Point, becoming a second-order stream downstream of its junction with Sinclair Pond Brook. The perennial surface water originates from several small tributaries that drain Crows Nest Mountain and form the Crows Nest Watershed that drains into the Hudson River. The NYSDEC classifies Crows Nest Brook as a Class C stream. Under the USMA's good stewardship directive, Crows Nest Brook has been recommended for treatment as a Class C stream west of Lee Road, and as a Class C(ts) stream east of Lee Road because of the presence of spawning trout (Markt 2003). Therefore, Crows Nest Brook is a NYSDEC Protected Stream (NRB 2003). Water quality measurements taken at this stream during June and August of 1996 indicated a temperature of 66.5 degrees Fahrenheit (^{o}F), conductivity of 690 micromhos per centimeter (micromhos/centimeters [cm]), total dissolved solids at 470 parts per million (ppm), and dissolved oxygen (DO) at 10.55 ppm (Linck 1996).

The Dassori Pond outlet is located in the southwestern portion of the Main Post/Academic Area of the USMA at West Point. Dassori Pond is a shallow impoundment fed by storm water runoff

from surrounding terrain. During dry periods, the water level in the pond is so low that the bottom becomes a juxtaposition of pools and exposed muck and organic debris. As such, the pond provides rich habitat for frogs, turtles, and other amphibians, but not for fish. However, the Dassori Pond outlet is known to support a population of blacknose dace (NRB 2004). The Dassori Pond outlet is listed as a Class B stream, and therefore is a NYSDEC Protected Stream (NRB 2003).

Stony Lonesome Brook is also located in the south-central portion of the Main Post/Academic Area of the USMA at West Point. Stony Lonesome Brook originates at an unnamed wetland area. It flows south out of this wetland for approximately 1.1 miles, where it joins Highland Brook, draining an area of approximately 250 acres. Although a perennial stream, the NYSDEC has not assigned a water quality classification for Stony Lonesome Brook. However, because it is a tributary of Highland Brook, its classification is the same as that stream and is classified as a Class A(t) stream (USMA 1998a). Therefore, Stony Lonesome Brook is a NYSDEC Protected Stream (NRB 2003).

Highland Brook is also located in the southwestern portion of the USMA at West Point property, but is outside of the project area. The NYSDEC classifies Highland Brook as a Class A(t) stream, and the stream is a source of potable water for Highland Falls. Therefore, Highland Brook is a NYSDEC Protected Stream (NRB 2003). Water quality measurements taken at the stream during June and August of 1996 indicated temperatures ranging between 62 to 65^{o}F, conductivity from 70 to 200 micromhos/cm, DO from 10.17 to 10.21 ppm, total dissolved solids from 100 to 160 ppm, and pH from 6.6 to 9.65 (Linck 1996).

In addition to the 13 known surface waterbodies listed in Table 2, the proposed project alignment has the potential to traverse a number of unmapped intermittent or perennial streams, ravines, and drainages, which do not appear on baseline USGS topographic quadrangle maps or the USMA at West Point's *Protected Surface Waters and Wetlands* map. Prior to construction as part of the design process, the USMA at West Point's architectural and engineering contractor would perform a walkover of the Preferred Alternative alignment to identify any unmapped intermittent or perennial streams, ravines, and drainages, and the USMA at West Point's

construction contractor would field-verify these locations to avoid any disturbance to the stream bed or banks of these identified surface waterbodies.

3.3.3 Public and Private Water Supply Sources

No public or private water supply wells are located within a 2-mile radius of the project area (Stegville 1999). As noted above, Highland Brook, located outside of the Main Post/Academic Area of the USMA at West Point, is the source of potable water for Highland Falls, and is tested regularly by Highland Falls for various water quality parameters. Results of these tests indicate that Highland Brook has extremely good quality water, that is consistent with the A(t) classification and standard (USMA 1998a).

The USMA at West Point's water supply is provided via a water main pipeline that originates from the USMA at West Point's Lusk Reservoir Water Treatment Plant. The Lusk Reservoir Water Treatment Plant has the capacity to provide up to 4 million gallons per day (mgd) of potable water through a water supply pipeline distribution system throughout the USMA at West Point Support Zone. The USMA at West Point also has a license agreement with the Palisades Interstate Park Commission (PIPC) to provide potable water to West Point during periods of high demand (October 16 through May 31 of each year).

3.4 FISHERIES

Existing aquatic habitats in the vicinity of the proposed project are suitable for several fish species. This section discusses the fish species, essential fish habitat, and any significant aquatic habitats likely to occur in the vicinity of the proposed project alignment. Rare, threatened, and endangered fish species of concern are discussed in Section 3.8.

3.4.1 Common Fisheries

Fish have been surveyed on the USMA at West Point by the Adirondack Lakes Survey Corporation (1987), Cornell University (1988-95), USFWS (as part of a cooperative agreement), and the USMA at West Point's NRB (USMA 1998a). Based on these surveys, 57 fish species have been documented at the USMA at West Point. The presence of 20 of these species have been confirmed in the waterbodies traversed by the proposed project alignment, including the American eel (*Anguilla rostrata*), yellow bullhead (*Ameiurus natalis*), channel catfish (*Ictalurus*

punctatus), white sucker (*Catostomus commersoni*), goldfish (*Carassius auratus*), common shiner (*Luxillus cornutus*), golden shiner (*Notemigonus crysoleucas*), spottail shiner (*Notropis hudsonius*), fathead minnow (*Pimephales promelas*), eastern blacknose dace (*Rhinichthys atratulus*), longnose dace (*Rhinichthys cataractae*), creek chub (*Semotilus atromaculatus*), banded killifish (*Fundulus diaphanus*), brook charr (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), rainbow trout (*Oncorhyncus mykiss*), tiger trout (*S. fontinalis x S. trutta*), and redbreast sunfish (*Lepomis auritus*) (Beemer 2003b). These species could potentially occur in the vicinity of the project area at some time in their life cycle. Waterbodies within the USMA at West Point may also include recreational fish species such as largemouth bass (*Micropterus salmoides*), channel catfish, and various trout (salmonid) species (Linck 1994, Green and Mills 1995, Linck 1996, USMA 1980, USMA 1996b). None of the 20 fish species documented as occurring within the waterbodies traversed by the proposed project alignment have been identified as federal- or state-listed endangered, threatened, or rare, or special concern wildlife species (NYSDEC 2002, Stilwell 2003, Ketcham 2003).

The Hudson River also provides habitat for a diverse array of fish species, including the federally-listed endangered shortnose sturgeon (*Acipenser brevirostrum*), and portions of the Hudson River that are within 0.5 miles of the proposed project area have been identified as anadromous fish concentration areas. However, the proposed alignment does not intersect any portion of the Hudson River.

3.4.2 Essential Fish Habitat

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, the Secretary of the U.S. Department of Commerce has approved Essential Fish Habitat (EFH) for a variety of commercially harvested species that have federal Fishery Management Plans. Specifically, the West Point reach of the Hudson River, located in the vicinity of the Proposed Action, lies within the river's estuary mixing zone. This reach of the Hudson River potentially provides habitat for a range of life stages of fish that currently have Fishery Management Plans within the Mid-Atlantic Unit, including red hake (*Urophycis chuss*), winter flounder (*Pseudopleuronectes americanus*), windowpane (*Scopthalmus aquosus*), Atlantic sea herring (*Clupea harengus*), bluefish (*Pomatomus saltatrix*), Atlantic butterfish (*Peprilus triacanthus*), summer flounder

(*Paralicthys dentatus*), and black sea bass (*Centropristus striata*) (Kurkul 2000). However, the bluefish is the only species that has been documented in this reach of the Hudson River by the NYSDEC, although the habitat in the portion of the Hudson River adjacent to the USMA at West Point is only sufficient to support transient individuals in search of food (Kurkel 2000, Beemer 2003b).

The USMA at West Point, as a federal agency, must only consult with the National Marine Fisheries Service (NMFS) if the USMA at West Point determines that its actions may have an adverse effect on EFH (Beemer 2003a). The USMA at West Point has determined that the proposed project would not be located within, or immediately adjacent to the Hudson River or its shoreline (NRB 2004). In addition, the NMFS has previously reported that, provided construction activities at the USMA at West Point are conducted using properly installed and maintained sediment controls, no EFH under their jurisdiction would be affected (Kurkul 2000).

3.4.3 Fish Areas

The USMA at West Point is located adjacent to the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat, a 12-mile stretch of the Hudson River, including the Iona Island Marsh and Constitution Marsh, that lies within the New York State coastal zone (NYSDOS 1987, Ketcham 2003). This habitat is part of the NYSDOS CMP, and is administered by the NYSDOS's Department of Coastal Resources and Waterfront Revitalization (Ketcham 2003). This significant coastal fish and wildlife habitat "encompasses all of the main river channel below mean low water," which consists of a "very narrow and deep (up to 200 feet deep) section of the Hudson River, with strong currents and a rock bottom substrate" that is seasonally subject to salt intrusion as part of the Hudson River estuary system (NYSDOS 1987). The Hudson River Mile 44-56 Significant Coastal Fish and Wildlife Habitat is considered irreplaceable because of its unusual ecosystem characteristics, is a bald eagle wintering area, is a potential shortnose sturgeon nursery area, and is a major spawning area for striped bass. The unusually high production of striped bass in this area supports commercial and recreational fisheries in the vicinity and beyond the project area (NYSDOS 1987). In addition, the New York State Natural Heritage Program (NYSNHP) has identified the Hudson River and Constitution Marsh on Constitution Island as an anadromous fish concentration area.

The USMA at West Point has determined that the proposed project would not be located within, or immediately adjacent to the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat (NRB 2004). This determination is further addressed with regard to consistency with coastal zone management policies for Significant Coastal Fish and Wildlife Habitat in Section 3.19.

3.5 VEGETATION

Based on an ecological classification system developed for New York State, the USMA at West Point lies within the Hudson Highlands area of the Hudson Valley, an ecozone consisting of Appalachian ridges and valleys located within the New England Upland Physiographic Province (Reschke 2002). Much of the West Point landscape consists of rugged terrain, deep ravines, and developed areas. Most of the undeveloped portion of the landscape is forested, but crests of ridges and hilltops, particularly those with rocky summits, tend to have few trees and support only stunted/sparse woodlands, savannas, or grasslands. Crests and ridges are also very dry and have a history of human-caused fires associated with military training activities (USMA 1998a).

Vegetation community inventories conducted by the USMA at West Point's NRB in 1993 through 1994, and updated in 1995, identified 28 upland community types within the USMA at West Point (Kakerbeck 1995). Of these, 12 upland communities occur within 1,000 feet of the proposed project alignment. Ecological descriptions of these subdivisions and communities are provided below (USMA 1998a). Wetland communities are addressed in Section 3.6.1, and rare threatened, and endangered plant species are addressed in Section 3.8.2.

3.5.1 Cliff Community

Cliff communities occur on vertical exposures of noncalcareous bedrock or consolidated material. Soil development is minimal. As such, plants are comprised of species able to grow in small cracks and crevices such as rock polypody (*Polypodium virginianum*), hairgrass (*Deschampsia flexuosa*), black chokeberry (*Aronia melanocarpa*), mountain laurel (*Kalmia latifolia*), and occasionally hemlock (*Thuja canadensis*). Cliff communities are relatively common throughout the USMA at West Point (18% coverage), but represent less than 1% of the vegetated cover within 1,000 feet of the proposed project alignment.

3.5.2 Rocky Summit Grassland

Rocky summit grasslands occur on ridges and rocky summits. Rocky summit grasslands are uncommon and represent less than 1% of the vegetated upland communities throughout the USMA at West Point and in the vicinity of the proposed project alignment. This community is dominated by grassland species that include little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), broomsedge (*Andropogon virginicus*), poverty grass (*Danthonia spicata*), and Indian grass (*Sorghastrum nutans*). Other less-dominant species include shrubs such as lowbush blueberry (*Vaccinium angustifolium*), scrub oak (*Quercus ilicifolia*), and shadbush (*Amelanchier stolonifera*).

3.5.3 Successional

Successional communities occur on sites that have been cleared or otherwise disturbed. Successional communities are uncommon and represent less than 5% of the vegetated upland communities throughout the USMA at West Point and within 1,000 feet of the proposed project alignment. They include the successional fern meadow, successional blueberry heath, successional old field, and successional shrubland communities. These diverse community types are typically dominated by ferns, such as hayscented fern (*Dennstaedtia punctilobula*) and New York fern (*Thelypteris noveboracensis*); ericaceous shrubs, such as blueberries (*Vaccinium* spp.); forbes and grasses, such as goldenrods (*Solidago* spp.), bluegrasses (*Poa* spp.), smooth brome (*Bromus inermis*), chickweed (*Cerastium arvense*), New England aster (*Aster novae-angliae*), and hawkweeds (*Hieracium* spp.); and/or, shrub species, such as gray dogwood (*Cornus foemina*), multiflora rose (*Rosa multiflora*), raspberry (*Rubus* spp.), hawthorn (*Crateagus* spp.), sumac (*Rhus* spp.), and Japanese barberry (*Berberis thunbergii*).

3.5.4 Rich Rocky Woodland

Rich rocky woodland communities are structurally intermediate between open canopy uplands and forests. Rich rocky woodlands occur on shallow soils and hard rock with numerous rocky outcrops and are uncommon (less than 1% coverage) throughout the USMA at West Point and within 1,000 feet of the proposed project alignment. The canopy is typically composed of stunted trees (less than 16 feet tall), and a sparse canopy cover (20 to 60%) that typically includes white ash (*Fraxinus americana*), pignut hickory (*Carya glabra*), black cherry (*Prunus*

serotina), or hop hornbeam (*Ostrya virginiana*). The herbaceous understory is usually well-developed and is typically dominated by common wood sedge (*Carex albicans*).

3.5.5 Appalachian Oak-Hickory Forest

Appalachian oak-hickory forests are widespread and represent approximately 11% of total upland vegetation at the USMA at West Point. Oak-hickory forests are the second most common community type found within 1,000 feet of the proposed project alignment (36% coverage). Oak-hickory forests contain greater than 60% tree canopy cover and are found in various forms on a wide range of sites and conditions throughout the USMA at West Point. Oak-hickory forests are located on well-drained bottomlands, benches, or coves, on previously cleared or burned areas, and on dry upper slopes and rocky ridgetops. When located on rich, well-drained sites, this community is dominated by northern red oak (*Quercus rubra*) and black oak (*Quercus veluntia*), and has a well-developed understory of tree saplings and seedlings. Common shrub species in this forest type include flowering dogwood (*Cornus florida*), witch hazel (*Hamamelis virginiana*), shadbush (*Amelanchier* spp.), and choke cherry (*Prunus virginiana*). Hickory (*Carya* spp.), when present, is typically not abundant.

When located on dry, upper slopes and rocky ridgetops, the oak-hickory community is dominated by pignut hickory and a diversity of oak species, including black oak, white oak (*Quercus alba*), chestnut oak (*Quercus prinus*), and northern red oak. The understory is typically dominated by huckleberry (*Gaylussacia baccata*) and wood sedge, but also may contain ebony spleenwort (*Asplenium platyneuron*), prickly pear cactus (*Opuntia humifusa*), and polypody ferns (*Polypodium* spp.)

The oak-hickory community also occurs as even-aged stands that have developed on sites that were cleared or burned within the past 60 years. This community is dominated by scarlet oak (*Quercus coccinea*) and/or black oak, but typically contain few hickory trees. Other less dominant tree species found in this forest type include red oak, white oak, chestnut oak, and red maple (*Acer rubrum*). Ground cover is typically composed of huckleberry, sweetfern (*Comptonia peregrina*), wintergreen (*Gaultheria procumbens*), and wood sedge.

3.5.6 Chestnut Oak Forest

The chestnut oak forest type occurs on well-drained sites with thin soils. This forest type is found on dry ridgetops and slopes and is relatively uncommon throughout the USMA at West Point (9% coverage) and within 1,000 feet of the proposed project alignment (7% coverage). The dominant tree species include chestnut oak and red oak, but also may include scattered white oak, black oak, and red maple. The shrub and herbaceous layers are composed of huckleberry, mountain laurel, blueberry, wood sedge, wintergreen, and mosses (*Leucobryum* spp.).

3.5.7 Oak-Tuliptree Forest

The oak-tuliptree hardwood forest occurs on moist, well-drained sites. This forest type is relatively uncommon throughout the USMA at West Point (3% coverage) and within 1,000 feet of the proposed project alignment (6% coverage). Tree species composition in oak-tuliptree forests is diverse, typically containing red oak, tuliptree (*Liriodendron tulipifera*), American beech (*Fagus grandifolia*), black birch (*Betula lenta*), red maple, scarlet oak, black oak, and white oak. The understory is usually well developed with a diversity of tree saplings, tall and low-growing shrubs, and herbs. Herbaceous species typically include white wood aster (*Aster divaricatus*), New York fern, wild geranium (*Geranium maculatum*), Solomon's seal (*Polygonum biflorum*), and Jack-in-the-pulpit (*Arisema triphyllum*).

3.5.8 Beech-Maple Mesic Forest

The beech-maple mesic forest type often integrates with the aforementioned oak-tuliptree forest. As such, this community often includes a wide diversity of species. When not integrated with oak-tuliptree forest, this forest type is dominated by sugar maple (*Acer saccharum*) and American beech. Less dominant species found in beech-maple forests include white ash, red maple, and/or chestnut oak, and a sparse understory of witch hazel, ferns, and spring ephemerals. Homogeneous stands of beech-maple are uncommon (3% coverage) throughout the USMA at West Point and within 1,000 feet of the proposed project alignment.

3.5.9 Hemlock-Northern Hardwood Forest

Hemlock-northern hardwood forests typically are found on middle to lower slopes of ravines, on cool, mid-elevation slopes, and on moist, well-drained sites along the margins of swamps. This community type is dominated by hemlock, but may also contain beech, red maple, sugar maple,

chestnut oak, white pine (*Pinus strobus*), yellow birch (*Betula lutea*), black birch, red oak, and basswood (*Tilia americana*). Understory species include striped maple (*Acer pennsylvanica*) as the dominant mid-story tree, and ground cover that includes partridgeberry (*Mitchella repens*), Christmas fern (*Polystichum acrostichoides*), and mosses. Hemlock forests are uncommon throughout the USMA at West Point (4% coverage) and within 1,000 feet of the proposed project alignment (3% coverage).

3.5.10 Talus Slope Woodland

Talus slopes are relatively common throughout the USMA at West Point (30% coverage), but represent less than 1% of the vegetated cover within 1,000 feet of the proposed project alignment. This community varies from open- to closed-canopy stunted woodlands (less than 16 feet tall), growing on shallow soils over bedrock. Rock outcrops are common in this community. Talus slopes are typically dominated by tree species that include sugar maple, white ash, basswood, hop hornbeam, chestnut oak, red oak, and white oak. Common ground layer species include Christmas fern, rock polypody, Virginia creeper (*Parthenocissus quinqefolia*), bloodroot (*Sanguinaria canadensis*), and baneberry (*Actaea* spp.).

3.5.11 Pine Plantation

Pine plantations are planted monocultures with at least 90% of the canopy consisting of white pine. The understory of this community is sparse, but occasionally contains speedwell (*Veronica officinalis*). Pine plantations are uncommon (less than 1% coverage) throughout the USMA at West Point and within 1,000 feet of the proposed project alignment.

3.5.12 Open

This classification includes ecological communities that have been created by anthropogenic forces. This community represents approximately 8% of total vegetated coverage within the USMA at West Point and is the most common community (42% coverage) within 1,000 feet of the proposed project alignment. Within the proposed project alignment, the open community type includes features associated with the military installation's academic, housing, and service facilities, such as mowed lawns, paved roads, mowed roadsides, brushy cleared land, training ranges, sand or gravel mines, and ordnance-impacted land.

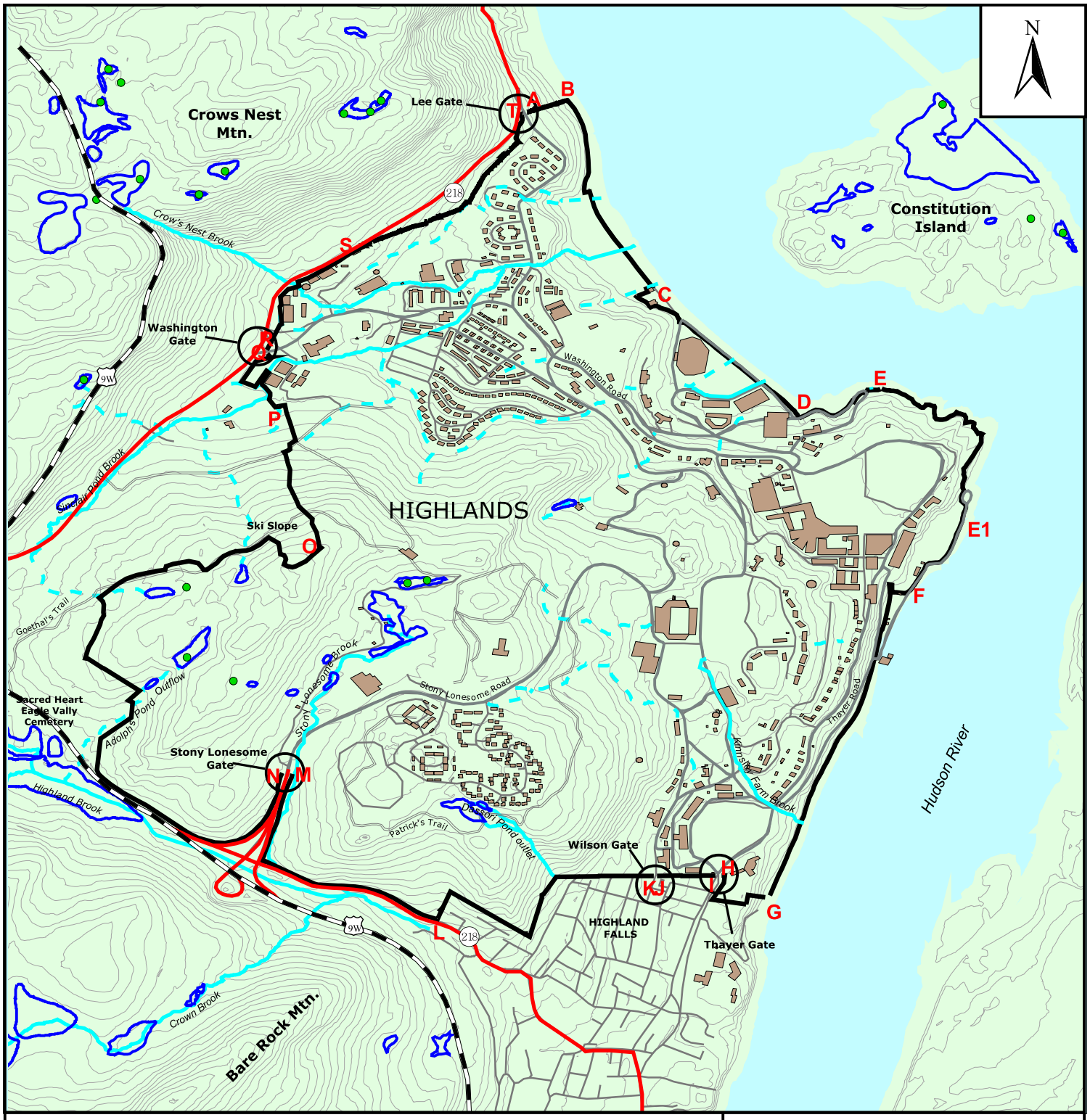
3.5.13 Communities of Special Concern

Seven significant vegetated communities have been identified in the vicinity of the proposed project area by the NYSNHP: pitch pine-oak heath rocky summit; chestnut oak forest; acidic talus slope woodland; Appalachian oak-hickory forest; red cedar rocky summit; rocky summit grassland; and cliff community (Ketcham 2003). As discussed above, the chestnut oak forest, Appalachian oak-hickory forest, rocky summit grassland, and the cliff community all occur within 1,000 feet of the proposed alignment. The acidic talus slope woodland and red cedar rocky summit community types were not identified as occurring at the USMA at West Point (USMA 1998a). The pitch pine-oak heath rocky summit, although found at the USMA at West Point (USMA 1998a), does not occur within 1,000 feet of the proposed alignment. None of these seven significant vegetated communities have been assigned a legal status or are afforded protection by the NYSDEC.

3.6 WETLANDS, FLOODPLAINS, AND NAVIGABLE WATERWAYS

3.6.1 Wetlands

In 1993, the USACE, New York District identified and mapped wetlands throughout the USMA at West Point. Based on this survey and subsequent field investigations, 310 distinct wetlands, covering approximately 1,085 acres, were identified within the USMA property boundary. Of these 310 wetlands, seven wetlands occur within 1,000 feet of the proposed project alignment (USMA 1998a) (Figure 9). Although none of these seven wetlands would be directly traversed by the proposed project alignment, the proposed project alignment would cross a portion of the 100-foot upland buffer zone of one wetland, Wetland A-80 (Figure 10). Wetland A-80 is located on the south side of U.S. Route 9W, which runs along the exterior of Segment N-O, and is down-slope of both U.S. Route 9W and the proposed project alignment, with U.S. Route 9W located between Wetland A-80 and the proposed project alignment. Wetland A-80 contains a total of 17.9 acres of palustrine forested (PFO) (6.8 acres), palustrine emergent (PEM) (9.6 acres) and palustrine scrub-shrub (PSS) (1.5 acres) wetlands (USMA 1998a).



LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- Vernal Pool
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- USACE Wetland
- G Segment
- Gate Location

1000 0 1000 2000 3000 Feet

Source: USMA 2003.

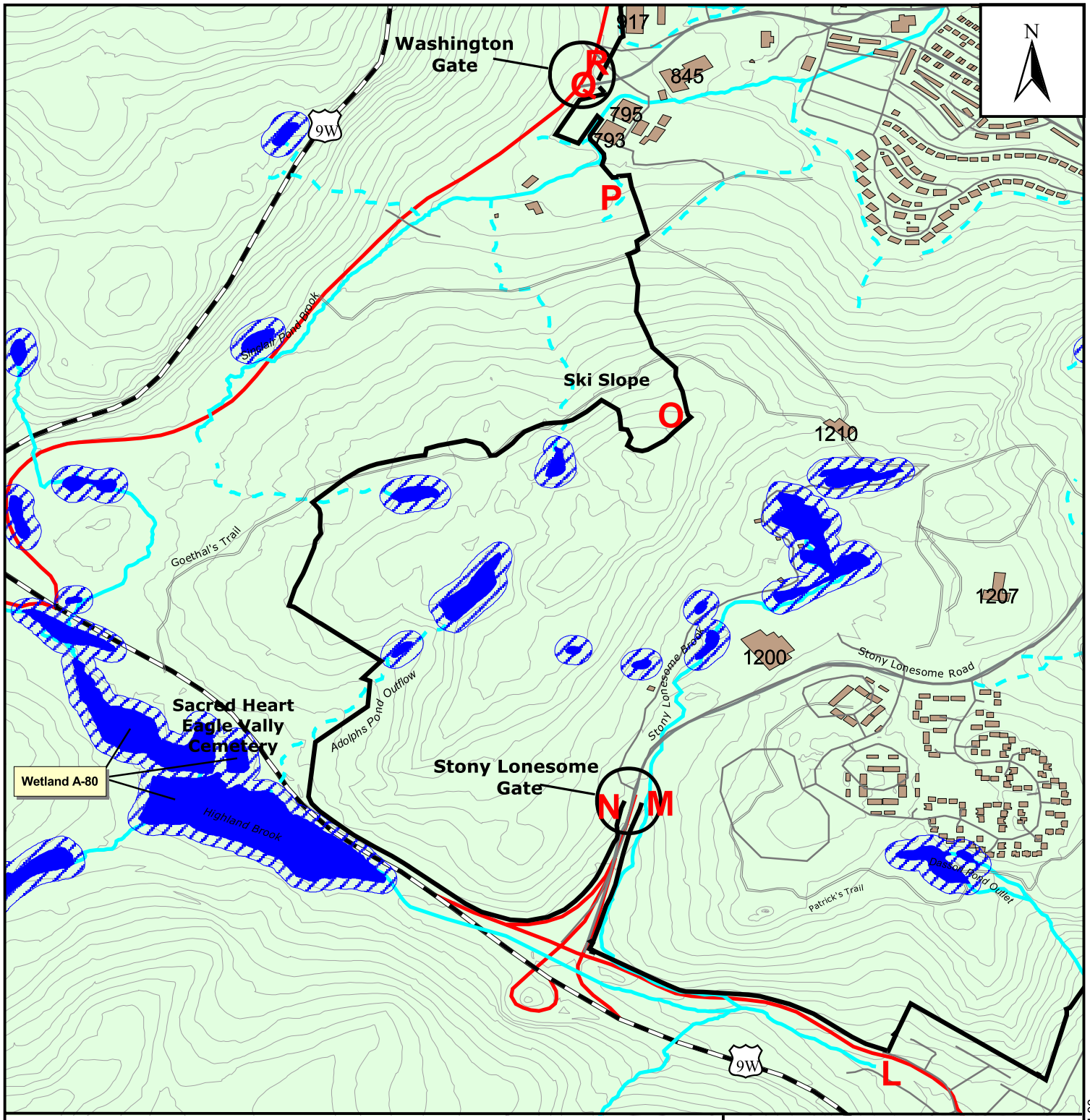
Figure 9. Wetlands and Vernal Pools in the Vicinity of the Proposed Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr



LEGEND

- Project Alignment
- Buildings
- Contours (10 ft interval)
- Permanent Streams
- Intermittent Streams
- G Segment
- Primary Roads
- Secondary Roads
- State Highway
- US Highway
- USACE Wetland
- 100 Foot Buffer Zone
- Gate Location

500 0 500 1000 1500 Feet

Source: USMA 2003.

Figure 10. USACE Wetland A-80 Located Adjacent to the Proposed Perimeter Security Fence Alignment, USMA, West Point, New York.

Client: U.S. Army Corps of Engineers New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr

PFO wetlands at the USMA at West Point are typically dominated by an overstory of broad-leaved deciduous tree species such as red maple and yellow birch. Other less-dominant species found in PFO wetlands include the shrub and herb species typically found in scrub-shrub wetland types. PSS wetlands at the USMA at West Point are typically dominated by a shrub layer that includes high and low-bush blueberry, sweet pepperbush (*Clethra alnifolia*), steeplebush (*Spirea tomentosa*), and meadowsweet (*Spirea alba*), and herb species that include various sedges, rushes (*Juncus* spp.), and ferns (*Thelypteris* spp. and *Athyrium* spp.). PEM wetlands at the USMA at West Point are typically dominated by sedges, rushes, smartweed (*Polygonum* spp.), common reed (*Phragmites australis*), and/or narrow-leaved cattail (*Typha angustifolia*), but also may contain a minor component of the same shrub species found in PSS wetlands (USACE 1993).

Of the 41 vernal pools that have been identified at the USMA at West Point, two vernal pools (C12a and D11), including a 100-foot buffer zone around each vernal pool as recommended in the USMA at West Point's INRMP, occur within 1,000 feet of the proposed project alignment (Barbour 1997, USMA 1998a) (Figure 9). Vernal pool C12a occurs 312 feet from the proposed project alignment and represents the closest vernal pool to project activities. Vernal pools are temporary bodies of water that provide vital habitat for many invertebrate and vertebrate species, some of which are dependent on vernal pools for their survival. As such, vernal pools are distinguished as important wetland habitats. However, neither of these two vernal pools, or their 100-foot buffer zones, would be traversed by the proposed project alignment.

3.6.2 Floodplains

Those portions of the proposed project alignment, along segments B-G, lie within the 100-year floodplain of the Hudson River (Federal Emergency Management Agency [FEMA] 2003). Remaining portions of the proposed project alignment, along segments G-T and A-B, lie outside of the 100-year floodplain of the Hudson River (FEMA 2003).

3.6.3 Navigable Waterways

All of the surface waterbodies along the proposed project alignment are considered navigable waterways under Section 404 of the Clean Water Act, because they are hydrologically connected to the Hudson River. The Hudson River is located immediately adjacent to, and east of, the proposed project alignment at its closest point.

3.7 WILDLIFE

The diversity of wildlife is reflected in the USMA at West Point's INRMP, which is in the process of being updated (Beemer 2003b). Based on the INRMP (USMA 1998a) and updated information available from the USMA at West Point's NRB (Beemer 2003b), 822 documented wildlife species have been observed on USMA at West Point property. The project area includes a variety of habitats that are suitable for a diverse group of migratory and resident wildlife, including mammals, birds, reptiles, amphibians, and invertebrates (fish species are addressed in Section 3.4). Documented wildlife species on the USMA at West Point property include 48 species of mammals, 249 species of birds, 22 species of reptiles, 18 species of amphibians, 100 species of dragonflies and damselflies, 234 species of moths, and 76 species of butterflies, as well as aquatic life (38 species of fishes, 35 species of mollusks, two [2] species of crayfish) (Beemer 2003b).

