DRAFT

ENVIRONMENTAL ASSESSMENT FOR INFRASTRUCTURE IMPROVEMENT AT CAPE COD AIR FORCE STATION

6TH SPACE WARNING SQUADRON
JOINT BASE CAPE COD, MASSACHUSETTS

SEPTEMBER 2018

DRAFT
FINDING OF NO SIGNIFICANT IMPACT FOR INFRASTRUCTURE IMPROVEMENT AT CAPE COD AIR FORCE STATION

Pursuant to Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), Title 23, U.S. Code (USC) § 327; Title 40, Code of Federal Regulations (CFR) Parts 1500-1508; and the U.S. Air Force (USAF) Environmental Impact Analysis Process (EIAP) Regulations codified at 32 CFR Part 989, the USAF, as the Lead Agency, has prepared an Environmental Assessment (EA) to identify and evaluate the potential impacts on the natural and human environment associated with the proposed infrastructure improvement projects at Cape Cod Air Force Station (CCAFS), Massachusetts.

PURPOSE OF AND NEED FOR PROPOSED ACTION

The overall purpose of the Proposed Action is to implement multiple infrastructure improvements described in the Installation Development Plan (IDP). The projects are intended to improve the functionality of CCAFS and physical infrastructure insufficiencies or deficiencies that have arisen over time through obsolescence, deterioration, and evolving mission requirements. The proposed repair of existing facilities, as well as the construction of new facilities and new infrastructure, would improve operational safety and functionality of the CCAFS. Additionally, the projects included in the Proposed Action would meet the station's needs to identify safety concerns and provide adequate security to CCAFS to achieve compliance with UFC 4-010-01, *Minimum Antiterrorism Standards for Buildings*. Further, implementation of the Proposed Action would help the 6th Space Warning Squadron (6 SWS) meet their goal of providing air and space surveillance in order to detect, track, and report sea-launched and intercontinental ballistic missiles.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Selection Criteria for Alternatives (Section 2.2, *Selection Standards for Project Alternatives*, Pages 2-1 to 2-3 of the EA)

Potential alternatives to the individual projects included in the Proposed Action were each evaluated based on three universal selection standards, which were applied to all alternatives.

- ***Standard 1: Planning Constraints*** – Planning constraints are man-made or natural elements that can create significant limitations to the operation or

construction of buildings, roadways, utility systems, and other operational facilities. These constraints, when considered collectively with the station's capacity opportunities, inform the identification of potential areas for development, as well as those areas that can be redeveloped to support growth. This standard addresses compatibility with overall station operations, land use compatibility, and natural and built resources, and largely dictates the location/placement of a proposed facility.

- ***Standard 2: Base Capacity Opportunities*** – This refers to the capabilities of the station's existing facilities/infrastructure to meet existing and future mission needs. This standard largely drives the scope of the facility/infrastructure development and/or improvement and requires that proposed facility/infrastructure development and improvements support: 1) mission operations; 2) mission support; 3) built infrastructure; and 4) quality of life.

- ***Standard 3: Sustainability Development Indicators*** – This refers to the ability to operate into the future without a decline in either the mission or the natural and man-made systems that support it, ensuring long-term sustainability of the station. Sustainability is a holistic approach to asset management that seeks to minimize the negative impacts of the USAF's mission and operations on the environment. This standard also generally drives the scope of the facility/infrastructure development and/or improvement and supports sustainability of the station through consideration of: energy, water, waste water, air quality, facilities space optimization, encroachment, and natural/cultural resources.

Description of the Proposed Action (Section 2.3, *Proposed Action and Alternatives*, Pages 2-3 to 2-14 of the EA)

The Proposed Action comprises seven construction, renovation, and demolition projects at CCAFS described in the IDP that are intended to improve the physical infrastructure and functionality of CCAFS. Implementation of the projects included in the Proposed Action would address inefficiencies in ongoing operations, identified safety concerns, and the need to provide adequate security to CCAFS to achieve compliance with Unified Facilities Criteria (UFC) 4-010-01, *Minimum Antiterrorism Standards for Buildings*.

Alternatives Eliminated from Further Consideration (Section 2.3, *Proposed Action and Alternatives*, Pages 2-3 to 2-14 of the EA)

Alternative Siting Locations. The 6 SWS considered siting each of the projects included in the Proposed Action at different locations and/or in different configurations at CCAFS. All of these alternatives were dismissed from further consideration as they did not meet the purpose and need for the Proposed Action, did not meet Selection Standard 1, or would otherwise not be considered viable due to existing environmental and land use constraints. The only alternatives carried forward for full analysis were the Proposed Action and the No-Action Alternative.

Description of the No-Action Alternative (Section 2.3, *Proposed Action and Alternatives*, Pages 2-3 to 2-14 of the EA)

Under the No-Action Alternative, none of the proposed infrastructure improvement projects identified for the Proposed Action would be implemented. Consequently, no upgrades or additions to the existing infrastructure would occur as described for the Proposed Action, and CCAFS would continue to maintain the station in its existing condition and configuration. For example, implementation of the No-Action Alternative would result in no improvements to the existing loading dock at Building 2, which are necessary to comply with UFC 3-260-01. However, because CEQ regulations stipulate that the No-Action Alternative be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented, this alternative is carried forward for analysis in the EA. The No-Action Alternative also provides a baseline against which the Proposed Action can be compared.

ENVIRONMENTAL CONSEQUENCES

The environmental analysis included in the EA focuses on the following resource areas: air quality, biological resources, geology and soils, cultural resources, hazardous materials and waste, and safety.

Per NEPA, the resource areas that are anticipated to experience either no impacts or negligible environmental impacts were not examined in detail in this EA. These resource areas include: land use, noise, transportation and circulation, visual resources, water resources, socioeconomics, and environmental justice / protection of children. Section 1.7, *Scope of the Environmental Assessment*, Pages 1-9 to 1-12 of the EA provides the rationale for dismissal of these resource areas.

Air Quality (Section 4.1, *Air Quality*, Pages 4-2 to 4-6 of the EA): There would be temporary, localized emissions during site preparation and construction activities associated with the Proposed Action. The proposed projects included in the Proposed Action would disturb a total area of approximately 3.2 acres. With the implementation of standard dust minimization practices, the total amount of dust (including both PM_{10} and $PM_{2.5}$) generated by the proposed construction and demolition activities would be approximately 0.844 tons per year (tpy) in Fiscal Year (FY) 2018. Additionally, operation of construction equipment with internal combustion engines and offsite vehicles (e.g., construction employee vehicles, delivery trucks) would result in emission of criteria air pollutants. However, construction equipment would be driven to and kept on-site for the duration of construction activities, and idling equipment would be shut off when not in use. Additionally, emissions associated with the Proposed Action would be well below *de minimis* thresholds for all pollutants, and Barnstable County is in attainment for all National Ambient Air Quality Standards (NAAQS). Therefore, the Proposed Action would not trigger the requirement for Conformity Determination under the General Conformity Rule. Further, under the Proposed Action, there would be no long-term changes to operational emissions at CCAFS. The implementation of the Proposed Action would not cause an exceedance of the NAAQS, nor exceed a *de minimis* threshold for any criteria pollutant. Therefore, the Proposed Action would result in less than significant impacts to air quality.

Biological Resources (Section 4.2, *Biological Resources*, Pages 4-7 to 4-13 of the EA): The proposed construction and demolition projects included in the Proposed Action have largely been sited on developed or previously disturbed land immediately adjacent to existing facilities at CCAFS. Construction and demolition activities associated with the Proposed Action could temporarily result in short-term noise and minor groundborne vibration; however, due to the short-term temporary nature of these activities, impacts to wildlife species that may transit the area would be negligible. Tree removal associated with the Proposed Action could potentially result in impacts to sensitive species at CCAFS, including northern long-eared bat (NLEB) (present on Joint Base Cape Cod [JBCC] but not known to occur at CCAFS). In order to avoid impacts to potentially occurring NLEB and associated maternity roost trees to the maximum extent feasible, vegetation removal and other construction activities in the forested areas at CCAFS would avoid pup season (i.e., June 1 through July 31). The 6 SWS sent a Section 7 consultation letter to the U.S. Fish and Wildlife Service (USFWS) on 15 May 2018. The USFWS responded indicating the need to complete and submit a NLEB 4(d) Rule Streamlined Consultation Form, the process of which relies upon the finding of the Programmatic Biological Opinion for the Final 4(d) Rule to fulfill their project-specific Section 7 responsibilities (USFWS 2016). As such, the 6 SWS submitted a NLEB 4(d) Rule Streamlined

Consultation Form to the USFWS on 3 July 2018. No response or requests for additional information were received from the USFWS within 30 days; therefore, per USFWS guidance under the NLEB 4(d) Rule, Section 7 consultation responsibilities are complete (see Appendix B). Vegetation removal could also affect state-listed moth and butterflies, migratory birds, and Watch List plant species. However, implementation of the projects included in the Proposed Action would avoid breeding/nesting period for moths and butterflies and migratory birds. Additionally, prior to the initiation of any construction-related activities involving vegetation removal, the 6 SWS natural resources staff would perform a visual survey of the area in order to ensure that the area is clear of sensitive plant species. Areas within the immediate vicinity of recorded occurrences would be avoided. As such, impacts to these sensitive plant species would be minimized to the maximum extent feasible. With the implementation of additional best management practices (BMPs), the Proposed Action would have no significant impacts to sensitive species at CCAFS (Section 4.2.3, *Proposed BMPs*, Pages 4-14 to 4-15 of the EA). Overall, impacts to biological resources at CCAFS would be less than significant.

