Fort Belvoir North Area (FBNA) Distribution Center Environmental Assessment

Fort Belvoir, Virginia
September 2022

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Fort Belvoir North Area (FBNA) Distribution Center
Fort Belvoir, Virginia

ENVIRONMENTAL ASSESSMENT

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

Pursuant to the National Environmental Policy Act (NEPA) of 1969 (Title 42, U.S. Code [USC], 4321-4370f), as amended; regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508); and 32 CFR Part 651, *Environmental Analysis of Army Actions*, Fort Belvoir has prepared an Environmental Assessment (EA) to evaluate potential environmental effects associated with construction and operation of a new distribution center at the Fort Belvoir North Area (FBNA) in Springfield, Virginia.

FBNA is located approximately 14 miles southwest of Washington, D.C., and about 13 miles southwest of the Pentagon, along Interstate 95 (I-95) in Fairfax County, Virginia (Figure 1-1). As a strategic sustaining base for America's Army in the National Capital Region, Fort Belvoir provides logistical, intelligence, and administrative support to a diverse group of more than 140 Army and Department of Defense (DoD) organizations. Fort Belvoir contributes to the nation's defense primarily by providing a secure operating environment for regional and worldwide DoD missions and functions. The garrison also provides housing, medical services, recreational facilities, and other support services for active-duty military members and retirees in the National Capital Region (NCR) (Fort Belvoir, 2014a).

The Army established Fort Belvoir during World War I as Camp A.A. Humphreys. In 1919, the Army Engineer School relocated to Camp Humphreys and remained on the installation until 1988. After World War II, Fort Belvoir's mission began to shift from training to research, development, test, and evaluation activities. In the 1950s, the installation's mission expanded to include hosting DoD organizations. With the departure of the Army Engineer School in 1988, Fort Belvoir's mission to support DoD organizations grew. In September 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended numerous realignment and closure actions for military capabilities, which led to the establishment of the current configuration of facilities on FBNA.

Formerly known as the Army Engineer Proving Ground (EPG), FBNA is located in Springfield, Virginia, approximately two miles northwest of Fort Belvoir's main installation. FBNA currently hosts the National Geospatial Intelligence Agency (NGA) headquarters and associated support facilities, which were constructed in 2011.

1.2 PURPOSE AND NEED

The purpose of this Proposed Action is to construct and operate an approximately 525,000 square foot warehouse and administrative building with approximately 600 personnel, associated parking, and covered storage on FBNA. This facility would support the delivery and receipt of materials within and across the Washington Metropolitan Area and NCR to achieve distribution efficiencies. The Proposed Action is needed to more efficiently process and distribute supplies worldwide in support of the intelligence agency and partner federal departments and agencies. The action would

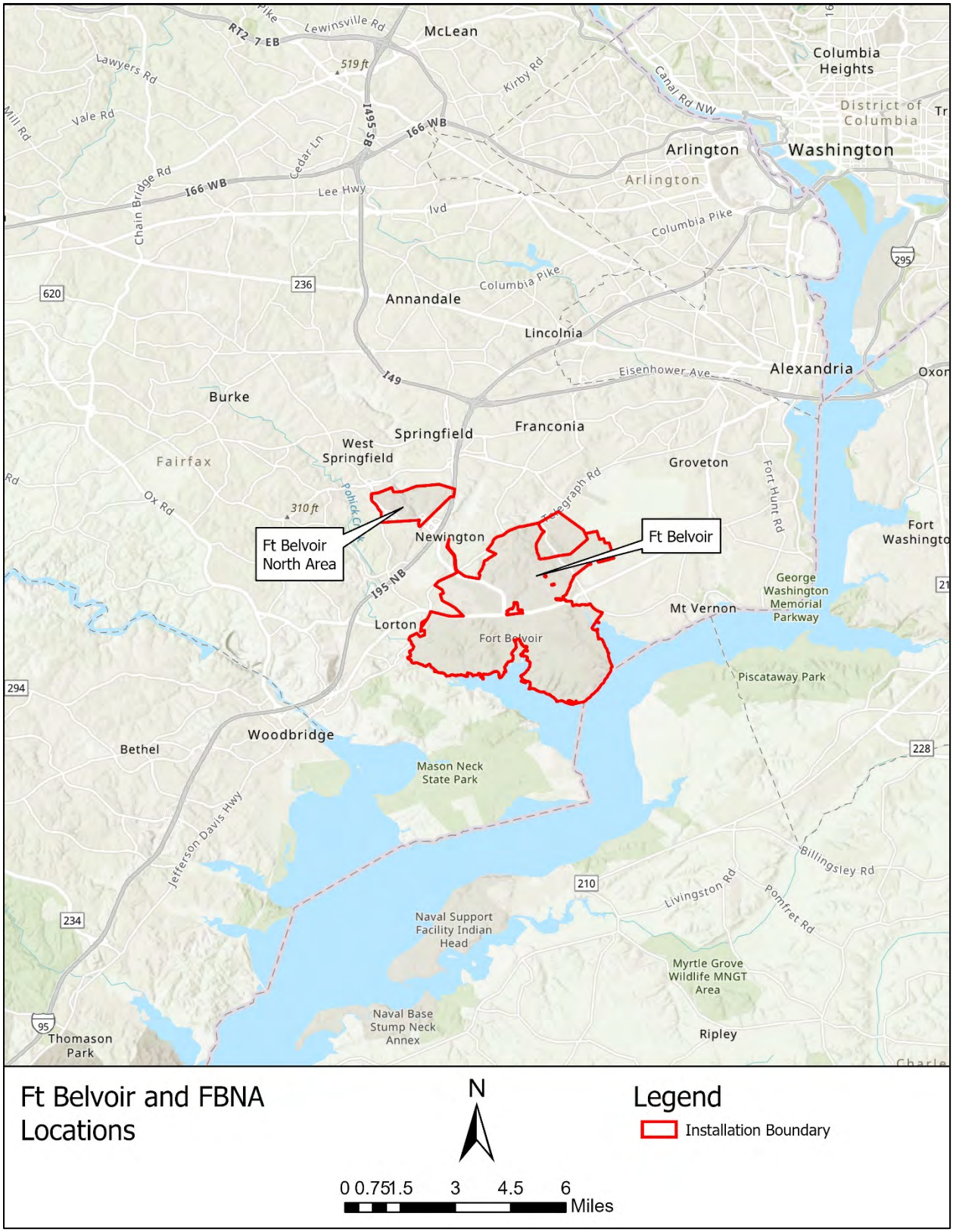

Figure 1-1: Location of Fort Belvoir and FBNA

also comply with Office of Management and Budget (OMB) guidance that encourages stewardship of taxpayer resources and improved joint site usage.

The Proposed Action is needed to modernize logistical operations and address safety, security, and operational concerns specific to the distribution center and its administrative functions.

1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

Under the guidance provided in NEPA and in 32 CFR Part 651, either an EA or an Environmental Impact Statement (EIS) must be prepared for any major Federal action. Actions that are determined to be exempt by law, emergencies, or categorically excluded do not require the preparation of an EA or EIS. If an action may significantly affect the environment, an EIS would be prepared. An EA provides sufficient evidence and analysis for determining whether or not to prepare an EIS. An evaluation of the environmental consequences of the Proposed Action and the No Action Alternative includes direct, indirect, and cumulative effects, as well as a qualitative and quantitative (where possible) assessment of the level of significance of these effects. The EA results in either a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an EIS.

The purpose of this EA is to inform decision makers and the public of the likely environmental consequences of the Proposed Action and No Action Alternative. This EA identifies, documents, and evaluates environmental effects of the construction and operation of a distribution center on FBNA in Springfield, Virginia. Environmental effects would include those related to construction and operation of the Proposed Action as well as impacts of increased personnel and traffic to FBNA. The Proposed Action and alternatives, including the No Action Alternative and other alternatives considered, are described in Section 2.0.

The existing conditions on FBNA are described in Section 3.0, *Affected Environment and Environmental Consequences*. These existing conditions, along with the No Action Alternative, serve as a baseline against which other alternatives will be measured to evaluate the effects of the construction and operation of the distribution center. The evaluation of cumulative impacts from the Proposed Action can be found in Section 3.13. The following resources are evaluated in this EA: land use; geology, topography, and soils; water resources; biological resources; hazardous and toxic materials and waste (HTMW); utilities; noise; airspace; air quality; traffic; cultural and historic resources; and socioeconomics, environmental justice, and protection of children.

1.4 INTERAGENCY/INTERGOVERNMENTAL COORDINATION AND CONSULATIONS

1.4.1 Interagency Coordination and Consultation

Per the requirements of the Intergovernmental Cooperation Act of 1968 (42 USC 4231(a)) and Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, Federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action will be notified during the development of a draft EA.

Early Input, or Scoping, is the early and open process used to solicit early comments on the Proposed Action so that comments can be considered and addressed in the draft EA.

An early input notice for this Proposed Action was advertised on 13 April 2022, and a virtual informational meeting was held on 19 April 2022 to provide additional information on the Proposed Action and ways for stakeholders and the public to submit early comments.

The early input notice was published in the *Washington Post*; The Connection: Mount Vernon Gazette and Springfield; and the *Washington Times*. Comments were accepted via the project email FBNA@usace.army.mil and the project website, https://www.nab.usace.army.mil/FBNA/.

Appendix A contains the list of stakeholders and the public notified early for input.

1.4.2 Government to Government Consultations

EO 13175, *Consultation and Coordination with Indian Tribal Governments*, directs Federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on Federally administered lands. Consistent with that EO and Department of Defense Instruction (DoDI) 4710.02, *Interactions with Federally Recognized Tribes*, Federally recognized tribes that are historically affiliated with the Fort Belvoir geographic region are invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the interagency coordination process, and it requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Native American tribal governments that were coordinated or consulted with regarding these actions include the Eastern Band of Cherokee Indians, Monacan Indian Nation, Nansemond Indian Nation, Pamunkey Indian Tribe, and Upper Mattaponi Tribe (Appendix A). The response received as a result of tribal consultation was a request for a hard copy of the draft EA to be sent, which was provided.

1.4.3 Other Agency Consultations

Per the requirements of Section 106 of the National Historic Preservation Act (NHPA) and implementing regulations (36 CFR 800); Section 7 of the Endangered Species Act (ESA) and implementing regulations; the Migratory Bird Treaty Act (MBTA); and Coastal Zone Management Act (CZMA), findings of effect and request for concurrence were transmitted to the Virginia Department of Historic Resources (VDHR) and the United States Fish and Wildlife Service (USFWS). Because the Proposed Action is located within Virginia's Coastal Zone, a consistency determination was drafted and will be sent to the Virginia Coastal Zone Management Program for review (Appendix C).

Fort Belvoir also initiated consultation with the following agencies for the proposed project: Virginia Department of Wildlife Resources (VDWR), Virginia Department of Environmental Quality (VADEQ), Fairfax County Department of Planning and Development, and National Capital Planning Commission (NCPC).

Concurrence indicating a finding of no effect for the construction and operation of the distribution center was sent by the VDHR on 21 June 2022. On 22 February and 28 June 2022, a report was generated through the Information for Planning and Consultation (IPaC) system, the USFWS online system for searching species protected under the ESA, noted that eleven protected species have the potential to occur within the proposed project area.

Correspondence regarding the findings, concurrence, and resolution of any adverse impact is included in Appendix A.

1.5 PUBLIC AND AGENCY REVIEW OF THE DRAFT EA

A Notice of Availability (NOA) for the draft EA was advertised in the newspapers of record (listed below) announcing the availability of the draft EA for review. The NOA invited stakeholders and the public to review and comment on the draft EA. The scoping meeting presentation was updated and posted to the project website with a summary of analysis and results of the draft EA.

The NOA was published in the *Washington Post*; The Connection: Mount Vernon Gazette and Springfield; and the *Washington Times*. Electronic copies of the draft EA were made available for review on the project website, https://www.nab.usace.army.mil/FBNA, and on the Fort Belvoir Environmental webpage at https://home.army.mil/belvoir/index.php/about/Garrison/directorate-public-works/ environmental-division. The draft EA was also made available by request from Fort Belvoir, and hard copies were placed in the Fort Belvoir Library at 9800 Belvoir Rd, Fort Belvoir, VA 22060, and at the following Fairfax County Public Libraries:

- Kingstowne Library, 6500 Landsdowne Ctr, Alexandria, VA 22315
- Sherwood Regional Library, 2501 Sherwood Hall Lane, Alexandria, VA 22306
- Richard Byrd Library, 7250 Commerce St, Springfield, VA 22150

Comments received during the 30-day public review period will be addressed in the final EA, as appropriate. All coordination letters sent and responses received to date during the preparation of this EA are located in Appendix A.

1.6 ENVIRONMENTAL LAWS AND REGULATIONS

This draft EA has been prepared in accordance with the NEPA, as amended (Title 42 USC §4321 et seq.), NEPA-implementing regulations of the CEQ (40 CFR 1500–1508), and the Army's NEPA-implementing regulations at 32 CFR Part 651.

Army decisions that affect environmental resources and conditions occur within the framework of numerous laws, regulations, and EOs. Some of these authorities prescribe standards for compliance while others require specific planning and management actions to protect environmental values potentially affected by Army actions. Key provisions of appropriate statutes and EOs are described in more detail throughout the text of this EA and in Table 1-1.

Table 1-1: Compliance with Federal Environmental Statutes and Executive Orders

ACTS	Compliance
Archaeological Resources Protection Act (ARPA) of 1979	FULL
Army Regulation 200-1, Environmental Protection and Enhancement	FULL
Clean Air Act, as amended (42 United States Code [U.S.C.] ch. 85, subch. I §7401 et seq.)	FULL
Clean Water Act, as amended (33 U.S.C. ch. 23 §1151)	FULL
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. §9601 et seq.)	FULL
Endangered Species Act of 1973, as amended (16 U.S.C. ch. 35 §1531 et seq.)	FULL
Energy Independence and Security Act of 2007, Section 438	FULL
Farmland Protection Policy Act (7 U.S.C 4201)	FULL
Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e)	FULL
Migratory Bird Treaty Act (16 U.S.C §§703-712, et seq.)	FULL
National Environmental Policy Act of 1969 (42 U.S.C. §4321 et seq.)	FULL
National Historic Preservation Act of 1966, as amended (16 U.S.C. ch. 1A, subch.II §470 et seq.)	FULL
Noise Control Act of 1972, as amended (42 U.S.C. §§4901-4918, et seq.)	FULL
North American Wetlands Conservation Act (16 U.S.C. 4401-4412)	FULL
Resource Conservation and Recovery Act (42 U.S.C. ch. 82 §6901 et seq.)	FULL
Safe Drinking Water Act, as amended (42 U.S.C. §300f)	FULL
Sikes Act, as amended (16 U.S.C. 670a-670o)	FULL
Solid Waste Disposal Act of 1965, as amended (42 U.S.C 6901 et seq.)	FULL
Toxic Substances Control Act of 1976 (15 U.S.C. ch.53, subch. I §§2601-2629)	FULL
Watershed Protection and Flood Prevention Act of 1954 (16 U.S.C. §1101, et seq.)	FULL
Wild and Scenic Rivers Act (16 U.S.C. 1271, et seq.)	FULL
Executive Orders (EO)	Compliance
Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (EO 13990)	FULL
Floodplain Management (EO 11988)	FULL
Protection of Wetlands (EO 11990)	FULL
Environmental Justice in Minority Populations and Low-Income Populations (EO 12898)	FULL
Federal Compliance with Pollution Control Standards (EO 12088)	FULL
Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)	FULL

Executive Orders (EO)	Compliance
Invasive Species (EO 13112)	FULL
Consultation and Coordination with Indian Tribal Governments (EO 13175)	FULL
Chesapeake Bay Protection and Restoration (EO 13508)	FULL
Tackling the Climate Crisis at Home and Abroad (EO 14008)	FULL
Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability (EO 14057)	FULL

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2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Pursuant to the requirements of NEPA and the regulations for implementing NEPA promulgated by the CEQ (40 CFR 1500-1508) and 32 CFR Part 651, this section presents alternatives to the Proposed Action, including the No Action Alternative.

2.1 PROPOSED ACTION

The Proposed Action is to construct an approximately 525,000 square foot distribution center consolidated complex consisting of a high bay warehouse; two-story administrative building; truck maintenance/refueling building; covered/enclosed storage buildings (approximately one-story); entry control facility, including gate house and vehicle inspection; and emergency backup generator. Enhanced security measures along the fenceline include upgrading the current chain link fence (current conditions shown in Figure 2-1 below) to an ornamental/palisade style fence, an approximately 30-foot clear zone around the fence consistent with the existing footprint, and a gravel maintenance and patrol path. See Figure 2-2 below for a rendition of the proposed new fence and patrol path design. The fence would be equipped with cutoff fixtures to ensure lights would only shine downward, not into adjacent properties, and lighting may be minimized along residential areas through the use of night-vision cameras and dimming capabilities. The distribution center expects minimal truck traffic compared to a typical industrial distribution center. The types of materials the distribution center would store and transport include food, clothing, fuel, and general medical supplies. The expected daily truck traffic flow is estimated to be about 640 cars and 12 trucks. The operational hours would typically be between 6am and 4pm.

2.1.1 Alternative 1 (Preferred Alternative)

The Preferred Alternative is to construct a distribution center on FBNA in an existing professional/institutional area, keeping the same type of activity that already exists within the FBNA fence line. The proposed site location on FBNA is a forested area bordered to the west by the Fairfax County Parkway and to the east by Accotink Creek. A portion of the proposed site was previously used as former munitions training ranges. Figure 2-3 depicts the approximately 161-acre Proposed Action Site boundary.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, a distribution center would not be constructed or operated on FBNA.

Figure 2-1: Existing Conditions of Current Fence

Figure 2-2: Rendition of Proposed Fence and Patrol Path Design

Figure 2-3: Proposed Project Location on FBNA

2.3 OTHER ALTERNATIVES CONSIDERED BUT ELIMINATED

Analyses of alternative site locations was conducted for multiple government and commercial locations both inside and outside the NCR. The alternative sites were determined unsuitable for the Proposed Action and were not further examined in this EA. A map showing the commercial and government sites that were considered within the NCR is shown in Figure 2-4.

2.3.1 Commercial Sites

A market survey report from April 2021 summarized the commercial sites for purchase that were analyzed for this Proposed Action. In total, 19 potential commercial sites were evaluated using the following screening criteria:

- Distance – should be ≤60-minute drive to Dulles International Airport and close to a military airport with sufficient runway length (11,000 feet);
- Zoning – should be zoned for commercial or industrial use;
- Infrastructure – should be available on site (or available to bring to site);
- Roadways – should be able to support traffic to/from the site;
- Floodplains – site should not be located within the floodplain; and
- Concerns regarding sale of the property – site may be undesirable or unavailable if it is ground lease only, has an unmotivated seller, or is under contract.

Of the 19 commercial sites evaluated, only two were considered "apparently suitable" – TerraBrite in Bristow, Virginia; and Prince William County Fairgrounds, Dumfries Assemblage, in Manassas, Virginia. These two sites were ultimately not carried forward in this EA because, in accordance with OMB Circular No. A-11, Appendix B guidance, joint site usage (a Federally owned site with similar Federal activities) was determined to be a better use of taxpayer resources, and mission partners are unknown for these sites.

2.3.2 Government Sites

In accordance with OMB guidance to use Federal sites, where feasible, at least 12 government sites on the east coast, both inside and outside the NCR, were considered for this project. Nine of these sites were screened from further consideration due to their distance from the NCR, distance from a railhead, and/or for not having at least 100 contiguous acres for project use. The remaining three government sites were FBNA; Quantico in Prince William County, Virginia; and Fort A.P. Hill in Caroline County, Virginia. Ultimately, Quantico and Fort A.P. Hill were screened from further consideration due to their distances to Dulles International Airport and their lack of mission partners.

Several other areas within FBNA were also considered; however, these sites were already slated for other uses in accordance with FBNA's draft Area Development Plan (ADP), and thus were not further analyzed in this EA.

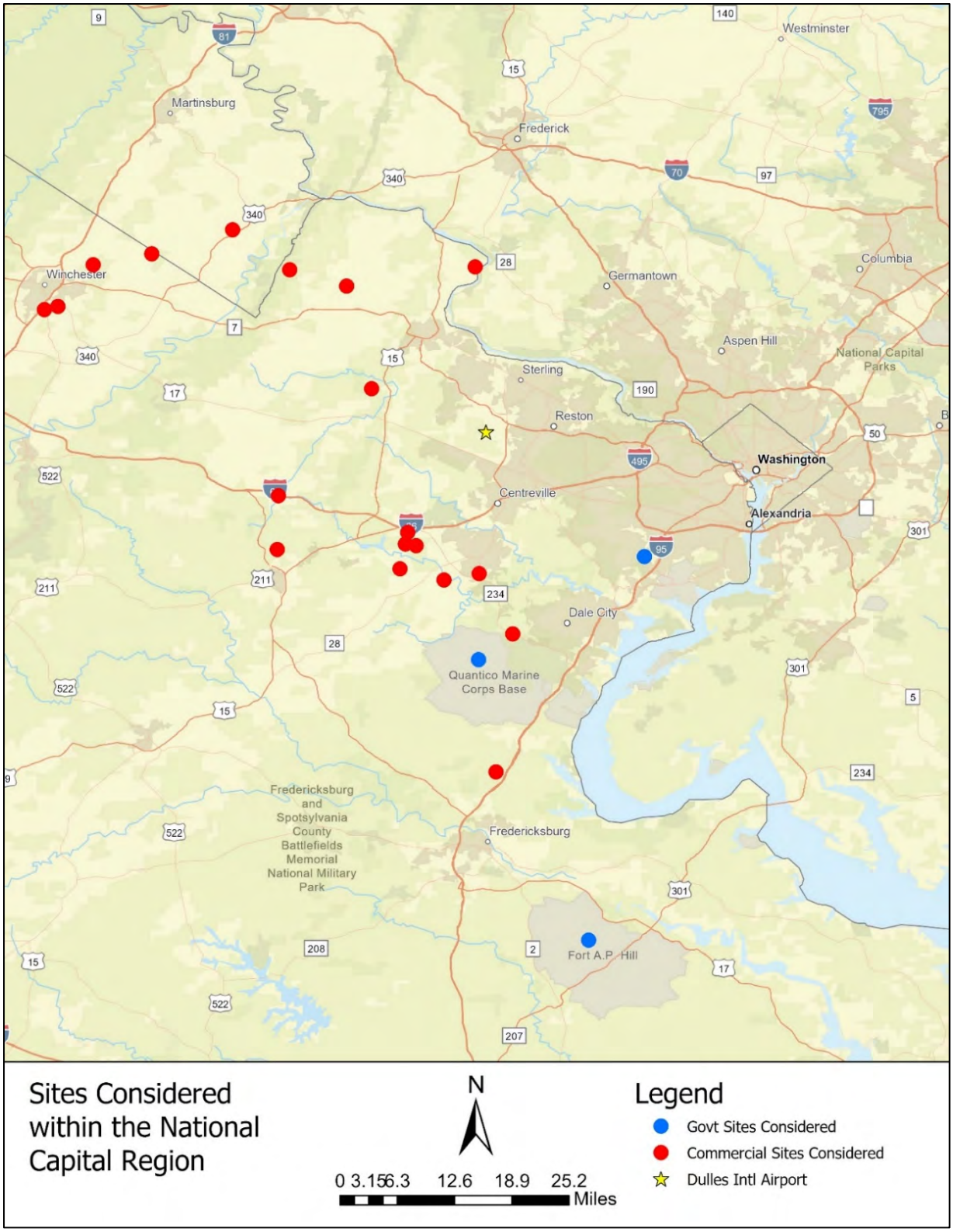

Figure 2-4: Project Sites Considered within the NCR

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section presents the affected environment at the Proposed Action Site and analyzes the environmental consequences of implementing the Proposed Action. The impacts of a proposed action can vary in duration. Two levels of impact duration could occur: short-term and long-term. Short-term impacts are temporary and generally occur during construction with the resource returning to preconstruction condition almost immediately afterward or represent impacts that could last up to two years following construction. Impacts considered long-term would occur if the resource would require more than five years to recover or result in a permanent change from an activity that affects a resource for the life of the project or beyond.

3.1 LAND USE

3.1.1 Affected Environment

FBNA, formerly known as the EPG, is an 804-acre noncontiguous property of Fort Belvoir that is located approximately two miles northwest of the Main Post. FBNA was acquired in the early 1940s for the testing of a wide range of military engineering equipment and supplies, including development of methods and equipment for the deployment, detection, and neutralization of landmines and explosives. FBNA was under the jurisdiction of the Army Research, Development, and Engineering Command and has undergone environmental investigation and remediation since the discontinuation of testing activities and the return of the property to Fort Belvoir in 1988 (U.S. Army, 2015). The Proposed Action Site, located west of Accotink Creek and north of Barta Road, was used for explosives and munitions training within former ranges 5, 5a, and 5b and explosive materials storage, located within the project boundary (Arcadis, 2021a).

Land use of the entire FBNA is classified as Professional/Institutional (U.S. Army, 2021). As part of the 2005 BRAC, NGA was relocated to the eastern side of FBNA and occupies approximately 62 acres between Accotink Creek and Interstate-95. Other facilities on FBNA include an emergency services center (fire station) located in the northeastern corner of the property north of Barta Road, a child development center for the NGA facility, and a remote inspection facility (RIF). The RIF is located on southwestern FBNA and includes parking areas, access control stations, and paved road surfaces.

The Proposed Action Site is situated on the west side of FBNA and is separated from the existing eastern facilities by Accotink Creek and from the RIF by Barta Road. Cissna Road traverses the southern area of the Proposed Action Site and an unpaved road connects Cissna Road north to the former ranges. Other than the former ranges and associated infrastructure, such as bunkers, the Site is relatively undeveloped with contiguous tracts of forested areas, tributaries, and associated wetlands. The Proposed Action is included in the final ADP for FBNA and is in accordance with the land use classification for the Site (U.S. Army, 2021).

3.1.2 Environmental Consequences

3.1.2.1 Threshold of Significance

Impacts on land use are analyzed based on the potential changes, caused by the Proposed Action, to land use designation.