3.7.1 Mammals

Forty-eight species of mammals have been documented on the USMA at West Point (USMA 1998a, Beemer 2003b). Section 3.17.1, pages 3-68, of the USMA's INRMP provides a list of the majority of mammal species documented within the USMA at West Point (USMA 1998a). The most common mammals likely to regularly occur in the habitats traversed by the proposed project alignment include the large and medium sized mammals such as the coyote (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*), opossum (*Didelphis virginianus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), and gray fox (*Urocyon cinereoargenteus*). Small mammals include such species as the short-tailed shrew (*Blarina brevicauda*), starnose mole (*Condylura cristata*), little brown myotis (*Myotis lucifugus*), red bat (*Lasiurus borealis*), silver haired bat (*Lasionycteris noctivagans*), eastern chipmunk (*Tamias striatus*), gray squirrel (*Sciurus carolinensis*), red squirrel (*Tamiasciurus hudsonicus*),

white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus*), and eastern cottontail (*Sylvilagus floridanus*).

3.7.2 Birds

The USMA at West Point's NRB has conducted periodic bird surveys on and near the USMA at West Point (USMA 1998a). Based on these surveys, and documentation of incidental sightings, 249 species of birds have been documented on the USMA at West Point (USMA 1998a, Beemer 2003b). Appendix E, Table E-1, of the USMA's INRMP provides a complete listing of bird species observed (USMA 1998a). Some of the representative species that would typically be found in the habitats traversed by the proposed project alignment include the Canada goose (*Branta canadensis*), wild turkey (*Meleagris gallopavo*), killdeer (*Charadrius vociferous*), American robin (*Turdus migratorius*), barred owl (*Strix varia*), red-tailed hawk (*Buteo jamaicensis*), ruby-throated hummingbird (*Archilochus colubris*), pileated woodpecker (*Dryocopus pileatus*), downy woodpecker (*Picoides pubescens*), eastern meadowlark (*Sturnella magna*), American crow (*Corvus brachyrhynchos*), blue jay (*Cyanocitta cristata*), red-eyed vireo (*Vireo olivaceus*), cerulean warbler (*Dendroica cerulea*), wood thrush (*Hylocichla mustelina*), European starling (*Sturnus vulgaris*), brown-headed cowbird (*Molothrus ater*), dark-eyed junco (*Junco hyemalis*), black-capped chickadee (*Parus atricapillus*), and house sparrow (*Passer domesticus*).

3.7.3 Reptiles and Amphibians

Herptile surveys have been conducted on the USMA at West Point by the USMA's NRB since the 1980s (USMA 1998a). Based on these surveys, and documentation of incidental sightings, 22 species of reptiles and 18 species of amphibians have been documented on the USMA at West Point (USMA 1998a, Beemer 2003b). Section 3.17.1, pages 3-69, of the USMA's INRMP provides a list of the majority of amphibian and reptile species found within the USMA at West Point (USMA 1998a). The most common reptiles and amphibians likely to regularly occur in the habitats traversed by the proposed project alignment include the spotted turtle (*Clemmys guttata*), wood turtle (*C. insulpta*), eastern box turtle (*Terrapene carolina*), eastern garter snake (*Thamnophis s. sirtalis*), ringneck snake (*Diadophis punctatus*), and milk snake (*Lampropeltis triangulum*). The eastern box turtle and spotted turtle are state-listed special concern species.

3.7.4 Invertebrates

Surveys conducted by K. Soltesz on the USMA at West Point in 1995 documented approximately 100 species of dragonflies and damselflies (USMA 1998a). Appendix E, Table E-4, of the USMA's INRMP provides a complete list of odonate species documented within the USMA at West Point (USMA 1998a). Of these species, the arrowhead clubtail (*Cordulegaster oblique*), found in the vicinity of Adolph's Pond, would have the greatest potential to occur in the project area because of its preference for small forested brooks (Deschenes 2003). Other noteworthy odonates that may occur in the vicinity of the project area include the big bluet (*Enallagma laterale*) known to have occurred at Golf Course Pond and the amber winged spreadwing (*Lestes eurinas*) found at Dassori Pond (Soltesz 2000, NRB 2004).

Seventy-three species of butterflies have been documented on the USMA at West Point by S. Barbour during surveys conducted in 1995 through 1996 (USMA 1998a). Three species have been added to this list since the completion of those surveys (Beemer 2003b). Appendix E, Table E-5, of the USMA's INRMP provides a list of the majority of butterfly species identified within the USMA at West Point (USMA 1998a). Of these species, the hackberry emperor (*Asterocampa celtis*) found at Gee's Point and the tawny emperor (*Asterocampa clyton*) found at Eagle Valley Cemetery would have the greatest potential to be in the vicinity of the project area because of their association (i.e., larval host) with hackberry (*Celtis occidentalis*), which occurs at the USMA at West Point (Deschenes 2003). Other noteworthy butterflies that may occur in the vicinity of the project area include the falcate orangetip (*Anthocaris midea*) and cobweb skipper (*Hesperia metea*) found at Crows Nest, the Edward's hairstreak (*Satyrium edwardsii*) found at Crows Nest and Redoubt 1 and 2, the brown elfin (*Callophrys augustinus*) found at Redoubt Road, and the black dash (*Euphyes conspicua*) found west of U.S. Route 9W. In addition, 234 species of moths have been observed at the USMA at West Point (Beemer 2003b).

Thirty-five species of mollusks have been documented on the USMA at West Point (USMA 1998a, Beemer 2003b). Except for riverine species, given the diverse array of aquatic habitats near the project area, all of these species may occur in the vicinity of the proposed project at some time in their life cycle.

3.7.5 Wildlife Areas

USMA at West Point is located in the vicinity of the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat, a 12-mile stretch of the Hudson River, including the Iona Island Marsh and Constitution Marsh, that lies within the New York State coastal zone (NYSDOS 1987, Ketcham 2003). The Hudson River Mile 44-56 Significant Coastal Fish and Wildlife Habitat is considered irreplaceable, because of unusual ecosystem characteristics and its use by the bald eagle as a wintering area. In addition, the NYSNHP has identified the Hudson River and Constitution Marsh as a waterfowl concentration area.

The USMA at West Point has determined that the proposed project would not be located within, or immediately adjacent to the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat (NRB 2004). This determination is further addressed with regard to consistency with coastal zone management policies for Significant Coastal Fish and Wildlife Habitat in Section 3.19.

Analysis of Geographic Information System (GIS) database information provided by the USMA at West Point for the proposed project area also indicated one special natural area, the 346-acre Crows Nest Special Natural Area, as occurring within 50 feet of the northwest border of the proposed alignment. Special Natural Areas have been identified by USMA and are specially managed for their ecological or geological significance, unique geological structure, and/or aesthetic and educational value to the installation. Special natural areas are a USMA designation and are not afforded legal protection.

3.8 RARE, THREATENED, AND ENDANGERED SPECIES

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, and AR 200-3, the USMA at West Point is required to ensure that any action is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or result in the destruction or adverse modification of any habitat of such species determined to be critical unless an exemption has been granted. Furthermore, state-listed endangered or threatened animal species are protected pursuant to Section 11-0535 of the NYSECL and state-

listed endangered, threatened, rare, or exploitably vulnerable plants are protected pursuant to Section 9-1503 of the NYSECL.

As a result of these federal and state mandates and the USMA at West Point's good stewardship policy, the Biological Survey Unit of the New York State Museum conducted a survey of threatened and endangered fauna and flora on the USMA at West Point. The survey concluded that no federally-listed species were permanent residents of, or breed on, the USMA at West Point. However, the federally-listed threatened bald eagle (*Haliaeetus leucocephalus*) is a common winter visitor to Constitution Island and has been observed on the Main Post. Several additional studies have documented the occurrence of several special status species within the USMA at West Point, including species of fish, invertebrates, birds, herptiles, and plants (Clemants and Barringer 1992, Mitchell and Tucker 1993, Barbour 1995a, Barbour 1995b, Kakerbeck 1995, Barbour 1996, Barbour 1997, and Barbour 2000). The following sections discuss those federally- and state-listed plant and animal species the may occur in the vicinity of the proposed project area (Table 3).

3.8.1 Animals

The federally- and state-listed threatened bald eagle is known to occur in the proposed project area. All bald eagles encountered on USMA properties are considered part of an overwintering population, and no nesting has been observed on USMA properties or the lower Hudson River Valley (USMA 1998a).

The state-listed threatened timber rattlesnake (*Crotalus horridus*) is known to occur in the vicinity of the proposed project area (Ketcham 2003, Stilwell 2003). Little was known about the timber rattlesnake population on the USMA at West Point prior to 1994. At that time, a three-year radiotelemetry study was initiated to investigate their population size, seasonal ranges, and habitat use, as summarized by Stechert (1997). The study identified three populations utilizing the USMA at West Point property and associated with three historic den sites that are located on the USMA at West Point. Two of the den sites are generally located in south-central portion and one in the northeastern portion of the USMA at West Point Reservation (Stechert 1995).

Additionally, timber rattlesnakes from a den located on Harriman State Park were found on USMA at West Point property (Stechert 1997).

Table 3. Federal and State Listed Rare, Threatened, and Endangered Species that May Occur in the Vicinity of the Project Area.

Common Name	Scientific Name	Federal and State Status[1]	Location
Animals			
Timber rattlesnake	*Crotalus horridus*	ST	Crows Nest
Bald eagle	*Haliaeetus leucocephalus*	FT,ST	Constitutional Island
Plants[2]			
Smooth bur-marigold	*Biden laevis*	ST	Target field railroad tracks
Stripe-fruited sedge	*Carex striatula*	SE	Crows Nest S Flank
Racemed pinweed	*Lechea racemulosa*	SR	Redoubt 1, Firebreak 9, Beavers Pond
Violet bush clover	*Lespedeza violacea*	SR	Redoubts 1 and 2
Gypsywort	*Lycopus rubellus*	SE	Gee's Point
Slender knotweed	*Polygonum tenue*	SR	All east of NYS Route 293
Small-flowered crowfoot	*Ranunculus micranthus*	ST	Redoubt 2, Crows Nest, north of Mine Torne Road, Constitutional Island

Key: FE=Federally-listed endangered, FT=Federally-listed threatened, SE=state-listed endangered, ST=state-listed threatened, SR=state-listed rare, SEV=state-listed exploitably vulnerable.

[1] Federally-listed endangered and threatened plant and animal species are protected pursuant to the ESA of 1973. State-listed endangered and threatened animal species are protected pursuant to Section 11-0535 of the NYSECL, as implemented under 6 NYCRR Part 182. State-listed endangered, threatened, rare, and exploitably vulnerable plant species are protected pursuant to Section 9-1503 of the NYSECL, as implemented under 6 NYCRR Part 193.3.

[2] Identified as occurring within 1,000 feet of the proposed alignment through a USMA at West Point GIS rare flora database analysis (NRB 2004).

3.8.2 Plants

The NRB has identified seven state-listed endangered and threatened plant species with occurrence records within 1,000 feet of the proposed project area (Table 3) (NRB 2004). The closest occurrence to the project alignment of any of the seven plant species is 757 feet for the state-listed rare racemed pinweed (*Lechea racemulosa).*

3.9 LAND USE AND ZONING

3.9.1 Land Use and Local Zoning

Land use within the Main Post/Academic Area of the USMA at West Point has been divided into four zones: the Cadet Zone, which serves as the core of the Main Post/Academic Area; the Cadet Support Zone, the first of three concentric zones around the core; the Community Support Zone, the second of three concentric zones around the core; and the Industrial/Field Training/Recreation Zone; the third and final of three concentric zones around the core (Figure 11) (Vollmer Associates, LLP undated). Land uses within each zone tend to be closely aligned with the zone's function, and those land use patterns that are located within the immediate vicinity of the proposed project alignment are described below.

The Cadet Zone is the primary residential and educational zone for the USMA at West Point. Facilities within this zone are associated with educational, residential, and recreational activities undertaken by cadets, and are arranged so that the various facilities are within pedestrian reach (Vollmer Associates, LLP undated). The proposed project alignment is located along the northern, eastern, and southern edges of the Cadet Zone, where existing land use patterns are dominated by athletic and recreation areas, and the historical and ceremonial areas of the USMA at West Point (Vollmer Associates, LLP 1999).

The Cadet Support Zone is the primary support zone for the USMA at West Point. Facilities within this zone are associated with optional cadet activities such as band and intercollegiate and club athletics, that do not necessarily need to be used on a daily basis, but which are still within pedestrian reach of cadets (Vollmer Associates, LLP undated). The proposed project alignment is located along the northeastern and southern edges of the Cadet Support Zone, where existing land use patterns are dominated by athletic and recreation areas along the northeastern edge, and senior residential areas along the southern edge (Vollmer Associates, LLP 1999).

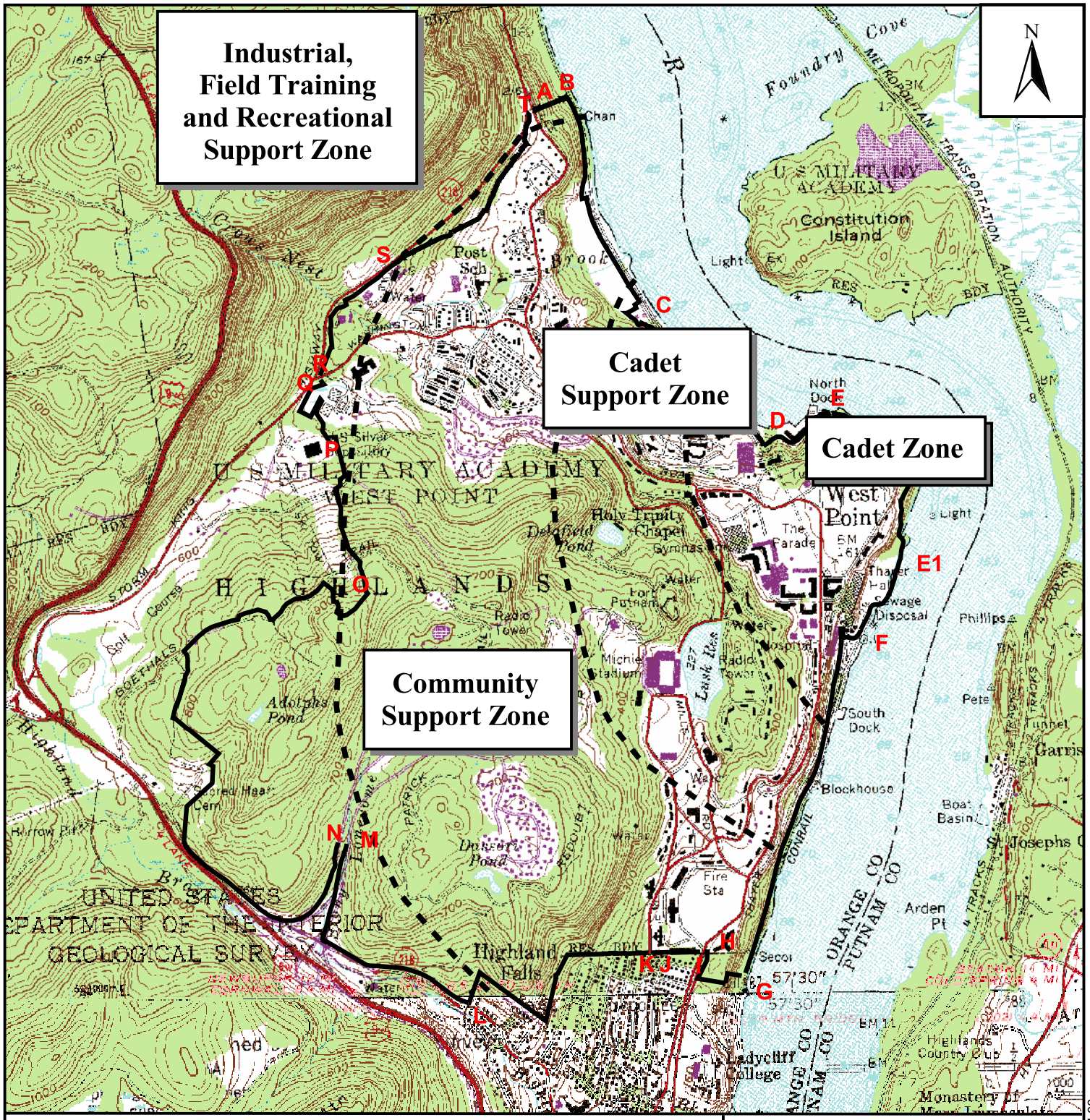


Figure 11. Land Use and Local Zoning Designations at the USMA, West Point, New York.

Client: U.S. Army Corps of Engineers, New York District

Source: USGS 7.5' series Quadrangles West Point and Peekskill, New York, 1957, Photorevised 1981; USMA 1998a.

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

z:/projects/CS-100-13/aprs/revisedEA/EA-Feb03.apr

The Community Support Zone is the secondary support zone for the USMA at West Point. Facilities within this zone are associated with housing and related facilities for support personnel and post administration use, and serve on-post military personnel and their families, military personnel in the vicinity of the USMA at West Point, and the retired military population of the surrounding region (Vollmer Associates, LLP undated). The proposed project alignment is located along the northern, northeastern, and southern edges of the Community Support Zone, where existing land use patterns include medical, post education, and residential areas along the northern edge, athletic and recreation areas along the northeastern edge, and athletic and recreation, residential, and unclassified areas along the southern edge (Vollmer Associates, LLP 1999).

The Industrial/Field Training/Recreation Zone is the outer zone for the USMA at West Point. Facilities within this zone are associated with activities required for cadet field training uses, outdoor recreational uses requiring significant expanses of land, and the operation and maintenance of the post (Vollmer Associates, LLP undated). The proposed project alignment is located within the eastern and northern portions of the Industrial/Field Training/Recreation Zone, where existing land use patterns are dominated by summer field training areas and supply, storage, and maintenance areas (Vollmer Associates, LLP 1999).

3.9.2 Recent, Ongoing, and Planned Developments

All recent and ongoing development within the Main Post/Academic Area should be compatible with uses outlined in the *USMA Master Plan for the Year 2007* (USMA 1998b). All planned developments are detailed in Section 5.0, Reasonably Foreseeable Future Actions.

3.9.3 Generation and Disposal of Waste Material

Annual generation of ordinary, non-hazardous solid waste from academic, military, and athletic activities at the USMA at West Point is 6,561 tons (USMA 1998a). In accordance with the USMA's INRMP, the USMA at West Point maintains various types of trash receptacles, and routinely collects and disposes of all generated solid waste. This solid waste, including municipal refuse and dewatered sludge from the sewage treatment facilities, is hauled by a contractor to a USMA-owned, contractor-operated, transfer station on the installation. From there, the waste is hauled to a private landfill (USMA 1998a).

Activities at the USMA at West Point also generate approximately 1.8 to 1.9 mgd of wastewater and sewage, which, for the Main Post/Academic Area, is treated at the Target Hill Wastewater Treatment Facility, and is then discharged to the Hudson River. The Main Post/Academic Area also has several storm water-drainage conveyance systems, including open ditches, grassed channels, paved open channels, and pipes. All storm water drainage outfalls discharge to the Hudson River (USMA 1989).

3.9.4 Recreational and Other Designated Facilities

The USMA at West Point provides a wide variety of athletic and physical recreational facilities and opportunities for cadets, in support of activities such as football, baseball, track and field, gymnastics, soccer, volleyball, tennis, swimming, cycling, golf, hockey, basketball, lacrosse, wrestling, boxing, rugby, skiing, rowing, crew, and sailing. Many of these facilities and services also are available to retirees, relatives, and guests, and to the surrounding community and general public (USMA 1998a).

A number of outdoor recreational facilities or areas, including the Target Hill Athletic Field, the North Athletic Field/Shea Stadium, The Plain, and the River Courts associated with the Crew and Sailing Center, are located adjacent to, or in the vicinity of, the Hudson River shoreline. Picnic facilities are located within open areas associated with Lee Gate, and the South and North Dock areas, and a number of walkways and trails are located along the Hudson River shoreline (Vollmer Associates, LLP 1999, Vollmer Associates, LLP undated). Many of these outdoor recreational facilities and areas are characterized by open access to the Hudson River and its shoreline areas.

A number of outdoor recreational facilities or areas, including an 18-hole golf course and a ski slope with a chair lift (Vollmer Associates, LLP 1999), are located adjacent to, or in the vicinity of the interior of the Main Post/Academic Area. Interior areas of the Main Post/Academic Area also contain numerous formal and informal trails, including the Goethal's Trail and Patrick Trail, as well as four summer training areas, J2 through J5, that are used for both recreation and training purposes (Vollmer Associates, LLP 1999, Vollmer Associates, LLP undated, Pew 2002). In particular, the summer training areas are heavily used between approximately May and

August by a number of different military units at the USMA at West Point, and by a wide variety of other federal and local agencies and groups that conduct regular military-style training (USMA 1998a). The J2, J3, J4 and J5 training areas are also selectively used during the late fall and early winter for bow-hunting of white-tailed deer, primarily for wildlife management purposes (USMA 1998a). In particular, the J3 training area is one of the most popular hunting areas within the USMA at West Point in terms of man-days (Beemer 2003a). Another training area, G-2, has been used for hunting in the past, but is temporarily closed (NRB 2004).

In addition to the facilities and opportunities for recreation at the USMA at West Point, the Main Post/Academic Area is located within four formally designated recreation or special use areas: the West Point Military Academy, Contemporary West Point Military Academy, and Hudson Highland subunits of the HHSASS (Sections 3.10 and 3.19), and the West Point NHLD (Sections 3.10 and 3.11). No other federal, state, or local designated recreation areas or parks, National Natural Landmarks, or Lands of Statewide Importance are located within the Main Post/Academic Area (New York State Department of Transportation [NYSDOT] 1992, USDI National Park Service [NPS] 1994, NYSDEC and NYSOPRHP 1995).

3.10 VISUAL RESOURCES

The various visual resources associated with the USMA at West Point have been identified for their contributions to landscapes of historical, architectural, aesthetic, and natural significance. These visual resources consist of historic landscapes associated with the NHLD at the USMA at West Point, such as landscapes associated with a variety of individual historic structures that are either nominated individually for the National Register of Historic Places (NRHP) or have been identified as contributing elements to the NHLD, aesthetic landscapes associated with a variety of communities within the Main Post/Academic Area of the USMA at West Point, and natural landscapes associated with the HHSASS. Historic landscapes are of particular significance at the USMA at West Point, although they are primarily associated with views of the buildings and properties adjacent to Washington Gate, Stony Lonesome Gate, and the main entrance to the Main Post/Academic Area at Thayer Gate, and views of West Point architecture from along the Hudson River frontage and shoreline, as well as the viewsheds from these buildings, properties, and installation entrances.

The USMA at West Point has developed a number of management plans that identify and protect the visual resources associated with these landscapes, including the *Historic Landscape Management Plan for the U.S. Military Academy at West Point*, the *United States Military Academy Installation Design Guide*, the *Identification and Analysis of the Historic Built Environment and Viewsheds, Cadet Zone*, and the *Draft U.S. Military Academy Perimeter Fence Line Views Analysis, West Point, New York* (Loechl et al. 2001, Design Collaborative, Inc. et al. undated, Halin et al. 2003, Loechl and Tooker 2003).

3.10.1 NHLD at the USMA at West Point

Visual resources that are related to historic landscapes within the NHLD at the USMA at West Point include the entire NHLD, as well as select component landscapes within the NHLD. Landscapes within the entire NHLD at the USMA at West Point are divided into four categories: roads and roadways, views, athletic fields, and the waterfront. Of these four categories, the proposed project alignment would be located within a number of views and landscapes that are visible from various points within the NHLD at the USMA at West Point, including those views and landscapes that are associated with the athletic fields and the waterfront.

Visual resources within the NHLD at the USMA at West Point consist of natural and cultural landscapes that are particularly associated with the Revolutionary Period of development at the USMA at West Point, and the Academic Era at the USMA at West Point (Loechl et al. 2001). Visual resources associated with the athletic fields and open areas on the Plain consist of a landscape with wide views and open spaces. The athletic fields landscape also reflects the increasing relevance of recreation and athletics to cadet training over time, such that the continuous land use of this area for recreation and athletics has become an important contributing element to the historic integrity of the NHLD at the USMA at West Point (Loechl et al. 2001). Visual resources associated with the waterfront along the western shoreline of the Hudson River comprise a landscape that has changed over the years, and, because of these changes over time, is not eligible as a historic landscape in its own right because of a lack of historic integrity. However, the waterfront is still important to operations at the USMA at West Point, and the waterfront landscape is an important component of the NHLD landscape due to the waterfront's significance and contribution to the USMA at West Point's story (Loechl et al. 2001).

3.10.2 Historic Feature Landscapes

Visual resources that are related to select component landscapes within the NHLD at the USMA at West Point are considered historic feature landscapes. Six historic feature landscapes have been identified for the USMA at West Point: the West Point Cemetery, Flirtation Walk, Kosciuszko's Garden, the Plain, the Academic Area, and the Superintendent's Garden (Loechl et al. 2001). Three of these six historic feature landscapes, Flirtation Walk, Kosciuszko's Garden, and the Plain, are located in the immediate vicinity of the proposed project alignment.

Flirtation Walk

Flirtation Walk, which is located in the vicinity of the proposed project alignment along segments D-E1, is a narrow path traversing the hillside below the Plain that was established during the Revolutionary War. This path was originally called Chain Battery Walk, referring to its original purpose as an access route to the four battery fortifications located along the base of the cliffs that descended from the Plain to the Hudson River, including the battery where the chain across the Hudson River was anchored during the Revolutionary War (Loechl et al. 2001). The original path associated with battery access was probably a compacted earthen trail, which was abandoned after use of the batteries was suspended. The path was rediscovered during the superintendency of Richard Delafield in the early 19th century, and renamed Flirtation Walk around the time of the Civil War, when the path became a popular destination for cadets and their dates (Loechl et al. 2001). Flirtation Walk is considered to be a historic landscape with very high historic landscape integrity. Features that contribute to the integrity of this historic feature landscape include the path, the batteries and redoubts, the views from the path, especially at batteries and redoubts, a rocky outcrop known as Kissing Rock, and the inscriptions carved into the rocks along the walk (Loechl et al. 2001).

Kosciuszko's Garden

Kosciuszko's Garden, which is located in the vicinity of the proposed project alignment along segments E1-F, is a small terrace on the hillside descending to the Hudson River on the east side of the Plain. The terrace was discovered by Thaddeus Kosciuszko, who created a garden on this terrace in 1778, during his tour of duty at West Point (Loechl et al. 2001). The original garden design was simple and contemplative, so that the garden was a small, understated retreat with long views up and down the Hudson River from its seemingly precarious perch on the cliff descending down to the river (Loechl et al. 2001). Modifications that have been made to Kosciuszko's Garden throughout the 19th and 20th centuries, including the addition of paving, a grotto, site furnishings, and elaborate plantings, have significantly altered the integrity of the site, particularly with regard to its feeling. However, Kosciuszko's Garden retains a number of features that contribute to this historic feature landscape, including the natural spring, the fountain, woodland vegetation, the stone steps and stone walls, the grotto, natural rock formations and terrain, and the views to the Hudson River (Loechl et al. 2001).

The Plain

The Plain, which is located in the vicinity of the proposed project alignment along segments D-F, is the center of the Academy and its main open space. The Plain has been used continuously for military and athletic training, is the site of Revolutionary War Fort Clinton, and is the site of cadet summer encampment from the early 1800s to 1942 (Loechl et al. 2001). Important historic landscapes have always been associated with the Plain, including its views of the Hudson River, which made it a highly desirable strategic site during the Revolutionary War, as well as an icon of American Wilderness during the 19th century (Loechl et al. 2001). The Plain is also the USMA at West Point's most historic military landscape. The naturally level terrain was one of the reasons for choosing the area as a fortification site, and for its continued use as the military academy (Loechl et al. 2001). The Plain is considered to be one of the most character-defining elements of the NHLD at the USMA at West Point, and is considered to have a high degree of integrity with regard to location, setting, association, design, and workmanship (Loechl et al. 2001). Features that contribute to the high degree of integrity associated with this historic feature landscape include its flat topography, historic river views, historic architecture, the site of Fort Clinton, the Old Laundry building, Trophy Point, the Battle Monument, the pathway north

of Cullum Road, the Apron and Diagonal walkways, and the rows of trees on the Apron of the Plain (Loechl et al. 2001).

3.10.3 Historic Housing Areas

In addition to the historic visual resources that are related to select component landscapes within the NHLD at the USMA at West Point, the USMA at West Point contains four historic housing areas that are also considered historic feature landscapes. These four historic housing areas include the Professor's Row Housing Area, the Thayer/Wilson Housing Area, the Lusk Housing Area, and the Lee Housing Area (Loechl et al. 2001). Two of these housing areas, the Lee Housing Area and the Thayer/Wilson Housing Area, are located in the immediate vicinity of the proposed project alignment.

Lee Housing Area

The Lee Housing Area, which is located in the vicinity of the proposed project alignment along segments S-T and A-C, consists of officers' family quarters arranged on curvilinear loop roads and cul de sacs off of Lee Road, on a slightly wooded plateau overlooking the Hudson River (Loechl et al. 2001). The Lee Housing Area quarters were designed in the 1930s, and the visual resources associated with this area are representative of the ideals of suburban design and town planning from this time period. The buildings are Neo-Georgian in style, and are constructed of brick with stone detailing. The lower portion of the Lee Housing Area contains six sets of housing quarters with detached garages, and the upper portion of the Lee Housing Area contains 40 duplexes with detached garages (Loechl et al. 2001). The Lee Housing Area is considered to have high architectural and landscape integrity, particularly with regard to its design that combined visually pleasing architecture, partially wooded settings, and tree-lined, curvilinear roads to create a pastoral feeling (Loechl et al. 2001). Features that contribute to the high architectural and landscape integrity of this historic feature landscape include Neo-Georgian style architecture expressed in brick and stone buildings, views of the Hudson River, streets lined with mature trees, and the location, layout, and arrangement of the neighborhood of the Lee Housing Area (Loechl et al. 2001).

Thayer/Wilson Housing Area

The Thayer/Wilson Housing Area, which is located in the vicinity of the proposed project alignment along Segment F-G, consists of officers' quarters that front along Wilson, Cullum, and Thayer roads, on a wooded, sloping site with expansive views to the Hudson River (Loechl et al. 2001). The Thayer/Wilson Housing Area contains multi-family quarters that were constructed during the period of 1870-1920, in a wide variety of materials and styles, including vernacular wooden-frame structures and Gothic Revival brick structures, using designs that are both elegant and visually pleasing (Loechl et al. 2001). The Thayer/Wilson Housing Area is considered to have high architectural and landscape integrity, with several examples of housing that represent the domestic life of West Point at the turn of the 20th century. The sloping landscape of mature trees and stone retaining walls remain intact, as do impressive views to the Hudson River (Loechl et al. 2001). Features that contribute to the high architectural and landscape integrity of this historic feature landscape include Gothic Revival style architecture expressed in brick and stone buildings and retaining walls, excellent views of the Hudson River, mature trees on a sloping site, continuous land use, and the location, layout, and arrangement of the neighborhood of the Thayer/Wilson Housing Area (Loechl et al. 2001).

3.10.4 Aesthetic Landscapes

Visual resources at the USMA at West Point are also related to aesthetic landscapes associated with 22 small, compact communities within the Main Post/Academic Area, which have been established or defined over time based on use, architecture, or topography, resulting in individualized visual characteristics or features that contribute to the unique aesthetic landscapes of each community (Design Collaborative, Inc., et al. undated). Eight of these 22 communities would not be affected by the proposed project alignment. Another five of these 22 communities are located in the general vicinity of, but are not crossed by, the proposed project alignment, including the Old English (north) Community in the vicinity of segments C-E, the Old English (south) and Lusk communities in the vicinity of Segment F-G, the Pershing Center Community in the vicinity of Segment G-H, and the Band Quarters Community in the vicinity of Segment S-T (Design Collaborative, Inc., et al. undated). The remaining nine communities are crossed by portions of the proposed project alignment, and the visual resources of these nine communities are discussed in greater detail below.

Central Support Community

The proposed project alignment crosses the Central Support Community approximately along segments A-D. The Central Support Community is the major utility support area of the USMA at West Point, with a highly diverse number of facilities, including barracks, a field house, an auditorium, and huge playing fields, including the Target Hill Athletic Fields (Design Collaborative, Inc., et al. undated). Visual resources associated with this community include spectacular views that vary from high eye-level vistas to low, river-level perspectives, and are characterized by brick buildings that are unified by material, and sited to take advantage of the horseshoe shape of the cliffs along the western shore of the Hudson River, and by varying topographic features that incorporate the flat, grassed playing fields that separate the buildings from the cliffs leading down to the river (Design Collaborative, Inc., et al. undated). Other features that contribute to the visual resources of the Central Support Community include the diverse topography, beautiful river-level views from playing fields and dock locations, Eisenhower Hall terraces that provide an area with longer and nicer views, the historic architecture of the community, the huge playing fields that serve as a buffer between the buildings and the river, and the setbacks of the buildings, which are sufficient to permit wide views of both the buildings and the river (Design Collaborative, Inc., et al. undated).