Geology and Soils (Section 4.3, *Geology and Soils*, Pages 4-14 to 4-18 of the EA): Potential impacts to geological resources associated with the Proposed Action at CCAFS would be limited to ground-disturbing activities occurring during site preparation and construction. Further, while construction activities may require minor grading and excavation, none of the proposed construction activities would affect the underlying bedrock geology. These activities would occur on developed or previously disturbed land immediately adjacent to existing facilities within the installation, with the exception of the relocation of Well #1 and installation of the main access road fence. The proposed relocation of Well #1 would be sited adjacent to the paved Cat Road on Plymouth-Barnstable complex, rolling, and extremely boulder soil, which underlies a majority of the station property (i.e., approximately 73 percent). As such, this soil and underlying bedrock supports the majority of the existing facilities at CCAFS and is capable of supporting the relocation of Well #1. Additionally, installation of the main access road fence would conform to the natural slope of the land and standard BMPs (Section 4.3.3, *Proposed BMPs*, Page 4-20 of the EA) would further reduce project impacts to less than significant levels. The Proposed Action would result in a short-term increase in soil disturbance; however, construction-related impacts as well as long-term impacts to soils would be less than significant.

Cultural Resources (Section 4.4, *Cultural Resources*, Pages 4-19 to 4-23 of the EA): Building 2 and Building 4 were determined to be eligible for the National Register of Historic Places (NRHP). The proposed demolition and replacement of the loading dock at Building 2 would be limited to the existing deficient loading dock adjacent to Building 2, which is ancillary to the main building. Further,

renovation of the loading dock would be completed with in-kind materials and would not substantially alter the size or location of the existing loading dock. Consequently, this project would not substantially alter the appearance of the building or affect any of the criteria that made it eligible for listing on the NRHP. Additionally, the complete project plans and specifications would be consistent with the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*. The Massachusetts State Historic Preservation Office (SHPO) was contacted regarding the Proposed Action as a part of the agency coordination and Section 106 consultation process associated with this EA (see Appendix B), in accordance with the provisions of 36 CFR Part 800. The Massachusetts SHPO concurred with the determination of *no historic properties affected* on 30 May 2018.

Construction associated with the Proposed Action consists of limited excavation and grading activities. Further, a majority of the projects included in the Proposed Action would be sited in previously disturbed regions of CCAFS, with the exception of the relocation of Well #1 and installation of the main access road fence. Consequently, these projects may result in limited potential to uncover previously undiscovered archaeological resources. However, based on previous archaeological surveys, there are no known cultural resources present at CCAFS and the station is expected to have low potential for on-site archaeological resources due to previous ground disturbance and development activities associated with construction of JBCC and CCAFS. Two federally-recognized Native American Tribes have expressed interest in the area of the JBCC, including the Wampanoag Tribe of Gay Head (Aquinnah) and Mashpee Wampanoag Tribe. These tribes were notified of the Proposed Action and consulted on 3 May 2018 as required by AFI 90-2002, which implements DoDI 4710.02, *DoD Interactions with Federally-Recognized Tribes*, as a part of the tribal coordination process associated with this EA. No comments or concerns were received in response to the initial consultation letter or subsequent follow-up communications (see Appendix C).

Hazardous Materials and Wastes (Section 4.5, *Hazardous Materials and Wastes*, Pages 4-24 to 4-27 of the EA): Some of the projects included in the Proposed Action would result in a short-term increase in hazardous materials associated with heavy construction equipment (e.g., fuel and other petroleum, oils, and lubricants [POLs]) and replacement and relocation of the three fuel storage tanks adjacent to Buildings 10, 50, and 58. Hazardous materials, including asbestos-containing material (ACM) and lead-based paints, generated or unearthed during construction and demolition activities associated with the Proposed Action would be handled in accordance with the station's Integrated Solid and Hazardous Waste Management Plan (ISHWMP). Further, there are no Environmental Restoration Program (ERP) sites or Areas of Concern (AOCs) on

CCAFS. Therefore, no significant construction-related impacts associated with POLSs, ACM, LBP, solid wastes, ERP sites, or AOCs would occur as a result of the implementation of the Proposed Action at CCAFS.

Operationally, implementation of the Proposed Action would not result in increased generation of hazardous wastes or use of hazardous materials at CCAFS. As such, there would be no long-term operational impacts to hazardous materials and waste. Further, minor long-term beneficial impacts would result from the replacement and relocation of the existing, corroded fuel storage tanks on new 6-foot by 10-foot concrete pads.

Safety (Section 4.6, *Safety*, Pages 4-28 to 4-31): Four projects included in the Proposed Action would be sited within wind turbine clear zones (WTCZs), including relocation of Well #1, installation of the perimeter fence, relocation and replacement of the fuel storage tank at Building 50, and replacement and upgrades to the existing main gate. However, consistent with safety requirements due to the danger of snow and ice throw, all of the proposed structures sited within the WTCZ are low-value, unoccupied facilities or ancillary structures. Additionally, construction of facilities sited within the WTCZs would occur between late spring and early fall to avoid potential safety risks associated with snow or ice debris from adjacent wind turbines. Therefore, implementation of the Proposed Action would not result in danger and impacts to the WTCZ would be considered less than significant.

Implementation of the Proposed Action would not site any buildings or structures within the radar clear zone (RCZ). Therefore, the Proposed Action would result in no safety impacts associated with the RCZ.

All proposed construction activities included in the Proposed Action would comply with Anti-Terrorism/Force Protection (AT/FP) measures, and several projects included in the Proposed Action address existing AT/FP-related deficiencies at CCAFS, including installation of the perimeter fence, installation of a main access road fence, ungrounding the 23-kilovolt (kV) electrical line, and replacement and upgrades to the existing main gate. Further, the proposed construction and demolition projects would comply with all applicable International Building Code (IBC) and Occupational Safety and Health Administration (OSHA) standards. Consequently, implementation of the Proposed Action would result in long-term beneficial impacts associated with occupational health and safety.

Cumulative Effects (Section 5, *Cumulative Impacts*, Pages 5-1 to 5-9 of the EA): Overall, the Proposed Action would result in minor, less than significant impacts

that would be well below context and intensity thresholds described for each resource area. As such, the projects included in the Proposed Action would not contribute to cumulatively significant impacts when considered with other past, present, and reasonably foreseeable future actions occurring at or in the vicinity of CCAFS.

MITIGATION AND MONITORING

The Proposed Action would not have the potential to result in significant impacts to any of the resource areas considered in this EA. As such, no mitigation measures would be required to reduce impacts to less than significant levels. Nevertheless, BMPs are described for air quality, biological resources, geology and soils, cultural resources, and hazardous materials and wastes. Although not required to reduce potential impacts to less than significant levels, these BMPs would be implemented in order to further reduce short-term, construction-related impacts as a result of the implementation of the Proposed Action.

SCOPING AND PUBLIC REVIEW

The USAF initially solicited comments on the Proposed Action from Federal, state, and local governments (Section 1.4.1, *Interagency Coordination and Consultations*, Page 1-6 of the EA). Comments received during the scoping period will be addressed accordingly in the Final EA.

NEPA, 40 CFR Parts 1500-1508, and 32 CFR Part 989 require that the public have an opportunity to review an EA before approval of a Finding of No Significant Impact (FONSI) and implementation of the Proposed Action. A Notice of Availability for public review of the Draft EA was published in the *Cape Cod Times* and the Draft EA and Draft FONSI have been made available for public review at the Sandwich Public Library located at 142 Main Street, Sandwich, MA 02563 to facilitate this opportunity for public review (see Appendix A). All comments received on the Draft EA will be incorporated into the Final EA.

FINDING OF NO SIGNIFICANT IMPACT

Based on the requirements of NEPA, 40 CFR Parts 1500-1508, 32 CFR Part 989, and the analysis in the attached EA, I conclude that the environmental effects of implementing the Proposed Action would not be significant and, therefore, an Environmental Impact Statement will not be prepared. The signing of this FONSI completes the USAF Environmental Impact Analysis Process.