3.1.2.2 Impacts of Proposed Action

The Proposed Action Site is situated within an area of FBNA designated as a Professional/Institutional land use zone. This land use generally includes non-tactical administrative functions, as well as some areas on post where research and development activities are concentrated (U.S. Army Garrison Fort Belvoir, 2015). Land use under the Proposed Action would be consistent with the current land use designation. Therefore, the Proposed Action would have no effect on land use, because no change to the site's current land use designation would be required for the Project.

3.1.2.3 Impacts of No Action Alternative

The No Action Alternative would have no effect on land use. The current land use would remain unchanged.

3.2 GEOLOGY, TOPOGRAPHY AND SOILS

3.2.1 Affected Environment

3.2.1.1 Geology

FBNA is located within the Piedmont geologic province, characterized by gently rolling topography with thick soils underlain by deeply weathered bedrock. In Virginia, the Piedmont province is bounded by the Blue Ridge Mountains to the west and the Fall Line, roughly demarcated by I-95, to the east. The underlying bedrock of the Piedmont is as much as 1,070 million years old and is comprised of rocks of sedimentary and metamorphic origins.

A finger of Piedmont Upland province bedrock extends from north to south along Accotink Creek, forming the bed and adjacent slopes of the creek that roughly bisects FBNA. Most of the more gently sloping areas to the east and west of the creek consist of unconsolidated sediment deposits typical of the Coastal Plain province found east of the Fall Line (U.S. Army, 2007).

3.2.1.2 Topography

The topography of FBNA is gently rolling, with steep slopes ranging from 20 to 30 percent grade forming a narrow valley along Accotink Creek (Figure 3-1). The Proposed Action Site is west of

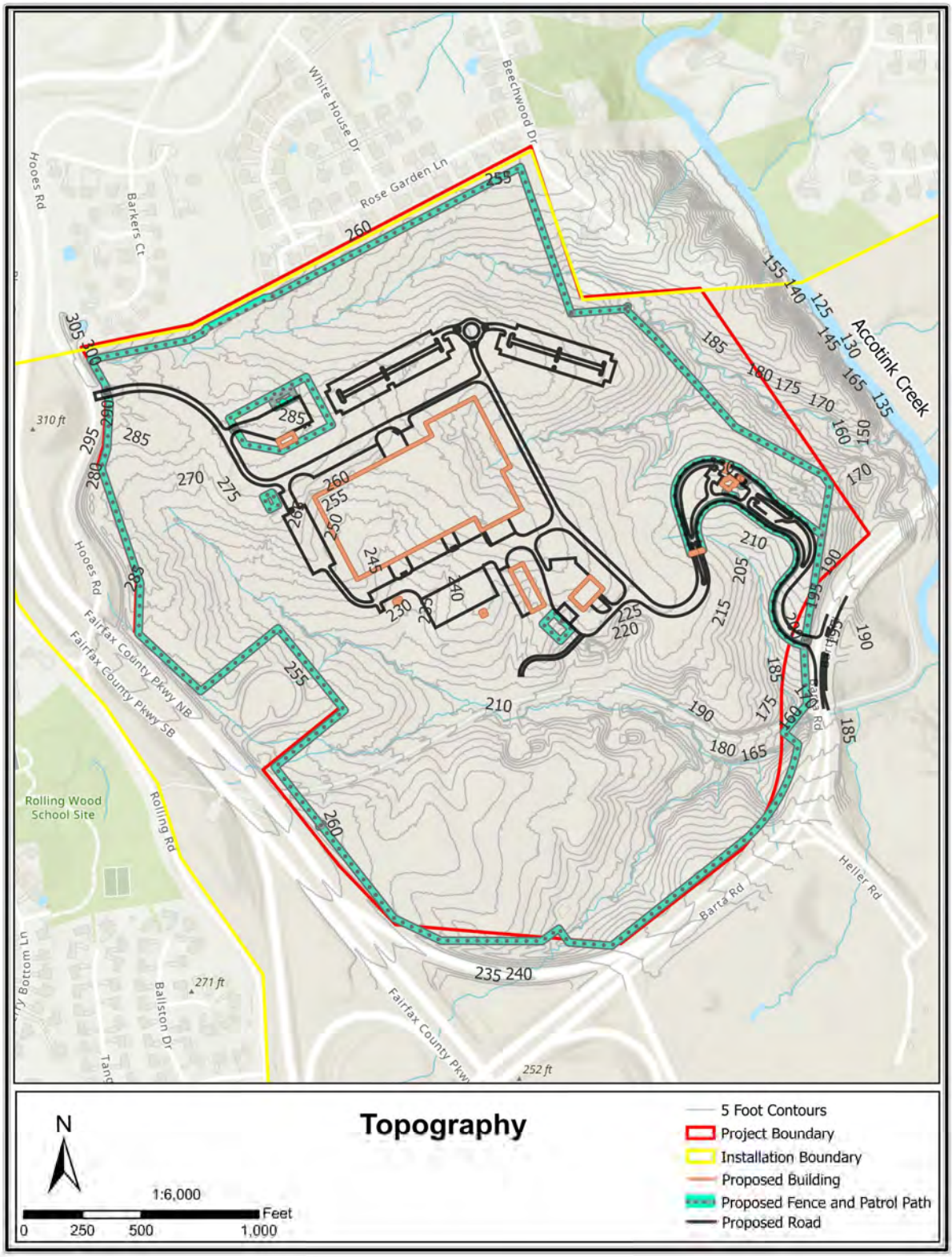

Figure 3-1: Topography

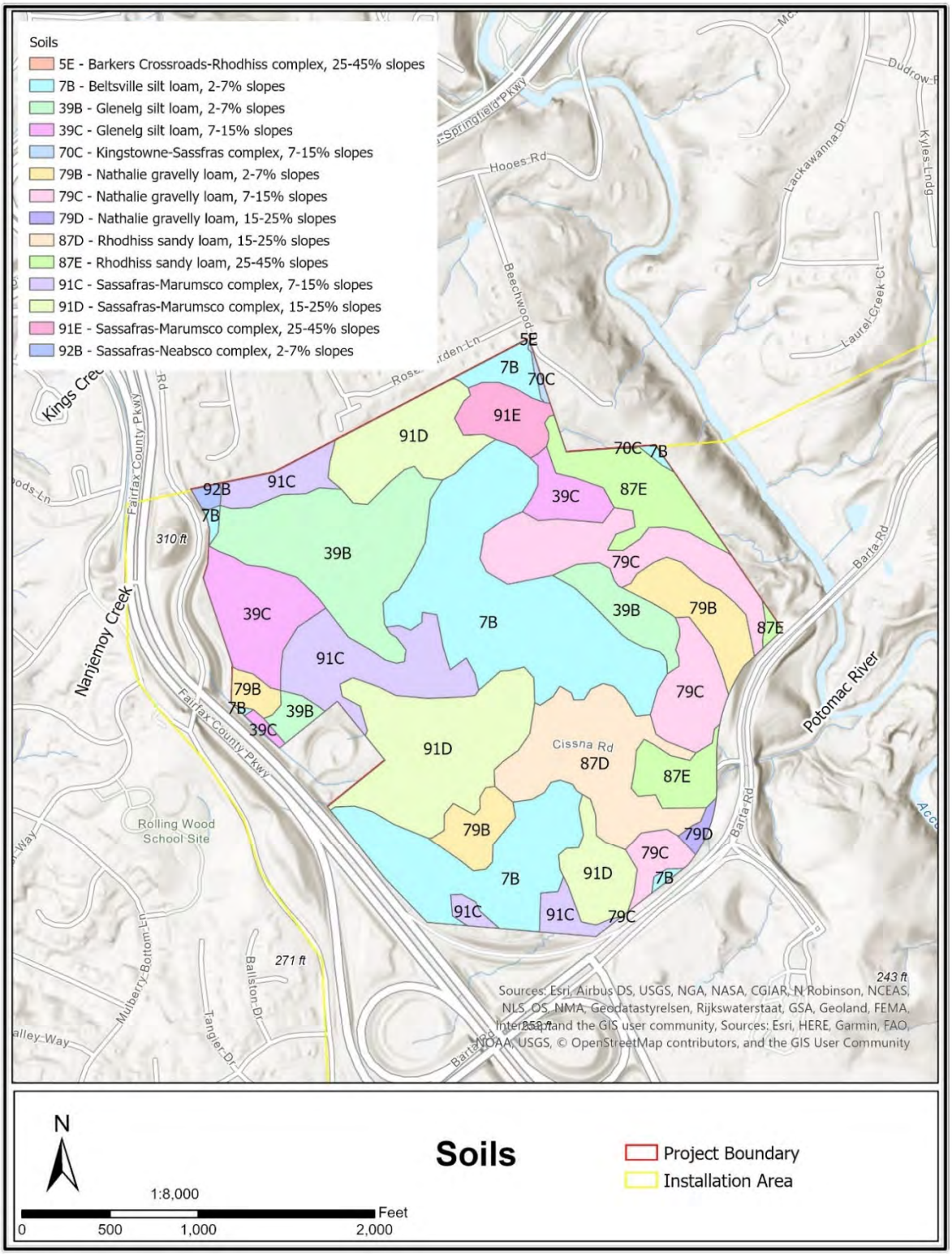

Figure 3-2: Soils

Table 3-1: Soil Types within the Proposed Action Site

Map Unit Symbol	Soil	Approximate acreage within Proposed Action Site	Drainage Class	Hydric
5E	Barkers Crossroads-Rhodhiss complex, 25 to 45% slopes	<0.1	Well Drained	No
7B	Beltsville silt loam, 2 to 7% slopes	38.8	Moderately well drained	No
39B	Glenelg silt loam, 2 to 7% slopes	20.6	Well Drained	No
39C	Glenelg silt loam, 7 to 15% slopes	9.8	Well Drained	No
70C	Kingstowne-Sassfras complex, 7 to 15% slopes	0.2	Well Drained	No
79B	Nathalie gravelly loam, 2 to 7% slopes	8.8	Well Drained	No
79C	Nathalie gravelly loam, 7 to 15% slopes	16.5	Well Drained	No
79D	Nathalie gravelly loam, 15 to 25% slopes	0.6	Well Drained	No
87D	Rhodhiss sandy loam, 15 to 25% slopes	12.1	Well Drained	No
87E	Rhodhiss sandy loam, 25 to 45% slopes	9.8	Well Drained	No
91C	Sassafras-Marumsco complex, 7 to 15% slopes	13.2	Well Drained	No
91D	Sassafras-Marumsco complex, 15 to 25% slopes	26.5	Well Drained	No
91E	Sassafras-Marumsco complex, 25 to 45 % slopes	3.5	Well Drained	No
92B	Sassafras-Neabsco complex, 2 to 7% slopes	0.4	Well Drained	No
Notes: Hydric criteria refer to the potential of a soil to support vegetation and/or hydric conditions indicative of wetlands. Source: NRCS, 2022				

Accotink Creek, with elevations ranging from 150 to 300 feet above mean sea level (an approximate 4.1 percent slope), generally sloping down from northwest to southeast in the direction of Accotink Creek. Several ravines with streams that flow into Accotink Creek traverse the site.

3.2.1.3 Soils

There are 14 soil types within the Proposed Action Site (See above Figure 3-2 and Table 3-1) that are comprised predominantly of Beltsville silt loam, 2 to 7 percent slopes, according to the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), soils map (NRCS, 2022). The next most prevalent soil type is Sassafras-Marumsco complex, 15 to 25 percent

slopes; followed by Glenelg silt loam, 2-7 percent slopes; and Nathalie gravelly loam, 7 to 15 percent slopes. All other soil types make up less than 10 percent of the Proposed Action Site. Soil types are moderately to well drained.

3.2.2 Environmental Consequences

3.2.2.1 Threshold of Significance

Geology, topography, and soil impacts are evaluated separately in the following sections. The impacts on geology are analyzed based on potential changes, caused by the Proposed Action, to bedrock, unique sensitive landforms, or rock foundations. The impacts on topography are analyzed on potential changes to surface features, especially steep slopes. Impacts to soils are analyzed based on potential changes to soil type, erosion, and sedimentation due to the implementation of the Proposed Action.

3.2.2.2 Impacts of Proposed Action

Geology
The Proposed Action would have less-than-significant adverse impacts on underlying geology. While some excavation into the underlying soils would be required to establish the foundation for the two-story administrative building and single-story high bay warehouse, these actions would alter only a small area within the larger, regional landscape and would not alter the underlying geological characteristics. On 8 March 2022, a geotechnical survey was conducted examining on-site soil conditions and provided preliminary recommendations to be included in a design-build package. Additional borings are recommended prior to finalization of the building designs. Based on the preliminary borings, a Seismic Site Class D was recommended for the Proposed Action Site (WRA, 2022).

Topography
The Proposed Action would have less-than-significant adverse effects on the topography of this site, and not result in the alteration or destruction of any unique or noteworthy topographic features within FBNA. Excavation and grading would be employed to prepare the site for construction, and the elevations would be permanently altered to support the buildings, the parking areas, and stormwater management system. The proposed buildings and parking areas would be located to maximize the use of topographic highs to the extent possible.

Soils
The Proposed Action would have short-term, less-than-significant adverse impacts on soils. Clearing of vegetation and grading and excavation of soils would cover approximately 40 acres within the project footprint. These actions expose soils and increase the potential for erosion. Because of the well-established connection between erosion of exposed soils and introduction of increased sedimentation into downstream waters, regulations have been enacted by federal, state and local governments to require project proponents to develop and implement plans to control site conditions and prevent erosion, and these regulations would be followed to minimize impacts.

These regulations and the types of site control mechanisms are described in more detail in Section 3.3.1.6.

3.2.2.3 Impacts of No Action Alternative

Under the No Action Alternative, no impact on geology, topography, or soils in the area would be expected because no grading or other earthwork would occur.

3.3 WATER RESOURCES

3.3.1 Affected Environment

3.3.1.1 Surface Water

FBNA is located within the highly urbanized 51-square-mile Accotink Creek watershed, which ultimately discharges to Accotink Bay and the Potomac River. Accotink Creek roughly bisects FBNA into eastern and western sections. Accotink Creek enters FBNA from the north at an elevation of approximately 120 feet above mean sea level and descends to an elevation of approximately 100 feet above mean sea level before exiting FBNA to the south. Steep slopes rise from both the eastern and western banks of Accotink Creek. The Accotink Creek Conservation Corridor was established in 2005 as a mitigation action associated with the 2005 BRAC Environmental Impact Statement Record of Decision and is a Special Natural Area that serves to protect the Accotink Creek riparian area on FBNA (U.S. Army, 2007). The Proposed Action Site is located within the northwestern half of FBNA, just west of Accotink Creek. Under preliminary design plans, a portion of the proposed roadway in the southeastern corner of the Proposed Action Site crosses into the Accotink Creek Conservation Corridor, where it connects to Barta Road (Figure 3-3).

The project area is predominantly forested with two unnamed tributaries that flow in a general west-to-east direction to their confluence with Accotink Creek off-site (Figure 3-4). The Fort Belvoir Integrated Natural Resources Management Plan (INRMP) (Fort Belvoir, 2017) has identified these areas as perennial streams with associated wetlands. The U.S. Army Corps of Engineers (USACE), Baltimore District staff conducted a field survey on 9-10 October and 19-20 November 2021 to verify the location and size of the tributaries. The northern tributary (R1) consists of two branches beginning at wetlands on-site (Wetland 1) that flow into Accotink Creek. The southern tributary consists of six reaches (R2-7) beginning at Hooes Road to the northwest (R3), a Fairfax County Parkway stormwater pond to the west (R4), Fairfax County Parkway to the southwest and Barta Road to the south (R6), and Barta Road to the south (R7). These run west to east through the Proposed Action Site to R5, flowing under Barta Road and into Accotink Creek. A shorter reach, R8, begins north of R5 and connects east of the Proposed Action Site before Barta Road. The field study determined that the streams exhibited signs of recent erosion such as collapsed, unvegetated banks and steep incision, particularly as they progressed further downstream. Further information on these tributaries is found in Appendix B.

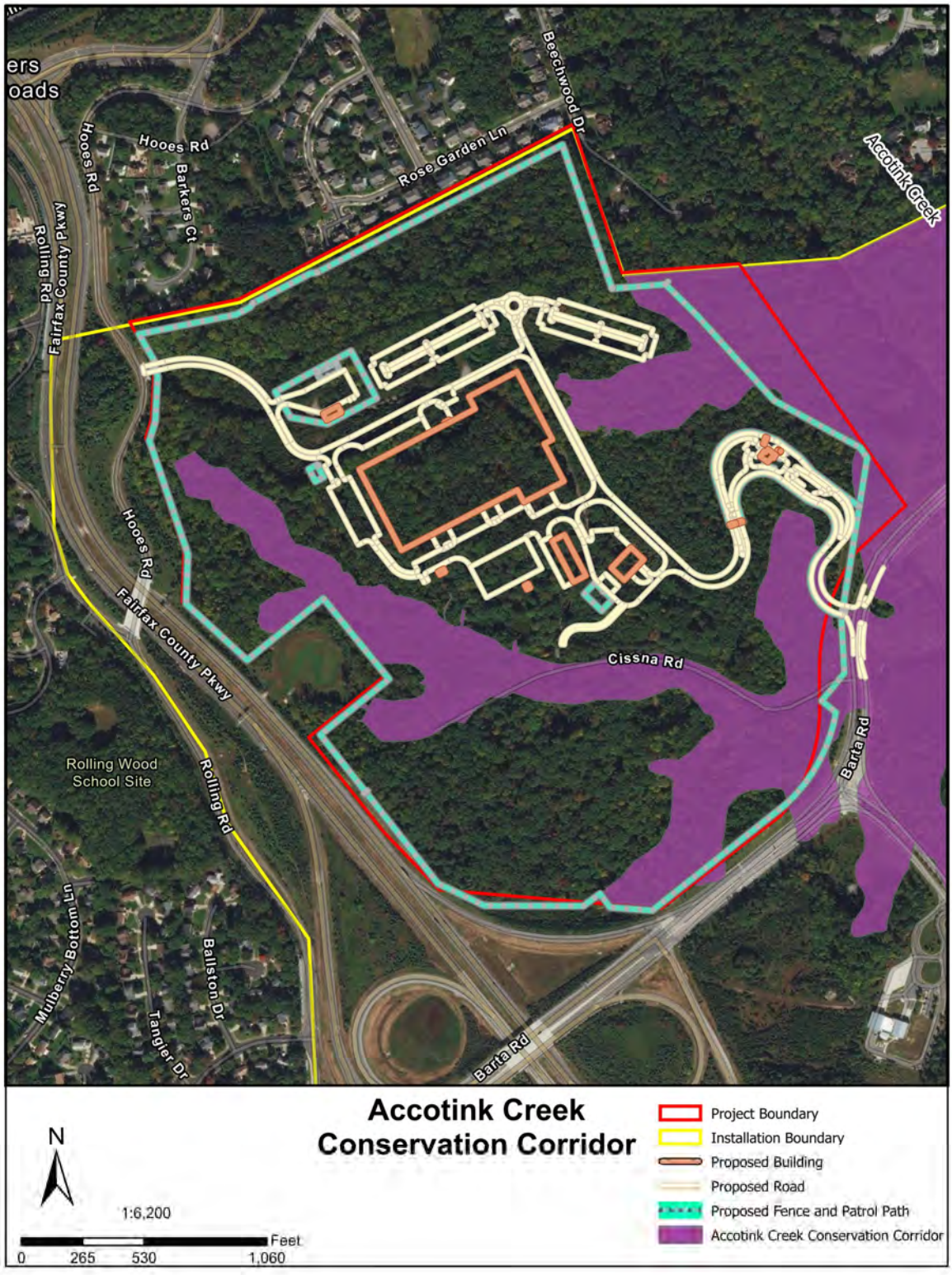

Figure 3-3: Accotink Creek Conservation Corridor

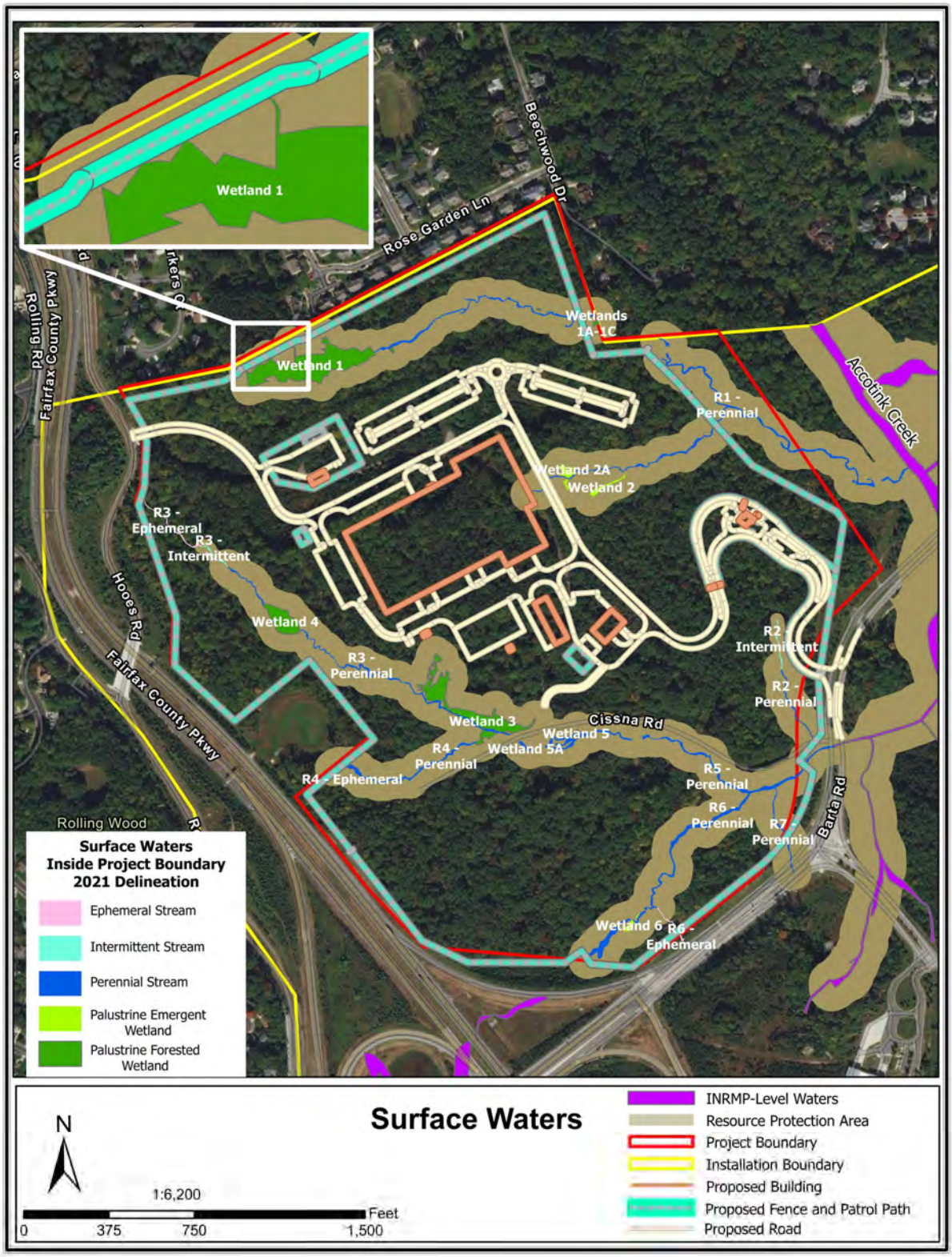

Figure 3-4: Surface Waters

West of the Proposed Action Site is an approximate 2.1-acre fenced stormwater pond for Fairfax County Parkway. Reviews of historical aerial photographs indicate that it was constructed between 2009 and 2010. The stormwater pond contains an outfall that connects to a pipe under the fence line and associated constructed berm, and then discharges to R4 of the southern unnamed tributary.

As discussed in Section 3.5, the former firing and training range resulted in the disposal of munitions and explosion debris within the project site and the contaminated area was designated as an area of potential concern (AOPC), AOPC-21 (Arcadis, 2019). In March 2013, explosives and chlorinated solvent compounds were detected in surface water and sediment samples collected at AOPC-21 and included 1,3-dinotrobenzene, 2,4- dinitrotoluene (DNT), 2,6-DNT, 1-nitroso-3,5-dinitro-1,3,5-triazacyclohexane, 1,3,5-triazine (RDX), octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), cis-1,2-dichloroethylene, and trichloroethylene (TCE). Long-term groundwater monitoring is ongoing at munitions site area AOPC-21 and solid waste management units (SWMUs) M-32 and M-33 within the Proposed Action Site. Evaluation of potential risks associated with contaminated groundwater would be conducted based on the current monitoring results.

The Accotink Creek watershed is 87 percent developed with commercial, industrial, transportation or residential land, with 28 percent of the non-tidal portion of the watershed covered by impervious surface (VADEQ, 2017). The quality of surface waters in such highly urbanized areas typically becomes degraded through increased amounts of sediments, chemicals, nutrients, and bacteria resulting from human activities. Pursuant to Section 303(d) of the federal Clean Water Act (CWA), which requires states to develop a list of impaired waterbodies, VADEQ has identified Accotink Creek as an impaired water based on biological monitoring of benthic macroinvertebrate communities. Section 303(d) of the CWA further requires states to take steps to halt or counteract degradation through development of Total Maximum Daily Load (TMDL) standards for specific pollutants. TMDLs target the load reduction needed to reduce the pollutants of concern and represent the total pollutant loading that a waterbody can receive without exceeding water quality standards. For Accotink Creek, TMDLs are under development for sediment and chlorides.