Cadet Center Community

The proposed project alignment crosses the Cadet Center Community approximately along Segment E-F. The Cadet Center Community is the USMA at West Point proper, and is the nucleus of the USMA at West Point (Design Collaborative, Inc., et al. undated). Visual resources associated with this community include the massive stone structures that were developed under the master plan of 1903, and constructed primarily in the Gothic granite style, or using style, scale and massing to reflect the Gothic granite style, that is noted worldwide and that establishes the character for the USMA at West Point, the Army, the Officer Corps, and the Cadet community. The visual resources associated with the built environment of the Cadet Center Community are well-suited to the dramatic location, with buildings appearing to grow directly from the cliffs, particularly when viewed from the Hudson River side of the community, and imparting a feeling of strength and longevity that is appropriate for the nation's oldest military institution (Design Collaborative, Inc., et al. undated). The visual resources associated

with the landscapes of the Cadet Center Community have a drama drawn from the built environment that is clear and overwhelming, with vistas from the reviewing stand that give the feeling of being at the center of the academy, and entirely enveloped by the surrounding architecture and topography, reinforcing the sense of command and authority of the USMA at West Point (Design Collaborative, Inc., et al. undated). Other vistas from high points of buildings within the Cadet Center Community extend outward over the entire community and the Hudson River Valley (Design Collaborative, Inc., et al. undated). Other features that contribute to the visual resources of the Cadet Center Community include the grand Gothic architecture that includes a consistent use of Gothic site lighting standards, mature trees, open spaces, and monuments, beautiful river views, and a central location within the USMA at West Point (Design Collaborative, Inc., et al. undated).

Buffalo Soldier's Field Community

The proposed project alignment crosses the Buffalo Soldier's Field Community approximately along segments G-K. The Buffalo Soldier's Field Community is the first real impression of the historical, architectural, and natural character of the Main Post/Academic Area of the USMA at West Point, when entering through the Thayer Gate entrance. This community contains a highly diverse number of facilities, including troop barracks, public use buildings, and military administrative and support buildings, that are arranged in a semi-circle around the Buffalo Soldier's Field, an open plain that is central to the community (Design Collaborative, Inc., et al. undated). Visual resources associated with this community include views and vistas from all directions within and surrounding the open plain, and from buildings and strategic locations around the periphery of the community. These views and vistas are characterized by naturally wooded terrain that slopes down to the Hudson River to the east, and by the mountains of the interior Stony Lonesome area that act as a backdrop to historic structures to the west, and the consistent use of architectural materials and colors throughout the community that reflect the architectural merit of a number of historic structures within the community (Design Collaborative, Inc., et al. undated). Other features that contribute to the visual resources of the Buffalo Soldier's Field Community include a richly landscaped buffer area and stair transition, a visually strong and attractive granite retaining wall edge alongside a pedestrian path, a visually attractive and mature forest backdrop to the community, dramatic vistas and views of the Hudson

River valley, centralized and impressive playing fields that draw pedestrians inward from the periphery of the community, a circular platform and monumental stone stair that is well sited in its location directly below barracks buildings, and mature trees that line the edge of Thayer Road (Design Collaborative, Inc., et al. undated).

Stony Lonesome Community

The proposed project alignment crosses the Stony Lonesome Community approximately along segments K-M. The Stony Lonesome Community is the most recent housing on West Point, with construction beginning in 1971, and consists of planned cluster housing (Design Collaborative, Inc., et al. undated). Visual resources associated with this community include the homogenous, well designed community, with buildings that are well fitted to the available land and its topographic variation, and landscaping that helps to blend the entire development to its rugged site (Design Collaborative, Inc., et al. undated). Other features that contribute to the visual resources of the Stony Lonesome Community include the quiet, natural setting that permeates the complex, proximity to the nearby Commissary and athletic fields, off-street parking clusters adjacent to housing units, a large, fairly centralized recreational space that is ideal for community recreation and social functions, and underground utilities (Design Collaborative, Inc., et al. undated).

Service Member Support Community

The proposed project alignment crosses the Service Member Support Community approximately along Segment N-O. The Service Member Support Community occupies a large portion of the western side of the Main Post/Academic Area, and is primarily characterized by undeveloped natural dense forest, which tends to make this community appear remote from the rest of the Main Post/Academic Area. Although lower lying areas within this forested community have potential for development, support facilities have been developed adjacent to the Stony Lonesome Community, including a commissary, post exchange service station, firehouse, post exchange, and child development center (Design Collaborative, Inc., et al. undated, USMA 2002b). Visual resources associated with this community include vistas and views of the surrounding, relatively undeveloped forest that are visible along formal and informal trails and paths throughout the naturally wooded areas (Design Collaborative, Inc., et al. undated). Other

features that contribute to the visual resources of the Service Member Support Community include the community open space that is surrounded by a natural forest backdrop, and the large playing fields that are east of the commissary parking lots (Design Collaborative, Inc., et al. undated).

Recreational Support Community

The proposed project alignment crosses the Recreational Support Community approximately along segments N-P. The Recreational Support Community is used primarily for recreational purposes, and is heavily wooded. Recreational facilities include a golf course and a ski slope, and a portion of this community is used as a cadet training area (Design Collaborative, Inc., et al. undated). Visual resources associated with this community include the serene and beautiful valley within this community, which is situated between Storm King Mountain to the north and a ridge to the south, and the mountainous, wooded areas on either side of this valley, with clearing associated only with the golf course and ski slope (Design Collaborative, Inc., et al. undated). Other features that contribute to the visual resources of the Recreational Support Community include the well-sited golf course club house, which is screened and appropriately designed for the area, and landscapes associated with the surrounding dramatic topography (Design Collaborative, Inc., et al. undated).

Washington Gate Industrial Community

The proposed project alignment crosses the Washington Gate Industrial Community approximately along segments P-R. The Washington Gate Industrial Community is the first real impression of the Main Post/Academic Area of the USMA at West Point upon entering though Washington Gate, and is generally considered to have little aesthetic appeal in spite of its high level of exposure to the public. Although this community contains various industrial and maintenance facilities, with a large area used for vehicle storage and the motor pool, the community does not have any planned open spaces or developed landscaping, lacks any architecturally significant buildings, and a number of facilities, such as Buildings 793 and 795, and the Post Laundry, overwhelm their surroundings and disrupt potential vistas (Design Collaborative, Inc., et al. undated). The few features that contribute to the visual resources of the Washington Gate Industrial Community include the bridge connection for second floor service

access to the Post laundry facility, beautiful views from behind the Non-Commissioned Officer's Club, and the dramatic natural forest backdrop to the north (Design Collaborative, Inc., et al. undated).

North Support Community

The proposed project alignment crosses the North Support Community approximately along segments R-T. The North Support Community is highly visible from Washington Road after entering Washington Gate, and contains various support facilities, including the West Point Elementary School, and the Keller Army Community Hospital, as well as a number of maintenance and storage buildings. The majority of the buildings within this community are not considered to be historically significant, and the community is not considered to create any lasting images of the USMA at West Point, although the West Point Elementary School, which is not individually eligible for the NRHP, is considered a contributing element of the NHLD at the USMA at West Point (Design Collaborative, Inc., et al. undated, Northern Ecological Associates, Inc. 2003). Visual resources associated with this community vary, with nicely landscaped and well-maintained grounds adjacent to the school and hospital, but poorly developed landscapes adjacent to the maintenance and storage buildings that are disorganized and cluttered with equipment and debris (Design Collaborative, Inc., et al. undated). Features that contribute to the visual resources of the North Support Community include well-designed playgrounds north of the elementary school parking lot, dramatic topography with rugged hills, flatlands, streams and forest backdrops, beautiful views and vistas from locations at the higher elevations in front of some supply and storage facilities, and from long paths within the community, a pedestrian bridge connection to the hospital over streams and water basins, and appropriate siting and parking lot lighting standards at the hospital (Design Collaborative, Inc., et al. undated).

3.10.5 Natural Visual Resources

In addition to the visual resources that are associated with historic, architectural, and aesthetic landscapes of structures and communities, the proposed project alignment is also located within areas of visual resources that are associated with the natural environment surrounding the USMA at West Point. These areas of natural visual resources include the Contemporary West Point Military Academy, West Point Military Academy, and Hudson Highland subunits of the

HHSASS, which is a designated coastal zone as determined by the NYSDOS CMP (Taylor 1998). The visual resources associated with the HHSASS are discussed in greater detail below.

The Contemporary West Point Military Academy Subunit

The Contemporary West Point Military Academy Subunit consists of two sections to the north and south of the West Point Military Academy Subunit. The location of the northern section of the Contemporary West Point Military Academy Subunit includes the western shore of the Hudson River and extends across the Hudson River, is approximately 1.5 miles long and 0.75-miles wide, and contains contemporary development at the USMA at West Point that is north of the "historic core" (NYSDOS 1993). The proposed project alignment crosses the northern portion of this subunit approximately along segments A-D and P-T. The location of the southern section of the Contemporary West Point Military Academy Subunit also includes the western shore of the Hudson River and extends across the Hudson River, is approximately 1-mile long and 0.75-miles wide, and contains contemporary development at the USMA at West Point that is south of the "historic core" (NYSDOS 1993). The proposed project alignment crosses the southern portion of this subunit approximately along segments H-K.

An evaluation of the location, scenic components, uniqueness, public accessibility, and public recognition of the landscape associated with the Contemporary West Point Military Academy Subunit indicated that this subunit makes an important contribution to the HHSASS because it serves as a link between surrounding subunits with distinctive scenic qualities, including the West Point Military Academy and Storm King subunits (NYSDOS 1993). Although the residential layout and setting within the subunit are not considered distinctive because of the "limited variety of features, common style of buildings, and repetitive, ordered landscape, " the subunit contains a "residential layout and setting that is unique," and is set "within the mountains of the Hudson Highlands, which offer a dramatic backdrop in all directions" (NYSDOS 1993). The unique residential layout and setting, and the dramatic setting within the Hudson Highlands complement adjacent subunits, and give the Contemporary West Point Military Academy Subunit "a significant place in the contexts of the HHSASS, linking the Storm King [Subunit] and the West Point [Military Academy Subunit]" (NYSDOS 1993).

The West Point Military Academy Subunit

The West Point Military Academy Subunit is located on the western shore of the Hudson River, is approximately 1.5 miles long and 1 mile wide, and contains the "historic core" of the USMA at West Point (NYSDOS 1993). The proposed project alignment crosses this subunit approximately along segments D-H. An evaluation of the location, scenic components, uniqueness, public accessibility, and public recognition of the landscape associated with the West Point Military Academy Subunit indicated that this subunit makes an important contribution to the HHSASS because of its very high scenic quality (NYSDOS 1993). The subunit consists of "a highly ordered landscape of great historic importance," which is "composed of a highly unified and ordered institutional complex of dramatic scale and siting" (NYSDOS 1993). The subunit contains "a large variety of scenic components, including the varied topography and shoreline form, and many architectural styles" that are visible from vantage points inside and outside of the subunit. These scenic components, which are "free from significant discordant features," exhibit both marked contrasts between open spaces and enclosures in the built environment of the USMA at West Point, as well as great unity between the architectural massing, style, and scale of the built environment, and the massing and scale of the Hudson River and the Hudson Highlands within the surrounding natural environment (NYSDOS 1993).

The Highlands Subunit

The Highlands Subunit is located west of the main developed areas of the USMA at West Point, and is roughly circular in shape, with a diameter of 1.5 miles (NYSDOS 1993). In general, "the Highlands Subunit is included in the HHSASS because it is of high scenic quality" (NYSDOS 1993). The proposed project alignment crosses this subunit approximately along segments K-P. An evaluation of the location, scenic components, uniqueness, public accessibility, and public recognition of the landscape associated with the Highlands Subunit indicated that this subunit makes an important contribution to the HHSASS because of its high scenic quality (NYSDOS 1993). The subunit consists of a landscape that is unified by shape, but which contains "steep and rolling hillsides and several flat areas [that] provide variety within the topography of the subunit" (NYSDOS 1993). The subunit's scenic quality is enhanced by the mature, wooded, primarily deciduous, vegetation cover that provides background changes in colors, tones and

textures for the built environment of the contemporary and historic portions of the USMA at West Point throughout the year (NYSDOS 1993). Although this subunit does contain some discordant features, they are screened from various internal and external viewsheds of the subunit by topography and vegetation and do not detract significantly from its overall contribution to the scenic quality of the HHSASS (NYSDOS 1993).

3.10.6 Recreational Areas and Transportation Routes

In addition to the visual resources located within the USMA at West Point, the proposed alternative locations for the project would be visible from a number of adjacent public recreational areas or transportation routes that have been recognized for their aesthetic qualities and/or scenic resources, including portions of the Black Rock Forest Preserve, Storm King State Park, U.S. Route 9W, and NYS Route 218 (Old Storm King Highway).

The Black Rock Forest Preserve is an approximately 3,800-acre nature preserve that has been "dedicated to scientific research, education, and conservation of the natural ecosystem(s) that once covered the Hudson Highland region" (Black Rock Forest Consortium 2003a). The Black Rock Forest Preserve is "relatively pristine," in part due to its function as a research and demonstration forest associated with Harvard University since the early 20th century. The Black Rock Forest Preserve was "set aside as a natural area for perpetuity in 1989" (Black Rock Forest Consortium 2003a), and remains undeveloped. However, a number of facilities exist within the Black Rock Forest Preserve that permit the use of the forest "as a public resource for leisure time activities, appropriate to the Forest's health" (Black Rock Forest Consortium 2003b). These facilities include the Science Center with classrooms and teaching labs, residential buildings consisting of a dormitory and cabins, 15 miles of marked trails, and 16 miles of gravel roads. Leisure time activities include hiking and mountain biking along the trails and road throughout the forest, as well as hunting every fall, when the Black Rock Forest Preserve is closed to the public for modern rifle deer hunting season. The Black Rock Forest Preserve contains seven waterbodies and five streams, and these water resources are available for limited recreational use, including boating and fishing, but are closed for swimming (NY-NJ-CT Botany Online 2003).

Storm King State Park is an approximately 1,900-acre state park that is considered to be "one of the Hudson River Valley's best known landmarks," as well as "the northern gateway to the Hudson Highlands" (Scenic Hudson 2003). Storm King State Park is a popular state park that "offers unsurpassed views of the Catskills and the Hudson Valley" and is "a favorite for hikers" (Wildernet 2003, USACE 2002). The park is considered to be undeveloped, with limited parking and no restroom facilities, although an approximately 8-mile network of trails, roads, and scenic overlooks is used for hiking and hunting, the only two recreational activities permitted within the park (Wildernet 2003). Although the park appears relatively pristine today, evidence of previous military activities is present within the park boundaries, including areas that contain historic UXO from artillery testing and practice activities at the West Point Foundry in Cold Spring and at the USMA at West Point between the early 19th century and the mid 20th century (USACE 2002).

A 5.42-mile portion of U.S. Route 9W and a 5.83-mile portion of NYS Route 218 (also known as the Old Storm King Highway) are designated New York State Scenic Roads, under the New York State Scenic Byways Program (NYSDOT 2003, Woods 2003). These Scenic Roads are located along the northern and western boundaries of the Main Post/Academic Area at the USMA at West Point.

3.10.7 CERL-Identified Historic Views

In recognition of the wide variety of visual resources associated with the project area, the Construction and Engineering Research Laboratory (CERL) of the USACE undertook a viewshed analysis of the proposed project alignment for the USMA at West Point. Results of this viewshed analysis identified a total of 14 historic views of or within the USMA at West Point that would contain portions of the proposed project alignment (Loechl and Tooker 2003). These 14 historic views are discussed in greater detail below.

View of Lee Gate

Portions of the proposed project alignment along Segment A-B would be located within the internal and external views of Lee Gate (Loechl and Tooker 2003). The historic Lee Gate area, constructed in the 1930s with Works Progress Administration (WPA) funds, contains the stone

gate and gateposts, which are considered historic, and architecturally and visually pleasing. One structure associated with Lee Gate, Building 701 (the Lee Gate Sentry Station), has been included in the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) inventory at the USMA at West Point, and is also considered eligible for the NRHP and a contributing element of the NHLD at the USMA at West Point (NPS 1984, Geo-Marine, Inc. 2001, Loechl and Tooker 2003). Internal views of Lee Gate are visible from Lee Road and portions of the Lee Housing Area. External views of Lee Gate are visible from NYS Route 218 (Old Storm King Highway).

View from Cold Springs and Constitution Island

Portions of the proposed project alignment along Segment A-B would be located within the external view of the USMA at West Point from the Hudson River, Cold Springs, Constitution Island, and communities and residences along the eastern shoreline of the Hudson River (Loechl and Tooker 2003). Portions of the proposed project alignment along segments B-F would also be located within this same external view of the USMA at West Point. Views along the Hudson River are historically very important to the region, and are valued by both transient users of the Hudson River and by neighboring communities and residents (Loechl and Tooker 2003). The external views from the eastern shoreline of the Hudson River are considered historic views of the USMA at West Point, dating back to the installation's Revolutionary War period, and are dominated by the Hudson Highlands in the background, the architecture of the USMA at West Point in the middle ground, and the Hudson River in the foreground (Halin et al. 2003).

View from Hudson River Traveling by Boat

Portions of the proposed project alignment along segments A-B and G-H would be located within the external view of the USMA at West Point from boat traffic, including leisure boats, barges, and tourist boats, along the Hudson River (Loechl and Tooker 2003). Portions of the proposed project alignment along segments B-G would also be located within this same external view of the USMA at West Point. The Hudson River corridor is an extremely well preserved area, and the external view of the USMA at West Point from the river has an extremely historic high significance, due in part to the historical use of the river as a primary transportation route until roads were constructed (Loechl and Tooker 2003).

View from Garrison

Portions of the proposed alignment along Segment G-H would be within the external view of the USMA at West Point from Garrison (Loechl and Tooker 2003). Portions of the proposed project alignment along segments E-G would also be located within this same external view of the USMA at West Point. This external view of the USMA at West Point is considered a significant historic view, dating from to the installation's Revolutionary War period. The current view is dominated by the buildings of the Academic Area, which are constructed in the Military Gothic architectural style, exuding power, might, and prominence within the surrounding landscape (Halin et al. 2003).

View of Thayer Gate

Portions of the proposed project alignment along Segment G-H would be within the internal and external views of Thayer Gate (Loechl and Tooker 2003). Thayer Gate, constructed in the 1930s with WPA funds, is the most formal entrance to the USMA at West Point, and is the primary point of entrance for visitors (Loechl and Tooker 2003). As part of the future Access Gates Security Upgrades Project (see Section 5.1.1), the USMA at West Point is currently reevaluating the NRHP-eligibility of the Thayer Gate and associated structures (Cubbison 2004). Two structures associated with Thayer Gate, Building 608 (the Thayer Gate Sentry Station) and Building 610 (the Thayer Gate Public Toilet), have been included in the HABS/HAER inventory at the USMA at West Point (NPS 1984). In the past, Building 608 has not been considered eligible for the NRHP but is a potentially contributing element of the NHLD at the USMA at West Point (Geo-Marine, Inc. 2001). In the past, Building 610 has been considered eligible for the NRHP but has not been considered a contributing element of the NHLD at the USMA at West Point (Geo-Marine, Inc. 2001). The reevaluation of the Thayer Gate and its associated structures is in progress (as of January 2004), and will be coordinated with the SHPO upon completion of the reevaluation in February 2004. At this time, the USMA at West Point is considering the Thayer Gate and its associated structures to be historic properties pending the results of this reevaluation (Cubbison 2004).

Internal views of Thayer Gate are visible from Thayer Road and Building 674 (the Thayer Hotel) (Loechl and Tooker 2003). Internal views of Thayer Gate would also be visible from Swift Road

and from buildings surrounding Buffalo Soldiers Field, including Building 622 (the Enlisted Men's Service Club/Post Library), Building 626 (Offices), and Building 646 (the Print Plant). All of these buildings, including Building 674 (the Thayer Hotel), have been included in the HABS/HAER inventory at the USMA at West Point, and are considered eligible for the NRHP, and contributing elements if the NHLD at the USMA at West Point (NPS 1984, Geo-Marine, Inc. 2001). External views of Thayer Gate are highly visible from the Highland Falls community (Loechl and Tooker 2003), as well as from the West Point Highway.

View of Wilson Gate

Portions of the proposed project alignment along segments I-K would be within the internal and external views of Wilson Gate and two historic buildings along the southern boundary of the USMA at West Point (Loechl and Tooker 2003). Wilson Gate is currently closed, and the internal and external views of Wilson Gate are not considered highly historic because the integrity of these views has been compromised by the introduction of modern features such as chain link fencing and concrete barriers, and by an adjacent substation (Loechl and Tooker 2003). However, internal and external views of the two historic buildings, Building 620 (Company Headquarters and Barracks) and Building 618 (the Public Toilet), are highly visible from the Highland Falls community (Loechl and Tooker 2003). Both of these buildings, which were designed by Cram, Goodhue, and Ferguson in 1908 as part of the winning plans in a design competition for improvements at the USMA at West Point, are associated with the Centennial Expansion Period (Loechl et al. 2001), have been included in the HABS/HAER inventory for the USMA at West Point, and are considered eligible for the NRHP, and contributing elements of the NHLD at the USMA at West Point (NPS 1984, Geo-Marine, Inc. 2001).

View from Redoubts 1 and 2 and Associated Batteries

Portions of the proposed project alignment along Segment L-M would be within the external views from Redoubts 1 and 2 and their associated batteries (Loechl and Tooker 2003). Redoubts 1 and 2 and their associated batteries are associated with the Revolutionary War period, and are considered some of the USMA at West Point's most important cultural resources (Loechl and Tooker 2003). That portion of the proposed project alignment located along U.S. Route 9W/NYS Route 218 would be visible from Redoubts 1 and 2 and their associated batteries

(Loechl and Tooker 2003), and would increase the view of modern features such as highways, power lines, and other development form these same vantage points.

Views of Stony Lonesome Gate

Portions of the proposed project alignment along Segment M-N would be within the internal and external views of Stony Lonesome Gate (Loechl and Tooker 2003). Although the Stony Lonesome Gate is not considered historic, it is an open point of entry to the USMA at West Point, and is visible from portions of U.S. Route 9W and NYS Route 218 (Old Storm King Highway) (Loechl and Tooker 2003), which are designated New York State Scenic Highways (NYSDOT 2003).

Views from Highland Falls Community Cemeteries

Portions of the proposed project alignment along Segment N-O would be within the external views from two cemeteries for the Highland Falls community, the Sacred Heart Catholic Cemetery and Eagle Valley Cemetery, which are located along NYS Route 218 (Loechl and Tooker 2003). The Sacred Heart Catholic Cemetery is considered a historic cemetery, and is most visible from NYS Route 218 (Old Storm King Highway) (Loechl and Tooker 2003), which is a designated New York State Scenic Highway (NYSDOT 2003). Eagle Valley Cemetery is a more recent cemetery that is located immediately adjacent to, and behind (north of) the Sacred Heart Catholic Cemetery, and portions of the proposed project alignment will be located along the northeast side of the Eagle Valley Cemetery (Loechl and Tooker 2003).

Views from U.S. Route 9W Scenic Overlooks

Portions of the proposed project alignment along segments N-T would be within external views from U.S. Route 9W, a designated New York State Scenic Highway (NYSDOT 2003), and its scenic overlooks (Loechl and Tooker 2003). Scenic U.S. Route 9W is considered a valued resource by the state of New York (Loechl and Tooker 2003). Although portions of the proposed project alignment would be visible from Scenic U.S. Route 9W, these views are fleeting due to the relatively high rate of speed used in traveling along this road (Loechl and Tooker 2003). Portions of the project alignment would also visible from the scenic overlooks along Scenic U.S. Route 9W, particularly where the proposed project alignment would be

located along the ski slope at the USMA at West Point (Loechl and Tooker 2003). The external views of the USMA at West Point from the U.S. Route 9W overlooks are historic views, dating back to the installation's Revolutionary War period, and include views of the cultural landscape of the Main Post/Academic Area as it has evolved over the years, as well the natural landscape containing forests, mountains, and the Hudson River (Halin et al. 2003).

View from Crows Nest Mountain

Portions of the proposed project alignment along segments N-P would be within external views from Crows Nest Mountain, particularly where the proposed project alignment would be located along the ski slope at the USMA at West Point (Loechl and Tooker 2003). Crows Nest Mountain is the highest point in the Hudson Highlands region, and is a destination point for cadets, the local community, and visitors to the Hudson Highlands regions. External views of the USMA at West Point from Crows Nest Mountain are considered historic views, dating back to the installation's Revolutionary War period, and include views of the cultural landscape of the Main Post/Academic Area as it has evolved over the years, as well the natural landscape containing forests, mountains, and the Hudson River (Halin et al. 2003). External views from Crows Nest Mountain are also considered historic views that are associated with the Hudson River School of Landscape Painting, an early 19th century art movement that emphasized the romantic elements of natural settings and scenery (Loechl et al. 2001, Loechl and Tooker 2003).

Views of Washington Gate

Portions of the proposed project alignment along Segment Q-R would be within the internal and external views of Washington Gate (Loechl and Tooker 2003). Two historic structures associated with Washington Gate, Building 711 (the Washington Gate Sentry Station) and Building 729 (Public Toilet), have been included in the HABS/HAER inventory at the USMA at West Point, and are also considered eligible for the NRHP and a contributing element of the NHLD at the USMA at West Point (NPS 1984, Geo-Marine, Inc. 2001). Internal views of Washington Gate are visible from Washington Road, one of five historic roads within the Main Post/Academic Area that are considered highly significant to the landscape of the USMA at West Point because of their historic importance, and because they are one of the major circulation routes (Loechl et al. 2001). External views of Washington Gate are visible from NYS Route 218

(Old Storm King Highway) (Loechl and Tooker 2003), which is a designated New York State Scenic Highway (NYSDOT 2003).

Views from NYS Route 218

Portions of the proposed project alignment along segments R-T would be within the external views from NYS Route 218 (Loechl and Tooker 2003), which is a designated New York State Scenic Highway (NYSDOT 2003). Scenic NYS Route 218 is considered a valued resource by the state of New York (Loechl and Tooker 2003), and external views of the proposed project alignment along segments R-T from this scenic highway include heavily forested and steeply sloping terrain along the northern boundary of the USMA at West Point, between approximately Washington Gate and Lee Gate.

Views from the Lee Housing Area

Portions of the proposed project alignment along Segment S-T would be within internal views from upper portions of the Lee Housing Area (Loechl and Tooker 2003). The Lee Housing Area was designed and constructed in the 1930s (Loechl et al. 2001). The design of the Lee Housing Area reflects the ideals of suburban design and town planning in the early 20th century, combining visually pleasing architecture, partially wooded settings, and tree-lined, curvilinear roads to create a pastoral feeling (Loechl et al. 2001). Buildings in the upper portion of the Lee Housing Area consist of 40 duplexes with detached garages, and were constructed in the Neo-Georgian architectural style using brick with stone detailing (Loechl et al. 2001). Portions of the proposed project alignment would be particularly visible from Buildings 260, 274, 276, 278, and 298-299 (Family Housing for Lieutenants, Colonels, and Majors posted at the USMA at West Point) (NPS 1984, Loechl and Tooker 2003). All of these buildings have been included in the HABS/HAER inventory at the USMA at West Point, and are also considered eligible for the NRHP and contributing elements of the NHLD at the USMA at West Point (NPS 1984, Geo-Marine, Inc. 2001).

3.11 CULTURAL RESOURCES

A wide variety of cultural resources have been identified for the USMA at West Point, including buildings, structures, districts, objects, and sites. These cultural resources can be divided into

three broad, inter-related categories: architectural resources, archaeological sites, and cultural landscapes. Architectural and archaeological resources are discussed below. Cultural landscapes are discussed in Section 3.10 (Visual Resources).

Architectural resources at the USMA at West Point have undergone extensive investigation, including, but not limited to, the initial nomination of the USMA NHLD in 1960, a comprehensive HABS/HAER architectural inventory and assessment of the USMA at West Point's built environment in 1984, with subsequent revision and amendments in 1998, and a revised NHLD nomination submission in the year 2003 to update the number of properties within the NHLD, and determine contributing and noncontributing properties to the NHLD (Tompkins et al. 1984, Nolte and Cinquino 2000, and Prior et al. 2000, as cited in Geo-Marine, Inc. 2001).

The boundaries of the NHLD are particularly important to understanding the nature of architectural resources within the USMA at West Point. The NHLD boundaries enclose an area of approximately 2,500 acres, including the Main Post/Academic Area and Constitution Island (Geo-Marine, Inc. 2001). More than 600 buildings or structures are located within the NHLD at the USMA at West Point, although these buildings or structures have not yet undergone conclusive evaluations to determine whether they are eligible for listing on the NRHP (Geo-Marine, Inc. 2001). However, additional investigations as part of a revised nomination of the NHLD at the USMA at West Point have indicated that 328 of these 600 buildings and structures may be contributing elements to the NHLD, although these buildings or structures have not yet undergone conclusive evaluations to determine whether they are eligible for listing on the NRHP (Geo-Marine, Inc. 2001). In addition to investigations to determine whether buildings or structures were contributing or non-contributing elements to the NHLD, 227 buildings or structures were identified as possessing preservation significance on the basis of a HABS/HAER conducted by the NPS (NPS 1984).

A number of archaeological excavations and surveys have been conducted within the boundaries of the USMA at West Point, including, but not limited to, early investigations in the 1920s, 1930s, 1960s, and 1970s by both avocational and academic individuals and institutions (Geo-

Marine, Inc. 2001). From the 1980s through the present, a series of formal cultural resources investigations were completed at various project-specific locations within the USMA at West Point, including investigations for the Stony Lonesome II Housing Facility investigations, the Queensboro ironworks, the USMA Timber Harvesting program, and various other construction projects, as well as predictive model testing at a variety of locations within the USMA at West Point by the State University of New York at Albany (Geo-Marine, Inc. 2001). As a result of these archeological investigations, 150 archaeological sites have been identified within the USMA at West Point (Geo-Marine, Inc. 2001). Prehistoric site types span the range of prehistoric time periods from the Archaic (ca. 9,000 before present [B.P.] to 3,700 B.P.) to the Woodland Period (terminating ca. 1600 Anno Domini [A.D].). Historic site types include 18th and 19th century historic residential, military, and industrial sites.

A review of the available documentation summarizing know architectural and archaeological resources for the USMA at West Point indicates that the surrounding environs for the proposed project alignment contain a number of previously recorded prehistoric and historic resources. These cultural resources include the buildings and properties adjacent to Washington Gate and the main entrance to the Main Post/Academic Area at Thayer Gate, along the Hudson River frontage between the South Dock and the North Dock (including the Old Railroad Station [Building 696] and the Heating Plant [Building 604]), and in the general southwestern portion of the proposed project area on the elevations above Stony Lonesome Brook (including Redoubts 1 and 2) (USMA 1998a).

Several cultural resource management plans have been completed for the USMA at West Point. These include the comprehensive HABS/HAER survey (NPS 1984); a survey of family housing quarters which includes preservation standards and guidelines (Mariani and Associates, Architects 1987); and a historic resources management plan, which includes locations of prehistoric and historic properties, drawings, and preservation and maintenance guidelines for maintaining significant properties, and was completed in association with the ACHP (USMA 1988). A preservation plan for Revolutionary War period sites located near the Stony Lonesome II Housing Facility also included preservation plans for maintaining Redoubts 1 and 2 (Benton 1995), and a historic building survey for the Queensboro Ironworks also included a management

plan for maintenance (Benton 1995). A management plan for cultural resources, including prehistoric and historic resources within the USMA boundaries, was completed in 1995 (The Research Foundation at SUNY-Albany 1995) and included a predictive model identifying areas of high, medium, and low archaeological sensitivity for the USMA at West Point.

Most recently, the USMA at West Point has developed an Integrated Cultural Resources Management Plan (ICRMP) (Geo-Marine, Inc. 2001). The ICRMP establishes an installation-specific cultural resources management program to allow the USMA at West Point to integrate the management of its cultural resources within mission activities, including processes for the ongoing identification and protection of archaeological and architectural resources and historic landscapes, for external consultation and coordination with non-installation regulatory agencies and other interested parties, and for implementation of standard operating procedures (SOP) for cultural resources actions (Geo-Marine, Inc. 2001). The ICRMP is also designed for use with the USMA at West Point's Installation Design Guide, Historic Landscape Management Plan, and zone management system to further protect the USMA at West Point's cultural resources (Design Collaborative, Inc. undated, Loechl et al. 2001, Geo-Marine, Inc. 2001).

Based on a review of the available documentation summarizing known architectural and archaeological resources for the USMA at West Point, the proposed project alignment traverses areas that are known to contain previously identified cultural resources or that have the potential to contain previously unidentified cultural resources. A Phase I cultural resources investigation was conducted for the Preferred Alternative, consisting of a pedestrian/walkover reconnaissance, photographic documentation, subsurface shovel testing, and global satellite positioning (Hanley et al. 2003). Results of the Phase I cultural resources investigation indicated that one prehistoric archaeological site, two historic isolated archaeological finds, and nine historic dry-stacked stone walls were identified along the proposed project alignment (Hanley et al. 2003). A Phase II cultural resource investigation has been recommended for the prehistoric archaeological site if the proposed project alignment could not be shifted to avoid the site (Hanley et al. 2003). No further cultural resource investigations have been recommended for the two historic isolated archaeological finds (Hanley et al. 2003). Although none of the nine dry-stacked stone walls appear to be eligible for the NRHP, it is recommended that potential impacts to these walls

during construction activities should be minimized if practical (Hanley et al. 2003).