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MAX LANTZ, Lt Col, USAF Date
Commander, 6th Space Warning Squadron

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ENVIRONMENTAL ASSESSMENT
FOR INFRASTRUCTURE IMPROVEMENT AT
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6TH SPACE WARNING SQUADRON
JOINT BASE CAPE COD, MASSACHUSETTS

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
21 SW	21st Space Wing
6 SWS	6th Space Warning Squadron
ACAM	Air Conformity Applicability Model
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
ANG	Air National Guard
AOC	Area of Concern
AQUIS	Air Quality Utility Information System
ARNG	Army National Guard
AST	aboveground storage tank
AT/FP	Anti-Terrorism/Force Protection
BENV	CCAFS Environmental Office
BMP	best management practices
BP	before present
CA	Cooperative Agreements
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CCAFS	Cape Cod Air Force Station
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
CO	carbon monoxide
CWA	Clean Water Act
DoD	Department of Defense
DoDI	Department of Defense Instruction
EA	Environmental Assessment
EBS	Environmental Baseline Survey
ECOS	Environmental Conservation Online System
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program

ACRONYMS AND ABBREVIATIONS
(continued)

ESA	Endangered Species Act
FY	Fiscal Year
HAP	Hazardous Air Pollutant
HAZWRAP	Hazardous Waste Remedial Actions Program
IBC	International Building Code
ICRMP	Integrated Cultural Resources Management Plan
IDP	Installation Development Plan
IERA	Institute for Environmental, Safety & Occupational Health Risk Analysis
INRMP	Integrated Natural Resources Management Plan
ISHWMP	Integrated Solid and Hazardous Waste Management Plan
JBCC	Joint Base Cape Cod
kV	kilovolt
LPN	Listing Priority Number
LQG	Large Quantity Generator
MassDEP	Massachusetts Department of Environmental Protection
MBTA	Migratory Bird Treaty Act
MMR	Massachusetts Military Reservation
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NLEB	northern long-eared bat
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PAVE PAWS	Precision Acquisition Vehicle Entry Phased Array Warning System
Pb	lead
PIR	Passive Infrared
PM_{10}	particulate matter equal to or less than 10 micrometers in aerodynamic diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter
POL	petroleum, oils, and lubricants

ACRONYMS AND ABBREVIATIONS
(continued)

PPE	personal protective equipment
Ppm	parts per million
PVC	polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
RAO	Response Action Outcome
RCRA	Resource Conservation and Recovery Act
RCZ	Radar Clear Zone
RES	Restricted Emission Status
SAP	Satellite Accumulation Point
sf	square feet
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SQG	Small Quantity Generator
THPO	Tribal Historic Preservation Officer
tpy	tons per year
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
UXO	unexploded ordnance
VA	Veterans Administration
VOC	volatile organic compound
WTCZ	Wind Turbine Clear Zone

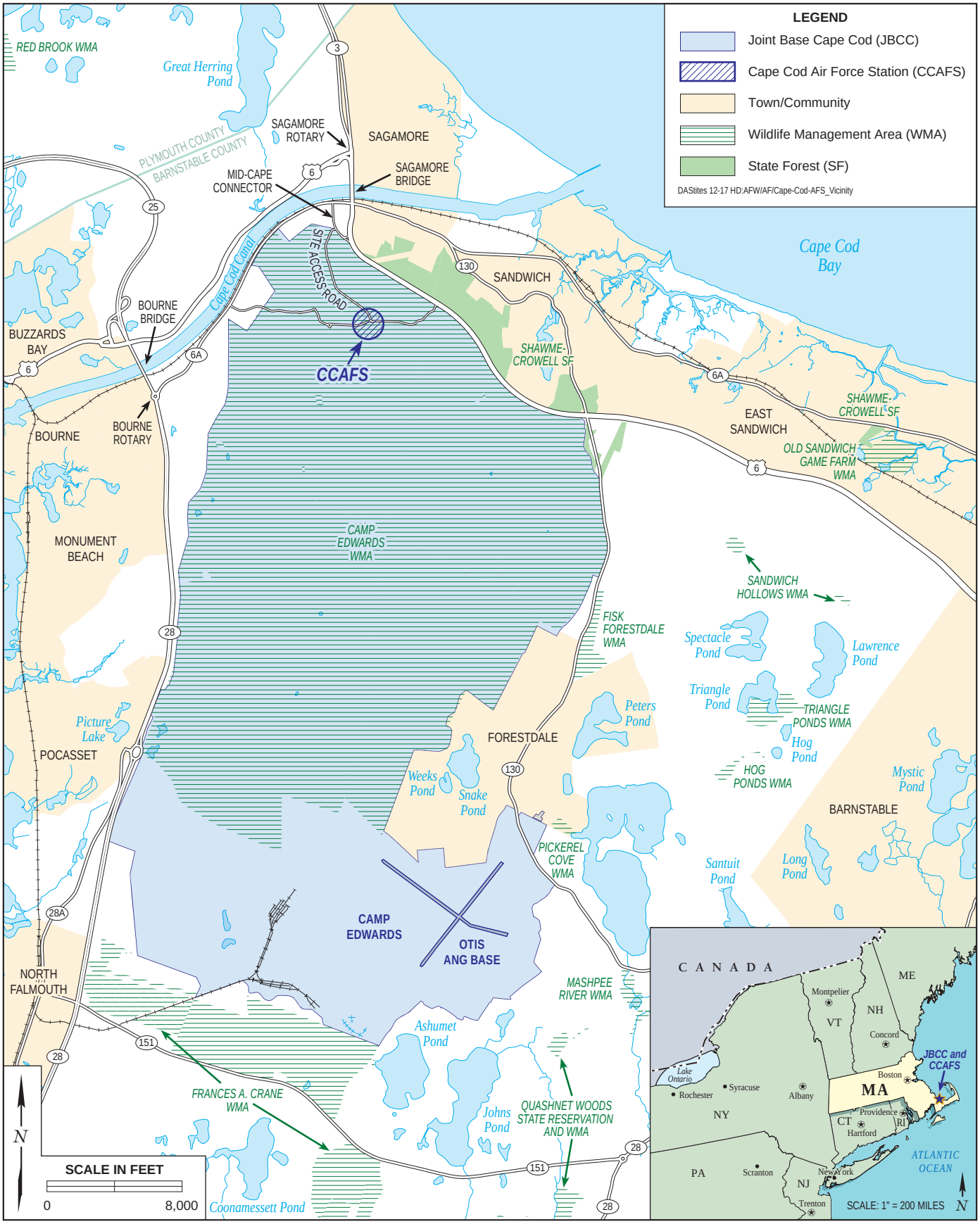
SECTION 1
PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The 6th Space Warning Squadron (6 SWS) is the host unit at Cape Cod Air Force Station (CCAFS). The 6 SWS has developed an Installation Development Plan (IDP) that has identified priorities for infrastructure improvement projects at CCAFS, of which seven projects are proposed for implementation over the coming years (i.e., 2018-2021). This Environmental Assessment (EA) has been prepared to evaluate the potential environmental impacts of these projects in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 U.S. Code [USC] §§ 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] Parts 1500-1508), U.S. Air Force (USAF) Environmental Impact Assessment Process Regulations codified at 32 CFR Part 989, and Air Force Instruction (AFI) 32-7061 as promulgated in 32 CFR Part 989, Environmental Impact Analysis Process (EIAP).

The seven projects considered in this EA are intended to provide infrastructure improvements necessary to support the mission of the 6 SWS. These plans identify requirements for the improvement of the physical infrastructure and functionality of CCAFS, including current and future mission, facilities and infrastructure requirements, development constraints and opportunities, and land use relationships.

CCAFS is located in southeastern Massachusetts, approximately 70 miles south of Boston, and 80 miles east of Providence, Rhode Island. The station occupies approximately 100 acres of leased land located within the northeast boundary of Joint Base Cape Cod (JBCC), including a circular tract of developed and forested lands comprising the operational area (87 acres) and an associated access road (11.5 acres) (see Figure 1-1).