3.3.1.2 Resource Protection Areas

The two tributaries and associated wetlands in the Proposed Action Site are denoted as a Resource Protection Area (RPA) on Fort Belvoir's INRMP mapping. These features ultimately connect to Accotink Creek, which discharges to Accotink Bay, a tributary to the Potomac River and the Chesapeake Bay. Recognizing the Chesapeake Bay's critical role in the economy and health of the region and the importance of improving the health of the Bay, the State of Virginia's General Assembly adopted the Chesapeake Bay Preservation Act in 1988. The Act requires local governments within Tidewater Virginia to adopt implementing regulations that promote water quality protection measures. One of the key provisions of this Act requires the protection of vegetated riparian buffers, known as RPAs, no less than 100 feet wide located adjacent to and landward of all tidal shores, tidal wetlands, water bodies with perennial flow, and non-tidal wetlands connected by surface flow and contiguous to tidal wetlands along water bodies with perennial flow. In Fairfax County, where Fort Belvoir is located, the Chesapeake Bay Preservation

Ordinance (CBPO) is the applicable local regulation. Fort Belvoir recognizes the RPA designation, but as a federal entity is not subject to the provisions of the Fairfax County ordinance. While Fort Belvoir does not use the RPA maps produced by Fairfax County, the Army does delineate RPAs on the installation, reflecting a spirit of compliance with the state and local requirements. Further, as part of the INRMP, Fort Belvoir designates a 35-foot RPA buffer for intermittent streams.

Establishing an RPA serves to limit adverse effects of development adjacent to streams and tidal wetlands by preserving vegetated buffers around sensitive aquatic resources. Vegetated buffers provide additional surface area for attenuation of surface water run-off velocity, thereby reducing erosion; filtration of excess nutrients and other pollutants carried by stormwater; and additional habitat corridors. Development in these areas should be avoided and/or minimized. When impacts occur, an additional review is conducted to determine the extent of impact, as well as mitigation for the RPA infringement. Mitigation for RPA impacts typically includes the replanting of trees and/or shrubs at a predetermined ratio or the enhancement of a degraded RPA elsewhere on Fort Belvoir. RPAs are typically addressed during the wetland permitting process or the CZMA federal consistency determination process.

It should be noted that EO 13508, *Chesapeake Bay Protection and Restoration*, must be addressed in terms of the Army's obligation to consider the protection and restoration of the Chesapeake watershed in terms of meeting the goals, outcomes and objectives set out in the Strategy for Protecting and Restoring the Chesapeake Bay Watershed. This document not only sets goals/outcomes/objectives of the federal government, but encourages coordination with state, local, and non-governmental partners to protect and restore the health of the Chesapeake Bay Watershed.

3.3.1.3 Floodplains

One-hundred-year floodplains on Fort Belvoir are protected under EO 11988, *Floodplain Management* (May 24, 1977), which directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The EO was issued in furtherance of NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973. Floodplains are defined in EO 11988 as the "lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year." Additionally, EO 13690, *Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, was reinstated in 2021. The EO established the Federal Flood Risk Management Standard, which is a flexible framework to increase the resilience against flooding and help preserve the natural values of floodplains.

As a federal agency subject to these EOs, Fort Belvoir is required to evaluate potential effects of any action occurring in a floodplain. The Proposed Action Site is located outside of the 100-year floodplain associated with Accotink Creek (Figure 3-5).

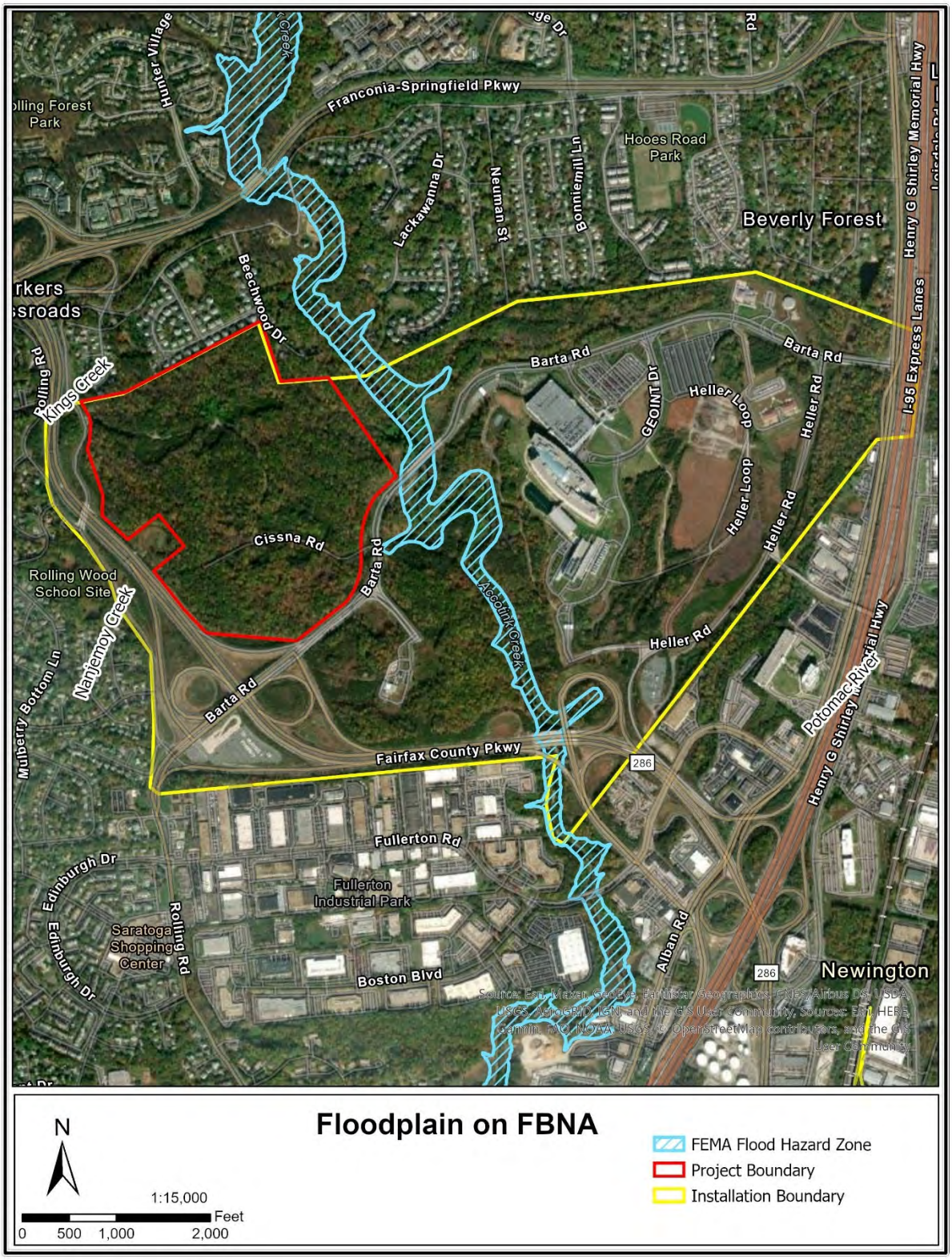

Figure 3-5: Floodplains

3.3.1.4 Wetlands

USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328). Important wetland functions include water quality improvement, groundwater recharge and discharge, stormwater attenuation and storage, sediment detention, fish and wildlife habitat, and erosion protection.

EO 11990, *Protection of Wetlands* (May 24, 1977), requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Under this EO, if wetlands are impacted by the Proposed Action, a Finding of No Practicable Alternative (FONPA) should be utilized to describe the proposed action, discuss its effect on the floodplain/wetland, and describe the alternatives considered. Construction in jurisdictional wetlands and waters of the United States is regulated by the USACE pursuant to Section 404 of the CWA as implemented in regulations contained in 33 CFR 320–330.

Impacts on state waters, including wetlands, are regulated by the Virginia Water Protection Permit Program (9 Virginia Administrative Code [VAC] 25-210-10 et seq.), which serves as Virginia's 401 Water Quality Certification Program for federal Section 404 Permits.

The predominant wetland type on Fort Belvoir is Palustrine Forested wetland, which tends to occur in association with the riparian areas of Accotink, Dogue, and Pohick Creeks. Wetlands generally occur along the perennial and intermittent streams that are drainages of these creeks (U.S. Army Garrison Fort Belvoir, 2015). The Fort Belvoir INRMP (Fort Belvoir, 2017) designated Palustrine Forested and small Palustrine Scrub-Shrub wetlands within the Proposed Action Site. Mapping of potential resources under the INRMP makes general assumptions based on a review of aerial photography; thus, a wetland delineation was conducted by USACE Baltimore District Staff on 9-10 October and 19-20 November 2021 pursuant to the 1987 *Corps of Engineers Wetland Delineation Manual* and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*. Six wetlands were delineated within the Proposed Action Site, amounting to approximately 2.33 acres. The wetlands are described below, and additional information is found in Appendix B.

Wetland 1 is a riparian, forested wetland that forms the headwaters of the unnamed, perennial tributary that discharges to Accotink Creek off-site to the east of the Proposed Action Site. The wetland borders merge into the narrow banks of the stream, which becomes progressively more incised as it travels downstream. This wetland is classified as Palustrine Forested with broad-leaved deciduous vegetation and a temporary flood regime. Dominant vegetation includes blackgum (*Nyssa sylvatica*), red maple (*Acer rubrum*), and bitternut hickory (*Carya cordiformis*) in the canopy; musclewood (*Carpinus caroliniana*) and sweetgum (*Liquidambar styraciflua*) in the understory; and cinnamon fern (*Osmundastrum* cinnamomeum) and Japanese stiltgrass (*Microstegium vimineum*) in the herbaceous layer.

Wetland 2 is a Palustrine Emergent wetland with persistent vegetation and a flood regime classified as seasonally flooded/saturated. The dominant vegetation observed included Japanese stiltgrass, false nettle (*Boehmeria cylindrica*), New York fern (*Thelypteris noveboracensis*), *Carex* spp. and common greenbrier (*Smilax rotundifolia*). The hydrology of this small wetland appears to originate from a hillside seep, which is a common wetland type found within Fort Belvoir. The groundwater daylights in the depression upslope from the relic roadbed, then flows downslope along its compacted surface. Although hydric soil characteristics are noted in the near-surface layers and hydrophytic vegetation predominates, there lacks a distinct and discrete discharge feature to the incised stream located to the north and downslope from this wetland.

Wetland 3 is classified as a Palustrine Forested wetland with broad-leaved deciduous vegetation and a temporary flood regime. Wetland 3 is a slope wetland that discharges into an unnamed tributary to Accotink Creek. The dominant canopy species observed was highbush blueberry (*Vaccinium corymbosum*). Dominant understory vegetation observed was sensitive fern (*Onoclea sensibilis*), deer tongue (*Dichanthelium clandestinum*) and common greenbrier.

Wetland 4 is classified as a Palustrine Forested wetland with broad-leaved deciduous vegetation and a temporary flood regime. Wetland 4 is a riparian wetland located further upstream of Wetland 3's discharge point into the same unnamed tributary. The dominant canopy species observed were sweet gum, red maple, white oak, and tulip poplar (*Liriodendron tulipifera*). The dominant understory vegetation consists of American holly (*Ilex opaca*) and highbush blueberry, and the herbaceous layer was dominated by cinnamon fern, southern lady fern (*Athyrium asplenioides*), whorled wood aster (*Oclemena acuminata***)** and common greenbrier.

Wetland 5 is classified as a Palustrine Forested wetland with broad-leaved deciduous vegetation and a temporary flood regime. Wetland 5 is a riparian wetland that drains into the unnamed tributary to Accotink Creek downstream (south) of the culvert crossing under Cissna Road. The canopy dominant species observed was tulip poplar with sweet gum and American holly in the sapling layer. The dominant understory species observed were Japanese stiltgrass, New York fern, soft rush (*Juncus effusus*), three-way sedge (*Dulichium arundinaceum*) and clearweed (*Pilea pumila*).

Wetland 6 is classified as a Palustrine Emergent wetland with persistent vegetation and a temporary flood regime. This small, depressional wetland is located adjacent to an unnamed tributary to Accotink Creek. The dominant vegetation observed was Japanese stiltgrass, mountain laurel (*Kalmia latifolia*), and highbush blueberry.

3.3.1.5 Groundwater

The groundwater on FBNA is located approximately 10 to 20 feet below the surface and follows the surface water drainage of the area (U.S. Army, 2007). In the Proposed Action Site, groundwater discharges to the surface water drainage of the unnamed tributaries and Accotink Creek.

Groundwater monitoring wells were installed and sampled as part of ongoing investigation and clearance activities at the former explosives and training ranges (Range 5, 5a, and 5b) located at the Proposed Action Site.

Initial groundwater sampling at AOPC-21 in Former Range 5 detected concentrations of TCE, RDX, 2,4-DNT, and 2,6-DNT (Arcadis, 2019) and identified them as groundwater constituents of concern (COCs). The removal of contaminated soil and Munitions and Explosives of Concern (MEC) materials has prevented the further leaching of contaminants into the groundwater, but elevated levels of RDX and 2,4-DNT/2,6-DNT remain. Groundwater sampling also detected COCs of RDX, 2,4-DNT/2,6-DNT at M-32 and M-33 at Former Range 5a (Arcadis, 2021b). The contaminated sites are actively managed in conjunction with the lead regulatory agencies, VADEQ and U.S. Environmental Protection Agency (USEPA), through groundwater use restrictions and groundwater sampling. Additional information about the investigations and clearance activities is found in Section 3.5.

3.3.1.6 Stormwater

The Proposed Action Site is located within the Accotink Creek watershed. There are no existing stormwater management structures within the Proposed Action Site (U.S. Army, 2021). Stormwater is directed by existing topography and drains downhill to the unnamed, perennial tributaries and eventually into Accotink Creek. Stormwater flow is primarily surface flow, with some shallow sub-surface movement. There is a 2.1-acre stormwater pond to the west of the Proposed Action Site that discharges stormwater to the tributary in the south side of the Site.

Stormwater runoff in urban areas is one of the leading sources of water pollution in the United States. Recognizing the importance of controlling stormwater generated from development, federal, state and local governments have adopted requirements. The following regulations apply:

Federal Requirements

- National Pollutant Discharge Elimination System (NPDES) - Section 402 of the Federal CWA, known as the NPDES program, requires permits for the discharge of pollutants from point sources and is administered by VADEQ through its Virginia Stormwater Management Program (VSMP). Fort Belvoir operates a municipal separate storm sewer system (MS4) for the entirety of the installation (including FBNA) pursuant to the NPDES regulations, and discharges stormwater runoff under Virginia Pollutant Discharge Elimination System (VPDES) Stormwater Permit No. VAR040093. Stormwater runoff generated by development on FBNA, including the Proposed Action, would be included under the installation-wide permit, provided the proponent comply with its terms and conditions and coordinate with the appropriate personnel on Fort Belvoir.

- Energy Independence and Security Act (EISA), Section 438 – federal projects 5,000 square feet in size or greater are required to maintain or restore pre-development hydrology. Guidance provided by the USEPA promotes retaining rainfall on-site through infiltration,

evaporation/transpiration, and re-use to the same extent as occurred prior to development. Section 438 requires that practices known as low impact development (LID) or green infrastructure, including reducing impervious surfaces and using vegetative practices, porous pavements, cisterns and green roofs be incorporated into development plans https://www.epa.gov/sites/production/files/2015-09/documents/eisa-438-factsheet.pdf.

- LID is a stormwater management approach that emphasizes the retention of native vegetation and soils, reduces runoff, and seeks to approximate predevelopment hydrologic conditions. LID provides an effective alternative to more traditional stormwater management approaches that rely on engineered structures. When properly used, LID can be cost effective by reducing the reliance on hard structures. It can make more efficient use of land resources by reducing the need for large, centralized stormwater basins, decreasing the total amount of runoff generated, and providing water-quality improvements (HDR, 2020).

State (Virginia) Requirements (VADEQ)

- Stormwater Management Act (9VAC25-870)
  - General Permit for Discharges of Stormwater from Construction Activities
  - Virginia Best Management Practice (BMP) Clearinghouse
  - Virginia Runoff Reduction Method
- Erosion and Sediment Control Law (9VAC25-840)
  - Erosion and Sediment Control Plan
  - Virginia Erosion and Sediment Control Handbook
- Chesapeake Bay Preservation Area Designation and Management (9VAC25-830-130)
  - Construction activities disturbing one or more acres, requires:
  - General Permit for the Discharge of Stormwater from Construction Activities
    - Stormwater Pollution Prevention Plan (SWPPP), developed by the project proponent, requires stormwater management measures as included in the approved site plan, and demonstration of how these measures would be maintained, identifying the responsible entity throughout duration of construction.

Installation Requirements

- The Fort Belvoir Directorate of Public Works (DPW) reviews all construction site plans involving 2,500 square feet or more of earth disturbance for compliance with the installation's MS4 conditions, state requirements for stormwater management and erosion/sediment control, and the Fairfax County Public Facilities Manual.

3.3.1.7 Coastal Zone

The CZMA of 1972 (16 USC §1451 et seq., as amended) provides assistance to the states, in cooperation with federal and local agencies, for developing land and water use programs in coastal

zones. Section 307(c)(1) of the CZMA Reauthorization Amendment stipulates federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management plan. The Commonwealth of Virginia has developed and implemented a federally approved Coastal Resources Management Program (CRMP) describing current coastal legislation and enforceable policies. There are enforceable policies for:

- Fisheries management
- Subaqueous lands management
- Wetlands management
- Dune management
- Non-point source pollution control
- Point source pollution control
- Shoreline sanitation
- Air pollution control
- Coastal lands management

Virginia's Coastal Zone includes all of Fairfax County, including Fort Belvoir; therefore, federal actions at Fort Belvoir are subject to federal consistency requirements. The VADEQ serves as the lead agency for consistency reviews. The Proposed Action Site is characterized as previously disturbed, with a gravel parking lot, unpaved and paved roads, and areas of forest, wetlands, and grass/shrub groundcover. While there are streambanks adjacent to the Proposed Action Site, there is no coastline present, nor dunes.

3.3.2 Environmental Consequences

3.3.2.1 Threshold of Significance

The threshold of significance for water resource and surface water quality impacts would be exceeded if a proposed action would result in changes to regional groundwater patterns or depletion of groundwater, alteration of local surface water, or degradation of water quality such that water quality standards would be exceeded. The threshold of significance for wetlands, RPAs, and floodplains would be exceeded if a proposed action would result in degradation of wetlands without mitigation, or result in a permanent, adverse change to the movement of surface water such that noticeable increased flooding occurs.

For coastal zone resources, the threshold of significance would be exceeded if a proposed action would not be consistent with the federal coastal zone policy, including consideration of the following:

- Substantial impacts of a proposed action on any land or water use or natural resource of the coastal zone;

- Substantial incremental impacts of a proposed action on any land or water use or natural resource of the coastal zone when added to past, present, and reasonably foreseeable future actions; and,
- Collective impacts of individual unrelated actions on any land or water use or natural resource of the coastal zone.

3.3.2.2 Impacts of Proposed Action

Surface Waters and RPAs

Implementation of the Proposed Action would result in less-than-significant adverse impacts on surface water. The Proposed Action includes the construction of roadways and parking features, which are near surface waters (i.e., wetlands or streams) and the Accotink Creek Conservation Corridor. This could result in the disturbance, alteration, or filling of the adjacent RPAs in multiple areas within FBNA. The proposed roadway on the east side of the proposed warehouse and administrative building would potentially require a culvert crossing over stream R1. The crossing would be located where the southern branch of R1 emerges, upstream of Wetlands 2 and 2A and of the hillside seep. The culvert crossing would impact less than 0.002-acre of stream R1 and would not alter the stream course. The proposed roadway entering the project site from Barta Road would be constructed through a portion of the RPA for R2, but would not cross the stream itself; however, it would overlap with the Accotink Creek Conservation Corridor. A proposed parking feature south of the proposed warehouse and administrative building would be constructed slightly within the RPA for perennial stream R3.

The Proposed Action also includes the replacement of the perimeter security fence, which could result in the disturbance, alteration, or filling of the adjacent RPAs in multiple areas within FBNA. Short-term, less-than-significant adverse effects would result from the destabilization of the soils within the limits of disturbance as a result of vegetation clearing and excavation/grading to prepare the site. This stage of construction exposes soils and increases the potential for erosion and discharge of sediment-laden stormwater to downstream receiving waters; however, appropriate erosion and sediment control measures would be implemented, pursuant to the construction SWPPP and the VSMP Construction General Permit and would minimize any detrimental effects.

Construction of permanent stormwater management features would capture stormwater generated from the development and be designed to maintain pre-development levels of off-site discharge. It is expected that the overall effects of construction and operation of the buildings and parking features would be beneficial to downstream receiving waters by stabilization of soils through vegetation and retention and treatment of stormwater flows. Currently, there are no such downstream stormwater management features, resulting in channeling and erosion of soil, particularly associated with the more steeply sloped portions of the Proposed Action Site.

Through the site layout design process, all practicable steps would be made to avoid inclusion of the unnamed tributaries to Accotink Creek, and associated RPAs, within the limits of disturbance (LOD). Unavoidable crossings of the Accotink Creek Conservation Corridor would be mitigated through incorporation of one or any combination of the following: on-site tree planting mitigation

or stream buffer enhancement vegetation planted elsewhere on FBNA along the Accotink Corridor; oversized box culverts for wildlife crossings with grates to allow for light to assist in wildlife crossing; streamside management zones; storm drains; bioretention and infiltration ponds; or green roofs, permeable pavements, and vegetated swales. Any work within the stream and RPA, as necessary to construct roadways, parking features, and security fencing would be appropriately permitted through USACE Regulatory and the Commonwealth of Virginia. Activities during construction would include appropriate BMPs to minimize sediment transport and erosion consistent with state and federal land and water quality criteria.

Wetlands

With implementation of the Proposed Action under the current conceptual plan, the project would avoid wetlands and have less-than-significant adverse impacts. However, there are approximately 2.33 acres of mapped wetlands within the project, and since the project plans are in the early stages of development, the project would continue to avoid these wetlands by relocating the perimeter fence alignment, where possible. Prior to construction, any unavoidable impacts would be permitted through USACE Regulatory and Commonwealth of Virginia's wetland permitting programs. Stormwater generated from within the project site during construction would be appropriately managed through erosion and sediment control measures required through the permitting process, preventing adverse effects of sedimentation on downstream receiving waters that include wetlands. Permanent stormwater management features would maintain pre-development levels of stormwater discharge.

Groundwater

Under the Proposed Action, no adverse effects are expected to occur to groundwater. Construction of the Proposed Action would result in an increase of impervious surface area, reducing the infiltration of stormwater into the shallow, near-surface aquifer. Due to residual groundwater contamination within the project footprint, stormwater management features for the Proposed Action would be required to control and redirect stormwater volume on site to minimize near field infiltration into subsurface groundwater.

Floodplains

Under the Proposed Action, no adverse effects are expected to occur on floodplains. The Proposed Action is not located within a floodplain.

Coastal Zone

Construction and operation of the Proposed Action would be consistent with Virginia's CRMP. Less-than-significant adverse impacts are anticipated under the current design plans; should any impacts on streams occur, they would be mitigated through contributions to habitat restoration at the installation's mitigation sites. Non-point source pollution would be managed through the use of temporary erosion and sediment control measures defined in an approved Erosion and Sediment Control plan or permanent stormwater management BMPs, as appropriate.

Fort Belvoir has determined that the Proposed Action would be consistent, to the maximum extent practicable, with the CRMP's enforceable policies, as described in Appendix C. State review and concurrence with the determination would be requested prior to initiating the Proposed Action.

Stormwater

Under the Proposed Action, less-than-significant adverse effects on stormwater would occur. The Proposed Action would add approximately 26.1 acres of impervious area within the Accotink Creek watershed, resulting in an increase in stormwater volume from impervious surfaces that could cause an increase in erosion and sedimentation if not appropriately controlled. The Proposed Action would meet all applicable stormwater management regulations, ensuring consistent and measurable steps to minimize detrimental impacts to water quality in downstream waters. As stated earlier, approximately 87 percent of land (45 square miles) within the watershed is developed, while approximately 28 percent (14 square miles) is covered by impervious surfaces. In the context of this 51-square mile watershed in central Fairfax County, which encompasses all of FBNA, this increase would be minimal and reduced by stormwater management strategies. Petroleum pollutants from the exposed surfaces of the paved roadways and parking features would be treated through vegetated buffers and stormwater management structures.

Because the project is located within a Chesapeake Bay Preservation Area and would disturb more than 2,500 square feet, the construction contractor would be required to prepare an erosion and sediment control plan in compliance with the Virginia Erosion and Sediment Control Law (9 VAC 25-840) and in conformance with the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992. The plan would be submitted to Fort Belvoir's Stormwater Permit Manager for review and approved by VADEQ's Northern Regional Office, and routine inspections would be conducted throughout construction to ensure compliance with these permits. The contractor would also obtain a Construction General Permit and prepare and implement a construction SWPPP to minimize sedimentation to downstream receiving water bodies.

This project and any construction activities associated with it has the potential to discharge pollutants in surface waters to a monitored/permitted Industrial Stormwater Outfall (ISW RO-031 and RO-032). This outfall is continually monitored for Total Suspended Solids (TSS), Total Petroleum Hydrocarbons (TPH), chloride, specific conductance, nitrogen and phosphorous, along with other constituents; therefore, any uncharacteristically high sediment content in the stormwater discharge detected at sampling could result in a violation of the VA0092771 permit. The construction contractor must contact Fort Belvoir DPW's Industrial Stormwater Section when construction begins and ends, so that precautions can be employed in the course of routine permit-required sampling events for this outfall. Construction as-builts of the new stormwater system would be required and must also be submitted to DPW's Environmental Division.

Construction BMPs would be implemented in accordance with federal, state, and local Fort Belvoir regulations, including Fort Belvoir's MS4 Program and VPDES Permit VA0400093, to protect downstream waters from sediment migration by ensuring adequate perimeter controls and buffers are used, including silt fencing, synthetic hay bales, and similar measures. While these measures would not entirely eliminate the potential for erosion and sedimentation, they would ensure that short-term adverse impacts remain negligible.

Use of appropriate erosion and sediment control measures and long-term LID measures would ensure that neither the construction nor the operation of the Proposed Action would contribute to further degradation of water quality or exceed TMDLs established for Accotink Creek as regulated

under Section 303(d). Therefore, short-term and long-term impacts on surface water quality on and in the vicinity of FBNA would be negligible.