3.12 SOCIOECONOMICS

3.12.1 Population

The Town of Highlands, including USMA at West Point, covers over 30 square miles. The population of the Town of Highlands (and Orange County) increased slowly, but consistently, during the first 50 years of the century. Construction of the New York Thruway, however, marked the transition of the area from one of intense agricultural activity to one of urban development, which led to a countywide population explosion during much of the last 50 years. However, the 1970s brought high interest rates, high unemployment rates, and a construction standstill leading to a slowing of population growth from the projected higher growth rates (USMA 1998b). The Town of Highlands recession led to a population decrease of 6.78 % between 1970 and 1990 (Orange County Planning Department [OCPD] 1990), resulting in a population of 12,484 in the year 2000 (Ulrich 2002). As of May 2001, the USMA at West Point maintained a population of 12,251 military and civilian residents, including over 4,000 cadets (Bjornsen 2001a).

3.12.2 Economy and Employment

The dominant industries in the Town of Highlands are retail trade, education, and public administration (OCPD 1990). The USMA is the major employer and the Highland Falls/Fort Montgomery School District is the second largest employer of full-time personnel in the region (Highland Falls/Fort Montgomery School District 2002). Additionally, the USMA routinely hires local and regional contractors to perform construction and rehabilitation activities for numerous projects at the USMA at West Point. In the year 2000, there were 4,794 construction jobs in Orange County (New York State Department of Labor 2002).

3.12.3 Community Services

The USMA at West Point provides quality of life and community services for those who reside on post or are employed by the USMA. These services include medical, housing, childcare facilities, chapel, recreational facilities, community club, fire department, and security services.

Children of military members that reside on post are eligible to attend on-post elementary and middle schools.

The USMA at West Point also provides athletic and physical recreational opportunities for cadets, such as football, baseball, track and field, gymnastics, soccer, volleyball, tennis, swimming, cycling, golf, hockey, basketball, lacrosse, wrestling, boxing, rugby, skiing, crew, and sailing. Many of these services also are available to retirees, relatives, and guests, and to the surrounding community and general public.

3.12.4 Tax Revenues

Because the USMA at West Point is federally owned, no federal, state, or local property tax revenue is directly generated by this installation. Civilian and military personnel employed at, or visiting, the USMA contribute to state sales tax revenue on goods and services purchased in the Town of Highlands and adjacent municipalities.

3.12.5 Transportation and Traffic Circulation

Six major highways serve the USMA at West Point area. Direct access to the Main Post is by U.S. Route 9W and NYS Route 218. Interstate 87 is located 9 miles west of the Main Post and is accessible by NYS Route 293, NYS Route 6, or U.S. Route 9W, and the Palisades Interstate Parkway (USMA 1989). The DHPW maintains roadways at the USMA at West Point, and traffic is controlled by the Military Police (MPs) (USMA 1996b). The roads on the Main Post/Academic Area, which consist of a double spine layout, were developed in response to the topography of the land as well as the historic and scenic nature of the area (USMA 1989, USMA 1996b). All roads at the USMA at West Point are hard-surfaced with designed drainage. Traffic circulates throughout the Main Post/Academic Area by means of a curving, continuous roadway consisting of Mills Road and Washington Road. This roadway runs from Thayer Gate on the southwest edge of the Main Post to Washington Gate (USMA 1989). The most heavily used portion of the spine is along Thayer and Washington roads (USMA 1998a).

Within the vicinity of the project area, U.S. Route 9W is the major divided highway, which runs for 3.5 miles through the USMA at West Point. There are approximately 16 miles of paved secondary roads which provide access around the project area, including NYS Route 293, which

is the major east-west road traversing the installation. There are also approximately 60 miles of unimproved roads that provide access to all of the training areas and ranges (USMA 1998a).

Passenger rail service in the vicinity of the USMA at West Point is provided by Metro North, which operates out of Grand Central Station in New York City and makes three stops on the east side of the Hudson River. Passenger rail service to West Point was terminated in the late 1950s, when the west shore (Hudson River) line was converted to freight only. This single-track freight service is provided along Conrail's West Shore line, and runs through West Point, entering and exiting the Main Post/Academic Area (USMA 1998a).

The Hudson River at West Point is navigable to barges, cargo ships, and passenger boats. Metro North operates the Peekskill Ferry, a tour boat service ferrying passengers from the east shore Peekskill rail stop to the USMA at West Point (USMA 1998a).

Employees of the USMA, both permanent staff and contractors, routinely enter the USMA at West Point property via the access roadways and park in existing parking lots. Shuttle bus service currently runs along main roadways through the USMA at West Point installation. Students enrolled at the West Point Elementary and Middle Schools are shuttled to and from school via a local private school bus system. Public transportation, in the form of the Short Line Bus Company, regularly services the West Point community (USMA 2001).

3.13 AIR QUALITY

The USMA at West Point, including the proposed project alignment, is located in the southern portion of the Hudson Valley Air Quality Control Region, in the Lower Orange County Metropolitan Area (USMA 1998a). Southern Orange County is currently classified as an attainment area for all National Ambient Air Quality Standards (NAAQS) criteria pollutants (carbon monoxide, nitrogen dioxide, particulate matter, lead, and sulfur dioxide), except ozone (NYSDEC 1996a, NYSDEC 1996b). Southern Orange County is classified as a non-attainment area for ozone (NYSDEC 1996b).

There are several major stationary and mobile sources of air pollutant emissions present in the greater USMA at West Point property. Stationary sources include ten gas-fired boilers, two incinerators, a restricted burn site, and nuclear, biological, and chemical training activities. Mobile sources include vehicular traffic, such as light-duty, gasoline-powered trucks and automobiles, heavy-duty diesel-powered vehicles, and aircraft (USMA 1998a). All major stationary and mobile sources of air pollutant emissions are in compliance with air quality standards (USMA 1998a).

3.14 NOISE

Noise is generally defined as unwanted sound. The day-night noise level (L_{dn}) is the most widely used descriptor of community noise levels. The unit of measure of the L_{dn} is the A-weighted decibel (dbA), which closely approximates the frequency responses of human hearing (USEPA 1978). Noise levels below 65 decibels are considered to be normally acceptable in suitable living environments (USMA 1998a).

The primary source of noise in the vicinity of the proposed project alignment is vehicular traffic on local roadways. Vehicular traffic generates a level of noise typical for a residential or academic setting. Noise level measurements have not been obtained specifically in the proposed project alignment area. In lieu of field measurements, the noise levels can be approximated based on existing land uses. The typical L_{dn} in residential areas ranges from 39 to 59 dbA (USEPA 1978). It can be assumed that the existing sound levels in the proposed alignment area are roughly within this range.

3.15 UTILITY INFRASTRUCTURE

3.15.1 Energy

Electricity at the USMA at West Point is provided by Orange and Rockland Utilities, Inc. (O&R) (USMA 1998a). O&R substations transmit electricity through overhead lines, and electricity is transformed to an adequate voltage for use at existing transformers located throughout the USMA at West Point. Current annual electrical usage at West Point is 66,262,310 kilowatt hours.

Heat for most of the buildings at the USMA at West Point is provided by the Central Power Plant, which consists of three fuel-oil boilers and three steam-turbine-driven generators, and is housed in Building 604. A separate gas/oil fired steam plant provides hear for several building in the Washington Gate area. This separate plant consisting of two 40,000-pound-per-hour water tube boilers is housed in Building 845 (USMA 1998a). Total annual consumption of fuel oil between these two plants is 5 million gallons per year (Alongi 2001). However, the USMA at West Point is currently in the process of converting the fuel-oil boilers to natural gas boilers as part of the USMA at West Point's initiatives to comply with Executive Orders 13123 and 13212 by reducing the use of petroleum fuel at the USMA at West Point, by utilizing more efficient sources of energy, and by utilizing energy more efficiently (USMA 2002a). This process would be completed by the time the Perimeter Security Fence Installation Project is implemented.

3.15.2 Telecommunications

Telecommunication services at the USMA at West Point include telephone, fire alarm, security, and cable television services. Contractors provide administrative telephone service, but all other telecommunication infrastructure is owned by the DA (USMA 2001). Fiber optic cables connect many of the buildings at the USMA at West Point and provide telephone service, as well as fire alarm, and security services. Cable television is provided through three services operated by a local cable company.

3.16 HAZARDOUS MATERIALS

Various hazardous materials are currently present at the USMA at West Point. These hazardous materials include potential UXO at specific locations along the proposed project alignment of the fence, as well as hazardous waste sites within the USMA at West Point, and hazardous materials stored or in use at various facilities at the USMA at West Point.

The potential for UXO has been identified for those areas of the proposed project alignment that are located on the south side of NYS Route 218, between Washington and Lee gates, and corresponding roughly with segments S-T and A-B (Sanborn 2003a). These segments of the proposed project alignment are located south of the former Crows Nest artillery impact area, in which Crows Nest Mountain was used as a target for firing artillery from the Plain and the North Dock areas of the USMA at West Point from the late 1700s through 1920 (Sanborn 2003a,

Sanborn 2003b), and a number of surveys have identified UXO or suspected UXO in the general vicinity of this portion of the proposed project alignment.

UXO from the USMA at West Point was identified on the north side of NYS Route 218 during a UXO site survey of areas along the southeast slope of Crows Nest Mountain in 1994 (Human Factors Applications, Inc. [HFA] 1994). This UXO consisted of a variety of loaded, possibly loaded or empty projectiles, as well as expended fuzes (HFA 1994). UXO from the USMA at West Point was also identified in the Storm King Mountain State Park, which is located north of and adjacent to Crows Nest Mountain, in the summer of 1999 (USACE 2002). This UXO consisted of a variety of artillery that ranged from historic cannonballs to approximately 75-millimeter artillery, including high explosive artillery (Sanborn 2003b). Finally, the USMA at West Point conducted geophysical mapping in those portions of the proposed alignment, along segments S-T and A-B, which are within close proximity to the lower southeastern slope of Crows Nest Mountain. This mapping identified areas with high potential for containing suspected UXO, and it is possible that this UXO would be similar to those types of UXO found at Storm King Mountain State Park and on the northern side of NYS Route 218 (Sanborn 2003a, Sanborn 2003b). However, older types of UXO in this area would be more likely, as early artillery firing locations were further south on the Plain, and early firing techniques would have limited the range of this early artillery to the lower slopes of Crows Nest Mountain (Sanborn 2003b).

In addition to the potential for UXO at the USMA at West Point, there are three USEPA-designated hazardous waste sites located within the project area (USEPA 2003), although none of these facilities would be directly traversed by the proposed project alignment. These hazardous waste sites include a United States Mint facility (Toxics Release Inventory [TRI] # 10996SMNTRT218), which has multiple contaminants associated with it, including air emission and metal stampings; a USMA facility (TRI # 10996SMLTR646SW), which contains special industrial machinery, general automotive repair shops, general medical and surgical hospitals, specialty hospitals, and other educational facilities; and, a USMA range control facility (TRI # 10996SMLTRSTATE) (USEPA 2003). There are also hazardous and toxic materials used for several activities at the USMA at West Point. These materials include pesticides,

polychlorinated biphenyls (PCBs), chemicals, and radiological substances. These substances are handled in accordance with USEPA regulations, and monitored on a regular basis (USMA 1998a). There are no NYSDEC-designated active or inactive hazardous waste sites or contaminated water or soil resources are located at the USMA at West Point (NYSDEC 2000).

Finally, various chemicals that are typically found in school laboratories, some of which can be considered hazardous materials, are used in USMA laboratories. These chemicals are stored and handled in accordance with Department of Defense Education Activity (DODEA) or USMA health and safety plans. Household cleaning agents and related chemical materials are securely stored and handled according to the DODEA and USMA health and safety plans. Any hazardous material spills that occur on USMA at West Point are reported, contained, and remediated in accordance with the USMA Installation Spill Contingency Plan (USMA 1996a).

3.17 PUBLIC HEALTH AND SAFETY

Various public health and safety hazards are currently present at the USMA at West Point. These hazards range from natural hazards, such as bee stings and tick-borne Lyme Disease, to individual physical injuries sustained during academic or physical training and recreational activities at formal and informal facilities and locations throughout the USMA at West Point. Furthermore, UXO may be found wherever military training has occurred within the USMA at West Point, in addition to portions of the USMA at West Point that contain established UXO areas (Sanborn 2003b).

The USMA operates and maintains complete public health, emergency response, and security services that serve the USMA community. These services include a hospital, emergency medical response teams, helicopter medical evacuation service, fire department, and military police.

The USMA at West Point maintains and operates the Keller Army Community Hospital (KACH), located on Washington Road. This is a 65-bed facility that houses a surgical unit, an obstetric unit, an intensive-care unit, a helipad, and numerous outpatient clinics. The hospital-operated Acute Care Clinic oversees an ambulance service for those who need immediate transport. In the event that injured individuals require emergency medical evacuation to another

facility, the USMA at West Point operates and maintains a trained medical evacuation unit and an associated emergency helicopter landing zone at the terminus of Worth Place. The landing zone supports intermittent operations of two flights per month or approximately two hours of operation per month.

The USMA at West Point maintains and operates three fire stations: the West Point Fire Station, located in Building 721 on Washington Highway, in the center of the USMA at West Point; the Stony Lonesome Fire Station, a two-company fire station in the Stony Lonesome area; and the Academy Fire station, a two-company, seasonally active fire station (May through September), located at Camp Buckner on NYS Route 293, near Range Control (Vollmer Associates, LLP 1999, Cubbison 2003). Numerous buildings in the Main Post/Academic Area maintain a system of fire alarm pull stations that communicate directly with the fire station, and the various building occupants conduct periodic fire drills. The USMA at West Point also maintains emergency exits, exit signs, and emergency lighting in the appropriate buildings in the Main Post/Academic Area in case of power outages to ensure safe evacuation of USMA personnel and support staff.

The Provost Marshal's Office at the USMA at West Point provides 24-hour military police support that includes foot and motor patrols, and general security services. The USMA military police maintain discipline and enforce laws and regulations, as well as provide physical and personal security and support for crime prevention. The USMA military police conduct routine patrols of the entire USMA at West Point installation, including the Main Post/Academic Area.

In addition to the above measures to protect the pubic health and safety at the USMA at West Point, security measures also include physical barriers at the formal entrances to the Main Post/Academic Area, including security gates, pullover areas, and Jersey barriers at the Thayer, Stony Lonesome, and Washington gates. These physical barriers are designed to control vehicular access to the Main Post/Academic Area, by restricting movement through these formal entrances. The Lee and Wilson gates contain similar physical barriers to control vehicular access to the Main Post/Academic Area, although these gates are currently closed to both vehicular and pedestrian traffic, and are expected to remain closed for the foreseeable future. Physical barriers

such as bollards with attached chain are located in the Cadet Zone to enhance security in this portion of the Main Post/Academic Area. However, the remainder of the Main Post/Academic Area is open to access from a variety of points outside of the USMA at West point, along formal and informal access roads, pipeline corridors, foot trails, and the shoreline along the Hudson River.

3.18 ENVIRONMENTAL JUSTICE

There are currently 1,033 active duty military personnel at West Point. Demographic information for the minority status of these personnel at West Point indicated that as of 2001, there were 829 Whites, 124 Blacks, 50 Hispanics, 3 Native Americans, 16 Asian/Pacific Islanders, and 11 personnel of other descent (USMA 2001).

Only military housing exists within the USMA community. However, low-income housing is scattered throughout the Village of Highland Falls, with the nearest low-income housing community, Weyant Green, located adjacent to the USMA's South Post, off West Point Highway on Webb Lane. Weyant Green, owned by Quaker Hill Housing, consists of six buildings with a total of 51 housing units built in 1983 with funding from the U.S. Department of Housing and Urban Development.

3.19 COASTAL ZONE MANAGEMENT

The USMA at West Point is located within a state-designated coastal zone management area that is associated with the Hudson River (NYSDOS 1981). Therefore, development projects must be evaluated for consistency with NYSDOS CMP State Coastal Policies (Ketcham 1999). There are a total of 44 NYSDOS CMP State Coastal Policies, which are grouped together to address issues related to development, fish and wildlife resources, flooding and erosion hazards, general issues, public access, recreation, historic and scenic resources, agricultural lands, energy and ice management, and water and air resources in state-designated coastal zone areas. Of these 44 State Coastal Policies, twelve policies may be applicable to the proposed project alignment as described below.

Policy 2 – **Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.** Policy 2 is a development policy that recognizes that state-designated coastal

zone areas contain finite available space adjacent to coastal waters for water-dependent and water-enhanced uses and facilities, and that "long-term demand for waterfront space would intensify" (NYSDOS 2002). Consistency with this policy is encouraged though the design of a proposed action that reduces the potential for reduction of use of state-designated coastal zone areas. In particular, this policy recommends that "State agencies would avoid … approving non-water-dependent uses when such uses would pre-empt the reasonably foreseeable development of water-dependent uses" (NYSDOS 2002).

***Policy 7* – Significant coastal fish and wildlife habitats would be protected, preserved, and where practical, restored so as to maintain their viability as habitats.** Policy 7 is a fish and wildlife policy encouraging the protection of significant coastal fish and wildlife habitats that assure the continued "survival of fish and wildlife populations" (NYSDOS 2002). In an effort to ensure the protection, preservation and/or restoration of these significant habitats, this policy recommends that proposed actions within state-designated coastal zone areas limit activities that may destroy or significantly impair such habitats "beyond the tolerance range of the organisms occupying the habitat," including activities such as grading land, clear cutting vegetation, physical alteration of shore areas through channelization or construction of shore structures, and/or the introduction of pollutants (NYSDOS 2002). Consistency with this policy would be determined by an evaluation of the potential effects of a proposed action on significant coastal fish and wildlife habitats, using information provided in individual habitat narratives (NYSDOS 2002). Consistency with Policy 7 is particularly important because the USMA at West Point is located in the vicinity of the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat, a 12-mile stretch of the Hudson River, including the Iona Island Marsh and Constitution Marsh, that lies within the New York State coastal zone (NYSDOS 1987, Ketcham 2003), which is discussed in greater detail in sections 3.4.3 and 3.7.5. However, the USMA at West Point has determined that the proposed project would not be located within, or immediately adjacent to the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat (NRB 2004).

Policy 18 – **To safeguard the vital economic, social and environmental interests of the state and of its citizens, proposed major actions in the coastal area must give full consideration**

to those interests, and to the safeguards which the state has established to protect valuable coastal resource areas. Policy 18 is a general policy recognizing that proposed major actions have the potential to "significantly impair valuable coastal waters and resources" (NYSDOS 2002). In an effort to reduce the potential for significant impairment of state-designated coastal zone areas, consistency with this policy is encouraged through recommendations that "proposed actions must take into account the social, cultural, economic and environmental interests of the State and its citizens," specifically including recreation as one interest area that must undergo impact assessment.

Policy 19 – **Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.** Policy 19 is a public access policy recognizing that coastal zone areas benefit from a balance between "access to a resource or facility, the capacity of a resource or facility, and the protection of natural resources" (NYSDOS 2002). In particular, consistency of a proposed action with this policy would be determined by the degree that "the existing access from adjacent or proximate public lands or facilities to public water-related recreation resources and facilities shall not be reduced" as a result of a proposed action, and by measures taken to ensure that the possibility of future access to public water-related recreation resources and facilities would not be eliminated as a result of a proposed action (NYSDOS 2002).

Policy 20 – **Access to publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.** Policy 20 is also a public access policy, but primarily addresses "coastal areas where there are little or no recreation facilities providing specific water-related recreational activities" (NYSDOS 2002). In particular, consistency with this policy is focused on proposed actions that would increase public access to relatively undeveloped coastal zone areas. Although this policy appears to be unrelated to the proposed action within coastal zone areas associated with the USMA at West Point, which are moderately developed for water-related recreational activities, an exception to this policy indicates that "public use of publicly-owned underwater lands and lands immediately adjacent to

the shore shall be discouraged where such use would be inappropriate" for reasons that include potential threats to public safety or military security (NYSDOS 2002).

Policy 21 – **Water-dependent and water-enhanced recreation would be encouraged and facilitated, and would be given priority over non-water-related use along the coast.** Policy 21 is a recreation policy that encourages "the development of water-related recreation [that] is consistent with the preservation and enhancement of such important coastal resources as fish and wildlife habitats, aesthetically significant areas, historic and cultural resources," and discourages "the siting or design of new public development in a manner which would result in a barrier to the recreational use of a major portion of a community's shore" as an effect that "should be avoided as much as practicable" (NYSDOS 2002). Consistency with this policy is encouraged through the implementation of mitigating measures to reduce any adverse environmental impacts that may result from a proposed action (NYSDOS 2002).

Policy 22 – **Development, when located adjacent to the shore, would provide for water-related recreation, whenever such use is compatible with reasonable anticipated demand for such activities, and is compatible with the primary purpose of the development.** Policy 22 is also a recreation policy that encourages a proposed action in a state-designated coastal zone area to consider including "practical opportunities for providing recreation facilities as an additional use of the site or facility" (NYSDOS 2002). Consistency of a proposed action with this policy would include "some form of water-related recreation use unless there are compelling reasons why any form of such recreation would not be compatible with the development" (NYSDOS 2002). Compelling reasons for incompatibility of a proposed action with increased water-related recreation use would include "recognition that some risk is acceptable in the use of recreation facilities" (NYSDOS 2002). Consistency with this policy also requires consultation with the NYSOPRHP "to determine appropriate recreation uses" in association with the proposed action, and should provide the NYSOPRHP "with the opportunity to participate in project planning" (NYSDOS 2002).

Policy 23 – **Protect, enhance and restore structures, districts, areas or sites that are of significance in the history, architecture, archaeology or culture of the state, its communities**

or the nation. Policy 23 is a historic and scenic resources policy that provides for the protection of historic and scenic resources that are both within the state-designated coastal zone area, as well as historic and scenic resources that have a coastal relationship (NYSDOS 2002). Such historic and scenic resources include resources "on, or nominated to be on, or determined eligible to be on the NRHP" (NYSDOS 2002). Consistency of a proposed action with this policy would include measures to "prevent a significant adverse change to such significant structures, districts, areas or sites," including such specific proposed actions as the addition of fences to a site "that is a recognized historic, cultural or archaeological resource" (NYSDOS 2002). Consistency with this policy would also include measures to prevent the implementation of proposed actions "within 500 feet of the perimeter of the property boundary of [a] historic, architectural, cultural, or archaeological resource and all actions within an historic district that would be incompatible with the objective of preserving the quality and integrity of the resource," particularly in a manner that would make the visual and locational relationship of the proposed action incompatible with the "special character of the historic, cultural, or archaeological resource" (NYSDOS 2002). Measures to ensure consistency with this policy include designing additions, including fencing, in adherence with the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, and ensuring the compatibility of the visual and locational relationship of the proposed action with historic and scenic resources by designing the general appearance of the proposed action to reflect such qualities as the architectural style, scale, proportion, line, color, and landscaping of the historic and scenic resources to the maximum extent possible (NYSDOS 2002).

Policy 24 – **Prevent impairment of scenic resources of statewide significance**. Policy 24 is also a historic and scenic resources policy that evaluates the impacts of a proposed action in areas that have been identified as scenic areas of statewide significance within a state-designated coastal zone area. These evaluations consider whether the proposed action would impair a Scenic Area of Statewide Significance (SASS), through activities such as the destruction or removal of vegetation in areas where vegetation is considered "significant to the scenic quality of an identified resource," and/or the addition of structures to a scenic area "which because of scale, form or materials, would diminish the scenic quality of an identified resource" (NYSDOS 2002). Consistency of a proposed action with this policy would incorporate guidelines identified in this

policy, including "siting structures…back from shorelines, or in other inconspicuous locations to maintain the attractive quality of the shoreline and to retain views to and from the shore," "orienting structures to retain views, [and] save open space," "adding vegetation to…blend structures into the site, and obscure unattractive elements," "using appropriate materials, in addition to vegetation, to screen unattractive elements," and "using appropriate scales, forms and materials to ensure that…structures are compatible with…the landscape."

Consistency of a proposed action with this policy would be particularly important because the USMA at West Point is located within the HHSASS, a 20-mile stretch of the Hudson River and its associated shoreline that lies within the New York State coastal zone, and that has been designated as a scenic area of special significance because of its "unique, highly scenic landscapes which are accessible to the general public, and recognized for their scenic quality" (NYSDOS 1993). Because the USMA at West Point and adjacent municipalities have not established a Local Waterfront Revitalization Program for the project area, the NYSDOS's CMP administers policies for development within the HHSASS (Millington 1998, NYDOS 2002).

The HHSASS is comprised of 28 subunits, which have distinct, but related scenic components that contribute to the larger HHSASS. The proposed project alignment is located within three of the 28 subunits of the HHSASS: the West Point Military Academy Subunit, the Contemporary West Point Military Academy Subunit, and the Hudson Highland Subunit, which have been discussed in greater detail in Section 3.10. The proposed project alignment may also be visible from locations within eight adjacent subunits of the HHSASS: the Storm King Subunit, the Highland Falls Subunit, the Brooks Lake Subunit, the Garrison Landing Subunit, the Garrison Four Corners Subunit, the Constitution Marsh Subunit, the Constitution Island Subunit, and the Cold Spring Subunit.

Policy 37 – **Best management practices would be utilized to minimize the non-point discharge or excess nutrients, organics and eroded soils into coastal waters**. Policy 37 is a water and air resources policy encouraging the minimization of non-point discharges or excess nutrients, organics, and eroded soils into waters within state-designated coastal zone areas. Consistency with this policy is encouraged through the use of best management practices for a

proposed action that requires management of pests, possibly including nuisance plant species, soil erosion control, and surface drainage control (NYSDOS 2002).

Policy 38 – **The quality and quantity of surface water and groundwater supplies, would be conserved and protected, particularly where such waters constitute the primary or sole source of water supply.** Policy 38 is also a water and air resources policy encouraging the conservation and protection of surface water and groundwater supplies within state-designated coastal zone areas. Consistency with this policy is encouraged through the use of best management practices for a proposed action that would protect the quality and quantity of surface and groundwater supplies that are principal sources of drinking water (NYSDOS 2002).

Policy 44 – **Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.** Policy 44 is also a water and air resources policy encouraging the protection and preservation of tidal and freshwater wetlands within state-designated coastal zone areas. Consistency with this policy is encouraged through the use of best management practices for a proposed action that is located in the vicinity of tidal or freshwater wetlands, as delineated on the NYSDEC's Tidal Wetlands Inventory Maps, and as defined in the NYS Freshwater Wetlands Act and the NYS Protection of Waters Act (NYSDOS 2002).

Pursuant to 15 CFR Part 930.34(b), the USMA must notify the NYSDOS CMP of project conformance with State Coastal Policies at least 90 days prior to project implementation. Although installation and/or replacement of security fence and gates from segments A-T would be consistent with NYSDOS' State Coastal Policies, the USMA would coordinate and consult with the NYSDOS CMP to ensure that the Proposed Action would have no impact on the HHSASS, and would have no undue adverse impact on New York State coastal zone resources.

4.0 ENVIRONMENTAL CONSEQUENCES

This section identifies the impacts or consequences to the natural and social environment that may result from implementing the Preferred Alternative.

4.1 GEOLOGY AND TOPOGRAPHY

Implementation of the Preferred Alternative would involve excavation of surficial material and minor impact on geological formations. The Preferred Alternative would require shallow holes, approximately three to four feet deep, to be excavated and then back-filled for installation of fence posts along the 5.8-mile alignment of the project corresponding to portions of segments G-H, I-J, K-M, N-Q and R-T. Because the subsurface bedrock geological formation does not have any specific economic (i.e., mineral resource) or other structural value, the implementation of the Preferred Alternative would have no significant adverse impact on geological resources.

4.2 SOILS

The Preferred Alternative would involve temporary disturbance of soils along the approximately 5.8-mile alignment of the project along portions of segments G-T. Table 4 identifies the linear distance and acreage of temporary soil disturbance for each soil type crossed by the Preferred Alternative. Implementation of the Preferred Alternative would result in earth moving, excavation, fill, and grading activities in construction work areas, as well as construction equipment movement and material storage. Excavated soil would be temporarily sidecast and stored adjacent to construction work areas. The USMA would obtain and use only clean fill materials from an existing commercial borrow pit, and transport these materials in accordance with applicable regulations.

Best management practices for erosion and sedimentation control outlined in a project-specific Storm Water Pollution Prevention Plan (SWPPP) would be implemented to mitigate the potential for soil erosion during land clearing, fill, grading, and restoration activities. Specifically, the USMA would require the contractor to prepare, submit for review and approval, and implement a

Table 4. Impacts to Soils from Implementation of the Preferred Alternative.

Segment	Rock Outcrop		Charlton		Hollis		Hoosic		Swartswood		Udorthents		Erie		Total[a]	
	Feet	Acres[b]	Feet	Acres[b]	Feet	Acres[b]	Feet	Acres[b]	Feet	Acres[b]	Feet	Acres[b]	Feet	Acres[b]	Feet	Acres[b]
A-B[c]	560	0.0	-	-	-	-	-	-	-	-	-	-	-	-	560	0.0
B-G[d]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G-H[e]	1131	0.4	-	-	-	-	-	-	-	-	68	<0.1	-	-	1,199	0.5
H-I[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I-J	-	-	-	-	86	<0.1	-	-	601	0.3	-	-	-	-	687	0.4
J-K[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K-L	3,166	1.5	-	-	639	0.3	-	-	-	-	-	-	-	-	3,805	1.8
L-M	2,069	1.0	-	-	-	-	1,670	0.8	-	-	-	-	-	-	3,739	1.8
M-N[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-O	5,055	2.3	1,119	0.5	3,864	1.8	<1	<0.1	-	-	-	-	166	<0.1	10,205	4.8
O-P	249	0.1	-	-	2,171	1.0	-	-	-	-	-	-	-	-	2,420	1.1
P-Q	-	-	-	-	1,749	0.8	-	-	-	-	16	<0.1	-	-	1,765	0.9
Q-R[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-S	-	-	-	-	2,319	0.9	-	-	-	-	-	-	-	-	2,319	0.9
S-T	2,128	<0.1	-	-	967	<0.1	-	-	-	-	-	-	-	-	3,095	0.2
T-A[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL[a]	**14,358**	**5.4**	**1,119**	**0.5**	**11,795**	**5.0**	**1,671**	**0.9**	**601**	**0.3**	**84**	**0.2**	**166**	**0.1**	**29,794**	**12.4**

Source: Northern Ecological Associates, Inc. 2004.

Key:
[a] = Some error due to rounding of distance and/or acreage.
[b] = Acreage derived by multiplying distance traversed by the Preferred Alignment by 20-foot-wide cleared area, then dividing by 43,560.
[c] = No impacts along Segment A-B due to use of natural terrain as perimeter security measure.
[d] = Hudson River shoreline. No impacts by Preferred Alternative alignment.
[e] = Reduced impacts along Segment G-H due to use of natural terrain as perimeter security measure.
[f] = Access gate. No impacts by Preferred Alternative alignment.

site-specific SWPPP. The SWPPP would ensure compliance with NYSDEC's current stormwater management regulations for construction activities pursuant to the SPDES, that went into effect on March 10, 2003. Additionally, the USMA would consult with the USDA Natural Resources Conservation Service (NRCS) to develop an appropriate seed mixture to revegetate and stabilize any exposed soils and fill as soon as practicable following completion of construction to prevent the potential for erosion of soils on steep slopes or soil series identified with an erosion hazard (e.g., Ch, HL, Ho, Sw, RO) in the project area. As a result, no significant soil erosion or sedimentation would result from implementation of the Preferred Alternative.

4.3 WATER RESOURCES

4.3.1 Groundwater Resources

The Preferred Alternative would have no effect on sole source, primary, principal, or important aquifers occur at, or near, the proposed project area.

4.3.2 Surface Water Resources

As indicated in Section 3.3.2, the proposed project alignment would traverse 13 known surface water resources at a total of 14 locations. Portions of five of the 13 affected surface waterbodies (Table 2) have been identified as NYSDEC Protected Streams: Crows Nest Brook (at the crossing location along Segment B-G), an Athletic Field drainage ditch (also known as the Delafield Pond outlet), Kinsley Farm Brook, the Dassori Pond outlet, Stony Lonesome Brook (NRB 2003, Pray 2004). All of these five protected waterbodies are perennial streams that support either warmwater or coldwater fisheries, where crossed by the proposed project.

Portions of two affected surface waterbodies, Sinclair Pond Brook and Crows Nest Brook (at the crossing location along Segment R-S) are not NYSDEC Protected Streams (both are classified as Class C streams), but are protected under the USMA at West Point's good stewardship directive because they are perennial streams which flow into the Hudson River, a federally protected surface water under Section 404 of the Clean Water Act (Pray 2004). The remaining seven waterbodies are intermittent streams that do not support fisheries, are not considered NYSDEC Protected Streams, and are not protected under the USMA at West Point's good stewardship directive (Pray 2004).

In addition to these 13 known surface water resources, prior to construction as part of the design process, the USMA at West Point's architectural and engineering contractor would perform a walkover of the Preferred Alternative alignment to identify any unmapped intermittent or perennial streams, ravines, and drainages, and the USMA at West Point's construction contractor would field-verify these locations to avoid any disturbance to the stream bed or banks of these identified surface waterbodies.