EA

Regional Location
Joint Base Cape Cod and Cape Cod Air Force Station

FIGURE 1-1

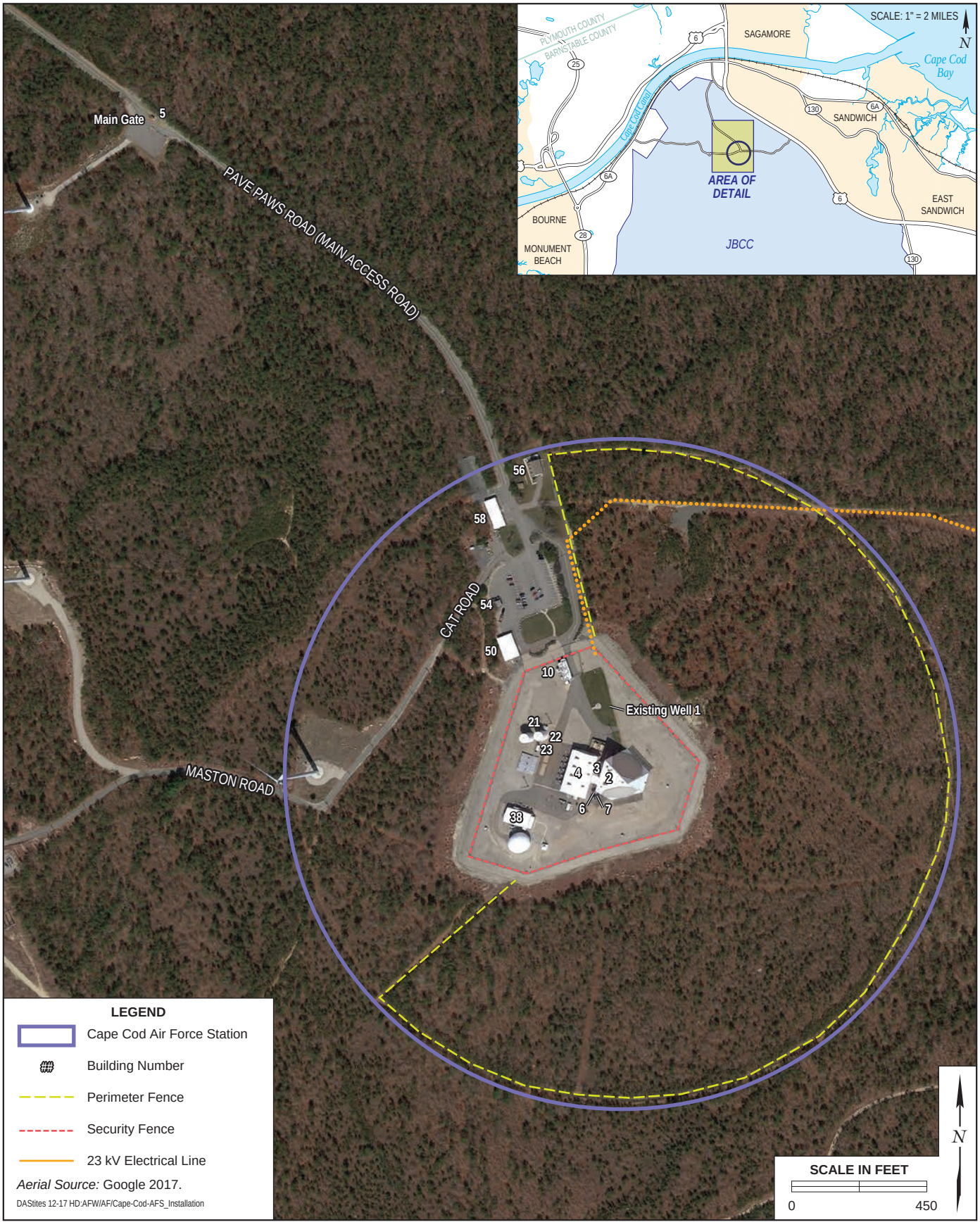
No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

JBCC is a full-scale, joint-use base that is home to five military commands training for missions at home and overseas, conducting airborne search and rescue missions, and intelligence command and control. In addition to the 6 SWS at CCAFS, JBCC also hosts the Massachusetts Army National Guard (ARNG), Massachusetts Air National Guard (ANG), Veterans Administration (VA), and U.S. Coast Guard (USCG).

The 6 SWS is a geographically separate unit of the 21st Space Wing (21 SW), which is headquartered at Peterson Air Force Base (AFB), Colorado. The 21 SW provides missile warning and space control to unified commanders and combat forces worldwide. The 21 SW manages a complex system of U.S. and foreign-based radars – operated by geographically separated units around the world – that detect and track ballistic missile launches, launches of new space systems, and provide data on foreign ballistic missile events.

The 6 SWS operates one of two PAVE PAWS radar sites responsible for monitoring the Atlantic Coast

The Precision Acquisition Vehicle Entry Phased Array Warning System (PAVE PAWS) is a USAF radar system designed to protect North America against sea-launched and intercontinental ballistic missiles and track satellites and other objects in orbit. There are two PAVE PAWS sites in the U.S.: the 6 SWS at CCAFS and the 7 SWS at Beale AFB in California. The 6 SWS has the distinction of being the first PAVE PAWS station in the country. The station became operational 4 April 1980, with the original name of Cape Cod Missile Early Warning Station, and the station's name changed to CCAFS on 5 January 1982. CCAFS's current mission is to surveil air and space along the Atlantic seaboard to detect, track, and report missile launches and high-interest satellite passes. The 6 SWS includes active duty U.S. and Canadian Air Force troops, Department of Defense (DoD) civilians, and BAE Systems employees.



EA

Cape Cod Air Force Station

FIGURE 1-2

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

The CCAFS IDP was prepared by the 6 SWS under the direction of the 21 SW and Air Force Space Command. This long-range planning document is the starting point for all programming, design, and construction decisions and is intended to achieve military goals regarding sustainability, readiness, and modernization. The IDP reviews the essential characteristics and capabilities of the station and comprehensively identifies strategies to support improvements to mission operations, mission support, built infrastructure, and quality of life at CCAFS. The goals of the IDP are to: 1) create a sustainable, defensible, and efficient installation; 2) develop and maintain strong community partnerships; 3) cultivate an exceptional quality of life; and 4) optimize use of resources.

The seven projects considered in this EA were identified as priorities for installation development at CCAFS over the next 3 years. These projects, which consider various development constraints (e.g., radar clear zones [RCZs], wind turbine clear zones [WTCZs], etc.) are intended to improve the physical infrastructure and operational functionality of CCAFS and meet current and future mission and facility requirements.

The intent of this EA is to facilitate the installation development process by evaluating the potential impacts of each of the projects included in the IDP on the physical and human environment. The seven projects included in the Proposed Action and evaluated in this EA are listed in Table 1-1.

Table 1-1. List of Projects Included in the Proposed Action

Project ID	Brief Project Description	Fiscal Year (FY)
1	Renovate Building 2 Loading Dock	2021
2	Relocate Well #1	2018
3	Install Perimeter Fence	2018
4	Install Main Access Road Fence	2018
5	Relocate and Replace Three Fuel Storage Tanks	2021
6	Underground 23-kV Electrical Line	2021
7	Replace and Upgrade of Main Gate	2021

See Figure 2-1 for an illustrative depiction of proposed development projects as well as Section 2.3, *Proposed Action and Alternatives* for a more detailed description of the individual projects included in the Proposed Action.

1.2 ENVIRONMENTAL ANALYSIS APPROACH FOR THE PROPOSED ACTION

To effectively manage the complexity and volume of projects included in the IDP, the USAF has identified near-term projects for environmental analysis that are related to the different categories of activities considered and geographic areas associated with the station, and which have the greatest potential for adverse impacts. Focusing analyses on these projects provides context within which a comparative analysis can be made for the projects identified in the Proposed Action as well as any future development activities on the station that are similar in scope to those analyzed in this EA. Any additional projects or future activities proposed on areas associated with the station must be evaluated on their own merit under USAF EIAP guidelines to determine their environmental impacts and appropriate level of NEPA analysis.

1.3 PURPOSE AND NEED FOR INDIVIDUAL PROJECTS INCLUDED IN THE PROPOSED ACTION

The purpose and need for each of the individual projects included in the Proposed Action is summarized below. (See Section 2.3, *Proposed Action and Alternatives*, as well as Table 1-1 and Table 1-2 for a more detailed description of each of the projects analyzed as part of the Proposed Action.) Impact analyses for the Proposed Action are presented in Section 4.0, *Environmental Consequences*.

1.4 INTERAGENCY/INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

1.4.1 Interagency Coordination and Consultations

Scoping is an early and open process for developing the breadth of issues to be addressed in an EA and for identifying significant concerns related to an action. 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 were notified during the development of this EA (see Appendix A).

Table 1-2. Purpose and Need for Each Project Included in the Proposed Action

Project Number	AFCEC Project ID	Project Name	Purpose of the Project	Need for the Project
1	DBHQ151014	Renovate Building 2 Loading Dock	The *purpose* of this project is to address the inadequate configuration of the existing loading dock at Building 2.	The project is *needed* to correct poor safety conditions associated with the loading dock at Building 2, including the lack of handrails and the configuration that is not currently in compliance with applicable International Building Code (IBC) and Occupational Safety and Health Administration (OSHA) requirements.
2	DBHQ081018	Relocate Well #1	The *purpose* of this project is to relocate Well #1 to ensure the viability of safe supplemental drinking water, fire-suppression water, and cooling water for CCAFS.	The project is *needed* because Well #1 is currently located in the Restricted Area of the installation within 250 feet of aboveground fuel storage tanks, as well as an active septic tank and wastewater leach field.
3	DBHQ161005	Install Perimeter Fence	The *purpose* of this project is to ensure adequate Anti-Terrorism/Force Protection (AT/FP) measures at the main gate in order to improve safety and security conditions.	The project is *needed* because the existing perimeter fence surrounding CCAFS is incomplete, with a large 2,500-foot gap east of the Restricted Area, which makes the station vulnerable to potential security and terrorism threats.
4	DBHQ161007	Install Main Access Road Fence	The *purpose* of this project is to adequately delineate and identify USAF property.	The project is *needed* because the existing main access road does not have adequate fencing, which is necessary to meet AF/FP requirements.
5	DBHQ141012	Relocate and Replace Three Fuel Storage Tanks	The *purpose* of this project is to address safety issues associated with three exterior 500- and 1,000-gallon fuel storage tanks at Buildings 10, 50, and 58.	The project is *needed* because the tanks are corroding due to the salty coastal air and are in violation of several safety regulations due to their proximity to occupied buildings.