3.3.2.3 Impacts of No Action Alternative

Under the No Action Aternative, less-than-significant adverse effects would occur on surface water because existing conditions at the Proposed Action Site would remain. There would be no man-made alteration of the current pattern of surface water flows across and discharging from the area. The recent erosion observed within the Accotink Creek tributaries such as collapsed, unvegetated banks and steep incision would likely continue to experience further downcutting, contributing to sediment loads downstream. There would be no alteration or construction within the RPA.

The No Action alternative would not impact jurisdictional wetlands, groundwater, floodplains, coastal zone or stormwater on FBNA. Runoff would continue to discharge with no enhanced treatment for volume, velocity or sedimentation downstream to tributaries of Accotink Creek and associated floodplain wetlands that are located beyond the area.

3.4 BIOLOGICAL RESOURCES

Located on the western shore of the Potomac River, within the larger metropolitan area of Washington, D.C., Fort Belvoir sustains its military mission while maintaining relatively large areas of native vegetation in terms of size, diversity, and regional position. Fort Belvoir has recognized the ecological importance of its natural habitats by designating three refuges, two biological corridors, wetlands, and steep-sloped areas as environmentally constrained areas (Fort Belvoir, 2017). These large areas of native vegetation afford a contiguous band of wildlife habitat within and extending outside of the installation. Fort Belvoir's natural resources management strategy, outlined in its INRMP, prioritizes preserving the native diversity of communities and species within communities and implements an ecosystem-based natural resources management program based in part on DoD Instruction 4715.3, *Natural Resources Conservation Program* and Army Regulation 200-1, *Environmental Protection and Enhancement,* to guide development on Fort Belvoir.

The Accotink Bay Wildlife refuge, Jackson Miles Abbott Wetland Refuge, T-17 Refuge, Accotink Creek Conservation Corridor, and Forest and Wildlife Corridor are designated Special Natural Areas by Fort Belvoir. The Accotink Creek Conservation Corridor was designated as a Special Natural Area in 2005. This predominantly forested 191-acre area serves as a wildlife migratory corridor and supports potential habitat for federally listed small whorled pogonia (*Isotria medeoloides*) and several other species of management concern (Fort Belvoir, 2017).

Biological resources discussed in the following sections include vegetation, wildlife, threatened and endangered species, and Partners in Flight (PIF) habitat. Relevant regulations and policies are also discussed when applicable. The area of analysis for biological resources focuses on the Proposed Action Site, taking into account a broader geographic range when appropriate.

3.4.1 Vegetation

The Proposed Action Site consists of approximately 161 acres. The 2017 Fort Belvoir INRMP characterizes the site as predominantly forested and comprised of hardwood, mixed tulip poplar (*Liriodendron tulip*)/hardwood, mixed pine/hardwood, pine forests, and wetland seeps (Fort Belvoir, 2017). There are two upland areas that were previously cleared for the former MEC training area. Since these sites are no longer active, they have been allowed to revert to natural habitats and have become early successional communities dominated by a near monoculture of Virginia (*Pinus virginiana*) pine samplings. No tree planting mitigations have been done at the Proposed Action Site, and no tree planting mitigation sites will be impacted by the Proposed Action.

A forest stand delineation was performed by USACE Baltimore District Staff on 17 and 23-25 August 2021 to inventory the forest composition at the Proposed Action Site. Forest stands were distinguished primarily by differences in species composition and successional stage and ranked as Priority 1, 2, or 3 following the guidelines of the Maryland State Forest Conservation Technical Manual. Although this method is not a regulatory requirement in Virginia, it provides an efficient and comprehensive approach for cataloging and prioritizing forest resources. Priority 1 stands have wetlands, specimen trees of 30" diameter at breast height (dbh) or greater, intermittent or perennial streams, steep slopes, and/or other sensitive areas. Priority 2 may contain some elements listed for Priority 1 and/or have a designation of priority in a local land use plan, local forest conservation program, or other criteria adopted by a local forest conservation program. Priority 3 areas have evidence of increasing levels of human disturbance compared to Priority 1 and 2 areas.

Eight forest stands were identified within the Proposed Action Site with seven designated Priority 1 (Stands 1-2 and 4-8), and one Priority 2 (Stand 3) (Figure 3-6). The stands support mature and specimen trees and most contain wetlands and/or perennial streams. Overall, invasive species coverage is relatively low with most occurrences in the ground cover layer. Tree canopy cover ranges from 70-100 percent coverage with dominant cover types of tulip poplar (*Liriodendron tulipifera*)/red maple (*Acer rubrum*) or oak (*Quercus* sp.)/hickory (*Carya* sp.).

Canopy and sub-canopy species include American beech (*Fagus grandiflora*), Northern red oak (*Quercus rubra*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), southern red oak (*Quercus falcata*), mockernut hickory (*Carya tomentosa*), black gum (*Nyssa sylvatica*), sassafras (*Sassafras albidum*), American holly (*Ilex opaca*), sweetgum (*Liquidambar styraciflua*), pawpaw (*Asimina triloba*), Virginia pine, and Loblolly pine (*Pinus taeda*). Understory species also include muscle wood (*Carpinus caroliniana*), Eastern red cedar (*Juniperus virginiana*), and mountain laurel (*Kalmia latifolia*). Herbaceous and woody species include cinnamon fern (*Osmundastrum cinnamomeum*), common greenbrier *(Smilax rotundifolia*), huckleberry (*Vaccinium membranaceum*), highbush blueberry (*Vaccinium corymbosum*), Indian cucumber-root (*Medeola virginiana*), Jack-in-the-pulpit (*Arisaema triphyllum*), partridgeberry (*Mitchella repens*), poison ivy (*Toxicodendron radicans*), saw-toothed viburnum (*Viburnum betulifolium*), tick trefoil (*Desmodium* spp.), and Virginia creeper (*Parthenocissus quinquefolia*). Invasive species include Asiatic bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle (*Lonicera japonica*), Japanese

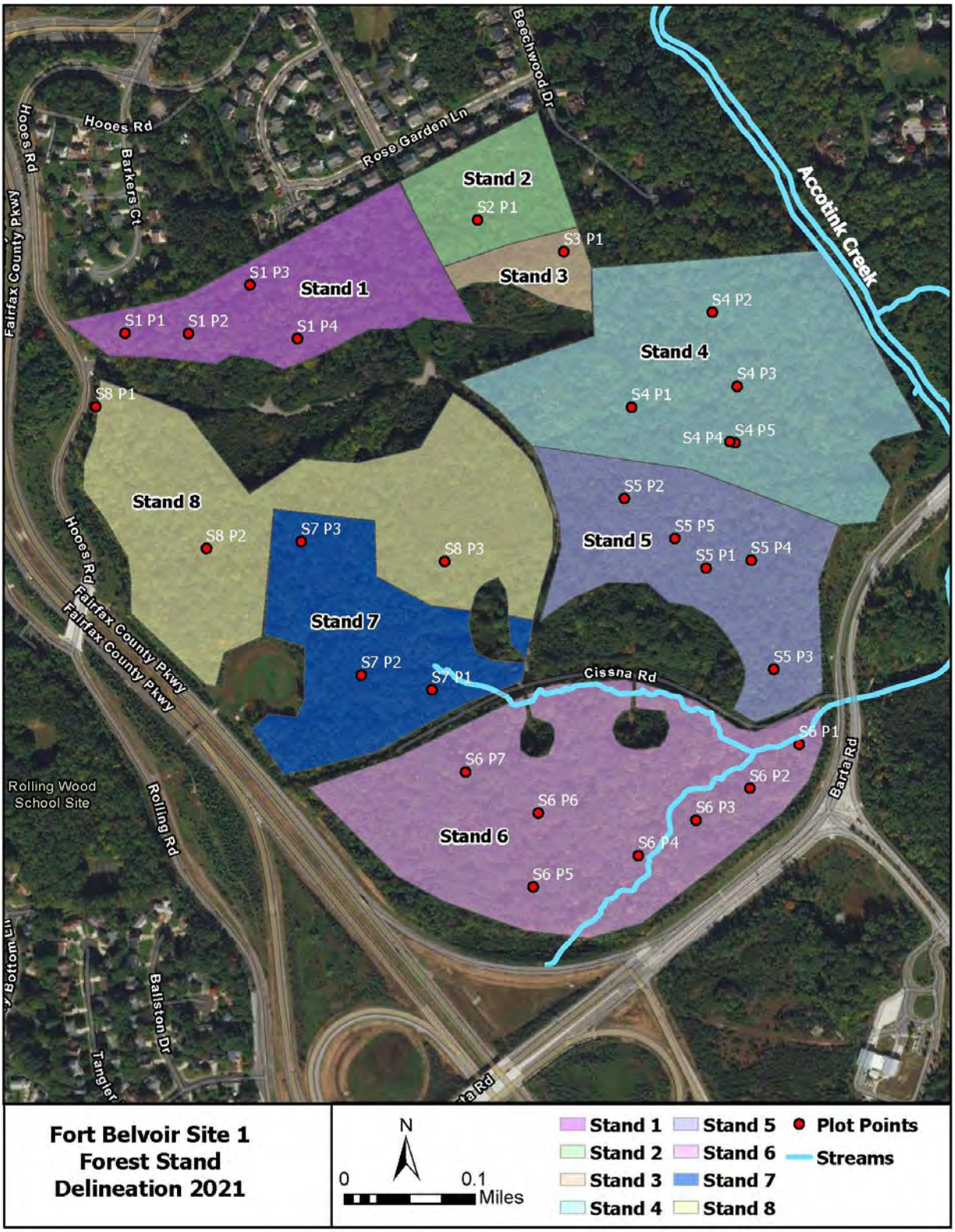

Figure 3-6: Forest Stands

stilt grass (*Microstegium vimineum*), multiflora rose *(Rosa multiflora*), and wisteria (*Wisteria sinensis*). Further information about the methods and results of the survey are found in Appendix D.

Fort Belvoir's Tree Removal and Protection Policy requires the protection of existing trees and, where tree loss is unavoidable, mitigation for the removal of trees must be performed unless expressly exempted. In-kind mitigation measures include replacing any trees four inches or greater dbh that are removed with the planting of two new trees. Out-of-kind compensatory mitigation, such as environmentally beneficial restoration, enhancement, or preservation measures may be completed if in-kind mitigation is not a feasible option (Fort Belvoir, 2018). Pursuant to the Tree Removal and Protection Policy, a Tree Protection Plan must be prepared in accordance with Fort Belvoir DPW requirements and included as part of the 35 percent design submittal for construction projects (Fort Belvoir, 2018). The Proposed Action would minimize tree clearing and maximize on-site tree plantings, including options such as evergreens to address viewshed impacts and provide additional seasonal noise buffers to residential communities. In addition, the Army would continue to work closely with Fairfax County on a Memorandum of Understanding that would include identifying additional tree replanting opportunities throughout the Accotink watershed, and such areas may include Fairfax County Public School properties and outreach programs.

3.4.2 Wildlife

There have been multiple surveys on the wildlife at Fort Belvoir (Fort Belvoir, 2017). A wildlife survey conducted on FBNA in 2006 found that mammals were predominantly white-tailed deer (*Odocoileus virginianus*), Virginia opossums (*Didelphis marsupialis*), and gray squirrels (*Sciurus carolinensis*) (U.S. Army, 2007). The Proposed Action Site primarily consists of upland and wetland forests. These types of habitats support a variety of species found on Fort Belvoir including the eastern chipmunk (*Tamias striatus*), southern flying squirrel (*Glaucomys Volans*), eastern cottontail (*Sylvilagus floridanus*), American beaver (*Castor canadensis*), and red fox (*Vulpes vulpes*) (Fort Belvoir, 2017). Reptiles found in these habitats include eastern mud turtle (*Kinosternon subrubrum subrubrum*), eastern rough green snake (*Opheodrys aestivus aestivus*), and northern ringneck snake (*Diadophis punctatus edwardsi*). Accotink Creek, along with its tributaries and associated floodplain wetlands, support amphibian species including spring peepers (*Pseudacris crucifer*), American toads (*Bufo americanus*), Fowler's toads (*Bufo woodhousii fowleri*), and bullfrogs (*Rana catesbeiana*).

3.4.3 Rare, Threatened and Endangered Species

Under the ESA of 1973, plant and animal species in danger of extinction throughout all or a significant part of their range are listed as endangered. Species that are likely to become endangered within the foreseeable future are listed as threatened. The USFWS is responsible for administering the ESA for terrestrial and freshwater organisms, as may be found within the Proposed Action Site and its vicinity. The ESA establishes the federal government's responsibility for protection and recovery of species considered to be in danger of extinction. The ESA requires federal agencies, in consultation with the USFWS, to ensure that actions they authorize, fund, or

carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Critical habitat can include areas not occupied by the species at the time of the listing, but are essential to the conservation of the species.

3.4.3.1 Federally Listed Species

Section 7 of the ESA requires federal agencies to request information about whether any species, are listed, proposed to be listed, or may be present in the area of such proposed action for any project that is conducted, permitted, funded, or licensed by a federal agency. According to a screening of the Proposed Action Site using the USFWS' IPaC online tool, the northern long-eared bat (*Myotis septentrionalis*) (NLEB), listed as a threatened species under the ESA, may occur in forested areas on or near the Proposed Action Site (USFWS, 2022). No critical habitat has been designated for this species. White-nose syndrome, a fungal disease known to affect bats, is the most severe and immediate threat to NLEB survival and is the basis for the listing of the species as threatened. During the active season (April 1 to October 31), bats roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and snags.

USFWS signed a Programmatic Biological Opinion (BO) 5 January 2016 on the Final 4(d) Rule that addresses effects to the NLEB by federal actions and provides a streamlined Section 7 consultation. USFWS has not yet designated critical habitat for NLEB. On May 24, 2022, a team of biologists from Fort Belvoir DPW Environmental Division conducted a field survey of the Proposed Action Site for the NLEB. The survey did not identify any NLEB, or state listed tri-colored or little brown bats, within the Proposed Action Site. Further information about the survey methods and results can be found in Appendix F.

The IPaC screening previously listed the small whorled pogonia (*Isotria medeoloides*) as potentially present within the Proposed Action Site, but in an updated IPaC screening from June 28, 2022, the small whorled pogonia is no longer listed for the Proposed Action Site (see Appendix A). The small whorled pogonia is an orchid listed as federally threatened throughout its range and listed as state-endangered by the Commonwealth of Virginia. In Virginia, small whorled pogonia is most typically found in deciduous second or third growth successional hardwood forests with fairly sparse ground cover and highly acidic, nutrient-poor, sandy loam soils, although plants have been found in a wider range of habitats in recent years. To date, FBNA is the only location in Fairfax County, where the small whorled pogonia has been found (U.S. Army, 2007). The small whorled pogonia was observed in the summer of 2005 on steep, oak-dominated forested slopes on a first order tributary of Accotink Creek in the southwestern part of FBNA. Areas of FBNA that had been previously identified as potential suitable habitat for the small whorled pogonia are along the western and southern boundaries of FBNA.

A team of biologists from the USACE Baltimore District, Fort Belvoir DPW, and a certified surveyor from Coastal Resources, Inc. surveyed the area of FBNA identified as potentially suitable habitat for small whorled pogonia on July 20-21, 2021. The habitat was categorized as 1) unsuitable habitat with little or no potential to support small whorled pogonia due to the lack of

forest, early succession stage, very dense understory and herbaceous cover, or presence of wetlands; 2) marginal habitat with mature habitat that have some potential to support small whorled pogonia but lacking other characteristics of suitable habitat; and 3) suitable habitat with a high potential to support small whorled pogonia, including mature forests on northerly or easterly facing slopes with flat to moderate topography; the presence of species associated with small whorled pogonia; acidic, sandy soils with low nutrients; an open understory and herbaceous layer; and canopy openings such as a small stream, road, or dead/fallen trees that allow sunlight to reach the forest floor (Figure 3-7).

No small whorled pogonias were found during the habitat survey, although suitable (7.25 acres) and marginal (16.76 acres) habitat were identified along the stream corridors (Figure 3-7). An additional survey for the presence or absence of small whorled pogonia was conducted on June 21, 2022. Similar to the 2021 survey, no small whorled pogonias were located within the Proposed Action Site. The survey documented numerous colonies of common whorled pogonia (*Isotria verticillata*), which is not a listed species, within the suitable small whorled pogonia habitat along the southern, unnamed tributary that flows southeast through the Proposed Action Site. Further information about the survey methods and results can be found in Appendix E.

The monarch butterfly (*Danaus plexippus*) is also listed in the IPaC screening as a candidate species and under consideration for official listing. Although there are generally no Section 7 requirements for candidate species, USFWS encourages agencies to take advantage of opportunities that may conserve the species. Primary threats to the monarch include loss and degradation of habitat, use of herbicides and pesticides, urban development, and climate change. Conservation efforts include protection of the obligate milkweed plants (primarily *Asclepias* spp.), which monarchs use for egg deposition and larvae feeding as well as other nectar resources for adults. Critical habitat has not been designated for this species.

3.4.3.2 Birds of Conservation Concern

The USFWS IPaC screening identified nine species of Birds of Conservation Concern within the Proposed Action Site that are protected under the MBTA. These include the black-billed cuckoo (*Coccyzus erythropthalmus*), cerulean warbler (*Dendroica cerulea*), Kentucky warbler (*Oporonis formosus*), prairie warbler (*Setophaga discolor*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), rusty blackbird (*Euphagus carolinus*), and wood thrush (*Hylocichla mustelina*). The bald eagle (*Haliaeetus leucocephalus*) is also identified as a Bird of Conservation Concern due to the special protections afforded under the Bald and Golden Eagle Protection Act of 1940; however, there are no documented bald eagle nesting areas on the Proposed Action Site.

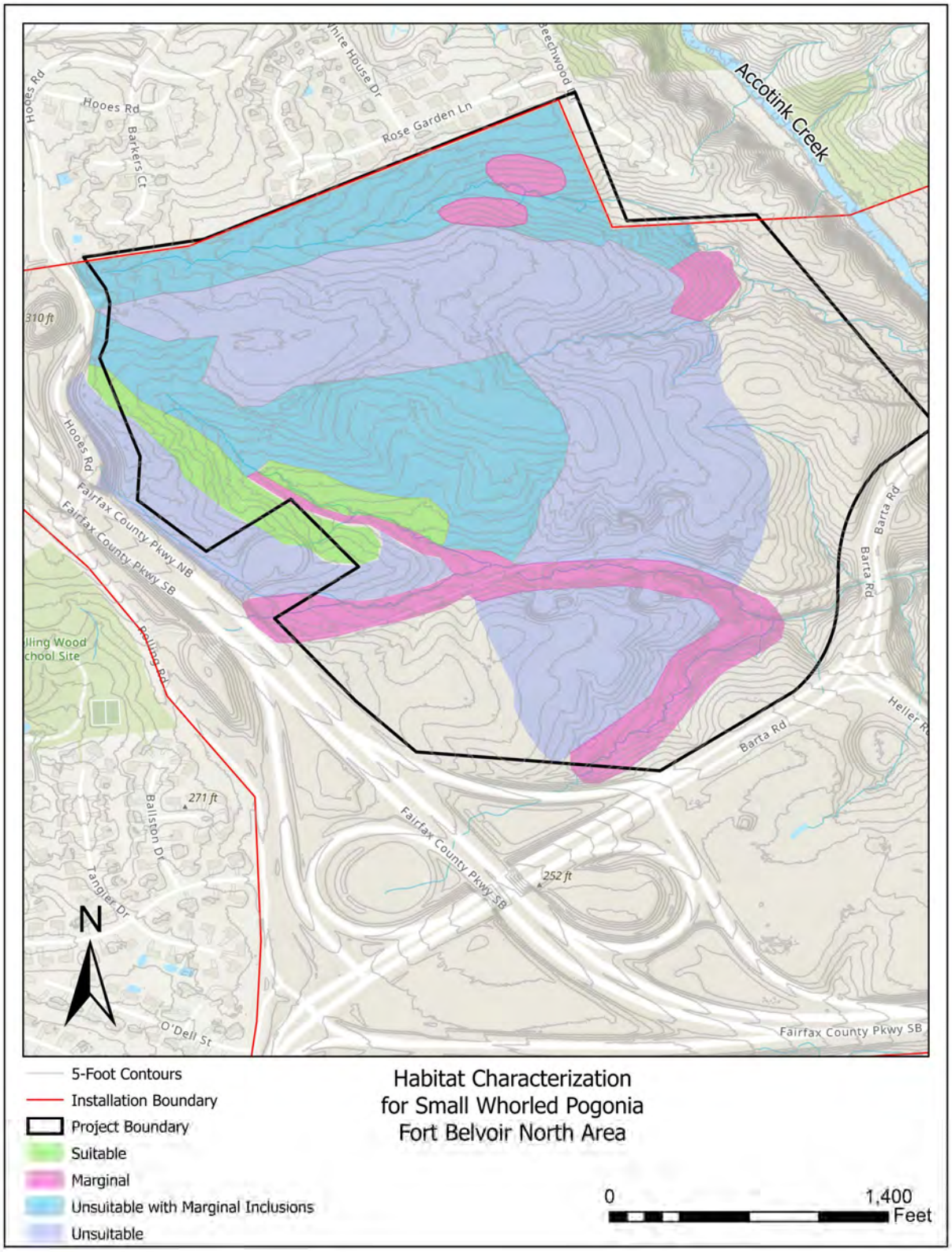

Figure 3-7: Small Whorled Pogonia Habitat

3.4.3.3 State-Listed Species

The Commonwealth of Virginia has promulgated a state endangered species act that provides endangered and threatened listings for species vulnerable to extinctions at the state level. The Virginia statute (4 VAC 15-20-130) prohibits the taking, transportation, possession, sale, or offer for sale within the state of any species listed on the federal endangered species list or any other species designated by the state board. Virginia also provides protection for plant and insect species through Chapter 10 §3.2- 1000 of the Code of Virginia. It is the role of Virginia's Department of Conservation and Recreation, Division of Natural Heritage to maintain listings and rarity (i.e., conservation) rankings of rare plant and animal species and ecological communities. Unlike endangered and threatened listings, rare species listings and their rankings are not legal designations and do not provide any protective status, but, rather, are used to prioritize resources for conservation.

Fort Belvoir has five state-listed animal species that occur on the installation, including the state-listed threatened wood turtle (*Glyptemys insculpta*), the state-listed threatened peregrine falcon (*Falco peregrinus*), the state-listed endangered little brown bat (*Myotis lucifugus*), the state-listed endangered tri-colored bat (*Perimyotis subflavus*), and the state and federally listed threatened NLEB. Potential habitat for the wood turtle is primarily located along Accotink Creek and its tributaries. However, this species is also known to traverse connected deciduous woodlands within 300 feet of resident waterways. The peregrine falcon has been regularly recorded on Fort Belvoir, as it migrates through the regional area and takes advantage of foraging habitat along the Accotink Creek/Accotink Bay stream corridor. A bat survey was conducted for the Proposed Action Site, and the survey did not identify any NLEB or state listed tri-colored or little brown bats, within the Proposed Action Site. The little brown bat and the tri-colored bat have an active season similar to that of the NLEB. The conservation measures outlined by the Commonwealth of Virginia include time of year restrictions that fall within the bounds of restrictions already established for the NLEB. Therefore, the conservation measures required for protection of the NLEB would also be adequate for protection of the state-listed bat species.

3.4.4 Partners in Flight

The DoD PIF program uses a cooperative network of natural resources personnel from military installations across the United States to sustain and enhance the military mission through proactive, habitat-based conservation and management strategies that maintain healthy landscapes and training lands (https://partnersinflight.org/). The DoD PIF uses voluntary partnerships at local, state, regional, national and international levels to share information and develop ecosystem-based, proactive management programs and programmatic priorities that aim to "keep common birds common" and help recover species at risk. The USFWS, as well as state wildlife agencies such the Virginia Department of Wildlife Resources (VDWR), through the state nongame program, are also partners in this program.

As part of the PIF Program, DoD installations are encouraged to incorporate elements of the Partners in Flight Bird Conservation Strategy into their INRMPs. Such elements include habitat

management practices such as prescribed burning and timber management programs. Designation of regional PIF priority bird species is the result of a cooperative/coordinated effort among various federal, state and private organizations. Fort Belvoir has designated approximately 4,200 acres of PIF habitat within its boundaries, most of it within the 1,480-acre Accotink Bay Wildlife Refuge along Accotink and Pohick Bays, and the 234-acre Jackson Miles Abbott Wetland Refuge along Dogue Creek, both areas of high-quality habitat located within Main Post. These large areas of habitat not only are valuable in and of themselves, but also provide for ecological connectivity through the installation to other regional habitats (USACE, 2015).

PIF Species of Concern (SOC) status and applicable conservation guidelines are part of a broader designation identified by the INRMP as Fort Belvoir Breeding Birds of Management Concern, and includes USFWS Birds of Conservation Concern, DoD PIF Mission Sensitive Species, and Fort Belvoir Habitat Indicator Species in addition to the PIF SOC for Bird Conservation Region 30 (New England/Mid-Atlantic Coast). The prairie warbler, wood thrush and scarlet tanager (*Piranga olivacea*) are Fort Belvoir Breeding Birds of Management Concern species documented on FBNA (Fort Belvoir, 2017). Documented occurrences of these species include Geographic Information Systems (GIS) mapping of a 500-foot buffer to provide protections for potential nesting and foraging areas (Figure 3-8). FBNA supports approximately 396 acres of designated habitat for PIF species (USACE, 2015). PIF management recommendations include maintaining upland forest habitat (to support wood thrushes) and creating and maintaining successional/shrub-scrub habitat (to support prairie warblers) (Fort Belvoir, 2017).

3.4.5 Environmental Consequences

3.4.5.1 Thresholds of Significance

The threshold of significance for biological resources would be exceeded if a proposed action would jeopardize the continued existence of any federally listed threatened or endangered species or result in destruction of critical habitat; decrease the available habitat for commonly found species to the extent that the species could no longer exist in the area; eliminate a sensitive habitat, such as breeding areas, habitats of local significance, or rare or state-designated significant natural communities needed for the survival of a species.

Potential impacts to plants, wildlife, and fish are evaluated in accordance with applicable regulations including, but not limited to, the ESA, the Fish and Wildlife Conservation Act of 1980, the MBTA, and EO 13112 on Invasive Species. The Sikes Act provides for cooperation by the Department of the Interior and DoD with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the U.S. The area of analysis for biological resources includes the Proposed Action Site.