Implementation of the Preferred Alternative has the potential to result in a number of effects on surface water resources. In particular, a NYSDEC Article 15 (Protection of Waters) permit would be required if construction activities associated with implementation of the Preferred Alternative would constitute the disturbance of the stream bed or stream banks, including the temporary or permanent placement of structures in or across, NYSDEC Protected Streams (NYSDEC 1994, NRB 2003, Markt 2004).

Pursuant to 6 NYCRR 608.1(b) (Definitions-Bed), a stream bed is defined as "that land area of a watercourse covered by water at mean high water" (NYSDEC 1994). Pursuant of 6 NYCRR Part 608.1(i) (Definitions-Mean low water and mean high water), mean high water is defined as "the approximate … high water level for a given body of water at a given location, that distinguishes between predominantly aquatic and predominantly terrestrial habitat as determined, in order of use, by the following: (1) available hydrologic data, calculations, and other relevant information concerning water levels (e.g., discharge, storage, tidal and other recurrent water elevation data)…; (2) vegetative characteristics (e.g., location, presence, absence, or destruction of terrestrial or aquatic vegetation); (3) physical characteristics (e.g., clear natural line impressed on a bank, scouring, shelving, or the presence of sediments, litter or debris); and (4) other appropriate means that consider the characteristics of the surrounding area" (NYSDEC 1994).

Additionally, pursuant to 6 NYCRR 608.1(a) (Definitions-Banks), stream banks are defined as "that land area immediately adjacent to, and which slopes toward, the bed of a watercourse, and which is necessary to maintain the integrity of a watercourse. For purposes of this Part a bank will not be considered to extend more than fifty (50) feet horizontally from the mean high water line: with the following exception: Where a generally uniform slope of 45 degrees (100 %) or

greater adjoins the bed of the watercourse, the bank is extended to the crest of the slope or the first definable break in slope, either a natural or constructed (i.e., road or railroad grade) feature, lying generally parallel to the water course" (NYSDEC 1994).

Implementation of the Preferred Alternative along segments B-G would not involve installation of any structural or non-structural security measures, and therefore would not result in any direct or indirect adverse affects on surface water resources. Specifically, implementation of the Preferred Alternative would have no adverse effects on the three NYSDEC Protected Streams, which include Crows Nest Brook (Segment B-C), the Athletic Field drainage ditch (Segment C-D), and Kinsley Farm Brook (Segment F-G), or the three additional unprotected streams, along segments B-G (Table 2).

Additionally, implementation of the Preferred Alternative along segments G-T would not require or involve direct disturbance of the stream bed or stream banks, including the temporary or permanent placement of structures in or across, NYSDEC Protected Streams, unprotected streams, ravines, or other drainages, and therefore would not require a NYSDEC Article 15 (Protection of Waters) permit or associated State Water Quality Certification pursuant to Section 401 of the Clean Water Act. Specifically, to ensure avoidance of fence installation and construction activities in regulated and unregulated stream beds and banks, the NRB at the USMA at West Point would identify, and mark in the field, prior to the start of construction, the location of the mean high water line (top of stream bed) and/or the top of stream bank (whichever is higher) on each side of each surface waterbody, including NYSDEC Protected Streams, unprotected streams, ravines, or other drainages, traversed by the Preferred Alternative alignment (Markt 2004). Construction activities and fence installation would then terminate at the field-marked mean high water line (top of stream bed) or top of stream bank (whichever is higher), with terminal fence posts being installed at or above the marked locations for each NYSDEC Protected Stream, unprotected stream, ravine, or other drainage. Furthermore, the proposed perimeter security fence would not be extended or "strung" across any surface waterbodies traversed by the Preferred Alternative, including NYSDEC Protected Streams, unprotected streams, ravines, or other drainages.

Additionally, no temporary or permanent equipment bridges would be placed in or across NYSDEC Protected Streams. Instead, required construction equipment would use existing paved roadways and vehicular-accessible trails to access the Preferred Alternative alignment on either side of NYSDEC Protected Streams. In limited instances where construction equipment access is required across unprotected streams, timber mat, or similar non-invasive, bridge types would be used to span these streams from top-of-bank to top-of-bank to minimize potential temporary disturbance to unprotected stream beds and banks. No invasive bridge types, such as rock/culvert, that would require substantive grading, excavation, or disturbance related to placement and removal of bridge materials in the stream beds or banks, would be used to provide temporary construction equipment access across unprotected streams.

Where the fence is aligned parallel to water resources (i.e., where the Preferred Alternative alignment is located parallel to Stony Lonesome Brook for approximately 1,150 feet along Segment L-M), the Preferred Alternative alignment would be adjusted so that fence installation and creation of the 20-foot-wide clear zone would be above the banks of the stream to avoid indirect, temporary, adverse effects on surface waters as a result of erosion, sedimentation, and turbidity. To avoid or minimize potential indirect, temporary, adverse effects on surface water resources along the Preferred Alternative alignment, the USMA at West Point would:

- orient the fenceline approach to each stream as perpendicularly as practicable, to reduce the amount of riparian vegetation clearing that would be required along streams, thereby reducing potential temporary erosion, sedimentation, and turbidity that would result from near-stream construction activities;
- where the fenceline would be located parallel to a stream (i.e., parallel to Stony Lonesome Brook along Segment L-M), the fenceline would be located above the top of the stream banks, to avoid impacting the stream banks or bed;
- as recommended in the USMA at West Point's INRMP, maintain vegetative buffers within at least 100 feet of surface waters traversed by the Preferred Alternative alignment to the maximum extent practicable. Maintenance of vegetation buffers would in turn:

    - reduce the amount of vegetation clearing required, thereby reducing potential temporary erosion, sedimentation, and turbidity that would result from near-stream construction activities,
    - allow existing vegetation to remain undisturbed and to continue to intercept and filter overland stormwater sheet flows that potentially carry suspended sediments towards streams,
    - reduce or eliminate potential increased sediment loads in the waterbodies and associated temporary and permanent impacts to stream bottom communities and spawning beds, and,
    - retain stabilized water levels and velocities within streams, thereby reducing potential impacts to lotic (e.g., stream) systems caused by scouring, turbidity, and/or changes to thermal balance or mixing characteristics of water.
- implement its *Standard Operating Procedures: Maintenance and Construction In or Near Surface Waters* (NRB 2003, Markt 2004), to ensure potential soil erosion, sedimentation, and turbidity are minimized to the maximum extent practicable;
- implement best management practices for erosion and sedimentation control during construction activities, including installation of sediment barriers/filters, to further minimize any potential soil erosion and subsequent sedimentation of adjacent waterbodies. Any increased sediments that may enter surface water resources are expected to quickly settle out of the water column or be dispersed by the stream current, and increased turbidity is expected to cease upon completion of construction activities.

Additionally, because implementation of the Preferred Alternative would result in an area of ground disturbance greater than one acre, the USMA at West Point would prepare a full SWPPP in accordance with NYSDEC requirements, including the requisite filing of a Notice of Intent (NOI) and a Notice of Termination (NOT), to gain coverage under the NYSDEC SPDES General Construction Permit GP-02-01 for Storm Water Discharges from Construction Activities (Markt 2004).

In addition, during construction, hazardous construction materials would be identified and controlled, and any accidental spills would be contained in accordance with the *United States Military Academy Installation Spill Contingency Plan* (USMA 1996a).

Operation and maintenance activities associated with the Preferred Alternative have also been designed to avoid direct, long-term effects on surface water resources. Revegetation of temporarily cleared areas adjacent to surface water resources would be implemented, particularly to maintain a vegetative buffer within at least 100 feet of streams traversed by the proposed project alignment, as recommended in the USMA at West Point's INRMP. Original vegetation cover adjacent to streams would be restored wherever possible, and would involve short-term revegetation of cleared areas with an herbaceous seed mixture favoring native species immediately following construction activities, and eventual long-term natural reestablishment of pre-construction woody vegetation species within 100 feet of streams crossed by the Preferred Alternative. For those areas adjacent to streams that would be permanently maintained as open areas, cleared areas would be revegetated using an herbaceous seed mixture favoring native species immediately following construction activities.

A regular maintenance plan would be implemented to prevent or control undesirable or invasive species. This maintenance plan would utilize a variety of methods for managing cleared areas until vegetation cover is restored, including brush clearing, mowing, prescribed burning, or herbicide applications, as identified in the USMA at West Point's INRMP. Of these various methods for managing cleared areas until vegetative cover is restored, herbicide application within 100 feet of stream crossings would have the greatest potential for impacts to surface water resources due to surface runoff of herbicides into adjacent surface waters. Therefore, the USMA at West Point would carefully monitoring herbicide applications to ensure that water quality and aquatic species and habitats are not adversely affected by herbicides.

With the implementation of the USMA at West Point's *Standard Operating Procedures: Maintenance and Construction In or Near Surface Waters*; design measures; best management practices; impact avoidance, reduction, and mitigation measures; and SWPPP measures discussed above, as well as acquisition and compliance with a NYSDEC SPDES General

Construction Permit GP-02-01 for Storm Water Discharge from Construction Activities, construction and operation of the Preferred Alternative would not result in significant temporary or permanent adverse effects on surface water resources at the USMA at West Point as a result of erosion, sedimentation, turbidity, or hazardous waste or herbicide runoff.

4.3.3 Public and Private Water Supply Sources

The Preferred Alternative would not cross or impact any public or private wells or surface drinking water supply sources. Therefore, no impacts on public and private water supply sources are expected from implementation of the Preferred Alternative.

4.4 FISHERIES

4.4.1 Common Fisheries

Implementation of the Preferred Alternative would not have a long-term or permanent negative impact on the existing fisheries at the USMA at West Point. Because installation of the fence will be stopped at the top of the banks on both sides of each stream along segments G-T, construction of the Preferred Alternative would not result in in-stream disturbances that could have temporary or permanent impacts on fisheries within the five known waterbodies crossed by the proposed project alignment: Dassori Pond outlet and Stony Lonesome Brook along Segment K-L, Sinclair Pond Brook along Segment O-P, and the tributary to Crows Nest Brook and Crows Nest Brook along Segment R-S. Furthermore, because the Preferred Alternative would not require construction within these five waterbodies, juvenile and adult fish of decent size (trout, catfish, sunfish), as well as smaller fish species, such as minnow and killifish, would continue to swim upstream and downstream unimpeded.

Because the streams crossed by the proposed project alignment are either first or second order streams of the Hudson River, the potential exists for fish species to enter lower portions of these streams in search of food, shelter, and/or spawning habitats. However, the locations of stream crossings identified for the Preferred Alternative are located in upstream locations, such that any impacts from construction activities would not directly affect these concentration areas.

In addition to the known streams identified on the USGS topographic maps, the proposed project alignment has the potential to cross a number of unnamed intermittent or perennial streams, ravines, and drainages. Similar to the known perennial streams for the project area, transient fishery resources have the potential to use these unidentified, unnamed waterbodies in search of food, shelter, and/or spawning habitats. Prior to construction as part of the design process, the USMA at West Point's architectural and engineering contractor would perform a walkover of the Preferred Alternative alignment to identify any unmapped intermittent or perennial streams, ravines, and drainages, and the USMA at West Point's construction contractor would field-verify these locations to avoid any disturbance to the stream bed or banks of these identified surface waterbodies.

To further avoid or reduce the potential for impacts on fisheries, best management practices would be implemented during construction, including installation of sediment barriers to further contain erosion and reduce sedimentation along the proposed project alignment. In addition, during construction, hazardous construction materials would be identified and controlled, and any accidental spills would be contained in accordance with the *United States Military Academy Installation Spill Contingency Plan* (USMA 1996a). With the implementation of the design measures and best management practices discussed above, temporary and long-term effects of construction and operation activities associated with the Preferred Alternative would not result in any significant permanent adverse effects on existing fisheries at the USMA at West Point.

4.4.2 Essential Fish Habitat

The USMA at West Point has determined that the Preferred Alternative alignment would not be located within, or immediately adjacent to the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat (NRB 2004). Therefore, the Preferred Alternative would not have any significant adverse effects on the NMFS EFH-designated species and no further consultation with the NMFS would be necessary. Those portions of the Preferred Alternative along segments A-B and G-T would be located in the upland areas of the USMA at West Point property, away from the Hudson River, and therefore would not impact EFH species, which are confined to the water of the Hudson River, adjacent to the USMA at West Point property.

4.4.3 Fish Areas

Portions of the Hudson River that are within 0.5 miles of the Preferred Alternative alignment have been identified as anadromous fish concentration areas, and the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat is in the vicinity of the Preferred Alternative alignment (Ketcham 2003, NRB 2004). However, the locations of streams crossed by the proposed project alignment identified for the Preferred Alternative are in upstream locations, such that any impacts from construction activities would not directly affect these anadromous fish concentration areas or the Hudson River Mile 44-56 state-designated Significant Coastal Fish and Wildlife Habitat.

Measures to avoid or reduce temporary, short-term effects of the Preferred Alternative on anadromous fish concentration areas in the nearby Hudson River would include best management practices, which would be implemented during construction, including installation of sediment barriers to contain potential soil erosion and reduce sedimentation. Any increased sedimentation would quickly settle out of the water column or be dispersed by the currents of the Hudson River, and therefore would not have any direct, significant adverse effects on anadromous fish concentration areas.

In addition to these measures, implementation of the Preferred Alternative would be consistent with coastal zone management policies regarding Significant Coastal Fish and Wildlife Habitat, as discussed in Section 3.19.

4.5 VEGETATION

The USMA at West Point has designed the proposed project alignment to minimize impacts to vegetation to the maximum extent practicable. However, the Preferred Alternative would have some short- and long-term impacts on vegetation resulting from clearing activities. The acreage impacted relative to the total acreage present at the USMA at West Point for the communities outlined in Section 3.5 are provided in Table 5. Overall, the total acreage of these individual communities that would be impacted by the Preferred Alternative would be minor compared to the total acreage of these communities present at the USMA at West Point, ranging from <0.1 to 0.5%.

Table 4. Impacts to Vegetation from Implementation of the Preferred Alternative.

Segment	Unidentified Community Type[a]		Pine Plantation		Appalachian Oak-Hickory Forest		Chestnut Oak Forest		Oak-Tuliptree Forest		Hemlock Forest		Open[b]		Total	
	Feet	Acres[c]	Feet	Acres[c]	Feet	Acres[c]	Feet	Acres[c]	Feet	Acres[c]	Feet	Acres[c]	Feet	Acres[b]	Feet	Acres[d]
A-B[e]	-	-	-	-	176	0.0	-	-	94	0.0	208	0.0	83	0.0	561	0.0
B-G[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G-H[g]	1,125	0.4	-	-	-	-	-	-	-	-	-	-	74	<0.1	1,199	0.4
H-I[h]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I-J	-	-	-	-	-	-	-	-	-	-	-	-	687	0.3	687	0.0
J-K[h]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K-L	1,744	0.8	-	-	1,390	0.7	-	-	-	-	-	-	671	0.3	3,805	1.5
L-M	36	<0.1	-	-	342	0.2	-	-	-	-	-	-	3,361	1.5	3,739	0.3
M-N[h]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-O	-	-	56	<0.1	3,983	1.9	1,891	0.9	144	<0.1	-	-	4,131	1.8	10,205	3.0
O-P	-	-	-	-	1,345	0.6	-	-	-	-	-	-	1,075	0.5	2,420	0.6
P-Q	-	-	-	-	-	-	-	-	-	-	-	-	1,765	0.8	1,765	0.0
Q-R[h]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-S	-	-	-	-	-	-	-	-	1,085	0.5	-	-	1,234	0.4	2,319	0.5
S-T[i]	-	-	-	-	898	<0.1	-	-	1,191	<0.1	146	<0.1	859	<0.1	3,094	0.3
T-A[h]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Impacted	**2,905**	**1.3**	**56**	**<0.1**	**8,134**	**3.5**	**1,891**	**0.9**	**2,514**	**0.7**	**354**	**<0.1**	**13,940**	**5.8**	**29,794**	**6.6**
Total at USMA		**INA**		**72.54**		**1719.22**		**1344.46**		**361.45**		**638.06**		**1,159.61**		**4,135.73**
% Impacted		**INA**		**<0.1**		**0.2**		**<0.1**		**0.2**		**<0.1**		**0.5**		**0.2**

Source: Northern Ecological Associates, Inc. 2004.

Key:

[a] = The Preferred Alternative traverses some areas where community typing is not complete.

[b =] No additional clearing in open areas. No new impacts are expected from the Preferred Alignment, and these acreages are not included in total impacts.

[b] = Acreage derived by multiplying distance traversed by the Preferred Alignment by 20-foot-wide cleared area, then dividing by 43,560.

[c] = Acreage derived by multiplying distance of non-open communities traversed by the Preferred Alignment by 20-foot-wide cleared area, then dividing by 43,560.

[d] = No impacts along Segment A-B. No clearing due to use of natural terrain as perimeter security measure.

[e] = Hudson River shoreline. No impacts by Preferred Alternative alignment.

[f] = Reduced impacts along Segment G-H. Reduced clearing due to use of natural terrain as perimeter security measure.

[g] = Access gate. No impacts by Preferred Alternative alignment.

[h] = No impacts along Segment S-T. No clearing due to UXO concern.

INA = Information Not Available. The Preferred Alternative traverses some areas where community typing is not complete.

In addition to impacts on vegetation resulting from clearing activities, many of the vegetated communities within the USMA at West Point occur on highly erodable shallow soils. Measures to reduce the potential for erosion and subsequent loss of vegetation as a result of construction and maintenance activities have been identified in Section 4.2. Anticipated impacts of the Preferred Alternative to wetland communities are discussed in Section 4.6.1 and anticipated impacts to special status plant species are discussed in Section 4.8.2.

The Preferred Alternative would involve the temporary and permanent clearing of vegetation along portions of the approximately 5.8-mile project alignment along segments G-T. Approximately 12.4 acres would be affected by implementation of the Preferred Alternative, of which 5.8 acres would be temporary impacts to existing open/cleared land. The total permanent impacts resulting from implementation of the Preferred Alternative on vegetated communities (i.e., the long-term conversion of successional and forested communities to maintained open land) would be 6.6 acres (Table 5). Specifically, the Preferred Alternative would require initial clearing of vegetation and maintenance of a permanent open/cleared area approximately 15-feet wide along the interior of the fence and approximately 5-feet wide along the exterior of the fence along portions of segments G-H, N-O, and O-P. For remaining portions of Segment G-H, and segments I-J, K-L, L-M, P-Q, and R-S, new fence would be installed and/or existing fences would be incorporated or upgraded, within existing permanently open/cleared areas, such that an approximately 15-foot-wide area along the interior of the fence and approximately 5-foot-wide area along the exterior of the fence would be maintained. Impacts along these remaining segments would not involve any new clearing or conversion of vegetated communities.

The preferred method for maintenance of the approximately 20-foot-wide permanent open/cleared area would be mowing, which would be the most frequently used maintenance method (Cubbison 2004). However, additional methods for maintenance of the approximately 20-foot-wide permanent open/cleared area may also include herbicide application or controlled burning (Cubbison 2004).

Two of the vegetation types directly impacted by the Preferred Alternative are listed by the NYSDEC as significant ecological communities (Ketcham 2003). Approximately 0.2 % (3.5

acres) of Appalachian oak-hickory forest and less than 0.1 % (0.9 acres) of the chestnut-oak forest currently present at the USMA at West Point would be permanently converted to maintained open land under the Preferred Alternative.

4.6 WETLANDS, FLOODPLAINS, AND NAVIGABLE WATERWAYS

4.6.1 Wetlands

The Preferred Alternative would not directly traverse any of the 13 wetlands identified by the USACE that are within 1,000 feet of the proposed project alignment. However, the Preferred Alternative would traverse the 100-foot upland buffer zone of one of these 13 wetlands.

A portion of the Preferred Alternative that is located along Segment N-O would be located within 100 feet of a 17.9-acre USACE-identified wetland, Wetland A-80, for a distance of approximately 500 feet (Figure 10). Specifically, the proposed fence, five feet of the clear zone inside the fence, and the 5-foot clear zone outside of the fence would traverse the outer, northern edge of the 100-foot buffer zone around Wetland A-80, immediately adjacent to the north side of U.S. Route 9W, which is also located within the 100-foot buffer zone of Wetland A-80.

The USMA at West Point requires that the NRB be contacted when projects encroach the 100-foot upland buffer zone of any federally-regulated wetland. In accordance with this policy, the USMA at West Point's NRB was consulted to evaluate potential direct and indirect impacts to Wetland A-80 as a result of implementation of the Preferred Alternative. The NRB concluded that because Wetland A-80 and the proposed project alignment are separated by U.S. Route 9W, no direct or indirect impacts are expected and no further consultation or action is necessary. Therefore, implementation of the Preferred Alternative would have no adverse impacts on wetlands.

4.6.2 Floodplains

The Preferred Alternative would not be implemented along segments B-G, and would not be located within floodplains. Therefore, implementation of the Preferred Alternative would not

have a significant effect on water flow during flood events, and the Preferred Alternative would have no adverse impacts on floodplains.

4.6.3 Navigable Waterways

All of the surface waterbodies located along the Preferred Alternative alignment are considered navigable waterways under Section 404 of the Clean Water Act because they are hydrologically connected to the Hudson River. However, the Preferred Alternative has been designed to stop at the tops of the banks at each surface waterbody crossing, and thus would not cross any navigable waterways. Therefore, the Preferred Alternative alignment would have no significant adverse impacts on navigable waterways.

4.7 WILDLIFE

Construction and maintenance of the Preferred Alternative would result in temporary and permanent alteration of wildlife habitat, as well as direct impacts on wildlife such as disturbance, displacement, and mortality. These impacts are described below. Impacts to rare, threatened, and endangered wildlife species are discussed in Section 4.8.

4.7.1 Mammals, Birds, Reptiles, and Amphibians

As discussed in Section 4.5, approximately 12.4 acres of land would be affected by implementation of the Preferred Alternative, of which 5.8 acres would be temporary impacts to existing open/cleared land and 6.6 acres would be new permanent impacts due to the long-term conversion of successional and forested communities to habitats maintained as open land. The clearing of vegetation would reduce cover, nesting, and foraging habitat for some wildlife. During construction, more mobile species, such as large- to medium-sized mammals and birds, would be temporarily displaced from the construction and surrounding areas to similar habitats nearby. Some wildlife displaced by construction would occupy adjacent undisturbed habitats during construction and would likely return to the newly disturbed area soon after completion of construction. Routine maintenance activities on the permanently cleared areas would have similar but less extensive short-term displacement effects on wildlife species in the area, depending on the time of year activities are carried out. More permanent effects due to construction and maintenance activities would include mortality of less mobile species, such as

burrowing small mammals, reptiles, and amphibians, as well destruction of bird nests located within project construction areas. Direct mortality of immobile or slow-moving species would be primarily caused by the movement and compaction of earth caused by construction equipment traveling across terrestrial habitat. Indirect mortality may be caused by loss of preferred breeding, denning, and nesting habitats during critical life history stages.

In forested areas, the principal impact on wildlife would be a conversion of forest cover to maintained open land and an increase in edge habitats. As a result of this conversion, a corresponding shift in species from those favoring forest habitats (e.g., downy woodpecker, cerulean warbler) to those using edge habitats and more open areas (e.g., eastern cottontail, eastern meadowlark) would likely occur in the immediate area of disturbance. However, many species common to the habitats found along the proposed project alignment adapt well to this type of habitat conversion and would take advantage of the increased herbaceous growth and new cover type that would be found along the new fence alignment corridor. Although Canada geese are known to be attracted to open areas such as those created by the Preferred Alternative, the relatively narrow width of the newly created open areas would likely limit their use because Canada geese require large open areas for take-off and landing. Predatory species such as the red-tailed hawk, coyote, and gray fox that commonly use edge habitats as travel corridors, and for hunting the often increased small mammal and bird populations found in areas with increased edge, are expected to benefit from construction of the Preferred Alternative.

Although construction and maintenance of the Preferred Alternative may be advantageous for some species, it would create new openings in some blocks of contiguous forest habitat that may affect some forest interior species, or species that prefer large tracts of unbroken forest. The breeding success of some forest interior bird species (e.g., many vireos, warblers, and thrushes) has been shown to be limited by the size of available unbroken forest tracts (Robbins 1979, Robbins et al. 1989). For these species, additional loss of forest habitat in tracts of already marginal size could further reduce breeding success. The new open areas may also encourage population expansion of nest-parasitic species, such as the brown-headed cowbird, and also encourage population expansion of exotic species (i.e., house sparrow, European starling), which compete with many native species. The potential for this type of impact would be greatest where

the proposed project alignment would traverse smaller, isolated woodlots (Galli et al., 1976). To minimize impacts to forest interior species, the USMA at West Point has located the Preferred Alternative fence alignment in areas with existing open land and existing fence lines to the maximum extent practicable while meeting project objectives.

Installation of an almost continuous 6-foot-high, chain-link fence with an additional 1-foot of barbed wire, and a mesh size of 2-inches, could have long-term effects on the movements, behavior, and population level of some wildlife species common to the habitat types traversed by the proposed project alignment. However, no effects are expected on the movement of species of small mammals, birds, reptiles, and amphibians that are able to fit through the 2-inch mesh or are able to burrow under, or fly or climb over the fence. In addition, the movement of most medium-sized mammals would not likely be impeded or altered by the presence of the new fence due to the high mobility of these animals and the presence of several gaps in the fence at stream and road crossings. However, the altered movements caused by the presence of the new fence could indirectly affect many species of mammals and especially some species of turtles, such as box turtles, that are unable to pass through the 2-inch mesh or burrow under or climb over the fence. The new fence could cause physical stress on these species by causing them to expend extra energy attempting to cross the fence through climbing, burrowing, or by searching for a section of fence that would allow them to cross safely. The presence of the fence could cause additional stress due to isolation of individuals and possible overpopulation of restricted populations on the fence interior. Wildlife within the fence interior could essentially be isolated from preferred foraging, nesting, and resting sites, and other populations located exterior to the fence. This isolation of populations could result in inbreeding and associated loss of genetic diversity, as well as possible population declines or overpopulation within the fence interior (Beemer 2002b).

Although these indirect affects could occur, it is expected that they would be minor. Most mammals, amphibians, and reptiles that occur at the USMA at West Point have the adaptability, mobility, and behavior (e.g., burrowing, climbing) that their movements would not likely be altered or impeded to the point where stress and isolation levels would lead to a loss of genetic diversity, population decline, or overpopulation. However, the movement of some species of

turtles and mammals may be negatively affected by the fence construction by causing them to expend extra energy searching for gaps in the fence during stressful migration periods or by causing them to only find gaps at road crossings were encounters with people or vehicles would be increased.

To reduce the indirect and direct impacts of construction of the fence on turtles and wildlife in general, the USMA at West Point has selected an alternative that allows for breaks or gaps in the fence at all stream crossings and would construct the fence so that gaps underneath the fence would occur at natural breaks or dips in the topography, such as at dry drainage channels or swales. The current design of the Preferred Alternative indicates that the fence would be constructed so that a minimum of a 2-inch gap would remain between the bottom of the fence and the ground surface. However, terrain conditions at the USMA at West Point would result in an as-built reality of areas with larger gaps between the bottom of the fence and the ground surface, such that movement of small- to medium-sized animals would not be significantly impeded by construction of the fence. Furthermore, the NRB at the USMA at West Point would perform a post-construction inspection of the fence to ensure that a sufficient number of appropriately-sized gaps along the fence are present, and would construct small gaps if necessary to allow the passage of turtles and other small animals. With implementation of this construction design it is expected that there would be an adequate number of areas where wildlife, including turtles, could traverse the fence without suffering loss of genetic diversity, overpopulation, undue stress, or increased mortality. In addition, the USMA at West Point has located the Preferred Alternative fence alignment in areas with existing fence lines to the maximum extent practicable while meeting project objectives.

White-Tailed Deer

The potential for overpopulation of white-tailed deer on the fence interior at the Main Post/Academic Area was considered. Although white-tailed deer may be able to jump over the fence it is likely that most individuals would avoid doing so. Therefore, the fence could act as a barrier to white-tailed deer emigration to areas outside of the fence and could cause overpopulation and isolation of the population within the fence interior. Furthermore, the

construction of the fence would reduce hunter access to Area J3 and could reduce the number of deer harvested further contributing to the potential for overpopulation within the fence interior.

Currently, the majority of deer management measures available to the NRB, such as hunting, are being implemented and maximized at the Main Post/Academic Area. Implementation of the Preferred Alternative may result in the increase in the Main Post/Academic Area deer population to unacceptable levels. The potential deer overpopulation and/or population isolation would be minimized through fence design, post-construction population monitoring, and the implementation of deer management measures available to the NRB. The fence design includes several gaps large enough for deer to pass through at road and stream crossings significantly reducing the potential for population isolation. The USMA at West Point will monitor the deer population after construction of the fence. If the USMA at West Point does experience an increase in the white-tailed deer population at the Main Post/Academic Area due to construction of the fence, USMA will evaluate potential deer management measures so that the population can be effectively managed within the fence interior and the potential for starvation, introduction or spread of disease, and loss of genetic diversity due to inbreeding is decreased. Management measures considered may include applying for nuisance deer removal permits with the NYSDEC or providing additional gaps in the fence that would allow deer, but not vehicle, passage.

Because of the fence design, post-construction monitoring, and implementation of deer control measures in addition to those already in place, implementation of the Preferred Alternative is not expected to result in any significant short- or long-term impacts on the white-tailed deer population at the USMA at West Point.

4.7.2 Invertebrates

Implementation of the Preferred Alternative would result in some short- and long-term impacts on invertebrate communities. Similar to the impacts to vertebrate wildlife species, terrestrial invertebrate species with low mobility would experience mortality along the project alignment as a direct result of construction activities. However, most terrestrial invertebrate species would temporarily disperse from the project area during construction activities, utilizing other suitable nearby habitats. Following construction activities, most terrestrial invertebrate species that dispersed from construction areas are expected to recolonize these sites quickly. As such, the Preferred Alternative is not expected to result in any significant short- or long-term impacts on invertebrate communities at the USMA at West Point.

Of the 76 butterfly species known to occur at the USMA at West Point, the hackberry emperor (*Asterocampa celtis*) and the tawny emperor (*Asterocampa clyton*) have the greatest potential to occur in the vicinity of the project area because of their association (i.e., larval host) with hackberry (*Celtis occidentalis*), which occurs at the USMA at West Point (Deschenes 2003). The NRB at the USMA at West Point has surveyed the area where the proposed fence alignment is adjacent to Sacred Heart/Eagle Valley Cemetery where tawny emperor has been observed. One hackberry tree was found in the vicinity of the proposed alignment and is located off of the USMA at West Point property. To mitigate the potential impacts to the hackberry emperor and the tawny emperor, any hackberry trees identified in the proposed fence alignment will be retained, unless security requirements require removal. Although it is possible that one or more hackberry trees will need to be removed for construction of the Preferred Alternative, it is not expected that such removal would significantly impact populations of the hackberry emperor or tawny emperor (Deschenes 2003). The NRB at the USMA at West Point has indicated that the dusted skipper (*Atrytonopsis hianna*) could benefit from the creation of open areas associated with Preferred Alternative, which could encourage the growth of its larval host, little bluestem (*Schizachirium scoparius*) (Deschenes 2003).

Of the 100 odonate species known to occur at the USMA at West Point, the arrowhead clubtail (*Cordulegaster oblique*) has the greatest potential to occur in the vicinity of the project area because of its preference for small forested brooks (Deschenes 2003). However, given that the

fence would not be constructed across streams, the construction of the Preferred Alternative is not expected to have an impact on the arrowhead clubtail. Other odonates would be similarly unaffected by construction of the Preferred Alternative because direct impacts to wetlands and waterbodies would be avoided and indirect impacts to water quality would be minimize through the implementation of best management practices for erosion and sedimentation control (see Section 4.3)

4.8 RARE, THREATENED, AND ENDANGERED SPECIES

As discussed in Section 3.8, several studies have documented the occurrences and locations of rare, threatened, and endangered species at the USMA at West Point (Clemants and Barringer 1992, Mitchell and Tucker 1993, Barbour 1995a, Barbour 1995b, Kakerbeck 1995, Barbour 1996, Barbour 1997, and Barbour 2000). A review of the Preferred Alternative alignment by the NRB and the results of a GIS query of documented special status species locations in relation to the proposed project alignment indicated that no occurrences records are located within the proposed 20-foot-wide cleared area associated with the Preferred Alternative.

4.8.1 Animals

The bald eagle (*Haliaeetus leucocephalus*) is a federal- and state-listed threatened species likely to occur in the vicinity of the proposed project alignment. To ensure compliance with applicable endangered species regulations, the USMA at West Point has coordinated with the NYSDEC and USFWS to develop a programmatic *Endangered Species Management Plan for the Bald Eagle* (*Haliaeetus leucocephalus) on the Properties of the United States Military Academy* (Beemer 2002a). As directed by the plan, the USMA at West Point initiated informal consultations with the USFWS regarding the beneficial and adverse impacts to the bald eagle from implementation of the proposed project. The USFWS has recommended that all construction activities for the Preferred Alternative be carried out from April 1 through November 30 to avoid disrupting wintering populations of bald eagles (Stilwell 2003). If construction activities would be conducted outside this time period, the USFWS indicated that a Biological Assessment or further Section 7 consultation pursuant to the Endangered Species Act should be initiated. As result of these consultations, the USMA at West Point has agreed to restrict construction activities to the April 1 to November 30 time window.