Table 1-2. Purpose and Need for Each Project Included in the Proposed Action (Continued)

Project Number	AFCEC Project ID	Project Name	Purpose of the Project	Need for the Project
6	DBHQ141009	Underground 23-kV Electrical Line	The *purpose* of this project is to address safety concerns associated with frequent lightning strikes to the aboveground 23-kilovolt (kV) electrical line.	The project is *needed* to minimize the need for frequent repair of the existing 23-kV electrical line, which is necessary for mission-critical functions associated with the PAVE PAWS, and to reduce the vulnerability to security and terrorism threats.
7	DBHQ151017	Replace and Upgrade Main Gate	The *purpose* of this project is to reduce congestion at the CCAFS main gate, and to make sure the main gate would provide adequate security.	The project is *needed* because the current main gate drop arm moves very slowly and does not meet AT/FP requirements under Unified Facilities Criteria (UFC) 4-010-01, *Minimum Antiterrorism Standards for Buildings*.

1.4.2 Government to Government Consultations

Section 106 of the National Historic Preservation Act (NHPA), and implementing regulations (36 CFR Part 800), requires Federal agencies to consult with interested federally recognized Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. Consistent with EO 13175, *Consultation and Coordination with Indian Tribal Governments*, Department of Defense Instruction (DoDI) 4710.02, *Interactions with Federally-Recognized Tribes*, and AFI 90-2002, *Air Force Interaction with Federally-Recognized Tribes*, federally-recognized Native American tribes that are historically affiliated with lands in the vicinity of CCAFS have been invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes (see Appendix C). 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 Installation Tribal Liaison Officer is the CCAFS point-of-contact for consultation with Native American tribes.

1.4.3 Other Agency Consultations

Per the requirements of Section 106 of the National Historic Preservation Act (NHPA) and implementing regulations (36 CFR Part 800), Section 7 of the Endangered Species Act (ESA) and implementing regulations (50 CFR Part 402), findings of effect and requests for concurrence have been submitted to the State Historic Preservation Officer (SHPO) and the U.S. Fish and Wildlife Service (USFWS) (see Appendix B)..

1.5 PUBLIC AND AGENCY REVIEW

NEPA, 40 CFR Parts 1500-1508, and 32 CFR Part 989 requires public review of the EA before approval of a Finding of No Significant Impact (FONSI) and implementation of the Proposed Action. Additionally, a Notice of Availability (NOA) for public review of the Draft EA was published in the Cape Cod Times and the Draft EA has been made available for public review at the Sandwich Public Library located at 142 Main Street, Sandwich, MA 02563. All substantive public and agency comments received during the 30-day public review period for the Draft EA will be incorporated into the Final EA.

1.6 DECISION TO BE MADE

The EA evaluates whether the Proposed Action would result in significant impacts on the human and/or natural environment. If significant impacts are identified, CCAFS would implement best management practices (BMPs) and/or mitigation measures to reduce impacts to below the level of significance, undertake the preparation of an Environmental Impact Statement (EIS) addressing the respective Proposed Action, or abandon the respective Proposed Action.

1.7 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This EA evaluates potential environmental impacts to the following resources that would have the potential to be affected by implementation of the Proposed Action or its alternatives:

- Air Quality;
- Biological Resources;

- Geology and Soils;
- Cultural Resources;
- Hazardous Material and Wastes; and
- Safety.

Per NEPA, those resource areas that are anticipated to experience either no environmental impacts or negligible environmental impacts under implementation of the Proposed Action or its alternatives are not examined in detail in this EA. These environmental resources include:

- Land Use;
- Noise;
- Transportation and Circulation;
- Visual Resources;
- Water Resources;
- Socioeconomics; and
- Environmental Justice / Protection of Children.

As described below, implementation of the Proposed Action or any of its alternatives, including the No-Action Alternative, would have no impact on these resource areas:

Land Use. Land use decisions at CCAFS are guided by an ongoing collaborative planning process, recently adopted via the IDP. As described in Section 2.2, *Selection Standards for Project Alternatives*, all of the projects included in the Proposed Action were sited such that the proposed construction and operation would be compatible with the designated land uses described for the station. No substantially new activities would be introduced that would result in potential changes to existing land use activities. Each of the projects included within the Proposed Action would be inherently consistent with land use guidelines for CCAFS and there would be no adverse impacts to existing land use at the station as a result of implementation of the Proposed Action.

Noise. Proposed construction, renovation, and demolition activities at CCAFS would not result in a substantial short-term change or any long-term change in ambient noise levels at the station, which is dominated by mission-related activities. Ambient noise in the vicinity of the station is characterized by industrial type sounds (e.g., wind turbines). Following the completion of construction there

would be no expansion of current operations that could result in additional long-term noise. Construction-related noise would be noticeable temporarily in the immediate vicinity of construction activities; however, these activities would be localized within the station and would not create adverse impacts to sensitive receptors (e.g., residences), which are located more than 0.75 miles to the north. Further, the proposed facilities would not be sited in an area with incompatible outdoor noise levels and none of the proposed facilities would be considered a new noise-sensitive use.

Transportation and Circulation. During construction activities, there may be short-term, temporary delays for vehicles entering CCAFS due to increased construction materials deliveries, haul-truck activities, etc. However, these delays would be minor. Further, following completion of the main gate replacement and upgrade, access to the station would be more efficient. Implementation of the Proposed Action would not result in any change in personnel levels at CCAFS and therefore would not affect congestion within the CCAFS circulation network. Parking on the station is abundant and would not be affected by the Proposed Action.

Visual Resources. CCAFS is characterized by a mixture of industrial and office facilities and a large area of natural and landscaped vegetation. The visual environment of CCAFS does not constitute a unique or sensitive viewshed, and the proposed facilities, as well as modifications of existing facilities would be visually consistent with existing structures at the station and in the vicinity of project sites. Further, views of the station from offsite are virtually nonexistent based on naturally occurring vegetation screening and the distance separating the controlled entry point and all areas affected by the Proposed Action. Therefore, no detrimental impact on visual resources at CCAFS or in the region would occur upon implementation of the Proposed Action.

Water Resources. Since there are no surface waters within CCAFS, construction activities included in the Proposed Action would not result in any surface water pollution or erosion-related impacts. Additionally, no dredge or fill activities are proposed as part of the Proposed Action. During construction activities, there would be interruptions to Well #1; however, there would be no interruptions to the water supply at CCAFS as operation of Well #2 would continue during

construction. Following completion of the well relocation, water supply would be provided by Well #1, and Well #2 would serve as a supply redundancy.

Socioeconomics. Implementation of the Proposed Action would provide short-term socioeconomic benefits to the local economy, including construction employment and materials purchases. However, such short-term beneficial impacts from temporary employment gains would be negligible on a regional scale and the Proposed Action would result in no long-term changes in employment levels or economic activity at CCAFS.

Environmental Justice / Protection of Children. With regard to environmental justice issues, no major adverse environmental impacts associated with the Proposed Action are anticipated to impact on- or off-station communities. Therefore, no populations (e.g., minority, low-income, or otherwise) would be disproportionately or adversely impacted and no adverse impact with regard to environmental justice would result. Implementation of the Proposed Action would not result in increased exposure of children to environmental health risks or safety risks such as those associated with the generation, use, or storage of hazardous materials. Standard construction site safety precautions (e.g., fencing and other security measures) would reduce potential risks to minimal levels and any potential impacts to children would be negligible and short-term.

SECTION 2
PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

This EA addresses the potential adverse and beneficial environmental consequences anticipated to result from implementation of the projects included in the IDP for CCAFS. Implementation of the seven proposed construction, renovation, and demolition projects included in the Proposed Action would address inefficiencies in ongoing operations, identified safety concerns, and the need to provide adequate security to CCAFS to achieve compliance with UFC 4-010-01, *Minimum Antiterrorism Standards for Buildings*; however, construction-related ground-disturbing activities would have the potential to result in short-term, temporary, construction-related impacts that require analysis in accordance with NEPA. In addition to the Proposed Action, CEQ regulations require an assessment of potentially effective and reasonably feasible alternatives for implementation of the Proposed Action. Additionally, CEQ regulations stipulate that the No-Action Alternative must be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented.

Details related to the Proposed Action and its alternatives, including the No-Action Alternative, are provided below.