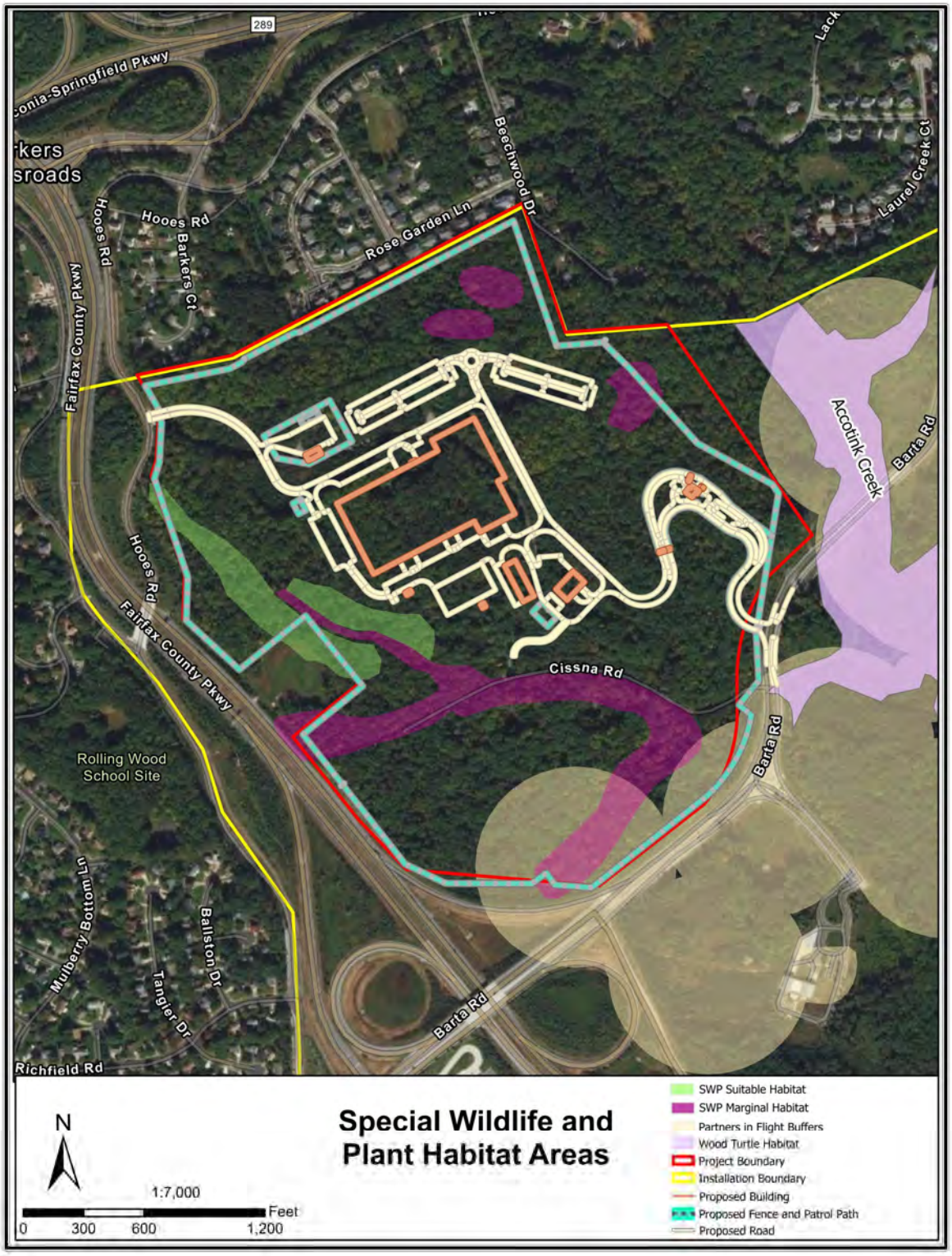

Figure 3-8: Special Wildlife and Plant Habitat Areas

3.4.5.2 Impacts of Proposed Action

Vegetation

Under the Proposed Action, short-term, less-than-significant adverse effects would occur on vegetation. Removal of approximately 40 acres of vegetation for construction of the facilities and infrastructure under the Proposed Action would result in short-term, minor, adverse effects on poplar/red maple and oak/hickory stand habitat on FBNA. This would be offset by a combination of replanting within other areas of Fort Belvoir in accordance with Fort Belvoir's Tree Removal and Protection Policy, requiring a 2:1 replacement ratio, because trees planted in urban forest situations only survive for an average of seven years and trees being replaced are generally far larger than trees planted as in-kind, in coordination with Fort Belvoir Environmental Division staff (Fort Belvoir, 2018). A tree survey was conducted by a USACE biologist on 17 and 23-25 August 2021 to characterize and quantify the forest resources within the Proposed Action Site to support determination of appropriate mitigation (see Appendix D). If it is not possible to plant the required number of replacement trees, project-related alternatives such as environmentally beneficial restoration, enhancement, or preservation measures may be done. DPW approval of out-of-kind, compensatory mitigation is required, and funding must be equivalent to that required to plant the remaining trees. For example, the Army would continue to work closely with Fairfax County on a Memorandum of Understanding that would include identifying additional tree replanting opportunities throughout the Accotink watershed.

Following construction, the Proposed Action Site would be landscaped, per a DPW approved landscape plan, with grass, shrubs and tree species coordinated with the Fort Belvoir Environmental Division staff to ensure that no invasive species would be introduced, and planting enhances wildlife habitat in a low-maintenance manner consistent with master planning objectives. As depicted in Figure 3-9, under the proposed landscape/tree replacement plan, approximately 120 acres of forested area would be preserved, and approximately 200 trees would be replanted on-site. While the character of the area would change from that of a mixture of poplar/red maple and oak/hickory stand habitat to a campus-like landscaped setting, some tree stands surrounding the facility would be retained to provide a cover and shade vegetative buffer along streams and wetlands. In addition, continued removal of invasive vegetative species and upkeep of desirable, native species throughout the life cycle of the facility would also result in an overall long-term beneficial effect.

Wildlife

Under the Proposed Action, short-term, less-than-significant adverse effects would occur on wildlife. During construction of the Proposed Action, equipment noise, ground disturbance, and vegetation removal would temporarily displace individuals of common wildlife species residing in the LOD. There may be limited mortality to individuals that are not able to relocate during construction. Population-level impacts would not reasonably occur due to the relatively small size of the construction area in relation to the overall size of FBNA. Additionally, most mobile species are able to safely avoid equipment. Therefore, construction activities associated with the Proposed Action are expected to result in short-term, negligible, direct, adverse effects on terrestrial wildlife resources located within the immediate area.

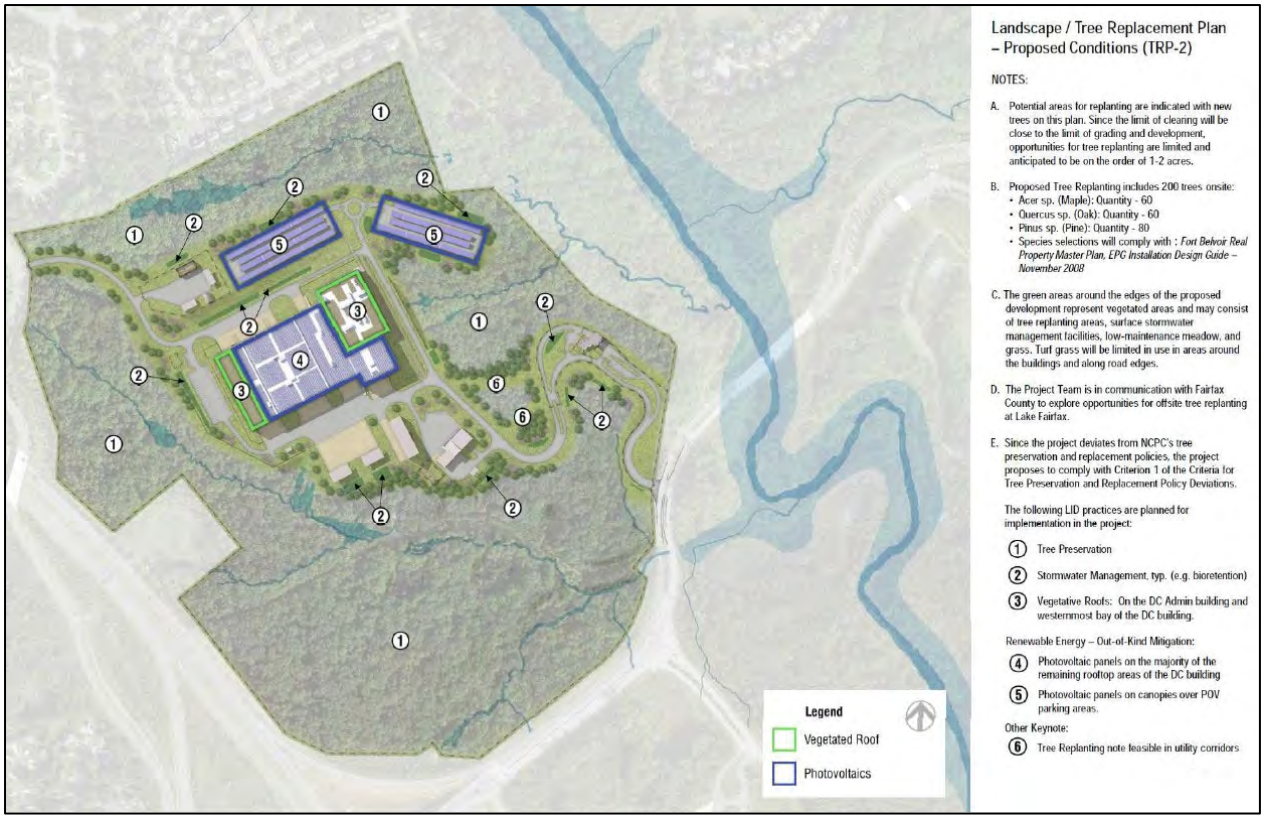

Figure 3-9: Proposed Landscape/Tree Replacement Plan

To minimize impacts on birds, construction activities should avoid cutting and removal of vegetation from 1 April to 15 July. If cutting and removal occurs during this time frame, a survey for birds and active bird nests is recommended. No migratory bird, active nest, egg, or hatchling should be disturbed, removed, damaged, or destroyed per the MBTA.

Following completion of construction, the Proposed Action Site would replace an undeveloped, infrequently used area with a distribution center that includes associated parking areas and security fencing. Wildlife accustomed to frequent human activity would use the new environment, while species requiring less disturbance and more secrecy would likely relocate. Planting of native vegetation near buildings and in open spaces within the campus would support habitat needs of species typically found within the vicinity of the Proposed Action Site and would serve as an extension of the stream corridor to the west of the developed area. The long-term adverse or beneficial effects of operation of the Proposed Action on wildlife are expected to be negligible.

Rare, Threatened, & Endangered Species

Under the Proposed Action, short-term, less-than-significant adverse effects would occur to rare, threatened, and endangered (RTE) species. The Proposed Action would occur in the former EPG that has had some prior disturbance as an area supporting testing facilities and was used as an explosives and munitions training area with three former ranges (Ranges 5, 5a, and 5b).

The Proposed Action Site includes area mapped as potential habitat for the small whorled pogonia. Consistent with standard practice in Virginia, the acceptable survey window for the small whorled pogonia is between 1 June and 20 July. A survey was conducted within the Proposed Action Site on 21 June 2022. No small whorled pogonia were located within the Proposed Action Site. While the small whorled pogonia has not been located on FBNA since 2005, suitable habitat has been identified within the Proposed Action Site and should be avoided to preserve the habitat of this species (Appendix E).

Despite previous disturbance of the area, clearing of vegetation associated with construction under the Proposed Action could adversely impact protected species if pre-construction surveys are not conducted. No wood turtle habitat has been identified within the Proposed Action Site. Should wood turtle habitat be identified within the area, surveys for the presence of the wood turtle would be conducted prior to site clearing, and the results of these surveys coordinated with Fort Belvoir Environmental Division staff and appropriate wildlife management agencies. Perimeter controls would be installed during the winter months to exclude the endangered wood turtle from areas of proposed construction activity, as necessary. To protect nesting bat species, no trees over three inches in diameter would be removed within the Proposed Action Site between 15 April and 15 September, in accordance with current USFWS guidelines and corresponding U.S. Army NLEB protection documents promulgated to protect the NLEB species (Appendix F).

Partners in Flight

Under the Proposed Action, short-term, less-than-significant adverse effects would occur on Breeding Birds of Management Concern. Fort Belvoir Environmental Division staff would be consulted to identify means to offset the loss of PIF habitat associated with the construction under the Proposed Action.

3.4.5.3 Impacts of No Action Alternative

Under the No Action Alternative, existing conditions would remain and no impacts on vegetation, wildlife, RTE species, or PIF would occur. Restoration plantings would not occur, and FBNA would continue to provide habitat for species that rely on tulip poplar/red maple and oak/hickory forest stand habitat. Maintenance of the area to prevent succession to invasive species cover would be dependent on Fort Belvoir DPW.

3.5 HAZARDOUS AND TOXIC MATERIALS AND WASTE (HTMW)

3.5.1 Affected Environment

Hazardous and toxic materials or substances are generally defined as materials or substances that pose a risk (i.e., through either physical or chemical reactions) to human health or the environment. Regulated hazardous substances are identified through a number of federal laws and regulations. The most comprehensive list is contained in 40 CFR 302, Designation, Reportable Quantities, and Notification, and provides quantities of these substances that, when released to the environment, require notification to a federal agency. Further, hazardous wastes, defined in 40 CFR 261.3, are

considered hazardous substances. Generally, hazardous wastes are discarded materials (e.g., solids or liquids) not otherwise excluded by 40 CFR 261.4 that exhibit a hazardous characteristic (i.e., ignitable, corrosive, reactive, or toxic), or are specifically identified within 40 CFR 261. Petroleum products are specifically exempted from 40 CFR 302, but some are also generally considered hazardous substances due to their physical characteristics (i.e., especially fuel products), and their ability to impair natural resources.

Fort Belvoir conducts its hazardous waste management program in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9605, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499. Fort Belvoir has a Hazardous Waste Management/Waste Minimization Plan and a Master Spill Plan. Fort Belvoir also participates in the "Greening of Government" program (EO 13101, *"Greening" the Government through Waste Prevention*) that promotes the purchase of products to reduce solid and hazardous waste through implementation of a centralized system for tracking procurement, distribution, and management of toxic or hazardous materials. Fort Belvoir DPW Environmental Division also files annual hazardous material and toxic chemical reports in compliance with the Emergency Planning and Community Right-to-Know Act.

FBNA was used for the development and testing of military engineering equipment and supplies in addition to providing training areas and storage for equipment and materials testing, mine deployment and recovery, and demolition as part of EPG. The heaviest of activity was from the 1940s to the mid-1950s. Investigations and clean-up activities have been ongoing since 1989 and have included the removal of munitions debris and non-munitions related debris as well as testing and the removal of explosive compounds and associated residual contaminants (Arcadis, 2021a). Investigations identified six SWMUs and five AOPCs within three former range sites (Range 5, 5a, and 5b) and adjacent areas within the Proposed Action Site. No soil or groundwater contamination was found at a vehicle maintenance area (AOPC-1), a former bunker associated with Building 2095 (SWMU M-22), and septic drain field associated with Building 2089 (SWMU M-43). All debris, underground storage tanks, and buildings were removed, and the sites were issued No Further Actions (NFAs) in concurrence with USEPA (USEPA, 2017).

Range 5

Former Range 5 was approximately two acres and used for ordnance and munitions training (Arcadis, 2021a). The site was also reportedly used as a waste disposal area for ordnance, weapons, chemicals, and barbed wire. Investigative studies for MEC and associated residual explosive and inorganic contamination identified three AOPCs (AOPC-17, AOPC-18, AOPC-21). All MEC materials were removed at AOPC-17 and AOPC-18, and no explosives or soil contamination were found. The sites were closed, and an NFA issued in concurrence with USEPA (USEPA, 2017).

A Unilateral Administrative Order under Resource Conservation and Recovery Act (RCRA), 42 USC Section 6934, required an additional investigation on FBNA to determine the significance of the threat posed by the presence of hazardous wastes, and included site AOPC-21 (Arcadis, 2019). Sources of contamination at the site were waste containers, MEC items, and a TCE storage drum. MEC materials, waste containers, and contaminated soil were removed between 2008 and 2010 and effectively eliminated the potential for continued leaching of chemical constituents from the

site to groundwater. However, elevated levels of COCs RDX and 2,4-DNT/2,6-DNT remain. Fort Belvoir is conducting biannual groundwater sampling to monitor levels of COCs, and results indicate that concentrations are declining to below maximum threshold levels. The site is managed through land use controls (LUCs) including the restriction of groundwater usage.

Range 5a

Former Range 5a encompassed 1.1 acres and was used for explosives and steel cutting. Investigative studies identified three SWMUs (M-32, M-33, M-34) and one AOPC (AOPC-19). All MEC materials were removed at AOPC-19, and no explosives or soil contamination were found. Munitions debris pits and contaminated soils were removed at M-34. AOPC-19 and M-34 were closed, and an NFA issued in concurrence with USEPA.

The MEC investigation and clearance was completed at sites M-32 and M-33. Contaminated soil was also identified at M-32 and removed. Elevated levels of COCs RDX and 2,4-DNT/2,6-DNT were detected in the groundwater at M-32 and M-33. Biannual groundwater testing for COCs is conducted, and results submitted to VADEQ. The site is managed through LUCs including the restriction of groundwater usage for residential purposes.

Range 5b

Former Range 5b was approximately four acres and was used for landmine detonation and removal training. Investigative studies for MEC and as part of the Military Munitions Response Program (MMRP) identified one SWMU (SWMU M-35). A total of 353 pounds of MEC was removed resulting in an assessment of complete clearance by the USACE Baltimore District (Arcadis, 2021a).

3.5.1.1 Installation Restoration Program

The Fort Belvoir Installation Restoration Program (IRP) operates in coordination with the U.S. Army Environmental Command and USACE to restore former military training areas, waste sites, and petroleum areas through regulatory closure. The IRP is a comprehensive program designed to address contamination from past activities and restore Army lands to useable conditions. It is one of two programs established under the Defense Environmental Restoration Program (DERP) to identify, investigate, and clean up hazardous substances, pollutants, and contaminants that pose environmental health and safety risks at active military installations and Formerly Used Defense Sites (FUDS). The IRP was established in 1975 and is achieving successful restoration of more than 11,000 identified active Army environmental cleanup sites.

The IRP response actions (i.e., site identification, investigation, removal actions, remedial actions, or a combination of removal and remedial actions) correct other environmental damage (such as the detection and disposal of unexploded ordnance) that poses an imminent and substantial endangerment to the public health or welfare or to the environment. IRP actions are conducted according to the provisions of CERCLA, EOs 12580 and 13016, and the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300).

3.5.1.2 Munitions

Congress established the MMRP in 2001, under the DERP, to address munitions-related concerns, including explosive safety, environmental, and health hazards from releases of unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC) found at locations other than operational ranges on active and BRAC installations and FUDS properties. The MMRP provides a focused program to address the challenges presented at sites called munitions response sites. Munitions responses are response actions, including investigation, removal actions and remedial actions that address the explosives safety, human health or environmental risks presented by UXO, DMM, and MC (https://aec.army.mil/index.php?cID=365). Munitions response actions are conducted under the process outlined in the National Contingency Plan (NCP) (40 CFR 300) as authorized by the CERCLA.

Given its historical use and concentration of ranges and test areas, all of FBNA is considered a Munitions Response Area site encompassing all former munitions, testing and training activities within the FBNA boundary. The ranges on FBNA were used for mine warfare material testing, research, and development as part of EPG. In 2006, the ten closed ranges on FBNA were determined to be eligible for the DERP and were subsequently enrolled in the MMRP. Several former FBNA training ranges were successfully cleared of ordnance and explosives from 2003 through 2005 in preparation for the proposed land transfer for the Fairfax County Parkway right-of-way. Subsequent clearance occurred between 2006 and 2010 for the areas outside of the right-of-way in support of the 2005 BRAC-related construction. Fort Belvoir developed a Focused Feasibility Study (FFS) to evaluate remedial alternatives, as required by CERCLA (AECOM, 2021).

The Proposed Action Site is managed through LUCs, including the restriction of groundwater usage for residential purposes (AECOM, 2021). As part of the LUCs, all future ground disturbances and construction activities are required to conduct munitions clearance per the Memorandum for All Proposed Land Modification Activities (U.S. Army Garrison Fort Belvoir, 2022). Once the full munitions clearance is complete for areas prior to development, then the level of munitions clearance and construction support would depend on the results of the full clearance and the recommendations of munitions experts on a case-by-case basis. VADEQ would be notified of any MEC/DMM discovered during these activities (AECOM, 2021). These LUCs, including additional munitions clearance, would protect human health and safety and the environment.

3.5.2 Environmental Consequences

3.5.2.1 Thresholds of Significance

Effects on hazardous materials and wastes are assessed by evaluating the degree to which the Proposed Action could cause worker, resident, or visitor exposure to hazardous materials; whether the Proposed Action would lead to noncompliance with applicable federal or state regulations or increase the amounts generated or procured beyond current waste management procedures and

capacities; and whether the Proposed Action would disturb a hazardous waste site, create a hazardous waste site, or contribute to a hazardous waste site resulting in adverse effects on human health or the environment.

Effects from UXO would occur if military munitions are inadvertently encountered, causing an unintended detonation or the release of munition chemicals to the environment.

3.5.2.2 Impacts of Proposed Action

Hazardous Materials and Waste

Under the Proposed Action, no significant impacts would occur on hazardous material and waste. The construction contractor would be required to prepare and adhere to a Spill Prevention, Control, and Countermeasures (SPCC) plan that identifies practices to minimize the potential for accidental spills of petroleum products or other hazardous substances and the procedures for containing and cleaning up any accidental spills that may occur.

Construction activities may require measures to prevent vapor intrusion below ground levels. Existing groundwater monitoring wells that would be impacted by construction activities would be capped and removed. Re-establishment of the monitoring well network would be coordinated with Fort Belvoir DPW.

Implementation of the Proposed Action would not result in a significant effect on hazardous materials and waste concerns within the Proposed Action Site. Soils excavated or otherwise disturbed during the project's construction phase would be tested in accordance with established Fort Belvoir policies and procedures. If concentrations of contaminants in soils are determined to exceed applicable regulatory thresholds for re-use on the site, any affected soils would be removed from the site and disposed of at a permitted facility off FBNA in accordance with Virginia Solid Waste Disposal Regulations as well as all other federal, state, and local laws and regulations.

Munitions

Under the Proposed Action, no significant impacts would occur from munitions. As previously described, LUCs require all future ground disturbances and construction activities to complete munitions clearance. Prior to construction of the Proposed Action, munitions clearance would be conducted and coordinated with Fort Belvoir DPW and the VADEQ. The Proposed Action would have a long-term, beneficial effect by alleviating safety concerns related to possible munitions remaining on the surface or buried near the surface through screening of the project area prior to construction. In addition, standard practice involves training of on-site personnel in the identification of potential munitions to prevent injury from unintentional detonations due to incorrect handling of discarded ordnance materials.

3.5.2.3 Impacts of No Action Alternative

The No Action Alternative would have no effect on hazardous and toxic materials and waste on FBNA. LUCs prohibit extraction of groundwater for potable use and development of the site into

another use unless determined to be compatible with applicable LUC policies and the Fort Belvoir ADP. However, efforts to identify potentially buried munitions within the LOD would not occur until such future time, when the area could be developed.

3.6 UTILITIES

3.6.1 Affected Environment

3.6.1.1 Electricity

Electrical power is provided to FBNA by Dominion Energy using a 34.5-kilovolt (kV) distribution infrastructure, including a substation on the southern portion of FBNA and a network of overhead and buried cables. Dominion Energy is responsible for operation and maintenance of the substation in the southeast corner of FBNA and the substation between Barta Road and Backlick Road, as well as upgrades, but Fort Belvoir maintains the electrical infrastructure on the installation beyond the substations. As of 2016, more than 112 miles of overhead and underground electric line, three switching stations, and one substation were present on Fort Belvoir. Dominion Energy also owns and operates medium-sized emergency diesel generators to provide back-up power for critical-functions throughout the installation. There are no generating stations on FBNA that would be capable of powering the entire post.

3.6.1.2 Potable Water and Wastewater

Potable water on FBNA is purchased from Fairfax County Water. No treatment facilities or groundwater wells supply potable water on post. The majority of the water distribution system on FBNA is owned by American Water under a 50-year utilities privatization contract to provide domestic water and wastewater services.

The water distribution system was designed with the intent and capacity to support the full build-out of the FBNA campus. There is a connection to Fairfax County Water that traverses the Proposed Action Site from Fairfax County Parkway to Barta Road. The Proposed Action would tie into the existing water main that runs through the site.

Wastewater for the FBNA is collected by a 14-inch diameter line that runs to the Fairfax County Sewer stub-out at the south end of the campus. The Proposed Action would tie into the existing Fairfax County sewer system along Barta Road.

3.6.1.3 Natural Gas

Since a privatization contract was issued in 1998, Washington Gas operates the natural gas distribution system serving FBNA. There are no natural gas production storage facilities on the installation. As of 2016, the natural gas distribution system has a network of approximately 120 miles of pipes. The new natural gas service to the site would tie in at the northwest portion of the site, near Fairfax County Parkway. The existing gas distribution on FBNA is a high-pressure gas

system with an 8-inch pipe that enters from the south side of the installation and runs west along Heller Road, where it connects to the NGA facility's utility plants line. Fort Belvoir can receive approximately 160 million cubic feet per day of natural gas through two delivery points.

3.6.2 Environmental Consequences

3.6.2.1 Thresholds of Significance

Effects on utilities would be considered significant if an overload of the capacity of existing utilities were to occur to the extent that current levels of service are compromised, resulting in outages or shutdown of water or wastewater service.