Potential timber rattlesnake den or basking/gestation habitat has not been identified as occurring within the project area. However, potential summer foraging or transient habitat used by the timber rattlesnake has been identified as occurring within the Appalachian Oak-Hickory Forest Community type, a community type present along the proposed project alignment. Construction of the Preferred Alternative would traverse approximately 16,692 linear feet (approximately 6.5 acres) of this habitat. Specifically, section S-T is a known location for rattlesnake activity (NRB 2004). As such, transient timber rattlesnakes could be impacted if they attempt to traverse active construction areas.

According to Section 11-0535 of the NYSECL, the taking, importation, transportation, possession or sale of endangered or threatened species of wildlife is prohibited, except under license or permit from the NYSDEC. To mitigate potential impacts to the timber rattlesnake during construction of the Preferred Alternative, the USMA at West Point would monitor the proposed alignment for timber rattlesnake activity when construction is scheduled between April and September. In addition, as recommended by the NRB construction within segment S-T would be limited to early April (April 1-15) or October through November (NRB 2004).

In the event of a timber rattlesnake encounter during construction activities, the USMA at West Point has a verbal agreement with the NYSDEC to move timber rattlesnakes to a suitable, off-site rookery, den, or foraging habitat (Beemer 2002b). This verbal agreement identifies that a Natural Resource Biologist for the USMA at West Point would be notified in case of an encounter and that this individual would handle and translocate individual timber rattlesnakes.

4.8.2 Plants

The NRB has identified seven state-listed endangered and threatened plant species with occurrence records within 1,000 feet of the proposed project area (Table 3) (NRB 2004). The nearest known location to the Preferred Alternative alignment is 757 feet for the racemed pinweed. To ensure that the proposed project alignment would avoid impacts to these sensitive plant species, all known occurrences of special status plant species were taken into consideration during the design of the Preferred Alternative. In addition, implementation of best management practices and design measures regarding soil protection and restoration of disturbed areas would

ensure the protection of any state-listed endangered or threatened plant species from any indirect effects associated with implementation of the Preferred Alternative.

4.9 LAND USE AND ZONING

4.9.1 Land Use and Local Zoning

Those portions of the Preferred Alternative alignment that are located within segments A-B, G-M, and P-T would have no significant effect on existing land uses. However, those portions of the Preferred Alternative that are located along segments N-P, in the northwestern part of the Main Post/Academic Area, would have an adverse effect on some existing land uses. These segments of the Preferred Alternative are located within the Industrial/Field Training/Recreation Zone. Existing land uses along these segments of the Preferred Alternative are generally associated with summer field training, including a number of formal and informal vehicle accessible and hiking trails that are located throughout this area. The construction of a perimeter security fence within a 20-foot-wide clear zone would create a physical barrier through portions of this relatively undeveloped area. This physical barrier would prevent or inhibit movement of training groups through this area, particularly where the Preferred Alternative alignment intersects the trails, and could restrict existing and future use of this area for training purposes.

4.9.2 Planned Developments

Implementation of additional actions and the Preferred Alternative would be consistent with the *USMA Master Plan for the Year 2007* (USMA 1998b). The potential contribution of the Preferred Alternative to cumulative effects is addressed in Section 6.0.

4.9.3 Generation and Disposal of Waste Material

Construction of the Preferred Alternative would temporarily generate various typical solid construction and demolition debris that would be minor compared to the total amount of solid waste generated per year at USMA at West Point. The USMA at West Point would develop a Construction and Demolition Waste Management Plan that would include leaving large construction and demolition debris on site, spreading chipped brush across the 20-foot-wide clear zone, and rolling rocks into the wood line. Construction would therefore have a minor, temporary impact on the generation and disposal of waste material.

Routine maintenance activities associated with the Preferred Alternative would not generate a significant increase in the amount of ordinary, non-hazardous solid waste compared to current land uses in the immediate project area. The generation of any such waste would be managed by the placement, maintenance, and periodic collection of adequate trash receptacles, and would be either recycled or disposed of at the USMA Transfer Station located at Range 3, prior to being transported off-site to an approved waste disposal site in accordance with USMA at West Point refuse management plans. Routine maintenance activities associated with the Preferred Alternative also would not generate a significant increase in the amount of wastewater and sewage that is already being produced by current land uses in the immediate area, treated at the Target Hill Wastewater Treatment Facility, and ultimately discharged into the Hudson River in accordance with the USMA's SPDES permit.

4.9.4 Recreational and Other Designated Facilities

Those portions of the Preferred Alternative that are located along segments G-M and P-T would have no significant effect on land uses associated with recreational facilities or areas. However, those portions of the Preferred Alternative that are located along segments N-P would have a number of effects on land uses associated with recreational facilities at the USMA at West Point, which are discussed in greater detail below.

The Preferred Alternative would also have an effect on four formally-designated recreation or special uses areas, as the physical barriers created by the Preferred Alternative could ultimately result in an unintended reduction in the use of interior areas in the vicinity of these segments. The effect of the Preferred Alternative on the West Point Military Academy, Contemporary West Point Military Academy, and Hudson Highland subunits of the HHSASS is discussed in Section 4.10. The effect of the Preferred Alternative on the West Point NHLD is discussed in Section 4.11.

The construction of a perimeter security fence within an approximately 20-foot-wide clear zone along segments N-P would have a negative effect on land uses associated with physical and military training activities, and recreational activities along these segments, including the use of the formal and informal vehicle accessible and hiking trails that are located throughout this area,

and the use of five summer training areas (J2 through J5, and G-2) for hunting in the late fall and early winter. Specifically, the Preferred Alternative would also create physical barriers where the proposed project alignment intersects formal and informal vehicle accessible and hiking trails, preventing through-travel by physical and military training programs and recreational users, as well as by public through-hikers who obtain access to the USMA at West Point from adjacent highways, state parks and forests, and the Town of Highlands. Furthermore, the Preferred Alternative would create a physical barrier that would prevent or inhibit movement of hunters through portions of this relatively undeveloped area, potentially resulting in a negative impact on the use of hunting as a wildlife management measure, particularly the use of restricted deer hunting as a method of controlling the deer population within the Main Post/Academic Area of the USMA at West Point. It should be noted that public through-hikers and hunters who are not associated with the USMA at West Point would be considered trespassers, and are, consequently, not stakeholders in the EA.

Measures to reduce the effects of the Preferred Alternative on the various recreational activities within interior areas of the Main Post/Academic Area would include the installation of lockable gates where the proposed project alignment would cross formal, vehicle-accessible trails, such that physical and military training programs would remain feasible. Measures to reduce the effects of the Preferred Alternative on the use of restricted deer hunting as a method of controlling the deer population within the Main Post/Academic Area would include applying for NYSDEC Deer Damage Control Permits or bonus tags (for bow-hunting only), which could be incorporated into the regular hunting seasons set by the USMA at West Point.

4.10 VISUAL RESOURCES

As indicated in Section 3.10, a viewshed analysis of the proposed project alignment has been conducted to formally identify areas of potential impact by the Preferred Alternative. The results of this viewshed analysis indicated that the Preferred Alternative would have an adverse effect on visual resources associated with each the 14 historic views of or within the Main Post/Academic Area of the USMA at West Point identified in Section 3.10 (Loechl and Tooker 2003). These 14 historic views are comprised of the wide variety of visual resources present at the USMA at West Point, including internal and external views that contain portions of the

NHLD at the USMA at West Point (consisting of natural and cultural landscapes associated with roads and roadways, views, athletic fields, and the waterfront, and two historic feature landscapes comprised of the Lee and Thayer/Wilson housing areas), internal views that contain portions of several small communities within the Main Post/Academic Area with unique aesthetic landscapes, external views that contain natural and cultural landscapes associated with the HHSASS, and external views that are significant to the aesthetic qualities of public recreational areas or transportation routes adjacent to the Main Post/Academic Area.

Following the determination that the Preferred Alternative would have adverse effects on these 14 historic views, the viewshed analysis provided an assessment of the significance of these adverse effects, and recommended mitigation measures to reduce or avoid adverse effects on the 14 historic views impacted by the Preferred Alternative. These mitigation measures, which are discussed in greater detail below, have been used in conjunction with the 30% design plans for the Preferred Alternative to reduce or avoid the adverse effects of the Preferred Alternative on visual resources within internal and external viewsheds of the Main Post/Academic Area, particularly those visual resources associated with the historic, architectural, aesthetic, and natural landscapes that have been identified in Section 3.10.

Scenic Hudson, an Interested Party for the Project, identified a number of concerns regarding potential adverse effects on a number of visual resources associated with views of the Main Post/Academic Area (Anzevino 2003). In general, Scenic Hudson's concerns overlapped with the findings of the viewshed analysis for the Preferred Alternative. Specifically, Scenic Hudson identified concerns regarding potential adverse effects by the Preferred Alternative on visual resources associated with views from overlooks along NYS Route 9W (a state-designated Scenic Byway), and with views from Storm King State Park, Crows Nest Mountain, and the Black Rock Forest Preserve. To address these potential adverse effects on visual resources, Scenic Hudson requested that the USMA at West Point prepare a visual analysis with computer-generated visual simulations of anticipated appearance of the Preferred Alignment from these visually sensitive areas (Anzevino 2004). In response to this request, the USMA at West Point will forward a copy of the viewshed analysis prepared for the Preferred Alternative to Scenic Hudson for their review.

Scenic Hudson also requested that the USMA at West Point consider integrating the design of the Preferred Alternative with the design of two additional projects proposed by the USMA at West Point, the proposed Stony Lonesome Water Tank Project, and the proposed Security Gate Access Upgrade Project, to further reduce or avoid potential adverse effects to visual resources within the Main Post Academic Area. Specifically, Scenic Hudson requested the integration of the design of the Preferred Alternative with the design of the proposed Stony Lonesome Water Tank Project, to ensure that vegetation intended to screen the proposed Stony Lonesome Water Tank Project would not be reduced during construction of the Preferred Alternative (Anzevino 2004). Additionally, Scenic Hudson requested the integration of the design of the Preferred Alternative with the design of the Security Gate Access Upgrade Project, to ensure that the appearance of the Thayer, Stony Lonesome, and Washington security gates for the Main Post/academic Area retain their visual and historic qualities which provide favorable, lasting first impressions for visitors to the USMA at West Point (Anzevino 2004). In response to these requests, the USMA at West Point will integrate the design of the Preferred Alternative with the design of two additional projects proposed by the USMA at West Point, the proposed Stony Lonesome Water Tank Project, and the proposed Security Gate Access Upgrade Project, to further reduce or avoid potential adverse effects to visual resources within the Main Post Academic Area.

The specific mitigation measures recommended for each of the 14 historic views impacted by the Preferred Alternative, as identified below, would be implemented in accordance with the USMA at West Point's management plans for the visual resources associated with these landscapes, including the *Historic Landscape Management Plan for the U.S. Military Academy at West Point*, the *United States Military Academy Installation Design Guide*, and the *Identification and Analysis of the Historic Built Environment and Viewsheds, Cadet Zone* (Loechl et al. 2001, Design Collaborative, Inc. et al. undated, Halin et al. 2003).

View of Lee Gate

The proposed alignment of the Preferred Alternative along portions of segments S-T and A-B would have a moderate to severe adverse effect on the visual resources associated with internal and external views of Lee Gate (Loechl and Tooker 2003), internal views from upper portions of

the Lee Housing Area which is a component landscape of the NHLD at the USMA at West Point (Loechl et al. 2001), views associated with the aesthetically unique landscape of the Cadet Support Community (Design Collaborative, Inc. et al. undated), and views associated with the Contemporary West Point Military Academy Subunit of the HHSASS (NYSDOS 1993). However, mitigation measures developed in conjunction with the 30% design plan for the project would significantly reduce or avoid this moderate to severe adverse effect by: eliminating cleared areas associated with the security fence to be installed along Segment S-T due to UXO concerns; using wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post to construct portions of the security fence that are adjacent to the west side of the Lee Gate, along Segment S-T; using black, PVC-coated, 2-inch mesh chain-link along remaining portions of the security fence along Segment S-T located in visible areas; and eliminating security fence and associated cleared areas adjacent to the east side of the Lee Gate, along Segment A-B, due to both UXO concerns and the use of naturally steep and thickly vegetated terrain along this segment as a natural barrier.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along segments S-T and A-B would have no significant adverse effects on visual resources associated with internal and external views of the Lee Gate, or internal views from upper portions of the Lee Housing Area, which is a component landscape of the NHLD at the USMA at West Point, views associated with the aesthetically unique landscape of the Cadet Support Community, and views associated with the Contemporary West Point Military Academy Subunit of the HHSASS.

View from Cold Springs and Constitution Island

The proposed alignment of the Preferred Alternative along Segment A-B would have a moderate to severe adverse effect on the visual resources associated with external views of the USMA at West Point from the Hudson River, Cold Springs, Constitution Island, and communities and residences along the eastern shoreline of the Hudson River (Loechl and Tooker 2003), as well as internal views from upper portions of the Lee Housing Area, which is a component landscape of the NHLD at the USMA at West Point (Loechl et al. 2001), views associated with the aesthetically unique landscape of the Cadet Support Community (Design Collaborative, Inc. et al. undated), and views associated with the Contemporary West Point Military Academy Subunit of the HHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate to severe adverse effect would be significantly reduced or avoided because there would be no security fence or associated cleared areas adjacent to the east side of the Lee Gate, along Segment A-B, due to both UXO concerns and the use of naturally steep and thickly vegetated terrain along this segment as a natural barrier.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along Segment A-B would have no significant adverse effects on visual resources associated with external views of the USMA at West Point from the Hudson River, Cold Springs, Constitution Island, and communities and residences along the eastern shoreline of the Hudson River, or internal views from upper portions of the Lee Housing Area, which is a component landscape of the NHLD at the USMA at West Point, views associated with the aesthetically unique landscape of the Cadet Support Community, and views associated with the Contemporary West Point Military Academy Subunit of the HHSASS.

View from Hudson River Traveling by Boat

The proposed alignment of the Preferred Alternative along portions of Segment G-H would have a moderate to severe adverse effect on the visual resources associated with the external view of the USMA at West Point from boat traffic along the Hudson River, including leisure boats, barges, and tourist boats (Loechl and Tooker 2003), as well as views associated with the Contemporary West Point Military Academy and West Point Military Academy subunits of the

HHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate to severe adverse effect would be significantly reduced or avoided because there would be no security fence or associated cleared areas along that portion of Segment G-H close to the Hudson River due to the use of naturally steep and thickly vegetated terrain along this segment as a natural barrier.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along this portion of Segment G-H would have no significant adverse effects on visual resources associated with the external view of the USMA at West Point from boat traffic along the Hudson River, including leisure boats, barges, and tourist boats, or views associated with the Contemporary West Point Military Academy and West Point Military Academy subunits of the HHSASS.

View from Garrison

The proposed alignment of the Preferred Alternative along portions of Segment G-H would have a moderate to severe adverse effect on the visual resources associated with the external view of the USMA at West Point from Garrison (Loechl and Tooker 2003), as well as views associated with the West Point Military Academy Subunit of the HHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate to severe adverse effect would be significantly reduced or avoided because there would be no security fence or associated cleared areas along that portion of Segment G-H close to the Hudson River due to the use of naturally steep and thickly vegetated terrain along this segment as a natural barrier.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along this portion of Segment G-H would have no significant adverse effects on visual resources associated with the external view of the USMA at West Point from Garrison, or views associated with the West Point Military Academy Subunit of the HHSASS.

View of Thayer Gate

The proposed alignment of the Preferred Alternative along portions of segments G-H and I-J would have a moderate to severe adverse effect on the visual resources associated with the internal and external views of Thayer Gate (Loechl and Tooker 2003), including views from the two historic structures associated with Thayer Gate (Building 608 [the Thayer Gate Sentry Station] and Building 610 [the Thayer Gate Public Toilet]) (NPS 1984, Geo-Marine, Inc. 2001), the Thayer Hotel (Loechl and Tooker 2003), buildings and spaces associated with the aesthetically unique landscape of the Buffalo Soldiers Field Community (Design Collaborative, Inc. et al. undated), and views associated with the West Point Military Academy Subunit of the HHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate to severe adverse effect would be significantly reduced or avoided because: portions of the security fence that are adjacent to both sides of the Thayer Gate would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post; remaining portions of the security fence along segment G-H and I-J would be located in a visible area, and fencing material would consist of black, PVC-coated, 2-inch mesh chain-link; and minimal additional clearing of trees and other screening vegetation would be necessary to maintain the existing open/cleared areas on both sides of the fence along portions of segment G-H and I-J. Furthermore, these design measures would be integrated with the design of the proposed Security Access Gate Upgrade Project to ensure that the appearance of the Thayer Security Gate for the Main Post/Academic Area retains its visual and historic qualities that provide favorable, lasting first impressions for visitors to the USMA at West Point.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along segments G-H and I-J would have no significant adverse effects on visual resources associated with internal and external views of the Thayer Gate, including the two historic structures associated with Thayer Gate (Building 608 [the Thayer Gate Sentry Station] and Building 610 [the Thayer Gate Public Toilet]), the Thayer Hotel, buildings and spaces associated with the aesthetically unique landscape of the Buffalo Soldiers Field Community, or views associated with the West Point Military Academy Subunit of the HHSASS.

View of Wilson Gate

The proposed alignment of the Preferred Alternative along portions of segments I-J and K-L would have a low adverse effect on the visual resources associated with the internal and external views of Wilson Gate, internal views from two historic buildings along the southern boundary of the USMA at West Point (Building 620 [Company Headquarters and Barracks] and Building 618 [the Public Toilet]) (NPS 1984, Geo-Marine, Inc. 2001, Loechl and Tooker 2003), views associated with the aesthetically unique landscape of the Stony Lonesome Community (Design Collaborative, Inc. et al. undated), or views associated with the Highlands Subunit of the HHHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this low adverse effect would be significantly reduced or avoided because: portions of the security fence that are adjacent to both sides of the Wilson Gate would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post; remaining portions of the security fence along segment I-J and K-L would be located in a visible area, and fencing material would consist of black, PVC-coated, 2-inch mesh chain-link; and no additional clearing of trees and other screening vegetation would be necessary to maintain the existing open/cleared areas on both sides of the fence along portions of segments I-J and K-L.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along segments I-J and K-L would have no significant adverse effects on visual resources associated with internal and external views of the Wilson Gate, internal views from the two historic buildings along the southern boundary of the USMA at West Point (Building 620 [Company Headquarters and Barracks] and Building 618 [the Public Toilet]), views associated with the aesthetically unique landscape of the Stony Lonesome Community, or views associated with the Highlands Subunit of the HHSASS.

View from Redoubts 1 and 2 and Associated Batteries

The proposed alignment of the Preferred Alternative along portions of Segment L-M would have a moderate adverse effect on the visual resources associated with the external views from Redoubts 1 and 2 and their associated batteries (Loechl and Tooker 2003), as well as views associated with the aesthetically unique landscape of the Stony Lonesome Community (Design

Collaborative, Inc. et al. undated), and views associated with the Highlands Subunit of the HHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate adverse effect would be significantly reduced or avoided by performing minor adjustments to the propose alignment of the Preferred Alternative along portions of Segment L-M, such that the fence and its associated cleared area would be located further up the hillside along the north side of NYS Route 218/U.S. Route 9W. Thus, the steeply sloping terrain along this segment would screen the Preferred Alternative from these views, while retaining adequate perimeter security.

As a result of implementation of these measures, the proposed alignment of the Preferred Alternative would not be visually intrusive within views from Redoubts 1 and 2, and the proposed alignment for the Preferred Alternative along Segment L-M would have no significant adverse effects on visual resources associated with the external views from Redoubts 1 and 2 and their associated batteries, views associated with the aesthetically unique landscape of the Stony Lonesome Community, or views associated with the Highlands Subunit of the HHSASS. Furthermore, implementation of these mitigation measures for the Preferred Alternative along these portions of Segment L-M would result in a beneficial effect on the external views from Redoubts 1 and 2 and their associated batteries, by minimizing the existing views of NYS Route 218/U.S. Route 9W from these same vantage points.

Views of Stony Lonesome Gate

The proposed alignment of the Preferred Alternative along portions of segments L-M and N-O would have a low adverse effect on the visual resources associated with internal and external views of Stony Lonesome Gate (Loechl and Tooker 2003), which, while not a historic structure (Loechl and Tooker 2003), is an open point of entry to the USMA at West Point that is visible from portions of U.S. Route 9W and NYS Route 218 (Old Storm King Highway), which are designated New York Scenic Highways (NYSDOT 2003), as well as views associated with the aesthetically unique landscapes of the Stony Lonesome and Service Member Support communities (Design Collaborative, Inc. et al. undated), and views associated with the Highlands Subunit of the HHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this low adverse effect would be

significantly reduced or avoided because: portions of the security fence that are adjacent to the Stony Lonesome Gate and remaining portions of the security fence along segments L-M and N-O, located in a visible areas, would consist of black, PVC-coated, 2-inch mesh chain-link; and minimal additional clearing of trees and other screening vegetation would be necessary to create open/cleared areas on both sides of the fence along these portions of segments L-M and N-O. Furthermore, these design measures would be integrated with the design of the proposed Security Access Gate Upgrade Project to ensure that the appearance of the Stony Lonesome Security Gate for the Main Post/Academic Area retains its visual and historic qualities that provide favorable, lasting first impressions for visitors to the USMA at West Point.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along segments L-M and N-O would have no significant adverse effects on visual resources associated with internal and external views of the Stony Lonesome Gate, views associated with the aesthetically unique landscapes of the Stony Lonesome and Service Member Support communities, or views associated with the Highlands Subunit of the HHSASS. Furthermore, implementation of these mitigation measures would ensure that internal and external views of the Stony Lonesome Gate remain visually pleasing.

Views from Highland Falls Community Cemeteries

The proposed alignment of the Preferred Alternative along portions of Segment N-O would have a moderate adverse effect on the visual resources associated with the external views from two cemeteries for the Highland Falls community, the Sacred Heart Catholic Cemetery and Eagle Valley Cemetery, which are located along NYS Route 218, a designated New York State Scenic Highway (Loechl and Tooker 2003, NYSDOT 2003), as well as views associated with the aesthetically unique landscapes of the Stony Lonesome and Service Member Support communities (Design Collaborative, Inc. et al. undated), and views associated with the Highlands Subunit of the HHSASS (NYSDOS 1993). However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate adverse effect would be significantly reduced or avoided if the Preferred Alternative along portions of Segment N-O could be realigned such that the fence and its associated cleared area would be further inside wooded areas adjacent to these cemeteries, so that the fence would not be visible from the

cemeteries. If realignment of the Preferred Alternative along this portion of Segment N-O would not be possible, this moderate adverse effect would be significantly reduced or avoided if portions of the security fence that are adjacent to these cemeteries would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post, and if native woodland vegetation could be planted to both screen the fence and its cleared area, while retaining adequate perimeter security.

As a result of implementation of either of these measures, the proposed alignment for the Preferred Alternative along this portion of Segment N-O would have no significant adverse effects on visual resources associated with external views from two cemeteries for the Highland Falls community, the Sacred Heart Catholic Cemetery and Eagle Valley Cemetery, which are located along NYS Route 218, a designated New York State Scenic Highway (NYSDOT 2003), views associated with the aesthetically unique landscapes of the Stony Lonesome and Service Member Support communities, or views associated with the Highlands Subunit of the HHSASS.

Views from U.S. Route 9W Scenic Overlooks

The proposed alignment of the Preferred Alternative along portions of segments N-T would have a moderate to severe adverse effect on the visual resources associated with the external views from U.S. Route 9W, a designated New York State Scenic Highway (NYSDOT 2003), and its scenic overlooks, particularly because the cleared area associated with the proposed alignment would result in a visually imposing straight line through existing forest vegetation, similar to a utility line cut (Loechl and Tooker 2003). The proposed alignment of the Preferred Alternative along portions of segments N-T may have additional moderate to severe adverse effects on views associated with the aesthetically unique landscapes of the Service Member Support, Recreational Support, Washington Gate Industrial, and North Support communities (Design Collaborative, Inc. et al. undated), views associated with the Highlands and Contemporary West Point Military Academy subunits of the HHSASS (NYSDOS 1993), and views from the Black Rock Forest Preserve and Storm King State Park. However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate adverse effect would be significantly reduced or avoided if the Preferred Alternative along portions of Segment N-T parallel to the ski slope could be realigned such that the fence and its associated cleared area

would be located adjacent to the eastern edge of the ski runs, such that the existing open/cleared area of the ski runs could be incorporated into the proposed alignment of the Preferred Alternative, thus reducing the amount of new cleared area for the project (maintaining large, canopy-level trees), without creating a safety hazard for skiers. Furthermore, these design measures would be integrated with the design of the nearby proposed Stony Lonesome Water Tank Project, to ensure that vegetation intended to screen the proposed Stony Lonesome Water Tank Project would not be reduced during construction of the Preferred Alternative, further reducing or avoiding potential adverse effects to visual resources from this visually sensitive area.

As a result of implementation of these measures, the proposed alignment of the Preferred Alternative would have no significant adverse effects on visual resources associated with the external views from U.S. Route 9W, a designated New York State Scenic Highway (NYSDOT 2003), and its scenic overlooks, views associated with the aesthetically unique landscapes of the Service Member Support, Recreational Support, Washington Gate Industrial, and North Support communities, views associated with the Highlands and Contemporary West Point Military Academy subunits of the HHSASS, or views from the Black Rock Forest Preserve and Storm King State Park.

View from Crows Nest Mountain

The proposed alignment of the Preferred Alternative along portions of segments N-P would have a moderate adverse effect on the visual resources associated with the external views from Crows Nest Mountain, particularly where the proposed project alignment would be located parallel to the ski slope at the USMA at West Point, and across the top of the hill perpendicular to the ski slope (Loechl and Tooker 2003). The proposed alignment of the Preferred Alternative along portions of segments N-T may have additional moderate to severe adverse effects on views associated with the aesthetically unique landscapes of the Service Member Support and Recreational Support communities (Design Collaborative, Inc. et al. undated), views associated with the Highlands and Contemporary West Point Military Academy subunits of the HHSASS (NYSDOS 1993), and views from the Black Rock Forest Preserve and Storm King State Park. However, because of mitigation measures developed in conjunction with the 30% design plan for

the project, this moderate adverse effect would be significantly reduced or avoided if the Preferred Alternative along portions of Segment N-P parallel with the ski slope could be realigned such that the fence and its associated cleared area would be located adjacent to the eastern edge of the ski runs, and the existing open/cleared area of the ski runs could be incorporated into the proposed alignment of the Preferred Alternative, thus reducing the amount of new cleared area for the project, without creating a safety hazard for skiers. This moderate adverse effect would be further reduced or avoided if the Preferred Alternative along portions of Segment N-P perpendicular to the ski slope could also be realigned such that the fence and its associated cleared area would be located along the highest point of the ridgeline. Furthermore, these design measures would be integrated with the design of the nearby proposed Stony Lonesome Water Tank Project, to ensure that vegetation intended to screen the proposed Stony Lonesome Water Tank Project would not be reduced during construction of the Preferred Alternative, further reducing or avoiding potential adverse effects to visual resources from this visually sensitive area.

As a result of implementation of these measures, the proposed alignment of the Preferred Alternative would have no significant adverse effects on visual resources associated with the external views from Crows Nest Mountain, particularly where the proposed project alignment would be located in the vicinity of the ski slope at the USMA at West Point, views associated with the aesthetically unique landscapes of the Service Member Support and Recreational Support communities, views associated with the Highlands and Contemporary West Point Military Academy subunits of the HHSASS, or views from Black Rock Forest Preserve and Storm King State Park.

Views of Washington Gate

The proposed alignment of the Preferred Alternative along portions of segments P-Q and R-S would have a moderate adverse effect on the visual resources associated with internal and external views of Washington Gate (Loechl and Tooker 2003), including views from two historic structures associated with Washington Gate (Building 711 [the Washington Gate Sentry Station] and Building 729 [Public Toilet]) (NPS 1984, Geo-Marine, Inc. 2001); Washington Road, a historic road within the Main Post/Academic Area that is considered highly significant to the

landscape of the USMA at West Point (Loechl et al. 2001); and NYS Route 218 (Old Storm King Highway), which is a designated New York State Scenic Highway (NYSDOT 2003); as well as views associated with the aesthetically unique landscapes of the Washington Gate Industrial and North Support communities (Design Collaborative, Inc. et al. undated), views associated with the Contemporary West Point Military Academy Subunit of the HHSASS (NYSDOS 1993), and views from the Black Rock Forest Preserve and Storm King State Park. However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate adverse effect would be significantly reduced or avoided because: portions of the security fence that are adjacent to the Washington Gate, along segments P-Q and R-S, would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post; remaining portions of the security fence along segments P-Q and R-S would be located in a visible area, and fencing material would consist of black, PVC-coated, 2-inch mesh chain-link; and no additional clearing of trees and other screening vegetation would be necessary to maintain the existing open/cleared areas on both sides of the fence along portions of segments P-Q and R-S. Furthermore, these design measures would be integrated with the design of the proposed Security Access Gate Upgrade Project to ensure that the appearance of the Washington Security Gate for the Main Post/Academic Area retains its visual and historic qualities that provide favorable, lasting first impressions for visitors to the USMA at West Point.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along segments P-Q and R-S would have no significant adverse effects on visual resources associated with internal and external views of the Washington Gate, including views from the two historic structures associated with Washington Gate (Building 711 [the Washington Gate Sentry Station] and Building 729 [Public Toilet]), from Washington Road, and from NYS Route 218 (Old Storm King Highway), as well as views associated with the aesthetically unique landscapes of the Washington Gate Industrial and North Support communities, views associated with the Contemporary West Point Military Academy Subunit of the HHSASS, or views from the Black Rock Forest Preserve and Storm King State Park.

Views from NYS Route 218

The proposed alignment of the Preferred Alternative along portions of segments R-T would have a moderate to severe adverse effect on the visual resources associated with the external views from NYS Route 218 (Loechl and Tooker 2003), which is a designated New York State Scenic Highway (NYSDOT 2003), as well as views associated with the aesthetically unique landscape of the North Support Community (Design Collaborative, Inc. et al. undated), views associated with the Contemporary West Point Military Academy Subunit of the HHSASS (NYSDOS 1993), and views from the Black Rock Forest Preserve and Storm King State Park. However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate to severe adverse effect would be significantly reduced or avoided along Segment R-T because: portions of the security fence that are adjacent to the Washington Gate, along Segment R-S, would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post; remaining portions of the security fence along Segment R-S would be located in a visible area, and fencing material would consist of black, PVC-coated, 2-inch mesh chain-link; no additional clearing of trees and other screening vegetation would be necessary to maintain the existing open/cleared areas on both sides of the fence along portions of Segment R-S; a heavily forested buffer exists between NYS Route 218 and the proposed project alignment along Segment S-T; and there would be no cleared areas associated with the security fence that will be installed along Segment S-T due to UXO concerns.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along segments R-T would have no significant adverse effects on visual resources associated with internal and external views of the Washington Gate, views associated with the aesthetically unique landscape of the North Support Community, views associated with the Contemporary West Point Military Academy Subunit of the HHSASS, or views from the Black Rock Forest Preserve and Storm King State Park.

Views from the Lee Housing Area

The proposed alignment of the Preferred Alternative along portions of Segment S-T would have a moderate to severe adverse effect on the visual resources associated with internal views from upper portions of the Lee Housing Area (Loechl and Tooker 2003), a component landscape of

the NHLD at the USMA at West Point (Loechl et al. 2001), particularly views from Buildings 260, 274, 276, 278, and 298-299 [Family Housing for Lieutenants, Colonels, and Majors], which are located within the Lee Housing Area and considered historic structures (NPS 1984, Geo-Marine, Inc. 2001, Loechl and Tooker 2003), as well as views associated with the aesthetically unique landscape of the North Support Community (Design Collaborative, Inc. et al. undated), views associated with the Contemporary West Point Military Academy Subunit of the HHSASS (NYSDOS 1993), and views from Storm King State Park. However, because of mitigation measures developed in conjunction with the 30% design plan for the project, this moderate to severe adverse effect would be significantly reduced or avoided because: portions of the security fence along Segment S-T would be located in a visible area, and fencing material would consist of black, PVC-coated, 2-inch mesh chain-link; and there would be no cleared areas associated with the security fence that will be installed along Segment S-T due to UXO concerns.

As a result of implementation of these measures, the proposed alignment for the Preferred Alternative along segments S-T would have no significant adverse effects on visual resources associated with internal views from upper portions of the Lee Housing Area, including internal views from Buildings 260, 274, 276, 278, and 298-299, views associated with the aesthetically unique landscape of the North Support Community, views associated with the Contemporary West Point Military Academy Subunit of the HHSASS, or views from Storm King State Park.