2.2 SELECTION STANDARDS FOR PROJECT ALTERNATIVES

This section outlines the alternative selection standards that were used by 6 SWS and the USAF to develop and analyze the range of reasonable alternatives for each of the projects included in the Proposed Action at CCAFS. Alternatives selection standards were used to help determine feasibility of alternatives, potential project siting locations, and the extent to which project alternatives would fulfill the purpose, need, and project objectives identified in Section 1.3, *Purpose and Need for Indiviual Projects Included in the Proposed Action*.

Potential alternatives to the individual projects included in the Proposed Action were each evaluated based on three universal selection standards, which were applied to all alternatives. The description of each project, beginning in Section

2.3, *Proposed Action and Alternatives*, provides details regarding how these selection standards apply to specific project requirements.

Standard 1: Planning Constraints – Planning constraints are man-made or natural elements that can create significant limitations to the operation or construction of buildings, roadways, utility systems, and other operational facilities. These constraints, when considered collectively with the station's capacity opportunities, inform the identification of potential areas for development, as well as those areas that can be redeveloped to support growth. This standard addresses compatibility with overall station operations, land use compatibility, and natural and built resources, and largely dictates the location/placement of a proposed facility.

- *Operational* – CCAFS does not have a flying mission or an aircraft inventory. Operational constraints are generally related to the operation of the PAVE PAWS; storing fuel and other potentially hazardous materials; and similar operational requirements that can limit future development activity. At CCAFS, operational constraints include, but are not limited to, safety zones, noise contours, explosives safety quantity distance zones, and AT/FP.
- *Natural* – Natural constraints include biological resources (e.g., forested habitat) and cultural resources (e.g., historic structures or archaeological resources) at CCAFS. These resources provide positive aesthetic, social, cultural, and recreational attributes that substantially contribute to the overall quality of life on station.
- *Built* – Built constraints are related to the condition, functionality, or effectiveness of infrastructure systems, facilities, and other man-made improvements.
- *Land Use* – Land use compatibility constraints are associated with land use designations (e.g., industrial, administrative, recreation, open space, etc.) on the station and ensuring that planning considerations account for compatibility between proposed and existing uses (e.g., recreational land uses may not be compatible with the industrial land uses).

Standard 2: Capacity Opportunities – This refers to the capabilities of the station's existing facilities/infrastructure to meet existing and future mission needs. This standard largely drives the scope of the facility/infrastructure development and/or improvement and requires that proposed facility/infrastructure development and improvements support: 1) mission operations; 2) mission support; 3) built infrastructure; and 4) quality of life.

Standard 3: Sustainability Development Indicators – This refers to the ability to operate into the future without a decline in either the mission or the natural and man-made systems that support it, ensuring long-term sustainability of the station. Sustainability is a holistic approach to asset management that seeks to minimize the negative impacts of the USAF's mission and operations on the environment. This standard also generally drives the scope of the facility/ infrastructure development and/or improvement and supports sustainability of the station through consideration of: energy, water, wastewater, air quality, facilities space optimization, encroachment, and natural/cultural resources.

2.3 PROPOSED ACTION AND ALTERNATIVES

CEQ regulations mandate the consideration of reasonable alternatives to the Proposed Action. "Reasonable alternatives" are defined as those alternatives that could also meet the purpose of and need for each project included in the Proposed Action.

The NEPA process is intended to support flexible, informed decision-making; the analyses provided in this EA and feedback from the public and other agencies will inform decisions made about whether, when, and how to execute the projects included in the Proposed Action. Among the alternatives evaluated for each project is a No-Action Alternative, which analyzes the consequences of not undertaking the projects included in the Proposed Action, and establishes a comparative baseline for analysis.

The scope, location, and objectives of the individual projects included in the Proposed Action are described below. These descriptions also include reasonable and practicable alternatives for projects where multiple viable courses of action exist. Those alternatives are assessed relative to the general selection standards and project-specific selection standards, where applicable. Alternatives that met all three selection standards were considered reasonable and retained for consideration in this EA. Alternatives that did not meet one or more of the standards were considered unreasonable and are not carried forward for consideration in the EA.

The following provides a detailed description of each individual infrastructure improvement project included in the Proposed Action and evaluated in this EA. For approximate locations for each of the projects, refer to Figure 2-1.

2.3.1 Project #1: Renovate Building 2 Loading Dock (FY 2021)

The existing loading dock located on the north side of Building 2 is currently in poor condition, contains no handrails, and is configured with inadequate space when loading doors are open; therefore, it is not currently compliant with applicable IBC and OSHA codes (e.g., 29 CFR § 1910.176, *Handling Materials*). Implementation of this project would include renovation of the loading dock, including demolition and reconstruction. Approximately five construction workers would be required on site for the demolition of the existing loading dock at Building 2, re-compaction of the existing subgrade, and construction of a new reconfigured loading dock which would include a 10-foot by 10-foot concrete pad and stairs with handrails leading up to the loading dock platform. Renovation would also include adding an exterior passive infrared (PIR) motion sensor light over the loading dock. The project would be constructed over approximately 850 square feet (sf) and would result in minor disruptions due to proximity (e.g., approximately 15 feet) to the primary path of entrance/egress to Building 2. Building 2 is one of the two structures on CCAFS that is potentially eligible for listing on the National Register of Historic Places (NRHP). However, the loading dock is ancillary to the main building and renovations would be consistent with the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*.

Selection Standard Applicability. The proposed new loading dock must be located in a compatible land use type within the developed area of the station (Selection Standard 1). Additionally, alternatives to the proposed new loading dock must meet IBC and OSHA codes (e.g., 29 CFR § 1910.176, *Handling Materials*) (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: *Alternative Location for a New Loading Dock*. Alternatives including the relocation of the existing loading dock at Building 2 were not carried forward for analysis because they would not meet Selection Standard 1. Building 2 is the primary

operational facility at CCAFS; therefore, materials required for operation of the PAVE PAWS delivered to CCAFS are transported directly to this facility, which includes a variety of designated storage space, including hazardous materials storage. The existing loading dock is located immediately adjacent to this storage space. Relocation of the loading dock to a new side of the building would not be operationally efficient. Further, construction of a new loading dock at an alternate location on the station would require additional transportation of materials (e.g., either by hand, dolly, or forklift) from the alternative location to Building 2. This would not be operationally efficient and would not address the need for Building 2 to be able to receive delivery of such materials.

Alternatives Considered for this Project: *No-Action Alternative.* Under the No-Action Alternative, the existing loading dock would continue to be used despite its poor condition, without the addition of handrails or additional space to allow safe movements when the loading doors are open. Further, this facility would continue to be in violation of requirements outlined in IBC and OSHA codes (e.g., 29 CFR § 1910.176, *Handling Materials*). This would not be supportive of the purpose of and need for the project. Nevertheless, the No-Action Alternative has been carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the project can be assessed.

2.3.2 Project #2: Relocate Well #1 (FY 2018)

Well #1, which provides supplemental drinking water, fire-suppression water, and cooling water at CCAFS, is currently located within the Restricted Area of the station within 250 feet of aboveground fuel oil storage tanks as well as an active septic tank and wastewater leach field. Consequently, Well #1 does not meet Massachusetts Department of Environmental Protection (MassDEP) standards for Zone I wellheads (310 Code of Massachusetts Regulations [CMR] 22.00, *Drinking Water Regulations*) and is currently non-operational. Instead, Well #2 is currently the sole water supply for CCAFS. Under the Proposed Action, Well #1 would be removed and relocated. The joint supply line between Well #1, Well #2, and storage tanks would be eliminated to isolate each well.

The relocated well site would need to be accessible by road, observable by security, and not within the radar face (i.e., RCZ). Further, the well site would need to meet

the requirements for Zone I well head protection radius of 250 feet. As such, the site would be located within an existing undeveloped lease area along Cat Road (to the east of the Restricted Area), which would require minor tree clearing.

Construction associated with this project would include installation of a new 400-foot deep, 8-inch diameter well with a 6-inch diameter submersible pump with controls; two 4-inch diameter ball valves; two 4-inch diameter check valves; and approximately 300 feet of 4-inch diameter polyvinyl chloride (PVC) pipe. Additionally, a chain link fence of approximately 48 linear feet would border the new well for a total area of approximately 475 sf. During the relocation of Well #1, water supply would continue to be provided by Well #2. It is estimated that approximately seven construction workers would be present on-site for implementation of the proposed well relocation project.

Selection Standard Applicability. The placement and operation of Well #1 at CCAFS must be compliant with MassDEP standards for Zone I wellheads described in 310 CMR 22.00, *Drinking Water Regulations* (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: *Alternative Location for Well #1.* Alternatives that included the relocation of Well #1 in an alternative location to that described for the project were not carried forward for analysis because they would not be compatible with existing land use at CCAFS and/or MassDEP standards for Zone I wellheads. There is currently very limited land area outside of any Restricted Area on CCAFS property that would be potentially available for alternative relocation of Well #1.