3.6.2.2 Impacts of Proposed Action

Electricity

Under the Proposed Action, long-term, less-than-significant, adverse effects would be expected from additional energy consumption. The electrical distribution system is new and in good condition with sufficient capacity for additional loading. Dominion Energy is responsible for operation and maintenance of the substation between Barta Road and Backlick Road, as well as upgrades. The new electrical utility service to the site would tie in at the northwest portion of the site, near Fairfax County Parkway. An emergency backup generator based on size load and including 48 hours of dedicated diesel-fuel supply would be required for the distribution center.

Potable Water and Wastewater

Long-term, less-than-significant, adverse effects on water and wastewater are expected under the Proposed Action due to additional wastewater generation from construction and operation of the distribution center. The current usage of potable water is only one-third of the maximum usage available on the installation (HDR, 2020). The water distribution system on FBNA was designed to accommodate future development and is considered to be in good working condition. There is connection to Fairfax County Water that traverses the Proposed Action Site from the Fairfax County Parkway to Barta Road.

The wastewater system was designed in anticipation of a full build-out of the FBNA campus and, therefore, has the capacity to accommodate the wastewater generated by construction and operation of the Proposed Action. The Proposed Action would tie in to the existing Fairfax County sewer system along Barta Road. Low-flow toilets, sinks and showers would be installed wherever possible to minimize impacts on water. Potable water and fire suppression will be supplied by at least an 8-inch diameter service pipe and a redundant 6-inch diameter pipe. A fire hydrant loop around the facility would be provided.

Natural Gas

Under the Proposed Action, long-term, less-than-significant, adverse impacts would occur on natural gas distribution. No system problems or capability issues would be expected. Construction and operation of the distribution center would increase the natural gas demands of the current

system; however, it was built expansion in mind and is more than adequate to support increased natural gas demands. The new natural gas service to the site would tie in at the northwest portion of the site, near Fairfax County Parkway, and follow the proposed path of the northwest entrance road to minimize the project footprint.

3.6.2.3 Impact of No Action Alternative

Under the No Action Alternative, no impacts would be expected on any utilities. All operations on FBNA would remain the same, with no fluctuations in utility demands.

3.7 NOISE

3.7.1 Affected Environment

Noise is generally defined as unwanted sound. It can be any sound that is undesirable because it interferes with communications or other human activities, is intense enough to affect hearing, or is otherwise annoying. Noise may be intermittent or continuous, steady, or impulsive. Human response to noise varies, depending on the type of the noise, distance from the noise source, sensitivity, and time of day.

The decibel (dB) is a unit of measurement for noise levels and uses a logarithmic scale. To better match the sensitivity of the human ear, noise levels are typically A-weighted (dBA) to deemphasize low-frequency and very high-frequency sound. For low-frequency sounds such as artillery fire, noise levels are often C-weighted (dBC) to evaluate the presence of low-frequency sound.

This noise section uses two common environmental noise metrics. The equivalent-average sound level (LEQ) represents an average sound level in decibels of a given event or period of time (typically one hour). The day-night average sound level (DNL) represents a 24-hour LEQ with a 10-dBA penalty applied to nighttime hours when sleep interference is more likely (10pm to 7am).

3.7.1.1 Applicable Noise Regulations

The *Noise Control Act* of 1972 (42 USC §4901, et seq.) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. The applicable local noise control regulation is the Fairfax County noise ordinance (Chapter 108.1), which states “no person shall permit, operate, or cause any source of sound or sound generation to create a sound which exceeds the limits set forth in the following table titled ‘Maximum Sound Levels’ when measured at the property boundary of the sound source or at any point within any other property affected by the sound” (County of Fairfax, 2021). As shown in Table 3-2, the maximum sound levels from continuous sound sources (such as an air handling unit) in residential areas should not exceed 60 dBA during the day and 55 dBA at night. An impulsive sound (or impulse sound) is generally characterized by a sound event that lasts for no more than one second, such as sounds from weapons, pile drivers, or blasting.

Table 3-2: Fairfax County Noise Ordinance (County of Fairfax, 2021)

Use and Zoning District Classification	Time of Day	Maximum Sound Levels (dBA)	
		Continuous Sound	Impulse Sound
Residential Areas in Residential Districts	7am to 10pm	60	100
Residential Areas in Residential Districts	10pm to 7am	55	80

Section 108.1-4-1 of the Fairfax County noise ordinance contains some specific prohibitions relevant to the Proposed Action:

- Construction, repair, maintenance, remodeling, demolition, grading, or other improvement of real property is prohibited outdoors between the hours of 9pm and 7am from Sunday through Thursday and between the hours of 9pm and 9am on Fridays, Saturdays, and the day before a federal holiday.
- Loading or unloading trucks outdoors within 100 yards of a residential dwelling is prohibited between the hours of 9pm and 6am.

Section 108.1-5-1 of the Fairfax County noise ordinance contains some specific exceptions relevant to the Proposed Action:

- Emergency work is exempt from the provisions of Chapter 108.1.
- Motor vehicles on road right-of-way are exempt from the provisions of Chapter 108.1.
- Construction, repair, maintenance, remodeling, demolition, grading, or other improvement of real property is exempt from the provisions of Chapter 108.1, but such activity shall not generate noise levels exceeding 90 dBA in residential areas and shall not begin before 9am on Saturdays, Sundays, and federal holidays.
- Back-up generators are exempt from the provisions of Chapter 108.1 during power outages from storms and other emergencies. Routine testing and maintenance of back-up generators are exempt from the provisions of Chapter 108.1 between the hours of 7am and 9pm and are prohibited from occurring at other hours. Additionally, the duration of routine testing and maintenance events shall not exceed two consecutive or non-consecutive hours in any one day.

Land use guidelines identified by the Federal Interagency Committee on Urban Noise are used to determine compatible levels of noise exposure for land use planning and control. Chapter 14 of Army Regulation 200-1 implements federal regulations associated with environmental noise from Army activities (U.S. Army, 2007). There are three Noise Zones (I, II, and III), which correlate to increasing noise levels (see Table 3-3). These zones are established based on the DNL over a period of 250 days for Active Army Installations and 104 days for Army Reserve and National Guard Installations. Additionally, there is the Land Use Planning Zone (LUPZ), which is the portion of Noise Zone I exposed to noise levels within 5 dB of Noise Zone II levels. One additional noise metric relevant to this discussion is the PK 15(met), which is the peak, unweighted noise level expected to be exceeded by 15 percent of all events that might occur.

Table 3-3: Noise Limits Definitions (U.S. Army, 2007)

Noise Zone	DNL Limit for Aviation Sources (dBA)	DNL Limit for Impulsive Sources (dBC)	PK 15(met) Limit for Small Arms (dB)
LUPZ (Land Use Planning Zone)	60-65	57-62	N/A
I	Less than 65	Less than 62	Less than 87
II	65-75	62-70	87-104
III	More than 75	More than 70	More than 104

* dBA = decibels, A-weighted ,dBC = decibels, C-weighted ,dBP = decibels, unweighted

The nearest potential noise-sensitive receptors (NSR) to the Proposed Action Site on FBNA are the North Belvoir Child Development Center (CDC) and the existing NGA) offices, located east of the Proposed Action Site and Accotink Creek (U.S. Army, 2021). A residential area is located north of the Proposed Action Site outside the FBNA boundary. The Proposed Action Site is relatively isolated from areas to the west by Fairfax County Parkway and areas to the south by Barta Road. The major thoroughfare of Interstate-95 (I-95) is located approximately 1.25 miles to the east of the Proposed Action Site. Currently, the major noise source in the project vicinity is generated from vehicular traffic on Fairfax County Parkway, Barta Road, and I-95. The Davison Army Airfield (DAAF) is located approximately 2.5 miles to the south of the Proposed Action Site and is an additional noise source from airplane and helicopter takeoffs and landings.

3.7.1.2 Existing Noise Levels

The Proposed Action Site is not located within the 65 dBA DNL areas for any nearby airports and airfields; therefore, aircraft-related noise is anticipated to be less than 65 dBA DNL. Noise measurements documented existing, outdoor noise levels from March 8 to 11, 2022, at two locations on the north end of the Proposed Action Site. Measurement Location (ML) 1 is in the northwest corner of the Proposed Action Site and is representative of residential NSRs north of the site that are closer to Fairfax County Parkway. ML2 is in the northeast corner of the Proposed Action Site and is representative of residential NSRs north of the site that are further from Fairfax County Parkway. The measurements were taken via Type 1 digital sound level meters and a Type 1 handheld calibrator. The microphones were protected using wind screens and were positioned away from reflecting surfaces. Table 3-4 summarizes the noise measurement results at ML1 and ML2.

Table 3-4: Noise Measurement Results

Measurement Location	Measured Overall Equivalent-Average Sound Level (LEQ) (dBA)	Measured Hourly LEQ at Daytime (dBA)	Measured Hourly LEQ at Night (dBA)	Measured Overall DNL (dBA)
ML1	54	45-65	39-59	58
ML2	49	44-55	39-56	55

* dBA = decibels, A-weighted; Daytime = 7 a.m. to 10 p.m.; Nighttime = 10 p.m. to 7 a.m.

ML1 was, on average, louder than ML2, which is to be expected for the location closer to Fairfax County Parkway. The measured noise levels during quieter periods were similar between the two locations. With reference to Table 3-3, the site would be classified as Noise Zone I because the measured DNL was below the transportation noise DNL threshold of 65 dBA at both locations.

3.7.2 Environmental Consequences

3.7.2.1 Threshold of Significance

Impacts on the noise environment from a proposed action or alternative would be considered significant if any of the following were to occur:

- Construction activities during prohibited hours or generating noise levels exceeding 90 dBA in residential areas.
- Back-up generators operating in a manner prohibited by Fairfax County.
- Typical operations generating noise levels exceeding the Fairfax County limits.
- Typical operations changing the Proposed Action Site from Noise Zone I to Noise Zone II or III.

3.7.2.2 Impacts of Proposed Action

The Proposed Action would introduce new noise sources during construction and operations, resulting in short- and long-term, less-than-significant, adverse impacts on the noise environment.

Construction

Construction under the Proposed Action would result in elevated noise levels due to operation of heavy equipment on site. The noise levels generated at any given time would vary depending on the phase of construction, the specific activities occurring, the types of equipment used, and the quantities used. Construction activity would generally only occur between the hours of 7:00am and 3:30pm, Monday through Friday, which would comply with the construction schedule requirements of the Fairfax County noise ordinance.

Table 3-5 summarizes calculated construction noise levels for representative activities that generate higher noise levels. The calculations assumed those representative equipment types would all operate at the same location for each activity.

Table 3-5: Calculated Construction Noise Levels

Activity (Equipment Types)	Hourly LEQ at 100 feet (dBA)	Hourly LEQ at 250 feet (dBA)	Hourly LEQ at 500 feet (dBA)
Peak Hour Traffic (auto, truck)	85	77	71
Mobilization (excavator, dozer, skid steer loader, truck)	84	76	70
Tree Removal / Grubbing (dozer, scraper, excavator, crane, truck)	85	77	71
Earthwork & Site Development (dozer, grader, excavator, truck)	85	77	71
Base Building Construction (crane, concrete saw, truck)	82	74	68

At 100 feet, the calculated hourly LEQs for the representative construction activities would be below 90 dBA. The primary site features associated with the Proposed Action are more than 100 feet from the FBNA property boundary. Based on the estimates of representative activities, construction noise is not anticipated to exceed 90 dBA in residential areas.

Therefore, construction noise is projected to have a short-term, less-than-significant, adverse impact.

Operations

Operation of the Proposed Action would introduce new or additional noise sources to the Proposed Action Site, including automobiles, trucks, electric forklifts, rooftop units, transformers, a diesel fire pump, and generators. The mobile and stationary noise sources associated with the Proposed Action were modeled using the industry-accepted 3-D environmental noise software Computer Aided Noise Abatement (CadnaA), with calculation methods from the International Organization for Standardization (ISO) 9613-2 “Acoustics – Attenuation of Sound during Propagation Outdoors” (ISO, 1996). The model was based on peak hour traffic volumes and representative stationary equipment noise emissions data. The model calculated hourly LEQs assuming all typical operations sources would operate simultaneously (generators excluded), with the electric forklifts excluded at nighttime hours. Table 3-6 summarizes the results of the typical operations noise model (Appendix I).

Table 3-6: Calculated Typical Operations Noise Levels

Location	Highest Modeled Hourly LEQ at Daytime (dBA)	Highest Modeled Hourly LEQ at Night (dBA)	Highest Modeled DNL (dBA)
North FBNA Boundary (residential parcels)	52	43	52
West FBNA Boundary (residential parcels)	55	38	53
South FBNA Boundary (industrial parcels)	47	28	45
FBNA NGA Remote Inspection Facility	50	34	49
FBNA NGA Headquarters	48	35	47

All modeled daytime hourly LEQs are below the Fairfax County daytime limit of 60 dBA, and all modeled nighttime hourly LEQs are below the nighttime limit of 55 dBA. The modeled daytime and nighttime hourly LEQs are within the range of existing hourly LEQ's measured at ML1 and ML2. The modeled DNLs are below the measured DNLs from ML1 and ML2; therefore, the site would be anticipated to remain classified as Noise Zone I during operations.

The generators were not included in the typical operations noise model as they would only operate during emergency conditions or for maintenance events. The maintenance events would only occur between the hours of 7:00 am and 9:00 pm with a total duration in any one day not to exceed two hours, which would comply with the Fairfax County exemption for generator noise. To minimize noise during operation, the generators would be housed in Level III sound attenuating enclosures, which provide 65-70 dBA at seven meters under full load.

Therefore, operational noise is projected to have a long-term, less-than-significant, adverse impact.

3.7.2.3 Impacts of No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. The Proposed Action Site would remain in its existing condition. The existing noise environment would not change; therefore, the No Action Alternative would have no impact on the noise environment.

3.8 AIRSPACE

3.8.1 Affected Environment

The DAAF, which is approximately 2.5 miles south of the Proposed Action Site, occupies approximately 400 developed acres of land west of Fairfax County Parkway. The mission of the DAAF is to transport passengers and freight for the Army and DoD to, from, and within the NCR.

The Federal Aviation Administration (FAA) secures specific airspace and zones at and around airports through Federal Aviation Regulation (FAR) Part 77 (14 CFR 77), *Safe, Efficient Use, and Preservation of the Navigable Airspace*, and FAA Advisory Circular 50/5300-13A, *Airport Design*. The areas defined in these regulations protect specific airspace and ground areas at and near airports. FAR Part 77 defines five types and dimensions of navigable airspace (imaginary surfaces) existing on and around a public airport, which must be kept free of obstructions and development that would conflict with air traffic so that aircraft may have a clear path for landing. These imaginary surfaces, shown in Figure 3-10 for DAAF, are the:

1) Primary Surface – airspace at ground-level elevation that is aligned on the runway centerline and extending 200 feet beyond the end of the runway,
2) Approach Surface – airspace aligned on the runway extended centerline that slopes up and outward from the end of the primary surface. The approach surface, considered the most critical among imaginary surfaces, must be clear of all objects to ensure safe landing,
3) Transitional Surface – airspace that extends out and slopes 7:1 upward from the sides of an airport and the primary surfaces of its runways and the approach surfaces at the runway ends,
4) Horizontal Surface – airspace that extends out from the transitional surface and upward to an elevation of 150 feet above the airfield, and
5) Conical Surface – airspace that extends out and slopes upward from the edge of the horizontal surface to an elevation of 350 feet above the airfield.

FAA Advisory Circular 50/5300-13A establishes airport design standards with specified clear, or obstacle-free zones, and safety areas along and just beyond the extents of an airport runway and taxiway to protect aircraft during takeoffs and landings (FAA, 2022). Building height restrictions are governed by guidelines and regulations relating to the identification and construction of obstructions within airspace (FAR Part 77). Building restrictions within the imaginary conical surface at the runway begin at 150 feet directly above the runway at the boundary with the inner horizontal surface and extend outward at a slope of 20:1 (horizontal: vertical) for a distance of 7,000 feet to an elevation of 500 feet above the airfield. Therefore, a building constitutes an obstruction to navigation if it extends 150- to 500-feet above ground level or runway elevation up to 3 miles from the runway (National Oceanic and Atmospheric Administration [NOAA], 2022). The Proposed Action Site falls largely within the inner horizontal surface of DAAF, with a small portion within the transitional surface and outer horizontal surface (see Figure 3-10). The proposed buildings would constitute an obstruction to navigation if they were greater than 150 feet in height.

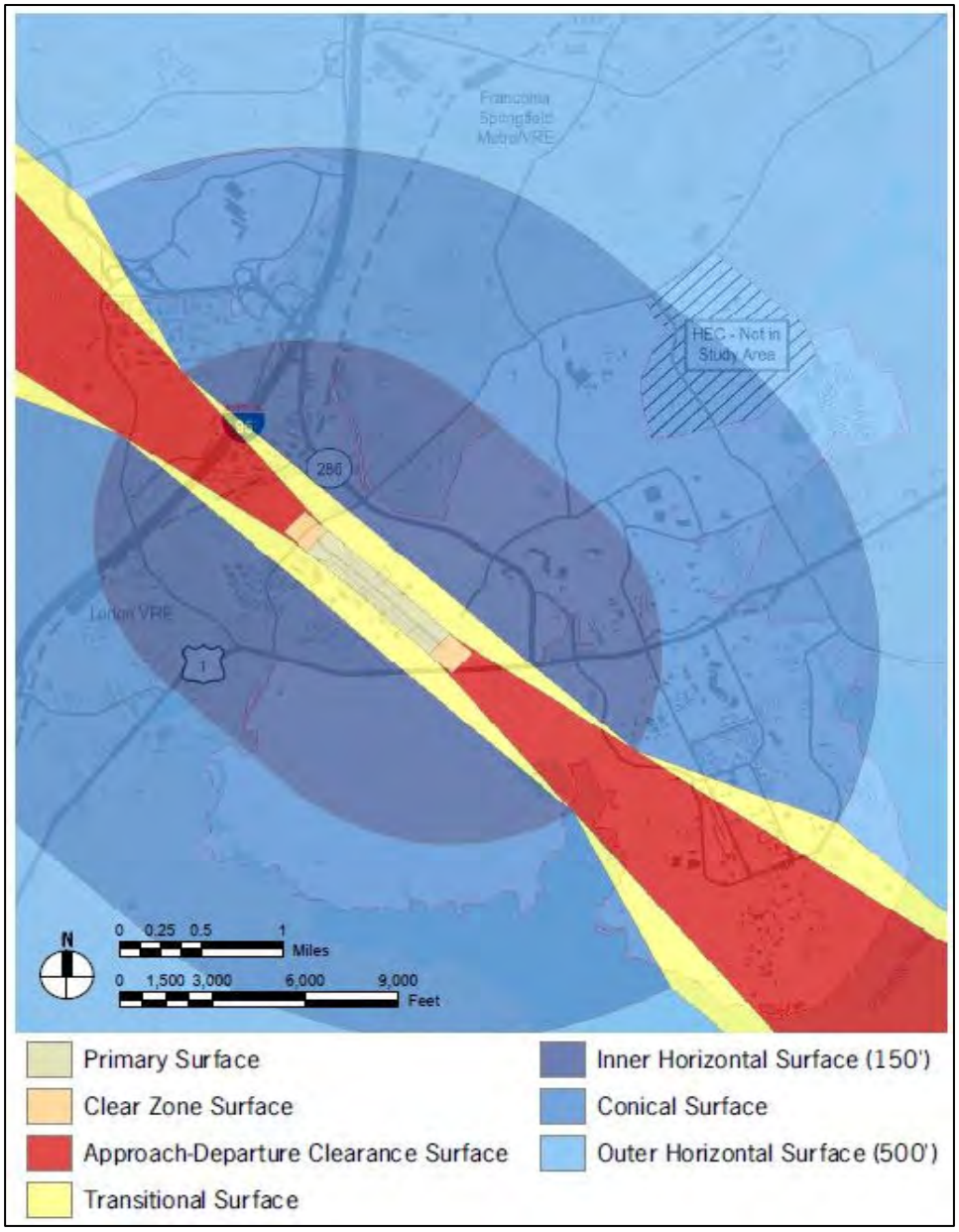

Figure 3-10: Imaginary Surfaces at DAAF
Source: U.S. Army Garrison Fort Belvoir, 2015

3.8.2 Environmental Consequences

3.8.2.1 Threshold of Significance

The Proposed Action and No Action Alternative were evaluated against the following significance criteria to determine if they would result in a significant impact on the airspace environment:

- Airspace would be obstructed by building heights.

- Aircraft operations would be altered by forcing rerouting of designated aircraft corridors to accommodate new construction.

3.8.2.2 Impacts of Proposed Action

Under the Proposed Action, less-than-significant impacts to airspace would occur. The Proposed Action would construct a two-story administration building and a one-story high bay warehouse as the tallest structures. Because these buildings would be located approximately 2.5 miles north of the runway at DAAF and the associated imaginary conical surface and would not exceed 150 feet, the buildings would remain within the vertical limits of the applicable airspace restrictions and below the height of the adjacent NGA complex. No obstruction to airspace and no changes in aircraft operations would occur.

3.8.2.3 Impacts of No Action Alternative

Under the No Action Alternative, no changes would be expected to airspace. No buildings would be constructed, and all operations on FBNA would remain the same, with the same aircraft operations and airspace available.

3.9 AIR QUALITY

3.9.1 Affected Environment

Air quality is defined by the ambient air concentration of specific pollutants of concern at a given location. Air pollution occurs when harmful substances, including solid particles and gases, are introduced into the earth's atmosphere. It can cause harm to the natural environment, including humans, animals, and plants. The following sections describe existing air quality conditions in the vicinity of the Proposed Action Site on FBNA, applicable laws and regulations, and potential impacts on air quality that could result from the implementation of the Proposed Action.

3.9.1.1 NAAQS

The USEPA, under the requirements of the 1970 *Clean Air Act* (CAA) as amended in 1977 and 1990, established National Ambient Air Quality Standards (NAAQS) for the following six criteria pollutants (40 CFR 50):

- Carbon monoxide (CO)
- Lead
- Nitrogen dioxides
- Ozone (O_3)
- Sulfur dioxide
- Particulate matter (PM), divided into two size classes:
    - Measured less than or equal to 10 micrometers in diameter (PM_{10})
    - Measured less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$)

CO, sulfur oxides (SO_X), and some particulates are emitted directly into the atmosphere from emissions sources. Nitrogen dioxide (NO_2), O_3, and some particulates are formed through atmospheric and chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds (VOCs) and nitrogen oxides (NO_X) emissions are precursors of O_3 and are used to represent O_3 generation. Lead emissions from common air emissions sources that would be used under the Proposed Action have been negligible since leaded gasoline for on-road vehicles was phased out in the United States between 1973 and 1996. Therefore, lead is not included in the air quality analysis.

The NAAQS include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. Each state has the authority to adopt air quality standards stricter than those established under the federal NAAQS. The Commonwealth of Virginia accepts the federal standards (9 VAC Chapter 30). Table 3-7 shows the federal primary and secondary air quality standards accepted by the Commonwealth of Virginia.

Table 3-7: National Ambient Air Quality Standards

Criteria Pollutant	Primary/ Secondary	Averaging Time	Level	Form
CO	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
NO_X	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	Primary and secondary	Annual	53 ppb	Annual Mean
O_3	Primary and secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
$PM_{2.5}$	Primary	Annual	12 $\mu g/m^3$	Annual mean, averaged over 3 years
	Secondary	Annual	15 $\mu g/m^3$	Annual mean, averaged over 3 years
	Primary and secondary	24-hour	35 $\mu g/m^3$	98th percentile, averaged over 3 years
PM_{10}	Primary and secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Lead	Primary and secondary	Rolling 3-month average	0.15 $\mu g/m^3$	Not to be exceeded
SO_X	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Sources: 40 CFR 50, 9 VAC Chapter 30
Notes: ppm = parts per million; ppb = parts per billion; $\mu g/m^3$ = micrograms per cubic meter

Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

FBNA is in Fairfax County, which is within the National Capital Interstate Air Quality Control Region (40 CFR 81.12). The USEPA has designated Fairfax County as marginal nonattainment for the 2015 8-hour O_3 NAAQS and as maintenance for the 2008 8-hour O_3 NAAQS. Fairfax County is designated as attainment or unclassified for all other criteria pollutants (USEPA, 2022a).

3.9.1.2 Clean Air Act Conformity

The CAA, as amended in 1990, requires state agencies to develop and adopt a State Implementation Plan to target the elimination or reduction of the severity and number of NAAQS violations in nonattainment areas. Federal agencies are required to ensure that their actions conform to the State Implementation Plan in a nonattainment area. Under Section 176(c) of CAA, a project is in "conformity" if it corresponds to a State Implementation Plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving their expeditious attainment.

Conformity further requires that such activities would not:

- cause or contribute to any new violations of any standards in any area;
- increase the frequency or severity of any existing violation of any standards in any area; or
- delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The USEPA published final rules on general conformity (40 CFR 51 and 93) in the *Federal Register* on November 30, 1993. The General Conformity Rules applies to federal actions in nonattainment or maintenance areas for any of the criteria pollutants. There are two main components to the overall process: a conformity applicability analysis to determine whether a conformity determination is required and, if it is, a conformity determination to demonstrate that the action conforms to the State Implementation Plan. A conformity applicability analysis is typically done by quantifying applicable direct and indirect emissions that are projected to result from implementation of a federal action. When the total emissions of nonattainment and maintenance pollutants (or their precursors) exceed specified thresholds, a general conformity determination is required. The emissions thresholds that trigger requirements for a general conformity determination are called *de minimis* levels. A federal action is exempt from a general conformity determination if the action's emissions for a particular criteria pollutant are below the pollutant's *de minimis* threshold.

Fairfax County is designated as nonattainment for the 2015 8-hour O_3 NAAQS and as maintenance for the 2008 8-hour O_3 NAAQS. Therefore, the General Conformity Rule is potentially applicable

to emissions of VOCs and NO_X because they are precursors for O_3. As outlined in 40 CFR 93.153(b), the applicable *de minimis* level thresholds for these pollutants is 50 tons per year (tpy) for VOCs and 100 tpy for NO_X.