4.11 CULTURAL RESOURCES

Architecturally, the Preferred Alternative traverses a large alignment that is located near a wide variety of structures within the Main Post/Academic Area of the USMA at West Point (e.g., structures within the Cadet, Cadet Support, and Community Support zones). In particular, the proposed alignment of the Preferred Alternative is positioned in the vicinity of a number of structures within the NHLD that have been designated as Category I and II structures in the HABS/HAER inventory for the USMA at West Point (NPS 1984), identified as individually eligible for the NRHP, and/or identified as contributing elements to the NHLD at the USMA at West Point (Geo-Marine, Inc. 2001). These buildings have been designated and/or identified as contributing significantly to the national cultural heritage and serve as major focal points related to the history of the USMA at West Point.

Measures developed by the USMA at West Point to reduce and/or mitigate adverse effects on extant historic structures within the NHLD at the USMA at West Point consist of varying design plans for the fabric of the security fence. Along highly visible areas along the proposed project alignment, particularly in the vicinity of the five security gates at the Main Post/Academic Area of the USMA at West Point and in the vicinity of the Sacred Heart/Eagle Valley Cemeteries, the security fence would consist of wrought iron, set in granite pedestals, similar to the fence currently under construction at South Post. Along low to moderately visible areas, particularly in the vicinity of existing residential and commercial areas and along portions of Stony Lonesome Road and NYS Route 218 and U.S. Route 9W, fencing material would consist of black, PVC-coated, 2-inch mesh chain-link.

The USMA at West Point would continue to evaluate the design plans for the Preferred Alternative in consultation with the NYSOPRHP as necessary, to ensure the continued incorporation of existing architectural cues from the larger NHLD at the USMA at West Point. As part of this evaluation process, the USMA at West Point would perform site visits as necessary along the proposed alignment for the Preferred Alternative, to ensure that the Preferred Alternative would have no adverse effects on historic structures as the USMA at West Point.

Archaeologically, the Preferred Alternative traverses a large alignment with moderate to high sensitivity for the presence of archaeological resources. A Phase I Cultural Resource Investigation was conducted for the Preferred Alternative to determine the presence of previously unidentified cultural resources (Hanley et al. 2003). Results of the Phase I cultural resources investigation indicated that one prehistoric archaeological site, two historic isolated archaeological finds, and nine historic dry-stacked stone walls were identified along the proposed project alignment (Hanley et al. 2003). A Phase II cultural resource investigation was recommended for the prehistoric archaeological site if the proposed project alignment could not be shifted to avoid the site (Hanley et al. 2003). No further cultural resource investigations were recommended for the two historic isolated archaeological finds (Hanley et al. 2003). Although none of the nine dry-stacked stone walls appear to be potentially eligible for the NRHP, it was recommended that potential impacts to these walls during construction activities should be minimized if practical (Hanley et al. 2003).

Mitigation measures to reduce or avoid adverse effects on cultural resources by the Preferred Alternative have been developed by the USMA at West Point for the prehistoric archaeological site and the nine dry-stacked stone walls identified along the proposed project alignment. Measures developed by the USMA at West Point to mitigate adverse effects on the prehistoric archaeological site would consist of the realignment of the Preferred Alternative to avoid impacting the prehistoric archaeological site. An assessment of the proposed realignment indicated that the proposed realignment would traverse an area of low archaeological sensitivity, with steep terrain with greater than 25% slope (Hanley et al. 2003), and no disturbance of additional cultural resources would be anticipated. The NYSOPRHP concurs with this measure to avoid impacting the prehistoric archaeological site (Adams 2003).

Measures developed by the USMA at West Point to mitigate adverse effects on the nine dry-stacked stone walls traversed by the proposed alignment of the Preferred Alternative would consist of: the creation of formal plans and elevations for, and accompanying photodocumentation of, both sides of those portions of the nine dry-stacked stone walls prior to construction activities for the Preferred Alternative; dismantling those portions of the nine dry-stacked stone walls within the construction right-of-way prior to construction activities for the Preferred Alternative; and reconstructing those portions of the nine dry-stacked stone walls that would remain outside of the approximately 20-foot-wide cleared area associated with the Preferred Alternative to their pre-construction dimensions following the completion construction activities for the Preferred Alternative.

For security and maintenance purposes, those portions of the nine dry-stacked stone walls that are currently located within the approximately 20-foot-wide cleared area associated with the Preferred Alternative would not be reconstructed. However, following implementation of the mitigation measures for the fence, the original alignment of these nine-dry-stacked stone walls would be readily apparent in the field, and information for the gaps in the walls created by the Preferred Alternative would be available from the formal plans, elevations, and photodocumentation prepared for these portions of the nine dry-stacked stone walls.

The USMA at West Point would continue to coordinate with the SHPO as design plans advance and implement pertinent recommendations from the SHPO to reduce and/or avoid adverse effects on cultural resources, such that impacts would be less than significant for any historic and archaeological resources identified along the proposed alignment for the Preferred Alternative.

4.12 SOCIOECONOMICS

4.12.1 Population

The Preferred Alternative would have no impact on the number of USMA Cadets trained or other personnel that typically use and operate the USMA facilities at West Point. The Preferred Alternative would likely not result in additional or subsequent development or construction, and therefore would have no cumulative impact on population.

4.12.2 Economy and Employment

The Preferred Alternative would have a minor, temporary, but positive impact on employment. Construction activities would require temporary construction workers employed by local or regional contractors. These contractors currently provide construction and maintenance services for numerous projects at the USMA at West Point.

4.12.3 Community Services

Implementation of the Preferred Alternative would result in long-term, minor inconveniences for USMA personnel and visitors due to enhanced security measures and safeguards restricting some uses of existing community services at the USMA at West Point.

4.12.4 Tax Revenues

Implementation of the Preferred Alternative would not result in any change in federal, state, or local tax-exempt status of the USMA at West Point.

4.12.5 Transportation and Traffic Circulation

During construction of the Preferred Alternative, segments of existing vehicular accessible roadways and pedestrian paths and sidewalks intersected by the proposed project alignment either would be temporarily closed or rerouted to ensure safety of public vehicular or pedestrian traffic. During construction adjacent to security gates, public vehicular traffic entering and

exiting the Main Post/Academic Area at the three open gates (Thayer, Washington, and Stony Lonesome) would be subjected to increased cautionary measures. Temporarily increased routine construction vehicle traffic would be required to implement the Preferred Alternative. The remaining two gates (Wilson and Lee) are currently closed to both vehicular and pedestrian traffic, and are expected to remain closed for the foreseeable future. During construction of the Preferred Alternative, local transportation infrastructure and circulation rates would not be adversely impacted.

The installation of the Preferred Alternative within portions of the Cadet, Cadet Support, and Community Support zones has the potential to increase the frequency of temporary congestion of vehicular and pedestrian traffic circulation during peak use periods. However, the USMA Cadet Zone is planned to become a pedestrian and bicycle zone only, with vehicular access restricted to only service and emergency vehicles (USMA 1998b). Additionally, reductions are planned in overall Main Post/Academic Area vehicular traffic, through a combination of planned satellite parking areas near the three main gates, an expansion of the shuttle bus service used by Main Post/Academic Area employees, and a planned commercial shuttle bus service for tourists from Pershing Center and the South Dock (USMA 1998b). These ameliorative plans would ensure that only minor and temporary congestion of pedestrian and vehicular traffic circulation at entry/exit points in the most intensely and frequently used Main Post/Academic Area zones, existing main gates, and primary roadways, would occur due to implementation of the Preferred Alternative.

Gates would be installed where the proposed project alignment crosses several unnamed vehicular accessible roads in the Industrial/Field Training/Recreation zones in the western portion of the Main Post/Academic Area of the USMA at West Point. These new gates would have the potential to restrict vehicular and pedestrian circulation. However, because the overall frequency of vehicular and pedestrian traffic is low and episodic in these zones, adverse impacts resulting from implementation of the Preferred Alternative would not be significant.

4.13 AIR QUALITY

The USMA at West Point is located in a non-attainment zone for ozone (NYSDEC 1996b). Heavy equipment used during construction of the Preferred Alternative may contribute minor amounts of air pollutants, including ozone-producing elements (i.e., nitrogen oxides and volatile organic compounds), in the immediate vicinity of the proposed alignment. To reduce air pollutant emissions, the USMA would ensure that contractors use construction equipment (i.e., backhoes, bulldozers, and dump trucks) that meets specific standards in terms of emissions. However, impacts to air quality resulting from clearing and construction activities would be minor and temporary, and would be expected to have no significant or long-term impact on air quality.

The Clean Air Act Amendments of 1990, 40 CFR 93.158, require that emissions associated with Federal Actions do not interfere with State Implementation Plans (SIP) for achieving NAAQS for criteria pollutants that currently are in non-attainment. The proposed alignment of the Preferred Alternative would be implemented in the Hudson Valley Air Quality Control Region, which is classified as a non-attainment area for ozone. Accordingly, the USMA has evaluated direct and indirect emissions associated with implementation of the Preferred Alternative to ensure these emissions conform to the SIP. This evaluation indicated that the requirements of the Clean Air Act Section 176, in accordance with 40 CFR Part 51, would not be applicable to the Preferred Alternative because fencing is described as an exempt action under 40 CFR Part 93.126 (Macri 2003).

4.14 NOISE

The Preferred Alternative would not involve the construction and operation of permanent noise-generating facilities. However, there would be a temporary increase in localized noise generated during the construction of the Preferred Alternative. There would be a short-term, minor elevation in the noise level in the immediate vicinity of the proposed project alignment during construction due to an increase in contractor vehicles and traffic, and operation of construction equipment.

External or exterior construction noise would be mitigated by limiting construction activities to daylight hours on weekdays. Additionally, equipment operation noise would be minimized by requiring construction contractors to use equipment that meets specific standards in terms of noise. Therefore, the impacts of the Preferred Alternative are expected to be minimal and short-term, and limited to the period of active construction. There would be no long-term impact on noise levels.

4.15 UTILITY INFRASTRUCTURE

The Preferred Alternative would have no permanent impacts on the electric, heating, or telecommunication utility infrastructures of the USMA at West Point.

4.16 HAZARDOUS MATERIALS

Portions of the Preferred Alternative, corresponding to segments S-T and A-B, would be aligned within an area that is suspected of containing UXO, based on positive results of geophysical mapping for UXO in this area, as well as positive results of UXO surveys in areas immediately north of and adjacent to these segments. In general, subsurface disturbance is prohibited in areas that have the potential for containing UXO. If any activities that would involve subsurface disturbance, such as clearing, digging, postholing, or grading, would be conducted in areas that have the potential for containing UXO, these areas must be cleared for prior to the start of such activities.

In support of the Preferred Alternative, the USMA at West Point has contracted with an ordnance /explosives contractor to conduct UXO avoidance operations along the proposed project alignment in segments S-T and A-B, to identify a route that is free of potential UXO (Sanborn 2003a, Sanborn 2003b), and that is safe for clearing, digging, postholing or grading activities that would be associated with the installation of the fence. As noted in Section 2.3.2, there would be no permanently cleared areas associated with the proposed fence along these segments of the Preferred Alternative.

The potential also exists for previously unidentified UXO to be located in other areas of the proposed alignment of the Preferred Alternative, because of the historic extent of the USMA at West Point's training activities. Therefore, construction contractors for the Preferred Alternative

would be instructed to stop work immediately, and notify the USMA's MPs if any UXO is suspected or identified. The MPs would evacuate the area as needed and notify the military Explosives Ordnance Disposal (EOD) unit in Fort Monmouth or Fort Dix, New Jersey, who provide support to the USMA at West Point. The military EOD unit would safely identify, remove, and dispose of any discovered UXO in accordance with Federal, state and local regulations (Sanborn 2003a).

None of the three USEPA-designated hazardous waste sites located at the USMA at West Point are expected to be impacted by the Preferred Alternative. Furthermore, these sites are not expected to affect implementation of the Preferred Alternative. No ground-intrusive activity is proposed at or near these sites, and the implementation of the selected plan would not affect them. Therefore, construction activities associated with the selected plan would not result in an increased risk to human health or the environment from exposure to hazardous materials.

4.17 PUBLIC HEALTH AND SAFETY

Implementation of the Preferred Alternative would not affect the current frequency or severity of natural hazards or typical physical injuries or accidents that occur to individuals during normal academic or recreational activities or physical training. The USMA at West Point would continue to maintain the existing public health and emergency response services, including the hospital, emergency response teams, helicopter medical evacuation service, fire department, and military police, that have been adequate in the past to address the impacts of natural hazards or physical injuries or accidents to individuals.

Implementation of the Preferred Alternative may affect the type of physical injuries or accidents that may occur to individuals during routine maintenance and security activities along those portions of the proposed alignment that are located between Washington and Lee gates, roughly corresponding to segments S-T and A-B, because of the high potential for suspected UXO in these areas. However, as discussed in Section 4.16, the USMA at West Point would conduct the following procedures to mitigate for these potential impacts to health and safety: conduct a UXO avoidance survey to identify locations within these segments that are safe for the installation of the fence; install the fence without an associated 20-foot-wide cleared area; post signs in the

vicinity of the security fence along these segments indicating that these segments are located in high probability areas for containing UXO; continue to prohibit subsurface disturbance in areas that have the potential for containing UXO, unless specific clearances are obtained; and require routine maintenance and security activities to cease immediately, and notify the USMA's MPs, if any UXO is suspected or identified. The MPs would evacuate the area as needed and notify the military EOD unit in Forth Monmouth or Fort Dix, New Jersey, who provide support to the USMA at West Point. The military EOD unit would safely identify, remove, and dispose of any discovered UXO in accordance with Federal, state and local regulations (Sanborn 2003a). As a result of implementation of these mitigation measures, the potential for impacts from UXO to human health and safety as a result of the Preferred Alternative are highly unlikely.

Implementation of the Preferred Alternative would also have a long-term positive impact on the health and safety of residents and support personnel at the USMA at West Point. The Preferred Alternative would continue to restrict vehicular access at the formal entrances (existing security gates) for admittance to active areas of the Main Post/Academic Area. The Preferred Alternative would also restrict vehicular access in remote areas of Main Post/Academic Areas at the USMA at West Point, particularly along the western portion of the proposed project alignment, which is currently possible along existing, unrestricted roads and trails.

To address the potential access of unauthorized individuals to active areas of the Main Post/Academic Area, the USMA would consider additional security measures, including increased foot and motor patrols in remote locations of the project area. These additional security measures would ensure that the Preferred Alternative would provide an increased level of security measures and services at the USMA at West Point.

4.18 ENVIRONMENTAL JUSTICE

In accordance with Executive Order 12898 (dated February 11, 1994), federal agencies are required to identify and address the potential for disproportionately high and adverse environmental and human health effects on minority and low-income populations, resulting from the agencies' programs, policies, and activities. One area of low-income housing, Weyant Green, is located south of the proposed project area in the Village of Highland Falls.

Based on the information presented in Section 4.0, Environmental Consequences, of this EA, no significant or unacceptable adverse environmental or human health effects are expected to result from implementation of the Preferred Alternative. It is anticipated that implementation of the Preferred Alternative would not have any negative impacts on the Weyant Green housing community, located south of the proposed project area.

4.19 COASTAL ZONE MANAGEMENT

Because the proposed project alignment is located within a state-designated coastal zone management area that is associated with the Hudson River, the Preferred Alternative must be evaluated to determine its consistency with NYSDOS CMP State Coastal Policies (Ketcham 1999). As indicated in Section 3.19, 12 policies may be applicable to the Preferred Alternative. Determinations for the consistency of the Preferred Alternative with these 12 policies are presented below. Furthermore, pursuant to 15 CFR Part 930.34(b), the USMA at West Point must notify the NYSDOS CMP of project consistency with State Coastal Policies at least 90 days prior to project implementation, and would coordinate and consult with the NYSDOS CMP and other agencies to ensure that the Preferred Alternative would be consistent with NYSDOS' State Coastal Policies, and would have no undue adverse effects on New York State coastal zone resources.

Policy 2 – **Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.**

Determination – Based on the preceding analysis in Section 4.9 (Land Use), the Preferred Alternative would be consistent with Policy 2. Specifically, those portions of the Preferred Alternative that are located within Segment A-B and segments G-T would be consistent with Policy 2, and would have no effect on the finite available space that is located along the western shoreline of the Hudson River and that is available for existing and future water-dependent or water-enhanced uses.

Policy 7 – **Significant coastal fish and wildlife habitats would be protected, preserved, and where practical, restored so as to maintain their viability as habitats.**

Determination – Based on the preceding analyses in sections 4.2 (Soils), 4.3 (Water Resources), and 4.5 (Vegetation), the Preferred Alternative would be consistent with Policy 7, and would have no effect on the Hudson River Mile 44-56 Significant Fish and Wildlife Habitat, including the Iona Island Marsh and Constitution Marsh. As discussed in sections 4.2, 4.3 and 4.5, the USMA at West Point would implement a project-specific SWPPP to reduce or eliminate the potential for soil erosion and sedimentation of streams along the proposed project alignment that may result from grading and vegetation clearing during construction activities associated with the Preferred Alternative. As discussed in Section 4.3, the USMA at West Point would design the Preferred Alternative such that the security fence and its associated cleared areas would stop at the tops of the banks on each side of all stream crossings, thus avoiding the physical alteration of streams crossed by the proposed project alignment within the state-designated coastal zone area, including avoiding construction or maintenance activities associated with the Preferred Alternative that would result in increased potential for channelization, scouring, or sedimentation within these stream courses. As discussed in Section 4.5, the USMA at West Point would implement a project-specific plan to reduce or eliminate the potential for the migration of herbicides into surface waters crossed by the proposed project alignment that may result from short and long-term maintenance activities associated with the Preferred Alternative, particularly those areas of the Preferred Alternative that would be permanently maintained as clear zones adjacent to the perimeter security fence.

Policy 18 – **To safeguard the vital economic, social and environmental interests of the state and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the state has established to protect valuable coastal resource areas.**

Determination – Based on the preceding analyses in sections 4.1 through 4.18, the Preferred Alternative would be consistent with Policy 18. The USMA at West Point has given full consideration to the safeguarding of the wide variety of vital economic, social, and

environmental interests within the alignment of the Preferred Alternative through the preparation of this EA. Furthermore, implementation of the Preferred Alternative would provide additional safety measures against unanticipated attacks, and would preserve the welfare of the citizens and environmental resources within the USMA at West Point.

Policy 19 – **Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.**

Determination – Based on the preceding analysis in Section 4.9 (Land Use), the Preferred Alternative would be consistent with Policy 19. Specifically, those portions of the Preferred Alternative that are located within Segment A-B and segments G-T would be consistent with Policy 19, and would have no effect on the existing or future access by the public from adjacent or proximate public lands or facilities to public water-related recreation resources and facilities within the state-designated coastal zone management area associated with the USMA at West Point.

Policy 20 – **Access to publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.**

Determination – As discussed in Section 3.19, Policy 20 is a public access policy that primarily encourages the development of public access to coastal areas where there are little or no recreation facilities providing specific water-related recreational activities, and does not appear to be related to the existing recreational environment of the state-designated coastal zone management areas associated with the USMA at West Point. Based on analyses in sections 3.1 through 3.18, state-designated coastal zone management areas associated with the USMA at West Point are already moderately developed for water-related recreational activities, and the Preferred Alternative would not be inconsistent with Policy 20.

Policy 21 – **Water-dependent and water-enhanced recreation would be encouraged and facilitated, and would be given priority over non-water-related use along the coast.**

Determination – Based on the preceding analysis in Section 4.9 (Land Use), the Preferred Alternative would be consistent with Policy 21. Specifically, those portions of the Preferred Alternative that are located within Segment A-B and segments G-T would be consistent with Policy 21, and would have no effect on the future development of water-dependent and water-related recreational use within the state-designated coastal zone management area associated with the USMA at West Point.

Policy 22 – **Development, when located adjacent to the shore, would provide for water-related recreation, whenever such use is compatible with reasonable anticipated demand for such activities, and is compatible with the primary purpose of the development.**

Determination – Based on the preceding analyses in Section 4.9 (Land Use), the Preferred Alternative would not be inconsistent with Policy 22, because the development of water-related recreational facilities as an additional use of the Preferred Alternative would be incompatible with the primary purpose of the Preferred Alternative, which is to provide increased security against unanticipated attacks, and preserve the welfare of the citizens and environmental resources within the USMA at West Point. In support of the proposed project, the USMA at West Point has initiated consultation with the NYSOPRHP, to provide the NYSOPRHP with the opportunity to participate in project planning through review and comment on the Preferred Alternative. Consultation with the NYSOPRHP in support of the proposed project would ensure that implementation of the Preferred Alternative would be consistent with the Coastal Zone Consistency Process and would ensure this determination of consistency with Policy 22.

Policy 23 – **Protect, enhance and restore structures, districts, areas or sites that are of significance in the history, architecture, archaeology or culture of the state, its communities or the nation.**

Determination – Based on the preceding analyses in sections 4.10 (Visual Resources) and 4.11 (Cultural Resources), and the results of the Phase I Cultural Resources Investigation and the Viewshed Analysis, the Preferred Alternative would be consistent with Policy 23, through the implementation of design measures that prevent, reduce, or mitigate significant adverse effects on historic and scenic resources along the proposed project alignment.

Policy 24 – **Prevent impairment of scenic resources of statewide significance**.

Determination – Based on the preceding analysis in Section 4.10 (Visual Resources), and the results of the Viewshed Analysis, the Preferred Alternative would be consistent with Policy 23, through the implementation of design measures that prevent impairment of scenic resources of statewide significance along the proposed project alignment. Specifically, implementation of the mitigation design measures would avoid impairment caused by removing vegetation and maintaining new, permanent clear zones adjacent to the perimeter security fence, adding structures and forms such as the fence and associated clear zone using designs that are inconsistent with surrounding scenic areas, siting the fence and associated clear zone in conspicuous locations within scenic areas, and failing to appropriately screen unattractive elements of the Preferred Alternative with vegetation and appropriate materials, scales and forms.

Policy 37 – **Best management practices would be utilized to minimize the non-point discharge or excess nutrients, organics and eroded soils into coastal waters**.

Determination – Based on the preceding analyses in sections 4.2 (Soils), 4.3 (Water Resources), 4.5 (Vegetation), and 4.16 (Hazardous Materials), the Preferred Alternative would be consistent with Policy 37. Although ground disturbance is expected as part of construction activities associated with the Preferred Alternative, best management practices would be implemented to reduce potential soil erosion, sedimentation, and hazardous material spills and runoff to a level that would not have a significant adverse effect on coastal waters. Furthermore, best management practices to reduce hazardous material spills and runoff would also be implemented

as part of the vegetation control plan that would be used to maintain the permanent, approximately 20-foot-wide clear zone adjacent to the perimeter security fence.

Policy 38 – **The quality and quantity of surface water and groundwater supplies, would be conserved and protected, particularly where such waters constitute the primary or sole source of water supply.**

Determination – Based on the preceding analyses in sections 4.2 (Soils), 4.3 (Water Resources), 4.5 (Vegetation), and 4.16 (Hazardous Materials), the Preferred Alternative would be consistent with Policy 38. Although ground disturbance is expected as part of construction activities associated with the Preferred Alternative, best management practices would be implemented to protect the quality and quantity of surface and groundwater supplies that are principal sources of drinking water. Furthermore, best management practices that include protection of surface and groundwater supplies would also be implemented as part of the vegetation control plan that would be used to maintain the permanent, approximately 20-foot-wide clear zone adjacent to the perimeter security fence.

Policy 44 – **Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.**

Determination – Based on the preceding analyses in sections 4.2 (Soils), 4.3 (Water Resources), 4.5 (Vegetation), and 4.6 (Wetlands, Floodplains, and Navigable Waterways), the Preferred Alternative would be consistent with Policy 44. Although ground disturbance is expected as part of construction activities associated with the Preferred Alternative, a minimum 100-foot buffer zone would be maintained around all tidal and freshwater wetlands for preservation and protection purposes. Furthermore, best management practices would be implemented to reduce potential soil erosion, sedimentation, and hazardous material spills and runoff to a level that is not significant, thus preserving and protecting tidal and freshwater wetlands along the proposed project alignment.

5.0 REASONABLY FORSEEABLE FUTURE ACTIONS

The USMA at West Point currently plans to implement nine reasonably foreseeable future actions (RFFAs), including Security Upgrades to Gates, Office of Directorate of Intercollegiate Athletics (ODIA) Storage Facility, Cadet Activities Area, New Permanent Helicopter Landing Zone, New Library and Learning Center, South Fill Retaining Wall Renovations, two Additional Security Upgrades to the Cadet Zone (e.g., New Bollards and Window Security Upgrades), and Alternative Security Measures along the Hudson River Shoreline, all located in the vicinity of the project (Figure 12). Each of these additional actions would be implemented within the 5-year period between March 2003 and March 2008.

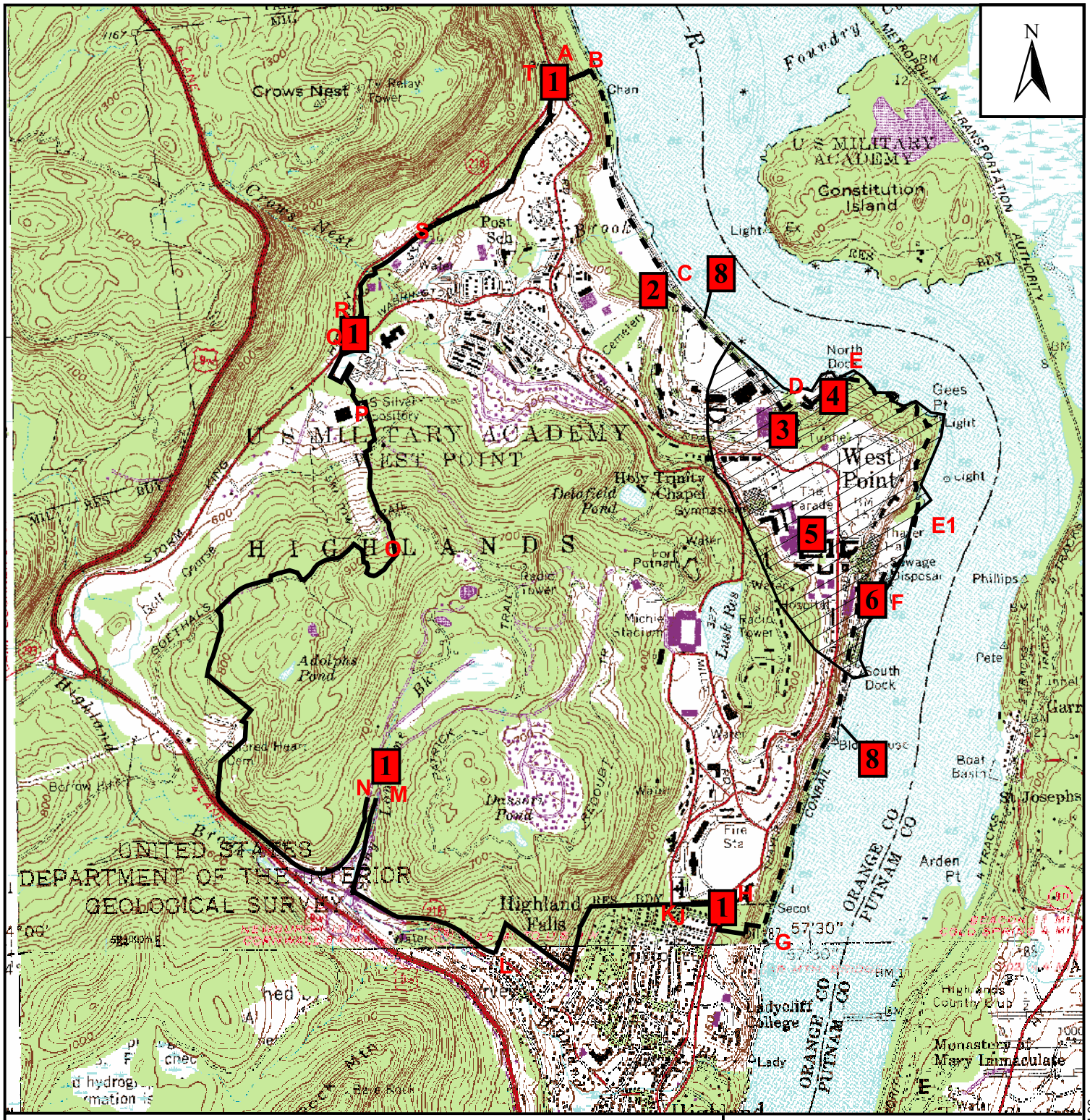
5.1 REASONABLY FORESEEABLE FUTURE ACTIONS

5.1.1 Access Gates Security Upgrades

The USMA at West Point is currently considering performing security upgrades to the Thayer, Washington, and Stony Lonesome security gates at the USMA at West Point. These proposed access gates security upgrades are anticipated to be designed during FY 2004, approximately one year after the Preferred Alternative is initiated. In general, pre-10% design concepts for the access gates security upgrades include the construction of new, wider traffic lanes, the installation of permanent traffic control measures such as traffic arms and signage, the installation of permanent lighting, deployable vehicle barrier systems and additional CCTV cameras, changes in the locations and sizes of designated vehicle search areas and parking areas, and enhanced personnel work stations, including canopies to protect soldiers on duty from inclement weather, and ballistic resistant gatehouses and security boxes. Individual pre-10% design concepts for the proposed access gates security upgrades at each of these three gates are detailed below.

Thayer Gate

Pre-10% design concepts currently under consideration for the Thayer Gate as part of the Access Gates Security Upgrade Project include short-term enhanced security measures such as an auto-dome CCTV camera, as well as long-term enhanced security measures such as the construction of new traffic lanes; permanent lighting; deployable vehicle barrier systems; canopies to protect



LEGEND

- 1 Access Gates Security Upgrade
- 2 ODIA Storage Facility on Target Hill Field
- 3 Cadet Activities Area (Building 639)
- 4 New Permanent Helicopter Landing Zone
- 5 New Library and Learning Center
- 6 South Fill Retaining Wall Renovations
- Additional Security Upgrades to Cadet Zone
- 8 Alternative Security Measures along the Hudson River Shoreline

1000 0 1000 2000 Feet

Source: USGS 7.5' series Quadrangles West Point and Peekskill, New York, 1957, Photorevised 1981; USMA 2003.

Figure 12. Site Location Map for Reasonably Foreseeable Future Actions, West Point, New York.

Client: U.S. Army Corps of Engineers New York District

Prepared By: NEA Northern Ecological Associates, Inc.

Date: 02/20/04

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soldiers on duty from inclement weather; additional CCTV cameras; new, limited access to the Thayer Hotel; permanent traffic control measures along Thayer Road (including traffic arms and new signage); the removal of landscape vegetation and sidewalks along Thayer Road, and some reduction in parking capacity. Additional pre-10% design concepts include the performance of a traffic safety study, retrofitting the existing gatehouses and security boxes so that they are ballistic resistant, and the development of an alternate security upgrade concept for the Thayer Gate.

Stony Lonesome Security Gate

Pre-10% design concepts currently under consideration for the Stony Lonesome Gate as part of the Access Gates Security Upgrade Project include short-term enhanced security measures such as an auto-dome CCTV camera, as well as long-term enhanced security measures that would require significant ground disturbance and rock removal, and alter the appearance of the existing gate, such as the construction of new, wider traffic lanes; a new security vehicle parking area; a new truck inspection area; a new 20,000 square-foot visitor control building with adjacent parking; permanent lighting; deployable vehicle barrier systems; canopies to protect soldiers on duty from inclement weather; additional CCTV cameras; and permanent traffic control measures along Stony Lonesome Road (including traffic arms and new signage). Additional pre-10% design concepts include the performance of a traffic safety study, retrofitting the existing gatehouses and security boxes so that they are ballistic resistant, and the construction of a new parking garage for USMA employees.

Washington Security Gate

Pre-10% design concepts currently under consideration for the Washington Gate as part of the Access Gates Security Upgrade Project include short-term enhanced security measures such as an auto-dome CCTV camera, as well as long-term enhanced security measures that would alter the appearance of the existing gate, such as the construction of new, wider traffic lanes; a new sentry house; permanent lighting; deployable vehicle barrier systems; canopies to protect soldiers on duty from inclement weather; additional CCTV cameras; and permanent traffic control measures along Washington Road (including traffic arms and new signage). Additional pre-10%

design concepts include the performance of a traffic safety study, and retrofitting the existing gate houses and security boxes so that they are ballistic resistant.

The USMA at West Point is currently not considering performing security upgrades to the Wilson and Lee security gates at the USMA at West Point. The Wilson Gate is an unmanned gate that is permanently locked, and protected by concrete "Jersey barriers" to prevent vehicle access. The Lee Gate is an unmanned, locked gate that is currently closed to both vehicular and pedestrian traffic. Because the Wilson and Lee gates are currently closed to both vehicular and pedestrian traffic, and are expected to remain closed for the foreseeable future, no additional modifications to the existing security measures are anticipated for the Wilson Gate.

5.1.2 ODIA Storage Facility on Target Hill Field

The ODIA and the Directorate of Physical Education (DPE) have proposed the construction of a new storage facility, consisting of a pre-manufactured, 14-foot-tall, 60-foot by 50-foot metal structure, adjacent to an existing smaller storage facility on the southwestern corner of the Target Hill Field. Currently the storage of field maintenance equipment, supplies, and athletic equipment are housed in multiple temporary storage facilities, including the Shea storage facility, many of which do not have adequate access to electric, water, heat, and ventilation. The purpose of this project would be to provide the ODIA and the DPE with a single storage facility for field maintenance and athletic equipment and supplies, and to allow the ODIA and the DPE to vacate the Shea storage facility for use by other groups at the USMA at West Point.