Alternatives Considered for this Project: *No-Action Alternative.* Under the No-Action Alternative, Well #1 would remain in its current location. Consequently, Well #1 would continue to not meet MassDEP standards for Zone I wellheads and water supply at CCAFS would continue to be provided solely by Well #2. This would not be supportive of the purpose of and need for the project. Nevertheless, the No-Action Alternative has been carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the project can be assessed.

2.3.3 Project #3: Install Perimeter Fence (FY 2018)

Project #3 – Existing Perimeter Fence at CCAFS

The existing perimter fence surrounding CCAFS is incomplete, resulting in a large (approximately 2,500-foot) gap on the east of the Restricted Area, which makes the station vulnerable to potential security and terrorism threats. Under this project, approximately three construction workers would be present on site to install chain link fencing, similar to the existing chain link fence that surrounds the rest of the station. The fence would be installed within an existing fire break, disturbing an estimated 10,000 sf total (assuming 4 feet of disturbance on either side of the fence). Since the fire break has been cleared of vegetation and is maintained, the installation of additional fencing would not require new vegetation or tree removal. Implementation of the project would result in minor, temporary disruptions to station activities and tenants, as the installation would occur within 15 feet of the primary path of entrance/egress to the radar at Building 2. However, the proposed installation of the perimeter fence would close the gap and secure the CCAFS.

Selection Standard Applicability. Alternatives to this project must maximize use of existing facilities and/or infrastructure (i.e., the existing incomplete perimeter fence) (Selection Standard 1). Additionally, the perimeter fence at CCAFS must be in compliance with the AT/FP requirements (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: *Alternative Location for Perimeter Fence*. Alternative locations for the perimeter fence were not carried forward for analysis because they would not meet Selection Standard 1. The existing perimeter of CCAFS is currently partially fenced and the fencing requires completion to address AT/FP vulnerabilities. Alternative locations for the perimeter fence would not follow the perimeter of the station and would not be located within the existing fire break. As such, alternate locations

would not enclose the entire perimeter of the station and would require additional vegetation removal.

Alternatives Considered for this Project: *No-Action Alternative.* Under the No-Action Alternative, the existing gap in the perimeter fence would continue to present ongoing safety and security risks. Further, this facility would continue to not meet the AT/FP requirements. This would not be supportive of the purpose of and need for the project. Nevertheless, the No-Action Alternative has been carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which impacts of the project can be assessed.

2.3.4 Project #4: Install Main Access Road Fence (FY 2018)

Project #4 – Install Main Access Road Fence

The existing main access road at CCAFS does not currently meet AT/FP requirements due to lack of proper fencing. Implementation of this project would be intended to delineate and identify USAF property for those potentially approaching from outside the fenceline. Approximately five construction workers would be required to install the proposed fencing along both sides of the main access road, set back approixmately 10 feet from the road near the edge of the treeline. The fencing would reach approximately 1,650 feet from the main gate to the station. Installation of fencing may require some limited tree removal. Additionally, minor, temporary disruptions would result from the project during loading of fence materials along the access road. However, at least one lane would remain open at all times during deliveries in order to prevent congestion along the main access road.

Selection Standard Applicability. Alternatives to this project must maximize use of existing facilities and/or infrastructure (i.e., the existing main access road)

(Selection Standard 1). Additionally, the main access road at CCAFS must be in compliance with all applicable AT/FP requirements (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: *Alternative Location for a New Main Access Road Fence*. Alternatives that included a different location of the proposed main access road fence were not carried forward for analysis because they would not meet Selection Standard 1. The proposed main access road fence is sited along the existing main access road at CCAFS. Construction of a main access road fence at an alternative location would not meet the intended function of siting the fence to address AT/FP vulnerabilities at this location.

Alternatives Considered for this Project: *No-Action Alternative.* Under the No-Action Alternative, the existing main access road would continue to present ongoing safety and security risks due to lack of proper fencing. Further, this facility would continue to not meet AT/FP requirements. This would not be supportive of the purpose of and need for the project. Nevertheless, the No-Action Alternative has been carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the project can be assessed.

2.3.5 Project #5: Relocate and Replace Three Fuel Storage Tanks (FY 2021)

Three exterior 500- and 1,000-gallon fuel storage tanks at Buildings 10, 50, and 58 currently violate several safety and UFCs due to the proximity of the tanks to the buidlings. The tanks also have existing issues with corrosion control due to the salty sea air. The project would require approximately seven construction workers to reloacate the three tanks approximately 5 feet away from the existing buildings and they would be replaced on new 6-foot by 10-foot concrete pads in order to meet

Project #5 - Relocate and Replace Three Fuel Storage Tanks

safety regulations and existing UFCs. The total disrupted area is estimated at 300 sf (approximately 100 sf for each fuel tank). Each building would require a 2- to 3-week interruption of heating service during removal of the old tank and installation of the new tank. As such, the boilers would not work until construction is complete and the system is reconnected. Construction would either occur during the summer months or building occupants would be temporarily relocated during the interruption.

Selection Standard Applicability. Alternatives to these three fuel storage tank replacements must maximize operational efficiencies (Selection Standard 1). Additionally, the fuel storage tanks at CCAFS must meet all applicable safety and UFC requirements (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: *Alternative Location for New Fuel Storage Tanks*. The fuel storage tanks at Buildings 10, 50, and 58 currently serve those buildings, rendering relocation of the tanks to other buildings infeasible. Alternatives that included the relocation of the existing fuel storage tanks to different sides of their respective buildings were not carried forward for analysis because they would not meet Selection Standard 1. Relocation of the tanks to different sides of Buildings 10, 50, and 58 would require additional trenching and installation of associated utilities. Consequently, relocation would result in a greater area of ground disturbance. Further, the three fuel storage tanks are currently configured on the appropriate sides of the buildings that they serve.

Alternatives Considered for this Project: *No-Action Alternative.* Under the No-Action Alternative, existing fuel storage tanks would continue to present ongoing safety risks. Further, this facility would continue to be in violation of safety regulations and UFCs addressing distances between adjacent buildings and location on concrete pads. This would not be supportive of the purpose of and need for the project. Nevertheless, the No-Action Alternative has been carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the project can be assessed.

2.3.6 Project #6: Underground 23-kV Electrical Line (FY 2021)

Project #6 - Underground 23-kV Electrical Line

An existing aboveground 23-kV electrical line located along Flatrock Road to the east of the main access road is frequently struck by lightning, often requiring repair. The electrical line (necessary for mission-critical functions associated with the PAVE PAWS) is also currently vulnerable to security and terrorism theats, in addition to weather, due to its current location aboveground and outside of the currently fenced area. Under the Proposed Action, approximately 4,000 linear feet of utilities would be placed underground in a previously cleared area adjacent to Flatrock Road, during which approximately five construction workers would be present on site. The total area disturbed during construction would be approximately 50,000 sf. Although no disruption to utilities would be expected during the implementation of the project, special considerations should be made for redundant power (i.e., backup generators on stand-by).

Selection Standard Applicability. Alternatives to this project must maximize operational efficiencies (Selection Standard 1). Additionally, the 23-kV electrical line at CCAFS must be in compliance with all applicable safety and AT/FP requirements (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: *Alternative Location for Underground Electric Line*. Alternatives that included the relocation of the existing route of the 23-kV electrical line at CCAFS were not carried forward for analysis because they would not meet Selection Standard 1. Undergrounding the electric line along a direct route would require additional vegetation removal as well as trenching and ground disturbance through a previously undisturbed, forested area of the station.

Alternatives Considered for this Project: *No-Action Alternative.* Under the No-Action Alternative, the existing 23-kV electrical line would continue to present ongoing safety and security risks. This would not be supportive of the purpose of and need for the project. Nevertheless, the No-Action Alternative has been carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which impacts of the project can be assessed.