3.9.1.3 Hazardous Air Pollutants

In addition to criteria pollutant standards, USEPA also regulates hazardous air pollutant (HAP) emissions for each state. HAPs differ from criteria pollutants for they are known or suspected to cause cancer and other diseases or have adverse environmental impacts. The National Emission Standards for Hazardous Air Pollutants regulate 188 HAPs based on available control technologies. Sources of HAP emission on FBNA include stationary, mobile, and fugitive emissions sources. Stationary sources include boilers, incinerators, fuel storage tanks, fuel-dispensing facilities, vehicle maintenance shops, laboratories, degreasing units, and similar testing units. Mobile sources of emissions include private and government-owned vehicles.

3.9.1.4 Greenhouse Gas Emissions and Climate Change

Greenhouse gases (GHGs) are compounds that contribute to the greenhouse effect. The greenhouse effect is a natural phenomenon where gases trap heat within the surface-troposphere (lowest portion of Earth's atmosphere) system, causing heating at the Earth's surface. The primary long-lived GHGs directly emitted by human activities are carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons (PFCs), and sulfur hexafluoride. The heating effect from these gases is considered the probable cause of the global warming observed over the last 50 years (USEPA, 2009). Global warming and climate change can affect many aspects of the environment. In the past, the USEPA has recognized potential risks to public health or welfare and signed an endangerment finding regarding GHGs under Section 202(a) of the CAA (74 *Federal Register* 66496, December 15, 2009), which found that the current and projected concentrations of the six key well-mixed GHGs in the atmosphere threaten the public health and welfare of current and future generations. To estimate global warming potential, all GHGs are expressed relative to a reference gas, CO_2, which is assigned a global warming potential equal to one (1). All six GHGs are multiplied by their global warming potential, and the results are added to calculate the total equivalent emissions of CO_2 (CO_2e). However, the dominant GHG emitted is CO_2, accounting for 80 percent of all GHG emissions as of 2019, the most recent year for which data are available (USEPA, 2022b). Current GHG emission sources on FBNA include combustion engines, boilers, chillers, and water heaters.

One of the key ways the DoD achieves reduction in GHG emissions in building construction and operation is through the Leadership in Energy and Environmental Design (LEED) certification program, an internationally recognized green building certification system providing third-party verification that a building or community was designed and built using measures to reduce energy and water use, GHG emissions and the amount of construction waste sent to landfills. The Energy Independence and Security Act of 2007 requires federal agencies to use a green building certification system for new construction and major renovations of buildings. Pursuant to DoD policy, the Proposed Action will be designed to achieve an LEED rating of Silver. The guiding

principles for sustainability for the Proposed Action are the 2016 Guiding Principles for Sustainable Federal Buildings and Determining Compliance with the Guiding Principles for Sustainable Federal Buildings, 2018 International Green Construction Code, UFC 3-600-01, Energy Star Energy Efficiency Labeling System (FEMP), and 40 CFR 247 Comprehensive Procurement Guideline for Products Containing Recovered Materials.

The Proposed Action would implement sustainable building practices, including use of solar panels, green roofs (vegetation and roof pavers), and stormwater biofiltration techniques. The Proposed Action would install approximately 220,000 square feet of solar panels on site as well as allocate about eight percent of parking spaces for electric vehicle charging stations. This amount of solar generation would not only offset a substantial portion of the site's daily energy usage, but it would also offset the carbon impact of the tree clearing on site by an estimated six times or more. In the event that the solar generation exceeds the site's energy usage, infrastructure would be added to the design to connect the site to a future potential campus micro-grid on FBNA, further increasing the potential benefits of the site's renewable energy resources.

EO 13990, signed January 20, 2021, reinstated the final guidance issued on August 5, 2016 by the CEQ that required federal agencies to consider GHG emissions and the effects of climate change in NEPA reviews. DoD has committed to reduce GHG emissions from non-combat activities 42 percent by 2025 (DoD, 2016). Per the Department of the Army (DA) Climate Strategy (DA, 2022), goals also include archiving 50 percent reduction in Army net GHG pollution by 2030, compared to 2005 levels, and attaining net-zero Army GHG emissions by 2050. Accordingly, estimated CO_2e emissions associated with the Proposed Action are provided in this EA for informative purposes.

Fort Belvoir is required to report to USEPA through the electronic GHG tool (e-GRRT) as the installation has exceeded 25,000 metric tons per year for CO_2e for the last five years. Current GHG emission sources at Fort Belvoir include combustion engines, boilers, chillers, and water heaters. The total CO_2e for Fort Belvoir is inclusive of Main Post and FBNA. FBNA sources, however, only account for 0.1 percent (natural gas) of the total 27,366.02 metric tons CO_2e for calendar year 2020 (Defense Intelligence Agency [DIA], 2021). The emission total is the amount reported annually under the requirements of 40 CFR 98 and does not include GHG emissions from mobile sources or emergency generators.

3.9.1.5 Emissions Reporting

Title V of the CAA requires states and local agencies to permit major stationary sources. As a major stationary source for emissions, Fort Belvoir (Main Post) operates under a Title V Permit (Registration Number 70550, issued on March 21, 2003). Fort Belvoir also operates under a minor New Source Review (mNSR) permit for Main Post (same Registration Number 70550).

The Title V and mNSR permits for Main Post do not apply to FBNA emission sources, as this area is non-contiguous from Main Post and considered a separate source. Stationary emission sources on FBNA include large boilers, generators, heaters, above ground storage tanks and emergency generators. FBNA emission sources are operated under a separate synthetic mNSR air permit

(Registration Number 73630). Emissions limits for stationary sources, as directed by the mNSR permit, are included in Table 3-8. As a synthetic minor source, the FBNA annual update report does not include the requirement for an emission statement. The FBNA annual update report provides specific total throughput (million cubic feet burned and/or gallons burned) for the permitted equipment. However, as a requirement of the permit, Fort Belvoir Air Quality Program maintains a rolling 12-month total for the criteria pollutant emissions from FBNA sources, as found in Table 3-8. There are no existing emissions sources within the Proposed Action Site. Any new equipment with the potential to emit would be evaluated for permitting thresholds prior to purchase and installation. Should the final design require it, a new permit would be obtained to account for future stationary sources, as warranted.

Table 3-8: mNSR Emissions Limits and Emissions from Stationary Sources (tpy) for CY 2020

	SO_X	CO	PM_{10}	$PM_{2.5}$	NO_2	VOCs
mNSR Emissions Limits	3.1	35.5	4.3	None	75.0	7.0
2020 FBNA Emissions	0.15	1.65	0.25	0.25	6.31	0.35

Source: Fort Belvoir, Air Quality Program

3.9.1.6 Sensitive Receptors

CEQ NEPA regulations require evaluation of the degree to which the Proposed Action affects public health (40 CFR 1508.27). Children, elderly people, and people with illnesses are especially sensitive to the effects of air pollutants; therefore, hospitals, schools, convalescent facilities, religious facilities, and residential areas are considered sensitive receptors for air quality impacts, particularly when located within one mile from the emissions source. Within a one-mile radius of the Proposed Action Site is the North Belvoir CDC located on FBNA, as well as several schools, residential areas, and senior living facilities adjacent to FBNA.

3.9.2 Environmental Consequences

3.9.2.1 Threshold of Significance

The threshold of significance for air quality impacts would be exceeded if the Proposed Action were to result in any of the following:

- Exceedance of the applicable General Conformity Rule *de minimis* level thresholds;
- Increase of criteria pollutant emissions to levels above permitted source thresholds; or
- Meaningful contributions to the potential effects of global climate change.

Based on compliance with the NAAQS, the General Conformity Rule is potentially applicable to emissions of VOCs and NO_X in Fairfax County. The applicable *de minimis* thresholds for these pollutants is 50 tpy for VOCs and 100 tpy for NO_X (40 CFR 93.153[b]). While the General Conformity Rule is not applicable to emissions of CO, SO_X, $PM_{2.5}$, and PM_{10}, an insignificance indicator of 250 tpy, defined as the USEPA Prevention of Significant Deterioration threshold, can be used to provide an indication of the significance of potential impacts to air quality. The 250 tpy

threshold indicator does not denote a significant impact; however, it does provide a threshold to identify actions that have insignificant impacts to air quality.

3.9.2.2 Impacts of Proposed Action

Construction

Short-term, minor, adverse impacts on air quality would result from the construction of the warehouse and administrative building. Emissions of criteria pollutants and GHGs would be directly produced from activities such as operation of heavy equipment; heavy duty diesel vehicles hauling construction materials and debris to and from the project site; workers commuting daily to and from the project site in their personal vehicles; and ground disturbance. All such emissions would be transitory in nature and would only occur when such activities are occurring. The estimated annual emissions for construction under the Proposed Action are summarized in Table 3-9.

Table 3-9: Estimated Annual Air Emissions from the Proposed Action

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2e
2022 Construction of Distribution Center and Administrative Building	0.439	2.772	2.385	0.007	65.188	0.113	691.8
2023 Construction of Distribution Center and Administrative Building	0.900	6.138	5.390	0.017	65.231	0.226	1,735.2
2024 Construction of Distribution Center and Administrative Building Heating for Buildings Operation of Emergency Generators	6.875	3.265	2.890	0.016	0.191	0.189	2,507.3
2025 and later Heating for Buildings Operation of Emergency Generators	0.198	3.616	2.944	0.024	0.270	0.270	4,153.3
General Conformity *de minimis* Thresholds	50	100	250[1]	250[1]	250[1]	250[1]	N/A

Note: [1] The 250 tpy Prevention of Significant Deterioration threshold, as defined by USEPA, was used as an insignificance indicator for emissions of CO, SO_X, PM_{10}, and $PM_{2.5}$.
Key: N/A = not applicable

The air pollutant of greatest concern is particulate matter, such as fugitive dust, which is generated from ground-disturbing activities and combustion of fuels in construction equipment. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of activity. Fugitive dust emissions would be greatest during initial site preparation activities and site grading and would vary from day to day depending on the work phase, level of activity, and prevailing weather conditions. In accordance with 9 VAC 5-40-90, construction contractors would be required to take reasonable precautions to prevent particulate

matter from becoming airborne. BMPs and environmental control measures (e.g., wetting the ground surface) would be incorporated at construction areas to minimize fugitive dust emissions. In addition, work vehicles would be well-maintained and use diesel particulate filters to reduce emissions of criteria pollutants. These BMPs and environmental control measures could reduce uncontrolled particulate matter emissions from a construction site by approximately 50 percent.

Construction associated with the Proposed Action would produce a total of 2,857.7 tons (2,592 metric tons) of CO_2e. By comparison, 2,592 metric tons of CO_2e is approximately the GHG footprint of 558 passenger vehicles driven for 1 year or 504 homes' energy use of 1 year (USEPA, 2022c). In 2019, Virginia produced 103.2 million metric tons of CO_2 emissions (U.S. Energy Information Administration [USEIA] 2018). Assuming all CO_2e emissions from construction are from CO_2, emissions from construction under the Proposed Action would represent less than 0.003 percent of the total CO_2 emissions from the state. As such, air emissions produced during construction would not meaningfully contribute to the potential effects of global climate change and would not notably increase the total CO_2 emissions produced by the State.

Climate patterns and foreseeable climate trends in the northeast, such as increased average temperatures, increase in the frequency and intensity of flooding and drought events, and disruption of vegetative ecosystems, are unlikely to affect the U.S. Army's ability to implement the Proposed Action, and the Proposed Action would not appreciably contribute to the regional (i.e., northeastern United States) impacts from global climate change because of insignificant CO_2e emissions compared to the total emissions produced by the state. Therefore, climate change would not likely affect the ability for the Proposed Action to be implemented.

Operation

Long-term, negligible, adverse impacts on air quality would occur from operational air emissions associated with the Proposed Action. Operational air emissions would be produced from the natural gas-fired boilers for the proposed buildings and from the emergency generators near the warehouse and entry control facility. Total estimated annual air emissions from operation of the warehouse and administrative building are summarized in Table 3-9.

Emissions from the heating system and emergency generators at the proposed buildings would not increase the installation's potential to emit above permitted emissions limits, and the capacities of the systems is likely to be low enough that they would not need to be added to the mNSR permit as stationary sources. If determined that such equipment would require permitting, FBNA's mNSR permit could be modified to include the proposed boilers and emergency generators. However, these facilities may require permitting by the facility end user. In such case, the boilers and emergency generators would be permitted under a separate mNSR permit. In either event, the proposed emissions from these facilities, combined with the potential to emit for FBNA, would not exceed major source thresholds.

Operation of the warehouse and administrative building would produce 4,153.3 tons (3,767.8 metric tons) of CO_2e, which is equivalent to the GHG footprint of 812 passenger vehicles driven for 1 year or 475 homes' energy use for 1 year (USEPA, 2022c). Assuming all CO_2e operational emissions are from CO_2, operational emissions would represent less than 0.005 percent of the total

CO_2 emissions from the state. As such, air emissions produced during operation of the warehouse and administrative building would not meaningfully contribute to the potential effects of climate change and would not noticeably increase the total CO_2 emissions produced by the state.

General Conformity

Emissions of VOCs and NO_X during the construction phase would be less than their respective *de minimis* level thresholds of 50 tpy for VOCs and 100 tpy for NO_X. Emissions of CO, SO_X, $PM_{2.5}$, and PM_{10} would be less than the insignificance threshold of 250 tpy. In addition, the annual emissions from operation of the warehouse and administrative building would not exceed the *de minimis* level thresholds or insignificance thresholds of any criteria pollutant (see Table 3-7). Therefore, a general conformity determination is not required and no significant impacts would occur. The U.S. Army has prepared a Record of Non-Applicability (RONA) for CAA conformity (see Appendix G).

3.9.2.3 Impacts of No Action Alternative

Under the No Action Alternative, air quality conditions would remain the same as described in Section 3.9.1 and no short- or long-term impacts on air quality would occur. Air emissions from construction and operation of a warehouse and administrative building on FBNA would not occur.

3.10 TRAFFIC

3.10.1 Affected Environment

This section describes the existing road network serving the Proposed Action on FBNA. A Traffic Impact Study (TIS) was conducted to evaluate existing conditions and the potential impacts of the Proposed Action to traffic patterns in the vicinity (see Appendix H). Four key intersections were identified in the traffic study area. Turning Movement Counts (TMCs) and roadway volume counts were conducted at the four locations shown in Figure 3-11. March 2022 traffic data was collected at four intersections along Barta Road to support the development of the TIS. This data was used to amend previously acquired counts collected in March 2021 for the DIA Annex project.

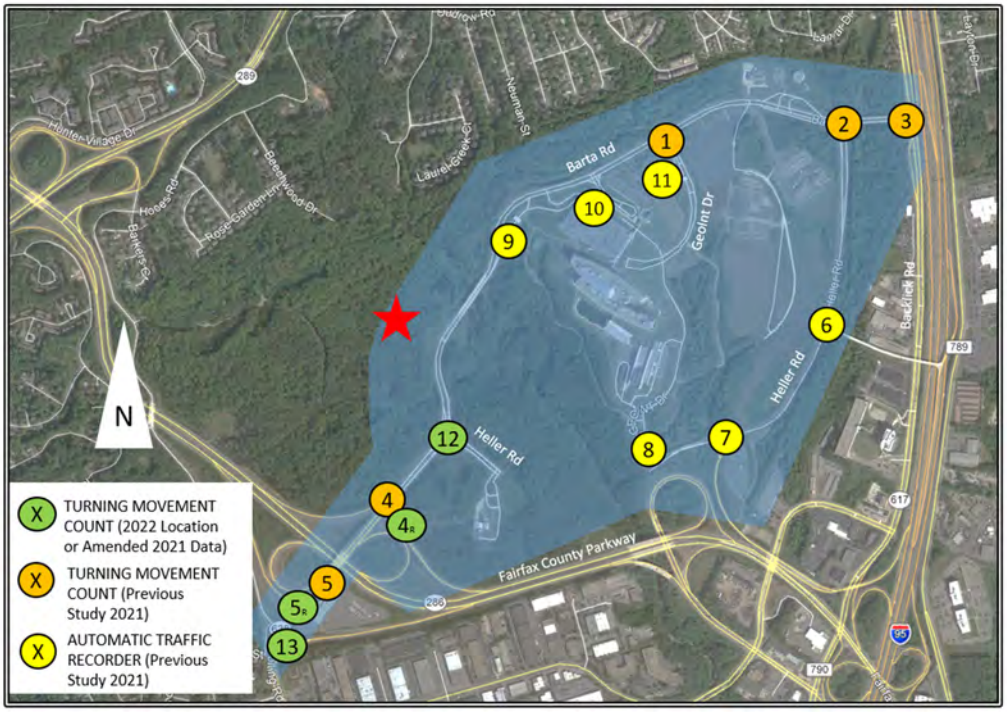

Figure 3-11: Traffic Count Locations for Existing Conditions

Level of Service Standards

Level of Service (LOS) is a qualitative measure describing operational traffic conditions, and the perception of these conditions by drivers or passengers. These conditions include factors such as speed, delay, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Levels of service are given letter designations from A to F, with LOS A representing the best operating conditions (free flow, little delay) and LOS F, the worst (congestion, long delays). Generally, LOS A and B are considered high level of service, LOS C and D are considered moderate, and LOS E and F are considered low. In general, the standards are LOS D in urban areas and LOS C in rural areas.

The results of the operations analysis using Synchro are provided in Table 3-10.

Table 3-10: Existing Intersection Operational Analysis - FBNA

Intersection ID	Intersection	Signalized (Y/N)	am	pm	am	pm
			Delay (s/veh)		LOS	
B	Barta Road / Heller Road	Y	2.5	0.4	A	A
C	West Gate Entrance	N	-	-	A	A
D	Barta Road / Parking Garage Exit	Y	0.0	9.5	A	A
E	Barta Road / Main Guest Access	N	-	-	A	A
F	Barta Road / GEOINT Drive	Y	5.5	10.4	A	B
G	Barta Road / Heller Road	Y	9.8	0.4	A	A

Intersection ID	Intersection	Signalized (Y/N)	am	pm	am	pm
			Delay (s/veh)		LOS	
H	Barta Road / Backlick Road	Y	7.9	18.9	A	B
I	Heller Road / HOV Entrance Ramp	N	-	-	A	A
J	I-95 Exit Ramp / Heller Road	N	-	-	A	A
K	South Gate Entrance	N	-	-	A	A
P	Barta Road / Rolling Road	Y	8.3	9.3	A	A
Q	Barta Road / South Bound VA 286 Ramps	Y	6.2	8.4	A	A
R	Barta Road / North Bound VA 286 Ramps	Y	9.0	11.9	A	B

As shown in the table above, all intersections are operating at LOS B or better.

Transit

There are three bus transit routes that pass near Fort Belvoir and FBNA, including Route 171, Route 335, and REX (Richmond Highway Express). Routes 171 and 335 are operated by the Fairfax Connector, and the REX is operated by Washington Metropolitan Area Transit Authority.

Non-motorized Facilities

Sidewalks and pedestrian crossings are present near the Proposed Action Site, but few pedestrian movements were noticed during the traffic counts. Surrounding streets do not have marked bicycle lanes, and no bicycle movements were observed during the traffic counts.

3.10.2 Environmental Consequences

3.10.2.1 Thresholds of Significance

Roadway traffic resulting from operations of the Proposed Action could result in changes to the LOS provided by existing road systems. Key issues of concerns regarding potential traffic impacts of the Proposed Action include:

- Maintaining a LOS on affected roadways that meets an acceptable standard.
- Minimizing the effect of 600 additional employees at the Access Control Points serving FBNA.

3.10.2.2 Impacts of Proposed Action

The distribution center construction is estimated to generate 600 additional staff positions. The analysis assumes that each additional staff member generates 0.9 additional am and pm peak hour trip for 600 additional staff (distribution center) and one additional am and pm peak hour trip for each 650 additional staff (DIA Annex). In addition, 18 truck trips have been modeled for both the

am and pm peak hours. The distribution between site access points was determined utilizing the March 2021 count data.

Peak Period Vehicular Traffic Impacts

Based on the traffic operational results, FBNA would be able to accommodate the existing site traffic and the anticipated additional traffic generated by the distribution center and the DIA Annex (Table 3-11); therefore, impacts would be less-than-significant.

Table 3-11: Build Condition (2023) Intersection Operational Analysis

Int. ID	Intersection	Signalized (Y/N)	*600 Added Personnel + 650 Added Personnel (DIA Annex)*			
			am	pm	am	pm
			Delay (s/veh)		LOS	
A	New Entrance / Barta Road	Y	4.9	22.7	A	C
B	Barta Road / Heller Road	Y	4.6	0.9	A	A
C	West Gate Entrance	N	-	-	A	A
D	Barta Road / Parking Garage Exit	Y	0.1	7.7	A	A
E	Barta Road / Main Guest Access	N	8.7	11.4	A	B
F	Barta Road / GEOINT Drive	Y	5.8	66.3	A	E
G	Barta Road / Heller Road	Y	9.8	4.7	A	A
H	Barta Road / Backlick Road	Y	8.5	22.2	A	C
I	Heller Road / HOV Entrance Ramp	N	-	-	A	A
J	I-95 Exit Ramp / Heller Road	N	-	-	A	A
K	South Gate Entrance	N	-	-	A	A
P	Barta Road / Rolling Road	Y	8.8	9.7	A	A
Q	Barta Road / South Bound VA 286 Ramps	Y	7.8	9.4	A	A
R	Barta Road / North Bound VA 286 Ramps	Y	27.7	11.3	C	B

Increased vehicle traffic may affect some intersections outside of the study area. The project traffic traveling through those intersections is expected to result in a small (less than 1 percent) increase in traffic at those intersections. The project trips associated with this project are not expected to affect the LOS of those intersections significantly.

Pedestrian and Bicycle Operations

Pedestrians are provided shared phasing with appropriate traffic phases. No impacts are expected along Barta Road. Additional connections to the new distribution facility may be appropriate with connection across Barta Road.

Proposed Design Features Intended to Reduce Impacts

From the analysis results, possible roadway and intersection improvements were identified to mitigate operational impacts that were degraded to LOS E. Potential mitigation is discussed below.

- pm – North B Geoint Drive to both EB & WB Barta Road
    - Mitigation – Signal optimization and additional turn lane for increased turn volumes.

Based on the modeling results, the existing roadway system build scenario operates at acceptable levels with the construction of the distribution center and added personnel. Low LOS at Geoint Drive in the pm would only be anticipated with the construction of the DIA Annex. LOS E is also expected only for exiting vehicles from existing Geoint Drive.

3.10.2.3 Impacts of No Action Alternative

Currently, the primary users of FBNA are government employees of NGA and their visitors. No growth in background traffic volumes in the study area would result from the No Action Alternative.

3.11 CULTURAL AND HISTORIC RESOURCES

3.11.1 Affected Environment

Several federal laws and regulations—including the NHPA of 1966, as amended, the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act of 1979 (ARPA), and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990—have been established to manage cultural resources. Cultural resources include "historic properties" as defined by the NHPA, "cultural items" as defined by NAGPRA, "archaeological resources" as defined by the ARPA, "sacred sites" as defined by EO 13007 to which access is afforded under AIRFA, and collections and associated records as defined in 36 CFR 79.

Archaeological resources consist of locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic significance. Traditional cultural properties include locations of historic occupations and events, historic and contemporary sacred and ceremonial areas, prominent topographical areas that have cultural significance, traditional hunting and gathering areas, and other resources that Native Americans or other groups consider essential for the persistence of their traditional culture.

The NHPA outlines federal policy to protect historic properties and promote historic preservation in cooperation with other nations, tribal governments, states, and local governments. Sections 106 and 110 of the NHPA require federal agencies to identify, evaluate, inventory, and protect historic properties (i.e. those listed or eligible for listing in the National Register of Historic Places [NRHP]) that are under their jurisdiction and control. Federal agencies must delineate the Area of Potential Effect (APE) within which impacts from a proposed action may occur, identify historic properties present within the APE, assess the potential effects of the undertaking on those historic properties and consider ways to avoid, minimize, or mitigate any adverse effects. The APE is the

geographic area in which an undertaking may directly or indirectly cause changes in the use or character of a historic property. An undertaking is any federal action with the potential to affect historic properties. Federal agencies are further required to initiate consultation with the State Historic Preservation Officer (SHPO) for actions that may impact historic properties. VDHR serves as the SHPO in Virginia.

The APE for the Proposed Action is defined as the study area outlined in Figure 2-3 plus a 1-mile buffer surrounding the Proposed Action Site to account for any potential effects on the viewshed of historic districts and other resources in the vicinity.

3.11.1.1 Site History

The Army acquired FBNA (formerly EPG) in the early 1940s to support the Research, Development and Engineering Center for the testing of a wide range of engineering equipment and supplies, including methods and equipment for the deployment, detection, and neutralization of landmines. The Army used EPG for these purposes from the 1940s through the 1970s (U.S. Army, 2007), with the highest level of activity at EPG occurring during the 1940s to the mid-1950s. Commercial and residential encroachment in the vicinity of FBNA in the 1960s and 1970s contributed to the reduction of testing activities at this location.

The Proposed Action Site was used as a MEC training area known as Range 5 (Arcadis, 2019). The range has since been closed and allowed to regenerate to natural areas. At the site, there are abandoned ammunition storage magazines and other buildings associated with the former training activities.

3.11.1.2 Archaeological Resources in the APE

In compliance with Section 110 of the NHPA, an archaeological survey was completed for the entire FBNA in 1993, and no archaeological properties eligible for the NRHP were identified (MAAR Associates, 1993). To date, only one archaeological resource, an isolated prehistoric artifact, has been discovered on FBNA, but evaluated as not eligible for the NRHP (New South Associates, 2007).

3.11.1.3 Architectural Resources in the APE

A comprehensive architectural survey of all extant properties on FBNA was completed in 2006 and none were eligible for the NRHP, nor listed on any state or local resister (Fort Belvoir, 2014b). The findings of this report were reviewed and concurred by Virginia SHPO. Further, a review of the Fairfax County Inventory of Historic Sites, current Fairfax County Historic Overlay Districts, the Virginia Landmarks Register, and the NRHP indicated that no listed resources or historic overlay districts are in close proximity to the Proposed Action Site or FBNA (U.S. Army, 2007).