The ODIA Storage Facility Project has not yet received comprehensive environmental or cultural resources review, and modifications to the project are anticipated following such review. However, preliminary evaluations indicate that construction of the current design for this facility, including its architectural style and materials, in this location would result in significant environmental impacts on visual and aesthetic resources at the USMA at West Point, that would require the preparation of an EA in accordance with NEPA and AR-200. The current design for this facility would be architecturally incompatible with adjacent structures in the Historic Post Services Area, many of which are either individually eligible for the NRHP or are considered contributing elements to the NHLD at the USMA at West Point, and may result in adverse

effects to the NHLD at the USMA at West Point, requiring the development and implementation of a Memorandum of Agreement with the SHPO. In addition to the potential adverse effects of the current design for this facility on NRHP structures and the NHLD at the USMA at West Point, the current design of this facility in this location would also introduce a highly visible discordant element into the visual landscape of the West Point Military Academy Subunit of the HHSASS that would diminish the scenic qualities associated with the HHSASS, requiring the preparation of documentation for CMP consistency in coordination with the NYSDOS.

5.1.3 Cadet Activities Area (Building 639)

The USMA at West Point intends to provide various cadet activity clubs with a single facility for use as a consolidated Cadet Activity Center. These cadet activity clubs are recognized as an important aspect of cadet life and training, and encompass a range of cadet interests, from clubs such as the Cycling Club, the Orienteering Club, and the Triathlon Club, that are team sports, support organized athletic activities, and formally represent the USMA in organized competitive events, to clubs that provide cadets with an opportunity to explore interests such as scuba diving and rock climbing. Currently, these Cadet clubs are located throughout the USMA Cadet Zone in spaces that are widely diverse in size and facilities, are frequently crowded, and in many cases do not provide adequate support for the activities of individual Cadet clubs. The purpose of the consolidated Cadet Activity Center would be to provide the various cadet activity clubs at the USMA at West Point with a single location within the Cadet Zone, and adequate space and support facilities for the diverse types of activities explored by members of these clubs.

Building 639 is the preferred facility for the consolidated Cadet Activity Center. Building 639 was constructed in 1937 as an Engineering and Ordnance Laboratory, and is considered to be a contributing element to the USMA at West Point's NHLD. However, the interior of Building 639 has been extensively remodeled, and little historic fabric remains. The building's current tenants, the ODIA, would vacate Building 639 once the new athletic facilities (described in Section 5.1.2) have been completed. It is anticipated that renovations to Building 639 to permit its use as a consolidated Cadet Activity Center would be internal only, with no modifications to the exterior appearance of the structure that would affect the status of Building 639 as a contributing element to the USMA at West Point's NHLD.

5.1.4 New Permanent Helicopter Landing Zone

The USMA at West Point is considering the North Dock area as the proposed location of a required, permanent helicopter landing zone (LZ). The USMA at West Point operates a temporary medical evacuation helicopter LZ at Worth Place, and has operated impromptu LZs at The Plain, Buffalo Soldier Field, and North Dock. Design requirements for the permanent helicopter LZ include an immediate LZ area that is closed to vehicular traffic by boulders or rocks, with access limited to the Fire Department and other authorized organizations. Additional requirements, such as fencing, lighting, and storm water drainage, at the LZ would be defined during site design activities. Although UH-60 Black Hawk helicopters are not operated at the USMA at West Point, the permanent helicopter LZ would also include an impermeable surface, which is a requirement for UH-60 helicopter LZs, so that UH-60 helicopters can be fielded at the USMA at West Point.

5.1.5 New Library and Learning Center

The USMA at West Point is proposing a variety of modernization activities as part of a general improvement of the Cadet Zone area that would allow the USMA at West Point to better fulfill its primary mission. The primary mission of the USMA at West Point is to educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of duty, honor, and country. Proposed modernization activities include the construction of new facilities, the potential renovation or demolition of structures that no longer contribute to the USMA at West Point's mission, and general modernization of facilities and maintenance in the Cadet Zone.

The proposed construction of a new Cadet Library/Learning Center, Thomas Jefferson Hall, along with modifications to Bartlett (Science) Hall, and the existing library, is necessary to provide floor space for the modernization and expansion of information resources, support facilities, and teaching and research laboratories and classrooms. In particular, the modernization and expansion of information resources and support facilities are needed to maintain the USMA at West Point's accreditation as a university. Current educational and research facilities at the USMA at West Point provide an environment that is less than optimal for Cadet academic growth and achievement, hinder the ability of the USMA at West Point to

accomplish its primary mission, and do not provide the Corps of Cadets with the opportunity to attain the highest levels of academic and professional achievement. To address these deficiencies, the proposed new Cadet Library/Learning Center would be the most important academic facility at the USMA at West Point. It would be the focus of information resources at the USMA at West Point, and would be designed to promote cadet learning and development as leaders that the nation would require in the future.

The USMA at West Point is also considering the renovation or demolition of obsolete structures within the Cadet Zone, including barracks renovations, building upgrades, and the continuation of on-going maintenance projects. Implementation of these actions would fulfill current and future needs for library and learning space, maintain university accreditation and academic excellence, and update existing cadet facilities that are over 30 years old, and would greatly enhance the learning environment at the USMA, by addressing Cadet needs, and reducing and eliminating existing problems.

A separate NEPA analysis was performed for the proposed New Library and Learning Center as project-specific design construction, and mitigations plans were prepared by the USMA at West Point. This separate NEPA analysis included the preparation of an EIS for the proposed New Library and Learning Center. The Record of Decision for the EIS for the proposed New Library and Learning Center has been signed (Cubbison 2004).

5.1.6 South Fill Retaining Wall Renovations

The USMA at West Point is proposing to renovate the existing South Fill Retaining Wall from the South Dock area north along the Hudson River to approximately the vicinity of the new Crew and Sailing Center. Renovations to the South Fill Retaining Wall in these areas would consist of performing rehabilitation to the existing masonry wall, and raising the existing masonry wall to a uniform height.

5.1.7 Additional Security Upgrades to Cadet Zone

<u>New Bollards</u>

The USMA at West Point is proposing to remove extant, permanently installed bollards and attached chain at selected locations within the Cadet Zone, and replace these bollards with new

bollards that would accommodate being locked. The purpose of this action is to replace extant bollards on the periphery of The Plain with bollards that would provide necessary continued security at the USMA at West Point, while remaining compatible with the sense of military feeling and place that characterizes the NHLD at the USMA at West Point. The extant, permanently installed bollards are of contemporary, utilitarian design, are less than 50 years old, and do not possess exceptional significance that would qualify them for the NRHP. In locations that are visible to the public, new bollards and chain would be identical to those bollards designed, fabricated and installed at Thayer Walk, and would be architecturally compatible with bollards located at Nininger Hall (Building 747) and Taylor Hall (Building 600), two structures that are listed individually on the NRHP and are contributing elements of the NHLD at the USMA at West Point. In locations that are not visible to the public, heavier locking steel bollards that are nearly identical in design and appearance would be installed to provide enhanced security to the Cadet Zone.

Window Security Upgrades

The USMA at West Point is considering the installation of various types of mylar film or plastic layering on windows as part of security upgrades to the Cadet Zone. The purposed of the installation of various types of mylar film or plastic layering to windows is to prevent the shattering of windows throughout the Cadet Zone in the event of an explosive detonation. Mylar film is applied directly to the windows, and plastic layering is installed inside of existing widows to provide appropriate protection. The first buildings proposed to receive such window protection are Cullum Hall (Building 605) and the First Class Club (Building 635). Eventually, all Cadet Zone structures would receive some type for window protection installed as building renovations are performed.

5.1.8 Alternative Security Measures along the Hudson River Shoreline

The USMA at West Point is considering the implementation of additional alternative security measures for that portion of the Main Post/Academic Area located along the western shoreline of the Hudson River, corresponding to segments B-G of the proposed perimeter security fence alignment. This RFFA has not yet been funded, and the proposed Alternative Security Measures along the Hudson River Shoreline are conceptual only, based on a planning charette. The

conceptual elements of the proposed Alternative Security Measures along the Hudson River Shoreline, which approximately correspond to segments B-G of the original proposed project alignment, would consist of a variety of measures, including increased foot and motor patrols along existing vehicular accessible roads and trails, electronic surveillance using CCTV camera, remote-controlled anti-vehicular barriers, and increased low-level, directional lighting.

Implementation of additional alternative security measures along the Hudson River shoreline, approximately corresponding to segments B-G of the original proposed project alignment, would be installed as a follow-on project, which is anticipated to be designed no earlier than FY 2007, approximately three years after the Preferred Alternative is initiated. Because the installation of proposed alternative security measures along the western shoreline of the Hudson River would be conducted as a follow-on project, this additional future action is considered an RFFA. A separate NEPA analysis will be performed for the proposed alternative security measures along the Hudson River once the project specific design, construction, and mitigation plans have been prepared by the USMA at West Point.

6.0 CUMULATIVE IMPACTS

Cumulative environmental effects are the result of a proposed action being added to effects of other past, present, and RFFAs, regardless of the agency or person responsible for such actions. Current security measures at the USMA at West Point, including existing fencing along the perimeter of the project area, foot and motor patrols of the project area, and the control of vehicular access at main and secondary gates to the project area, serve as a baseline for cumulative effects analysis.

Cumulative effects associated with these past, present, and RFFAs at the USMA at West Point are summarized in this section by resource area, including geology/soils, water resources, biological resources, land use, visual resources, cultural resources, socioeconomics, air quality, noise, utility infrastructure, hazardous materials, public health and safety, and environmental justice. This section provides a summary of direct, indirect, and cumulative impacts associated with the Preferred Alternative and RFFAs. This section addresses only those resources subject to cumulative effects, whereas "no effect" issues are not addressed.

6.1 GEOLOGY/SOILS

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have minor short-term and long-term direct impacts on soils. Earth moving associated with construction activities of the Preferred Alternative may result in temporary, indirect soil erosion and sedimentation. The 12.4-acre area of disturbance associated with the Preferred Alternative, combined with other construction activities, represent long-term, direct, impacts on soils. However, the total acreage affected by construction activities is minor relative to the size of the USMA at West Point property. Furthermore, the use of site-specific erosion control measures and best management practices during, and immediately after, earth moving activities would reduce the potential temporary erosion and sedimentation effects to a level that is not undue or significant.

6.2 WATER RESOURCES

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have no direct or indirect significant impacts on groundwater resources.

Cumulatively, these actions would result in a potential temporary, minor, adverse impact on surface waters due to potential soil erosion during construction activities, primarily associated with the Preferred Alternative, the Security Gate Upgrades, the erection of the ODIA Storage Facility on Target Hill, the construction of the New Permanent Helicopter Landing Zone, construction of the New Library and Learning Center, and the Renovations to the South Fill Retaining Wall. However, the use of site-specific erosion control measures and best management practices during earth moving activities, as well as hazardous and toxic material spill control and remediation, would reduce potential temporary erosion, sedimentation, and hazardous material runoff effects to a level that is not undue or significant.

6.3 BIOLOGICAL RESOURCES

The implementation of past, present, and reasonably foreseeable future development in the project area would increase the potential for short-term and long-term adverse impacts on biological resources, including the long-term direct loss or conversion of common vegetation types, and subsequent short-term direct loss or indirect displacement of wildlife. Because existing biological resources in the project area are common in Orange County and upstate New York, cumulatively these impacts would be considered minor. Any potential significant impacts on vegetation communities and RTE species would be avoided, minimized, or mitigated to a level that is not significant in accordance with the Endangered Species Act of 1973 (as amended) and New York State RTE species protection laws. In addition, any impacts to jurisdictional wetlands also would be avoided, minimized, or mitigated to a level that is not significant in accordance with Section 404 of the Clean Water Act, Article 15 (Protection of Waters) of the NYSECL, Article 24 (Freshwater Wetlands) of the NYSECL, and NYSDEC 401 Water Quality Certification.

6.4 LAND USE

Generally, existing land uses at the USMA at West Point are consistent with uses identified in the *Master Plan for the Year 2007* (USMA 1998b), and any proposed development or redevelopment would be required to be consistent with land uses allowed in accordance with this plan (USMA 1998b). Therefore, adequate controls are in place to ensure any future developments are consistent with USMA regulations.

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have some minor, long-term, direct adverse impacts on land use. Minor adverse effects to land use would occur as a result of construction of the ODIA Storage Facility on Target Hill Field, and the New Permanent Helicopter Landing Zone, which would each result in the converting natural landscapes to buildings and/or paved surfaces.

However, the implementation of past, present, and reasonably foreseeable future development in the project area likely would have greater long-term, beneficial, direct impacts on land use. Beneficial impacts to land use would occur as a result of increased security for the residents and support personnel in the Main Post/Academic Area at the USMA at West Point, particularly as a result of implementation of the Preferred Alternative, in conjunction with Access Gates Security Upgrades, Alternative Security Measures along the Hudson River Shoreline, and the New Permanent Helicopter Landing Zone. Beneficial impacts would also occur as a result of increased security, which would allow residents and support personnel to more fully enjoy the academic and recreational facilities and activities located throughout the Main Post/Academic Area, including the proposed interior renovations for the new Cadet Activities Area in Building 639, and the New Library and Learning Center. None of these activities would result in the conversion of natural landscapes and habitats to paved surfaces, buildings, or permanent rights-of-way, and as a result, implementation of past, present, and reasonably foreseeable future development would cumulatively result in long-term, positive impacts on land use at the USMA at West Point.

6.5 VISUAL RESOURCES

The implementation of past, present, and reasonably foreseeable future development in the region of influence likely would result in long-term direct impacts on visual resources. Implementation of the Preferred Alternative, the ODIA Storage Facility on Target Hill Field, and the New Permanent Helicopter Landing Zone would each result in long-term, adverse impacts on visual resources by potentially intruding into existing visual resources, particularly those identified as having significant scenic qualities (the Preferred Alternative), or by converting natural landscapes to landscapes that include paved surfaces, buildings, and/or permanent rights-of-way (the ODIA Storage Facility on Target Hill or the New Permanent Helicopter Landing

Zone at North Dock). However, design measures have been incorporated into the Preferred Alternative to reduce the visual intrusion of the security fence and its associated 20-foot-wide cleared area, and the USMA at West Point is particularly sensitive to the use of appropriate designs, materials, and vegetative landscaping to reduce, if not enhance, the existing visual landscapes at USMA at West Point. As a result, visual resources would be not be significantly impacted in the long-term by the construction of the Preferred Alternative, ODIA Storage Facility, the New Permanent Helicopter Landing Zone, the New Library and Learning Center, and the Renovations to the South Fill Retaining Wall. From a cumulative perspective, therefore, implementation of past, present, and RFFAs would result in long-term, but minor, adverse impacts on visual landscapes.

6.6 CULTURAL RESOURCES

Generally, any development at the USMA at West Point is required to comply with the NHPA for the protection of properties listed or eligible for listing on the NRHP, as well as NYSOPRHP SHPO regulations. As a result, no undue adverse cumulative impacts on cultural resources are anticipated, and the implementation of past, present, and reasonably foreseeable future development in the project area likely would have a long-term, direct, beneficial impact on cultural resources at the USMA at West Point. Specifically, all projects that involve earth-disturbing activities undergo archaeological investigations, and all projects that involve renovation, rehabilitation, demolition or construction undergo architectural assessments. As such, the design of the security fence incorporated into the Preferred Alternative, the interior renovation of Building 639 for the Cadet Activities Area, the construction of the New Library and Learning Center, and the Renovations to the South Fill Retaining Wall would each result in a minor, beneficial impact by avoiding or rehabilitating, and thus protecting and preserving, these cultural resources. From a cumulative perspective, implementation of past, present, and RFFAs would result in a long-term, minor, beneficial impact on cultural resources.

6.7 SOCIOECONOMICS

6.7.1 Population and Employment

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have a positive impact on the population of the USMA at West Point.

Employment of construction contractors needed to complete all past, present, and reasonably foreseeable future development would result in a minor temporary beneficial impact to socioeconomic resources within Orange County. Once these actions are complete, the employment of contractors would not be necessary and the temporary employment benefit would cease.

6.7.2 Community Services

The implementation of past, present, and reasonably foreseeable future development in the project area of influence likely would have a minor, long-term, positive impact on community services of the USMA at West Point. All actions would improve infrastructure and facilities at the USMA at West Point, thus improving the quality of academic, recreation, and community services at the USMA at West Point. Additionally, the increased security created by the Preferred Alternative would accommodate the primary mission of the USMA, which is to educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of duty, honor, and County.

6.7.3 Tax Revenues

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have no direct or indirect impact on tax revenues at the USMA at West Point. Because the USMA at West Point is federally owned, no federal, state, or local property tax revenue is generated by this installation. However, the employment of contractors to construct the Preferred Alternative may result in minor, temporary increased state sales tax revenue on goods and services purchased in the Town of Highlands and adjacent municipalities.

6.8 TRANSPORTATION AND TRAFFIC CIRCULATION

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have a temporary, direct, minor, adverse impact on transportation and traffic circulation at the USMA at West Point. Traffic would temporarily increase in the project area during the construction phase of each action. However, this impact would be mitigated to a level that is not undue or significant at the overall USMA at West Point by the implementation of best management practices, such as posting “construction work area” signs, using flagpeople to slow and direct traffic as necessary, and by performing construction activities only during

daylight, weekday hours.

6.9 AIR QUALITY

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have temporary adverse direct and indirect impacts on air quality at the USMA at West Point. All actions may result in increased direct emissions of exhaust and fugitive dust from construction machinery and activities. However, temporary construction emissions generally would be minor and confined primarily to individual project sites. Cumulatively, these temporary emissions of NAAQS criteria pollutants likely would not exceed SIP emission thresholds at the USMA at West Point, and would conform to the SIP.

6.10 NOISE

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have temporary, direct and indirect, adverse impacts on noise at the USMA at West Point. These actions would result in temporary increased noise during construction and any required blasting activities. Cumulatively, adverse noise impacts on academic, recreational, and residential activities would be reduced to a level that is not undue or significant by performing construction and blasting activities only during daylight, weekday hours.

6.11 UTILITY INFRASTRUCTURE

The implementation of past, present, and reasonably foreseeable future development in the project area likely would have a permanent, minor impact on the utility infrastructure of the USMA at West Point. Construction and operation of the Alternative Security Measures along the Hudson River Shoreline and construction of the New Permanent Helicopter Landing Zone would require modifications to increase the capacity of the existing electrical and telecommunications infrastructures of the USMA at West Point, including additional wiring and equipment to operate security monitoring systems associated with CCTV cameras, anti-vehicular barriers, and additional lighting, as well as radio beacons. Completion of these modifications would serve to expand the overall electrical and telecommunication infrastructure within the Main Post/Academic Area of the USMA at West Point.

6.12 HAZARDOUS MATERIALS

The implementation of past, present, and reasonably foreseeable future development in the project area have the potential to result in a temporary, minor, direct and indirect impacts on human health by the storage, use, transport, and disposal of hazardous materials associated with construction activities. Cumulatively, however, these potential impacts would be reduced to a level that is not undue or significant by handling all such hazardous materials in accordance with the applicable health and safety plans and *USMA Installation Spill Contingency Plan* (USMA 1996a).

6.13 PUBLIC HEALTH AND SAFETY

The implementation of past, present, and reasonably foreseeable future development in the project area likely would result in long-term, direct, beneficial impacts on public health and safety. Implementation of the Preferred Alternative, in conjunction with the Security Upgrades to Gates, the installation of New Bollards in the Cadet Zone, and Alternative Security Measures along the Hudson River Shoreline would result in an increased ability to control and monitor vehicular access to the Main Post/Academic Area of the USMA at West Point. Significant beneficial impacts to public health and safety would also result from the proposed Window Security Upgrades to buildings in the Cadet Zone, which would be designed to prevent the shattering of windows throughout the Cadet Zone in the event of an explosive detonation. The proposed New Permanent Helicopter Landing Zone would provide additional beneficial impacts on public health and safety by permitting a helicopter landing zone that can accommodate uses other than medical evacuations.

6.14 ENVIRONMENTAL JUSTICE

Implementation of the past, present, and RFFAs would not disproportionately impact minority or low-income populations.

7.0 SUMMARY AND CONCLUSION

7.1 PREFERRED ALTERNATIVE

The Preferred Alternative would involve the construction of a 5.8-mile long, 7-foot-tall security fence, constructed primarily of chain-link topped by barbed wire, around the western portion of the perimeter of the Main Post/Academic Area of the USMA at West Point, enclosing an area of approximately 2,500 acres. The security fence generally would be located within a 20-foot-wide cleared right-of-way such that approximately 15 feet of cleared right-of-way would be located on the interior of the security fence, and approximately 5 feet of cleared right-of-way would be located on the exterior of the security fence. The 20-foot-wide cleared right-of-way would be maintained primarily by mechanical means (e.g., with mowers or brush hogs). Open points would remain along the proposed alignment of the Preferred Alternative where the proposed alignment would cross streams and other waterbodies.

7.2 ALTERNATIVES

Three alternatives were identified for the project: the No-Action Alternative, the Original Proposed Action, and the Partial Perimeter Security Fence Alternative (Preferred Alternative). The No-Action Alternative consisted of using and maintaining the current security measures that exist at the USMA at West Point. The Original Proposed Action consisted of 9.1 miles of 7-foot-high perimeter security fencing, composed of chain link topped by barbed wire around the entire perimeter of the Main Post/Academic Area, including shoreline areas along the Hudson River. The Partial Perimeter Security Fence Alternative consisted of using a combination of 5.8 miles of 7-foot-high perimeter security fencing, composed of chain-link topped by barbed wire, in the western portion of the project area, and natural barriers consisting of thickly wooded vegetation and steep terrain adjacent to the Hudson River shoreline in eastern portions of the project area.

The No-Action Alternative would not fulfill the Vice Chief of Staff of the DA's verbal directive establishing the purpose and need for the project, and, therefore, was rejected as a viable alternative. The Original Proposed Action would fulfill the Vice Chief of Staff of the DA's verbal directive establishing the purpose and need for the project, but would be too costly to

construct and would result in significant environmental impacts. Therefore, the Original Proposed Action was rejected as a viable alternative. The Partial Perimeter Security Fence Alternative was determined to fulfill the intent of the Vice Chief of Staff of the DA's verbal directive establishing the purposed and need for the project, and was subjected to environmental analyses as the Preferred Alternative to the Original Proposed Action.

7.3 ANTICIPATED ENVIRONMENTAL EFFECTS

No significant cumulative effects would result from implementation of the Preferred Alternative. The principal direct and indirect environmental issues related to the implementation of the Preferred Alternative would include:

(1) Construction impacts (e.g., soil erosion, traffic, roadway access, utility access, noise, air quality);
(2) Vegetation impacts as forested and scrub-shrub lands are converted to open areas;
(3) Wildlife impacts as the movement of medium-sized and low-mobility animals are restricted;
(4) Visual impacts to viewsheds and cultural resources within and outside of the NHLD; and,
(5) Recreational and training impacts to residents and support personnel.

Several of these potential impacts would be mitigated by the use of good management practices and engineering controls, and careful design, placement, and use of materials. Mitigation measures must be addressed and are included in order to diminish any potential significant adverse effects.

7.4 MITIGATION MEASURES

Mitigation measures would be employed to address impacts due to implementation of the Preferred Alternative, including:

(1) Developing a project-specific Storm Water Pollution Prevention Plan, incorporating erosion and sediment controls in accordance with USACE specifications and good

construction practices. Excavation of material would be controlled by best management practices, design specifications, and engineering practices.

(2) Developing a project-specific revegetation plan, incorporating planting plans and monitoring schedules in accordance with USMA at West Point specifications and USDA NRCS recommendations to minimize erosion, facilitate revegetation, protect any special status species from any indirect effects of project implementation, and minimize the occurrence of invasive species along the approximately 20-foot-wide cleared area adjacent to the proposed alignment.

(3) Designing the proposed alignment to minimize erosion and sedimentation when crossing streams and stream banks, maintaining 100-foot-wide riparian buffer zones, avoiding subsequent impacts on streams and stream banks, maintaining water quality and aquatic life, retaining openings along the proposed alignment to facilitate the movement of aquatic and terrestrial wildlife, and performing a post-construction survey of the fence to ensure that a sufficient number of appropriately-sized gaps along the fence are present between the bottom of the fence and the ground surface, and constructing small gaps if necessary to allow the passage of turtles and other small animals.

(4) Developing a project-specific Spill Contingency Plan in accordance with USMA at West Point specifications for the identification and regulation of hazardous materials that would be used construction and maintenance activities, including herbicide application to control undesirable or invasive species, to avoid subsequent impacts on water quality, aquatic life, and human health.

(5) Obtaining all required permits, including NYSDEC Section 401 Water Quality Certification as necessary, to minimize impacts to waterbodies and wetlands.

(6) Performing formal pre-construction field surveys to verify or 'ground truth' all unnamed or previously unidentified intermittent or perennial waterbodies, ravines, drainages, or wetlands along the proposed alignment.

(7) Designing the proposed alignment to follow existing cleared areas to the maximum extent practicable, and limiting new cleared areas along the perimeter fence to a width of 20 feet, to minimize the permanent impact of construction and maintenance on vegetation and wildlife.

(8) Performing all construction activities between April 1 and November 30, as recommended by the USFWS, to avoid disrupting wintering populations of bald eagles.

(9) Performing monitoring for timber rattlesnake activity when construction activities are scheduled between April and September, and limiting construction activities along Segment S-T to April 1 – 15 or October 1 – November 30.

(10) Designing the proposed alignment in the western portion of the proposed alignment with lockable gates at all vehicle-accessible roads and trails, that could be opened for specific uses or at regulated times to facilitate continued use of these areas to the maximum extent practicable for physical and military training activities, and certain recreational activities such as cross-country running and skiing, hiking, and hunting.

(11) Minimizing the permanent and temporary impacts of construction and maintenance on the NHLD, including historic structures, archaeological resources, and on-post visual or aesthetic resources, to the maximum extent practicable, in accordance with the USMA at West Point's historic landscape and cultural resource management plans, and recommendations from the CERL viewshed analysis and the NYSOPRHP. Mitigation measures include: adjusting the alignment of the Preferred Alternative to avoid the archaeological site identified during the Phase I cultural resource investigation for the proposed project; limiting new cleared areas along the perimeter fence to a width of 20 feet; using fencing designs, colors, and materials that are consistent with the historic and visual context of the NHLD; relocating of portions of the proposed project alignment to less obtrusive locations (e.g., within the viewsheds from Redoubts 1 and 2 and their associated batteries, the U.S. Route 9W scenic overlooks, Crows Nest Mountain, and adjacent to the Highland Falls Community Cemeteries); integrating the design of the Preferred Alternative with the design of two additional projects proposed by the USMA at West Point, the proposed Stony Lonesome Water Tank Project, and the proposed Security Gate Access Upgrade Project, to further reduce or avoid potential adverse effects to visual resources within the Main Post Academic Area; using fencing materials that are consistent with adjacent architecture; and documentation of NRHP-ineligible structures (e.g., the nine dry-stacked stone walls).

(12) Development of a project-specific Construction and Demolition Waste Management plan to address the on-site collection and disposal of construction and demolition debris.

(13) Limiting construction to daylight, weekday hours to minimize temporary project impacts to traffic, roadway access, utility access, and quality of life, and to reduce the impact of temporary increased noise levels.

(14) Requiring contractors to use equipment that meets specific air quality and noise standards to reduce the impact of temporary, decreased air quality levels (i.e., ensuring that contractors use construction equipment such as backhoes, bulldozers, and dump trucks that produces the Lowest Achievable Emission Rate) and to reduce the impact of temporary, increased noise levels.

7.5 CONCLUSION

Implementation of the mitigation measures previously identified would reduce the potential impacts of the Preferred Alternative, resulting in no significant adverse impacts to the environment. An Environmental Impact Statement is, therefore, not required.

8.0 LIST OF PREPARERS

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9.0 PUBLIC AND AGENCY PARTICIPATION

A comprehensive listing of agencies and persons consulted for information supporting this EA is provided in Appendix A.

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APPENDIX A

LIST OF AGENCIES AND PERSONS CONSULTED AND SUPPORTING INFORMATION

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LIST OF AGENCIES AND PERSONS CONSULTED AND SUPPORTING INFORMATION

Name of Contact Agency	Information Requested	Date Contacted	Date Responded
Douglas Cubbison, USMA, Directorate of Housing and Public Works	Water System Security Upgrade – Phase II Record of Environmental Consideration (REC), Water System Security Installation REC, Bollard Erection REC, Mooring Dolphin Construction and Repair REC, Closed Circuit Television Surveillance System REC, and Crew and Sailing Center Final EA	10/21/02	10/21/02
Christopher Pray, USMA, Natural Resources Division	GIS Coverages of the Natural Resources of the USMA	11/18/02	11/21/02
James Beemer, USMA, Natural Resources Division	Mollusk and Crayfish Survey of the Drainages within the United States Military Academy at West Point, New York, July 2000 - November 2001	12/31/02	1/07/03
David Stilwell, U.S. Fish and Wildlife Service	Federally-listed threatened or endangered species, and designated critical habitat	12/13/02	1/8/03
Theodore Kerpez, New York State Department of Environmental Conservation, Bureau of Wildlife Management	Rare, threatened or endangered species, other species of concern, wildlife refuges or management areas, designated Critical Environmental Areas, and other natural landscape features	12/13/02	1/29/03
Jean Petrusiak, New York Natural Heritage Program	Threatened, endangered, or other species of concern, significant habitats, and other natural landscape features	12/13/02	1/29/03
S. Cabrera, Orange County Soil and Water Conservation District, Middletown, New York	Agricultural Districts, hydric soils, state-designated Unique Farmlands, or additional Farmlands of Statewide Importance information	1/14/03	1/14/03

Source: Compiled by Northern Ecological Associates, Inc. 2003.

APPENDIX B

AGENCY CORRESPONDENCE

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SCENIC HUDSON

March 19, 2004

United States Military Academy
Directorate of Housing and Public Works EP &SD
Building 667
Ruger Road
West Point, NY 10996

ATTN: Mr. Douglas R. Cubbison, Acting NEPA Coordinator

RE: Draft Environmental Assessment, West Point NHLD Perimeter Fence Project
United States Military Academy, West Point, Orange County, New York

Dear Mr. Cubbison:

Thank you for forwarding a copy of the West Point NHLD Perimeter Fence Project.

As you know, Scenic Hudson has a longstanding interest in protecting the visual and historic resources of the Hudson River Valley. In particular, the Hudson Highlands are one of our priority areas. As one of New York's most frequently visited and arguably the State's most historic site, the United States Military Academy (USMA) and its National Historic Landmark District warrants the most careful protection from insensitive development. Over the last few years Scenic Hudson has reviewed and commented upon several projects with the potential to compromise West Point's world renowned historic and scenic landscape, including the new library adjacent to The Plain, the Warner Boat House, and the water tank and cell tower, both of which are near the ski area and visible from scenic overlooks on Route 9W.

Based on our staff review of the Environmental Assessment we offer the following comments.

1) We are pleased that the USMA has determined that the Complete Perimeter Security Fence (Original Proposed Action) is not feasible due to significant environmental impacts and cost.

2) The Partial Perimeter Security Fence Alternative (Preferred Alternative) appears to avoid visual impacts along the Hudson River.

3) We are concerned, however, that the preferred alternative may impose additional visual impacts between Points N and Q when viewed from Route 9W (a State-designated Scenic Byway), Storm King State Park (associated with Scenic Hudson's genesis), Crows Nest Mountain (possessing historic views associated with Hudson River School of Art), and/or Black Rock Forest (an important recreation area).

See Section 4.10

Hence, Scenic Hudson suggests that the EA be expanded to include a visual analysis with computer-generated visual simulations demonstrating how the perimeter fence and cleared area would look from each of the following locations:

- The overlooks on Route 9W;
- Crows Nest Mountain;
- Black Rock Forest; and
- Storm King State Park.

4) Scenic Hudson urges the integration of the design of the water tank project with the perimeter fence so that vegetation intended to screen the water tank is not removed for the construction of the perimeter fence.

See Section 4.10

5) Since each of West Point's gates serve as the "front door" providing a lasting first impression for nearly 3 millions people visiting the Academy each year, the manner in which the Perimeter Security Fence connects with West Point's gates is key to ensuring that these first impressions are favorable. In this regard, we urge the Academy to integrate the planning for the upcoming Gate Access Upgrade Projects into the planning of the Perimeter Fence Project so that historic qualities are not compromised.

Scenic Hudson appreciates your commitment to protecting the visual and historic resources of the National Historic Landmark District at the US Military Academy at West Point. We look forward to working with you in the future and contributing to the Master Plan process beginning this fall.

Thank you for your consideration.

Sincerely,

Jeffrey Anzevino, AICP
Senior Regional Planner

JA/kb

APPENDIX C

DISTRIBUTION LIST

APPENDIX C

DISTRIBUTION LIST

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Hudson Highlands Land Trust
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Village of Highland Falls
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Highland Falls Public Library
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