Based on the information provided above, Fort Belvoir has concluded that no historic properties exist within the APE or in close proximity.

3.11.2 Environmental Consequences

3.11.2.1 Thresholds of Significance

Significant impacts on cultural resources would occur if potential resources that have not been previously documented are not properly identified, consultation pursuant to Section 106 is not completed, or impacts on viewsheds within the APE buffer are not appropriately considered and addressed.

3.11.2.2 Impacts of Proposed Action

No effects on cultural resources are anticipated from the Proposed Action. The Proposed Action Site has been previously disturbed, as a result of its use for testing activities and munitions ranges, since its inception as a testing ground in the 1940s with subsequent ground disturbance from contamination testing and removal actions. No eligible archaeological or architectural resources exist within the APE for the Proposed Action on FBNA. In terms of potential effects to viewsheds of historic districts in the project vicinity, the project is consistent with the campus-style environment found across Fort Belvoir. The distribution center would be designed in accordance with applicable installation design guidelines, including the Fort Belvoir Master Plan. The site is surrounded by stands of second-growth pines and hardwood forest that provide a visual screen for off-site properties.

In accordance with Section 106 of the NHPA, consultation was initiated with the Virginia SHPO (VDHR) and Fort Belvoir received concurrence from the SHPO on the determination of “no historic properties affected." A record of this consultation is included in Appendix A.

Additionally, should cultural artifacts be inadvertently discovered during construction operations of the Proposed Action, the inadvertent discovery plan described in Fort Belvoir’s Integrated Cultural Resources Management Plan (ICRMP) would be implemented to ensure notifications are made to appropriate personnel and VDHR.

3.11.2.3 Impacts of No Action Alternative

No effects on cultural resources are anticipated from the No Action Alternative.

3.12 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, and PROTECTION OF CHILDREN

3.12.1 Affected Environment

3.12.1.1 Socioeconomics

Socioeconomic factors are defined by the interaction or combination of social and economic factors. The relevant factors related to the Proposed Action include population and housing, economic development, and quality of life/health and safety issues.

The Region of Influence (ROI) for socioeconomic characteristics encompasses Fairfax County, Virginia. This ROI includes the installation and the immediately surrounding communities that have direct and indirect socioeconomic relationships with the installation, because distribution center staff may potentially live in this county and military personnel may frequent commercial establishments outside the installation.

3.12.1.2 Environmental Justice

Environmental justice addresses the race, ethnicity, and poverty status of populations within the ROI. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income communities. EO 14008, *Tackling the Climate Crisis at Home and Abroad*, signed by President Biden on January 27, 2021, further strengthens EO 12898 by requiring that "Agencies shall make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts."

Potential environmental justice considerations are determined by comparing demographic and economic characteristics (minority population composition and poverty rates) within the ROI to the same characteristics in the surrounding region. Environmental justice analyses are performed to identify potential disproportionate adverse effects from proposed actions and to identify alternatives that might mitigate these effects (USEPA, 2016).

The term minority refers to people who classified themselves as American Indian or Alaskan Native; Asian or Pacific Islander; African Americans or Black, not of Hispanic origin; or Hispanic.

Minority populations are defined as areas where racial minorities comprise 50 percent or more of the total population. Because CEQ guidance does not establish a threshold for low-income communities, for the purposes of this EA a low-income population is one with at least 25 percent or greater of its population living in poverty for the purposes of this EA.

Demographics

Fairfax County comprises an area of 391 square miles, and the estimated 2020 population was 1,150,309, according to the 01 April 2020, Population Census, a 6.0 percent increase from the population of 1,081,726 in 2010 (U.S. Census, 2022). In 2021, 35.3 percent of Fairfax County's population was composed of minorities. Fairfax County is not considered a minority community because the percentage of minorities living in the county is less than 50 percent of the total population. The median household income from 2015 to 2019 (in 2019 dollars) was $124,831. There were approximately 6 percent of persons living in poverty in Fairfax County. Fairfax County is not considered a low-income community because low-income people and families do not comprise 25 percent or more of the total population (U.S. Census, 2022). Some of the census tracts within Fairfax County and north of the Proposed Action Site do qualify as at least 25 percent minority. Census Tracts 4315 and 4316 are 38.9 percent and 70.3 percent minority, respectively (U.S. Census, 2020a). The surrounding census tracts are not considered low-income, because the percent population below poverty does not exceed 25 percent (U.S. Census, 2020b).

Fort Belvoir is approximately 8,000 acres in size and has an approximate working population of 40,000 people (NCPC, 2017). FBNA is roughly 804 acres in size and supports approximately 10,700 employees, most of whom are government civilians, military members, and contractors employed by the NGA Campus East, whose headquarters were completed as part of the 2005 BRAC actions in September 2011. NGA Campus East is the third largest federal facility in Washington, D.C. area, at approximately 2.77 million square feet (https://www.nga.mil/history/).

Housing

Approximately 7,500 residents live on Fort Belvoir (2,100 housing units, located on Main Post) (NCPC, 2017). A residential area is located north of and adjacent to the Proposed Action Site outside the FBNA boundary.

3.12.1.3 Protection of Children

On 21 April 1997, President Clinton issued EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directing each federal agency to ensure that its policies, programs, activities, and standards address disproportionate environmental health or safety risks to children that may result from the agency's actions. EO 13045 recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks due to still developing neurological, immunological, physiological, and behavioral systems. Examples of risks to children include increased traffic volumes and industrial- or production-oriented activities that would generate substances or pollutants that children could come into contact with and ingest.

Two CDCs are located east of the Proposed Action Site on FBNA (U.S. Army, 2021). These facilities were completed in 2015 and provide childcare services primarily for the existing NGA facility. The Army has taken precautions for the safety of children by limiting access to certain areas, the use of fencing, and providing adult supervision (USACE, 2021).

3.12.2 Environmental Consequences

3.12.2.1 Thresholds of Significance

Socioeconomics

A proposed action is evaluated against the following significance criteria to determine if they would result in a significant impact on the socioeconomic environment:

- Substantially change local population growth rates or employment opportunities.
- Create a demand for housing, schools, public facilities, or recreational opportunities that exceeds existing supply.

Environmental Justice

The concept of environmental justice is based on the premise that no segment of the population should bear a disproportionate share of adverse human health or environmental effects of a proposed federal action. Historically, low-income and minority communities have been disproportionately affected by negative environmental effects, receiving few of the benefits of economic growth and development while absorbing much of the societal cost.

A proposed action is evaluated against the following significance criteria to determine if they would result in a significant impact on environmental justice populations: it would cause socioeconomic impacts that disproportionately affect low-income or minority populations.

Protection of Children

Because children may suffer disproportionately from environmental health risks and safety risks, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was issued in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure federal agencies' policies, programs, activities, and standards address environmental and safety risks to children.

A proposed action is evaluated against the following significance criteria to determine if they would result in a significant impact on the protection of children: it would increase risks to the safety of children.

3.12.2.2 Impacts of Proposed Action

Socioeconomics

Under the Proposed Action, long-term, less-than-significant, beneficial effects would be expected on socioeconomics. The construction and renovation expenditures would result in beneficial increases in the return on investment business sales volume, income, and employment. Although the Proposed Action's expenditures would be quite substantial, Fort Belvoir is in an economically large and robust region where the magnitude of the expenditures relative to the regional demographic and economic forces would be considered minor. Because construction projects are, by nature, temporary, the economic stimulus from construction of the Proposed Action would diminish over time as the project reached completion.

Environmental Justice

Under the Proposed Action, no effects would be anticipated on environmental justice. The ROI for the Proposed Action is not considered to be a minority or low-income community (USACE, 2021). In addition, the Proposed Action would not have the potential to substantially affect human health or the environment by excluding persons, denying persons benefits, or subjecting persons to discrimination because of their race, color, national origin, or income level.

Protection of Children

Under the Proposed Action, no effects would be anticipated to occur to children. The CDCs are to the east of the site and with proper precautions, would not allow children near the construction site. Post-construction, there would be no environmental risks for children near or in the Proposed Action Site.

3.12.2.3 Impacts of No Action Alternative

Under the No Action Alternative, no changes would be expected to occur to socioeconomics, environmental justice, or protection of children. Fairfax County would see no changes in employment or need for public services. No changes to minority or low-income communities would occur. No changes would occur on-site that have the potential to disproportionately affect children.

3.13 CUMULATIVE EFFECTS

This EA has been developed in accordance the 2020 CEQ NEPA regulations (40 CFR 1500-1508) as amended on May 20, 2022, which require assessment of cumulative impacts (U.S. Army, 2022). A cumulative effect is defined as the following (40 CFR § 1508.1(g)(3)): An effect on the environment that results from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

3.13.1 Projects Considered for Potential Impacts

The assessment of cumulative effects involves identifying and defining the scope of other actions and their interrelationship with a proposed action or alternatives. The scope must consider other projects that coincide with the location and timeline of a proposed action and other actions. Therefore, this cumulative effects analysis focuses on past, present, and reasonably foreseeable actions taking place within and immediately adjacent to FBNA.

Past actions are those actions, and their associated impacts, that occurred within the geographical extent of cumulative effects that have shaped the current environmental conditions of the Project area and, therefore, are now part of the existing environment, in addition to present actions and included in the affected environments for each resource area. Reasonably foreseeable actions that

could have a causal relationship to the Proposed Action and Alternatives and contribute to additional impacts on the human environment are discussed in this section. Because the Proposed Action would be largely confined to FBNA, aside from commuter and operational traffic, only those actions occurring on FBNA or immediately adjacent to FBNA are included in this analysis. Brief descriptions of these actions, as available, follow.

Fort Belvoir Defense Intelligence Agency (DIA) Headquarters (HQ) Annex. The Proposed Action involves the construction of the HQ annex building within FBNA, in the vicinity of the NGA complex. The HQ annex would consist of an approximately 77,000 net square foot/116,080 gross square foot administrative building and an associated parking structure. The proposed HQ annex would consolidate administrative facilities for approximately 650 personnel from DIA HQ to address safety, security, and operational concerns specific to the administrative functions of the agency (DIA, 2021).

FBNA Real Property Master Plan (RPMP) And Area Development Plan (ADP) Projects. The Fort Belvoir RPMP and FBNA ADP describe various transportation, infrastructure, and land use projects to be implemented over time that would accomplish the following goals: Mission and Land Use Compatibility, Dense Mid-Rise Buildings, Short/Secured Delivery Routes, Emergency Response Quickness Maintained, Improved Power Redundancy, Mission Appropriate Parking Ratio, Architecture Adaptable to Emerging Technology (Utilidors, Conduit), Increased Transit and Rideshare, Continued Compliance with Existing Permits and Policies, and Mitigated Potential Encroachment (U.S. Army, 2021; Fort Belvoir, 2014a).

Fairfax County and Franconia-Springfield Parkways Alternatives Analysis and Long-Term Planning Study. The Planning Study includes a proposal to widen the Fairfax County Parkway from 4 to 6 general purpose lanes between the Barta Road interchange and John J. Kingman Road. This widening effort would also include construction of continuous, connected, multi-use trails on both sides of the Parkway. In addition, Fairfax County has proposed interchange modifications at Fairfax County Parkway and I-95 (FCDOT, 2016).

3.13.2 Cumulative Effects on Resource Areas

The Proposed Action, when combined with present and reasonably foreseeable future projects, would not result in cumulatively significant effects on any resource area. Four resource areas that would likely incur cumulative impacts are discussed below; the other resource areas identified earlier in Section 3 would not incur greater than negligible cumulative impacts.

Water Resources. The master plan for Fort Belvoir envisions FBNA as a future center for an intelligence community integrated campus, with mid- and long-term additions of more buildings and associated infrastructure, including roads, parking and stormwater management facilities. This additional build-out, including the Proposed Action and DIA HQ annex, would add more impervious surfaces to FBNA. Construction of an extension of Heller Road, to form a loop (with Barta Road) around the eastern portion of FBNA, could potentially impact Accotink Creek and associated wetlands. Project proponents would be expected to obtain coverage under applicable

permits issued by USACE and VADEQ in accordance with the CWA and would adhere to avoidance, minimization and compensatory mitigation to ensure that impacts to regulated waters would remain minor, and the resulting cumulative impacts would not be significant.

Noise. If the Proposed Action were to occur at the same time as other construction efforts under the reasonably foreseeable actions, cumulative short-term, minor impacts on the noise environment would be expected as a result of combined construction equipment and construction-related noise. In combination with other reasonably foreseeable actions, such as the DIA HQ annex, long-term, minor but intermittent noise would be anticipated from commuter traffic and vehicle and generator use as part of daily operations. No project has been identified that, when combined with the Proposed Action, would result in significant impacts.

Air Quality. If the Proposed Action were to occur at the same time as other construction efforts under the reasonably foreseeable actions, cumulative short-term, minor impacts on air quality would be expected from construction vehicle emissions. Implementation of BMPs and environmental control measures, such as wetting the ground surface and regular maintenance of work vehicles, would be incorporated at construction areas and during operations to minimize potential impacts. Cumulative, long-term, negligible to minor, adverse impacts on air quality would be expected as a result of daily operation of the distribution warehouse and DIA HQ annex, and Fairfax County traffic due to vehicle, equipment, and generator use. Estimated air emissions generated by the Proposed Action would be *de minimis* and activities of this limited size and nature would not result in significant impacts on air quality.

Traffic. Long-term, negligible to minor, adverse impacts on traffic would be expected as a result of daily commutes and operations on FBNA under the Proposed Action. When combined with the DIA HQ annex, and potential operational expansions under the ADP and RPMP, cumulative long-term, minor, adverse impacts on traffic would be expected. Increased traffic on FBNA would be alleviated by traffic flow improvements due to Fairfax County Parkway widening and improvements. Cumulative impacts would not be significant.

4 CONCLUSIONS

This draft EA has been prepared to analyze the potential environmental, cultural, and socioeconomic effects associated with the proposed construction and operation of a distribution center on FBNA. The purpose of this project is to build and operate a 525,000-square foot distribution center warehouse and administrative building with associated parking and covered storage for approximately 600 personnel. The need for this Proposed Action is to modernize logistical operations and will address safety, security, and operational concerns specific to the distribution center and its administrative functions.

The analysis within this draft EA concluded that there would be no significant adverse impacts on land use, geology, topography, groundwater, floodplains, utilities, airspace, cultural and historic resources, socioeconomics, environmental justice and protection of children; short-term minor adverse impacts on soil, surface water, RPAs, coastal zones, wetlands, stormwater, vegetation, wildlife resources, noise, air quality and traffic; long-term minor beneficial impacts on vegetation, hazardous materials and waste, munitions, and socioeconomics; as well as short-term minor beneficial impacts on socioeconomics.

Table 4-1 summarizes the potential consequences the Proposed Action and No Action Alternative would have on the environmental resources.

Based on the evaluation of the environmental consequences in this draft EA, the Proposed Action would have no significant impacts on the environment, and the preparation of an EIS is not warranted. The preparation of an FNSI is appropriate.

Table 4-1: Summary of Potential Environmental Consequences on Environmental Resources

Resource	Proposed Action	No Action Alternative	Permits and Best Management and Mitigation Measures
Geology, topography, and soils	Short-term, less-than-significant adverse impacts on soils. Clearing, grubbing and grading would temporarily increase erosion and the potential for sediments to be transported off-site; however, the finished building would be beneficial in reducing accelerated rates of runoff from adversely affecting downstream receiving waters as a result of properly designed stormwater management	No effects	-Obtain ground disturbance permits from Fort Belvoir DPW -Follow ESC Plan (to be included in the project civil design plan following review by Fort Belvoir DPW and approval by VADEQ) -Follow SWPPP -Obtain Construction General Permit from VADEQ

Resource	Proposed Action	No Action Alternative	Permits and Best Management and Mitigation Measures
Water resources (Surface water, RPAs, wetlands, floodplains, groundwater, stormwater, Coastal Zone)	Less-than-significant adverse impacts on surface water, RPAs, wetlands, coastal zone and stormwater. No effects on groundwater and floodplains. This stage of construction exposes soils and increases the potential for erosion and discharge of sediment-laden stormwater to downstream receiving waters; however, appropriate erosion and sediment control measures would be implemented, pursuant to the construction SWPPP and the VSMP Construction General Permit, and would minimize any detrimental effects. Construction of permanent stormwater management features will handle stormwater generated from the development and be designed to maintain pre-development levels of off-site discharge.	Less-than-significant adverse impacts on surface water. No effects on RPAs, wetlands, groundwater, floodplains, coastal zone.	-Obtain CGP -Follow ESC and SWPPP, as referenced above -Design and construction would be performed in accordance with Virginia CZMA policies. -Obtain permit for impacts to wetlands/streams pursuant to Section 401/404 of the CWA prior to disturbance to these resources - All temporarily disturbed areas would be graded and revegetated upon completion of construction -Employ erosion and sediment control measures during construction, to include silt fencing and sediment traps. -Provide spill kits on site in the event of an accidental release of petroleum products from construction equipment. -Provide appropriate secondary containment for on-site generators.
Biological resources (Vegetation, wildlife, RTE species, PIF)	Less-than-significant, short-term, adverse effects on vegetation, wildlife, and RTE species. The Proposed Action would remove existing vegetation, disturbing habitat areas and causing fauna that use the area to relocate. The vegetation/tree removal would be offset with replantings, and the construction area stabilized and revegetated with native plants.	No effects	-Replanting to offset removal of existing trees within the site would be performed in accordance with Fort Belvoir's Tree Removal and Protection Policy. -Consultation regarding listed species would be conducted pursuant to Section 7 of the ESA. -Survey for the small whorled pogonia was conducted on 21 June 2022 and a bat survey for the NLEB was conducted in May 2022. Both species were absent from the Proposed Action Site. - Perimeter controls would be installed during the winter months to exclude the endangered wood turtle from proposed areas of construction activity, as necessary. - To minimize impacts to birds,

Resource	Proposed Action	No Action Alternative	Permits and Best Management and Mitigation Measures
			construction activities would avoid cutting and removal of vegetation from April 1 to July 15. - To protect nesting bat species, no trees over 3 inches in diameter would be removed within the project area between April 15 and September 15.
Hazardous Waste Materials and Munitions	Less-than-significant beneficial effects on hazardous waste and munitions. A munitions survey would ensure the Proposed Action area is cleared from munitions., alleviating safety concerns related to possible munitions remaining on the surface or buried near the surface.	No effects	-Munitions clearance would be conducted pursuant to the 2021 Fort Belvoir Best Management Practice memorandum. -Land use controls, likely to result in the requirement for a vapor intrusion barrier for the administrative building, would continue to be in effect for this site. -Ongoing remedial actions would continue through the re-establishment of an effective groundwater monitoring well system and capping of wells where necessary. -Soils excavated or otherwise disturbed during the project's construction phase would be tested in accordance with established Fort Belvoir policies and procedures. -The construction contractor would be required to prepare and adhere to a SPCC plan.
Utilities (Electric, Wastewater, and Natural Gas)	Less-than-significant, long-term adverse effects on electric, wastewater, and natural gas. The operation of the building would increase demand, but the existing utility systems have been constructed in consideration of long-term buildout of FBNA.	No effects	Any required ground disturbance associated with the extension of existing utilities for connection to the Proposed Action would adhere to the required sediment and erosion control permits.
Noise	Less-than-significant, long-term adverse effect and Less-than-significant, short-term adverse effects during the construction period would occur as a result of the various types of heavy equipment needed. BMPs (listed in	No effects	-The Fairfax County noise ordinance limits construction noise above 60 dBA for residential areas during weekdays. -Noise levels must not exceed National Institute for Occupational Safety and Health or Occupational Safety and Health Administration guidance for workers. -To minimize the potential adverse impact from these noises, construction

Resource	Proposed Action	No Action Alternative	Permits and Best Management and Mitigation Measures
	this section) would be employed to minimize the adverse effects from construction noise. Operation of the completed facility would be expected to result in a negligible increase in ambient noise from climate control (heating/cooling) infrastructure supporting the building and additional commuting vehicles.		vehicles would be equipped with noise dampening equipment including mufflers which would be operated according to the manufacturers' instructions. -Construction vehicles and equipment would be turned off when not in use for more than five minutes. -Construction would take place during daylight hours on weekdays, unless there is a specific action that would require working outside of this normal timeframe, such as mobilizing oversized materials or equipment to the site.
Airspace	Less-than-significant, adverse effects	No effects	No permits/BMPs required.
Air Quality	Less-than-significant, short- and long-term adverse effects. During construction engine emissions and potential fugitive dust emissions would have adverse effects; however, these impacts would be minimized through BMPs. Long-term operation of the facility would result in de minimis emissions.	No effects	-Comply with VDEQ's Fort Belvoir - North Area synthetic mNSR air permit -BMPs include: covering truck beds while in transit to reduce fugitive emissions; spraying water on any unpaved roads or stockpiles to limit fugitive emissions; using ultra-low sulfur diesel as a fuel source where appropriate to minimize oxides of sulfur emissions; using clean diesel in construction equipment and vehicles though the implementation of add-on control technologies and using electric-powered equipment in lieu of diesel-powered equipment when feasible; and, implementing control measures for heavy construction equipment and vehicles (e.g. minimizing operating and idling time). -LEED-Silver design to reduce energy and water usage over the life of the building.
Traffic	Less-than-significant, short-term adverse effects on the regional roadway network and project vicinity from construction worker commutes and delivery/pickup of construction materials/debris. Less-than-significant, long-term	No effects	-Possible roadway and intersection improvements to mitigate operational impacts.

Resource	Proposed Action	No Action Alternative	Permits and Best Management and Mitigation Measures
	effects of increased personnel commuting to/from FBNA.		
Cultural and Historic Resources	No effects. No sites eligible for listing on the NRHP are located within the study area.	No effects	-Consultation in accordance with Section 106 of the NHPA required. -Inadvertent discovery of cultural resources would be managed according to procedures documented in Fort Belvoir's ICRMP.
Socioeconomics, Environmental Justice, and Protection of Children	Less-than-significant, short- and long-term beneficial effects on socioeconomics due to the potential employment of local construction workers and purchasing of materials from local vendors.	No effects	-The Proposed Action would be initiated only after this environmental review has been completed and the appropriate permits are acquired. It is anticipated that the permitting process would result in assurance of safety and protection of the public, including children. -Proper precautions including the placement of fencing, signage, and other types of barriers would be used to prevent potential harm to all civilians, including children.

5 ACRONYMS

ADP	Area Development Plan
AIRFA	American Indian Religious Freedom Act
AOPC	Area of Potential Concern
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
BMP	best management practices
BO	Biological Opinion
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CadnaA	Computer Aided Noise Abatement
CBPO	Chesapeake Bay Preservation Ordinance
CDC	Child Development Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	equivalent emissions of CO_2
COC	Constituent of Concern
CRMP	Coastal Resources Management Program
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DA	Department of Army
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
dbh	diameter at breast height
DA	Department of the Army
DAAF	Davidson Army Airfield
DDD	dichlorodiphenyldichloroethane
DERP	Defense Environmental Restoration Program
DIA	Defense Intelligence Agency
DMM	discarded military munitions
DNL	day-night average sound level
DNT	dinitrotoluene
DoD	Department of Defense
DoDI	Department of Defense Instruction
DOPAA	Description of Proposed Action and Alternatives
DPW	Directorate of Public Works
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act

EO	Executive Order
EPG	Engineer Proving Ground
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBNA	Fort Belvoir North Area
FCDOT	Fairfax County Department of Transportation
FFS	Focused Feasibility Study
FNSI	Finding of No Significant Impact
FONPA	Finding of No Practicable Alternative
FUDS	Formerly Used Defense Sites
GHG	greenhouse gases
GIS	Geographic Information Systems
HAP	hazardous air pollutant
HFC	hydrofluorocarbon
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HQ	Headquarters
HTMW	Hazardous and Toxic Materials and Waste
I-95	Interstate-95
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IRP	Installation Restoration Program
ISO	International Organization for Standardization
kV	kilovolt
LEED	Leadership in Energy and Environmental Design
LEQ	equivalent-average sound level
LID	low impact development
LOD	limits of disturbance
LOS	Level of Service
LUC	land use control
LUCIP	Land Use Control Implementation Plan
LUPZ	Land Use Planning Zone
MBTA	Migratory Bird Treaty Act
MC	munitions constituents
MEC	Munitions and Explosives of Concern
ML	measurement location
mNSR	Minor New Source Review
MMRP	Military Munitions Response Program
MS4	Municipal Separate Storm Sewer System
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NCPC	National Capital Planning Commission
NCP	National Contingency Plan

NCR	National Capital Region
NFA	No Further Action
NHPA	National Historic Preservation Act
NGA	National Geospatial Intelligence Agency
NLEB	Northern Long-eared Bat
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	noise-sensitive receptors
O_3	ozone
OMB	Office of Management and Budget
PFC	perfluorocarbon
PIF	Partners in Flight
PM_{10}	particulate matter measured less than or equal to 10 micrometers in diameter
$PM_{2.5}$	particulate matter measured less than or equal to 2.5 micrometers in diameter
RCRA	Resource Conservation and Recovery Act
RDX	1,3,5-triazine
REX	Richmond Highway Express
RIF	Remote Inspection Facility
ROI	Region of Influence
RONA	Record of Non-Applicability
RPA	Resource Protection Area
RPMP	Real Property Master Plan
RTE	rare, threatened, and endangered
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Office
SO_X	sulfur oxides
SOC	Species of Concern
SPCC	Spill Prevention, Control, and Countermeasures
SWMU	Solid Waste Management Unit
SWPPP	Stormwater Pollution Prevention Plan
TCE	Trichloroethylene
THP	Total Petroleum Hydrocarbons
TIS	Traffic Impact Study
TMC	Turning Movement Counts
TMDL	Total Maximum Daily Load
tpy	tons per year
TSS	Total Suspended Solids
UAG	U.S. Army Garrison
USC	United States Code

USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEIA	U.S. Energy Information Administration
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
VAC	Virginia Administrative Code
VADEQ	Virginia Department of Environmental Quality
VDHR	Virginia Department of Historic Resources
VDWR	Virginia Department of Wildlife Resources
VOC	volatile organic compound
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program

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