2.3.7 Project #7: Replace and Upgrade Main Gate (FY 2021)

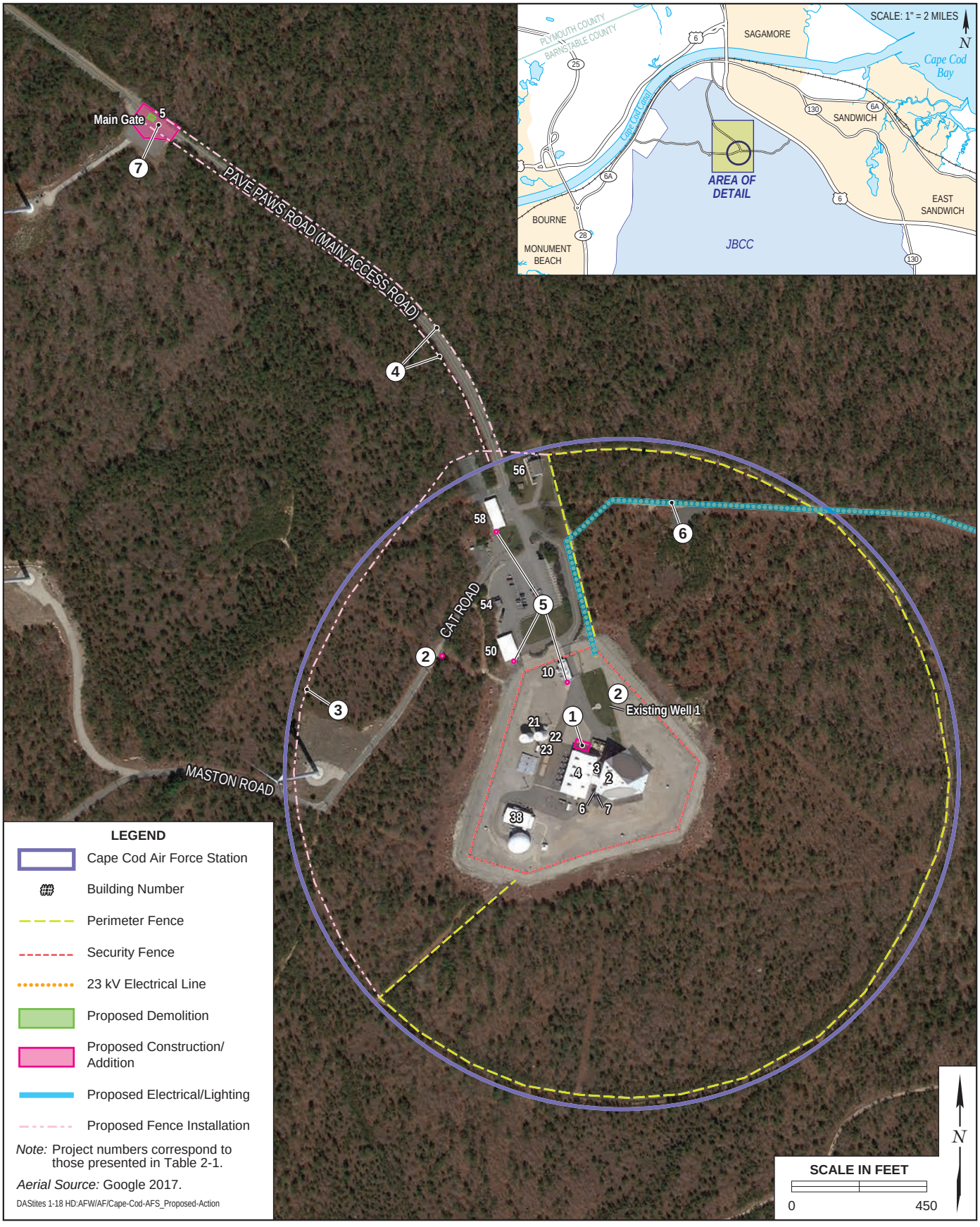
Project #7 – Replace and Upgrade Main Gate

While the existing drop arm at the CCAFS main gate currently serves its functional purpose, it moves very slowly and can cause congestion at the station's entrance. The existing main gate lacks vehicle denial capabilities and is only monitored remotely by camera. Additionally, the main gate does not contain any defined areas with supporting infrastructure for delivery vehicle inspection. Consequently, the current configuration of the main gate does not provide adequate security for CCAFS and does not meet AT/FP requirements (e.g., UFC 4-022-01, *DoD Minimum Antiterrorism Standards for Buildings*). Implementation of the project would require approximately 15 construction workers present on-site for demolition and replacement of the existing guard shack as well as the addition of a vehicle inspection pit and stationary and pop-up bollards to provide vehicle denial capabilities. The project would involve a total area of approximately 7,500 sf and would require the removal and replacement of a minor amount of asphalt; however, no vegetation removal would be required. Although demolition of the existing main gate and construction of the new main gate would result in minor, temporary disruptions to the main entrance/egress to the station, one lane would remain open at all times during implementation of the project in order to prevent congestion. Additionally, tenants and workers would be briefed on the schedule of construction, as well as possible obstructions to normal gate operations.

Selection Standard Applicability. Alternatives to the replacement and upgrade of the main gate must maximize operational efficiencies (Selection Standard 1). Additionally, the main gate at CCAFS must be in compliance with the AT/FP requirements described in UFC 4-022-01, *DoD Minimum Antiterrorism Standards for Buildings* (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: *Alternative Location for a New Main Gate*. Alternatives that included the relocation of the existing main gate at CCAFS were not carried forward for analysis because they would not meet Selection Standard 1. Operation of a new main gate at an alternative location would require additional reconfiguration of CCAFS buildings and construction of a new main gate area.

Alternatives Considered for this Project: *No-Action Alternative.* Under the No-Action Alternative, the existing main gate would continue to present safety and security risks due to lack of vehicle denial and delivery vehicle inspection capabilities. Further, this facility would continue to not meet requirements outlined in UFC 4-022-01, *DoD Minimum Antiterrorism Standards for Buildings*. This would not be supportive of the purpose of and need for the project. Nevertheless, the No-Action Alternative has been carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the project can be assessed.



EA

Proposed Projects at Cape Cod Air Force Station

FIGURE 2-1

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

SECTION 3
AFFECTED ENVIRONMENT

This section describes relevant existing environmental conditions for resources potentially affected by the projects included in the Proposed Action and their identified alternatives, including the No-Action Alternative. This information will be used to identify the anticipated environmental impacts associated with implementation of the Proposed Action (see Section 4, *Environmental Consequences*). In compliance with the NEPA, CEQ regulations, AFI 32-7061, 32 CFR Part 989, and UFC 3-260-01, the description of the affected environment focuses on only those resources potentially subject to impacts.

In the case of the Proposed Action at CCAFS, the affected environment description is limited locally to the station and regionally to Barnstable County, Massachusetts. As described in Section 1.7, *Scope of the Environmental Assessment*, resource descriptions focus on the following areas:

- Air Quality;
- Biological Resources;
- Geology and Soils;
- Cultural Resources;
- Hazardous Materials and Wastes; and
- Safety.

3.1 AIR QUALITY

3.1.1 Definition of Resource

Air quality in a given location is determined by the concentration of various pollutants and particulates in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) under the Clean Air Act (CAA) amendments for six criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 micrometers in aerodynamic diameter (PM_{10}) and 2.5 micrometers in aerodynamic diameter ($PM_{2.5}$), and lead (Pb). NAAQS represent maximum levels of background pollution considered safe for public health and the environment, with an adequate margin of safety.

3.1.1.1 Criteria Pollutants

Air quality is affected by stationary sources (e.g., industrial development), mobile sources (e.g., motor vehicles), and area sources (e.g., dry cleaners, gas stations, auto body paint shops). Air quality at a given location is a function of several factors including the quantity and type of pollutants emitted locally and regionally, as well as the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion include wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

Ozone. The majority of ground-level (or terrestrial) O_3 is formed as a result of complex photochemical reactions in the atmosphere involving Volatile Organic Compounds (VOCs), nitrogen oxides (NO_x), and oxygen. O_3 is a highly reactive gas that damages lung tissue, reduces lung function, and sensitizes the lung to other irritants. Although stratospheric O_3 shields the earth from damaging ultraviolet radiation, terrestrial O_3 is a highly damaging air pollutant and is the primary source of smog.

In March 2008, the USEPA published a new standard for 8-hour ozone, and revoked the 1-hour NAAQS for O_3 in most areas. During the review of NAAQS for O_3, the USEPA revised the existing 8-hour threshold to a level of 0.075 parts

per million (ppm) from the previous level of 0.08 ppm. On 26 October 2015, the USEPA published in the Federal Register Regulation Identification Number 2060-AP38, Volume 80, Number 206, a proposed new rule revising the NAAQS for ground-level O_3. As of 28 December 2015, the primary and secondary 8-hour NAAQS for O_3 has been revised to a level of 0.070 ppm from the previous level of 0.075 ppm.

Carbon Monoxide. CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina and peripheral vascular disease.

Nitrogen Dioxide. NO_2 is a highly reactive gas that can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Repeated exposure to high concentrations of NO_2 may cause acute respiratory disease in children. Because NO_2 is an important precursor in the formation of O_3 (or smog), control of NO_2 emissions is an important component of overall pollution reduction strategies. The two primary sources of NO_2 in the U.S. are fuel combustion and transportation.

Sulfur Dioxide. SO_2 is emitted primarily from stationary source coal and oil combustion, steel mills, refineries, pulp and paper mills, and from non-ferrous smelters. High concentrations of SO_2 may aggravate existing respiratory and cardiovascular disease; asthmatics and those with emphysema or bronchitis are the most sensitive to SO_2 exposure. SO_2 also contributes to acid rain, which can lead to the acidification of lakes and streams and damage trees.

Particulate Matter. Particulate matter is a mixture of tiny particles that vary greatly in shape, size, and chemical composition, and can be comprised of metals, soot, soil, and dust. PM_{10} includes larger, coarse particles, whereas $PM_{2.5}$ includes smaller, fine particles. Sources of course particles include crushing or grinding operations, and dust from paved or unpaved roads. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. Exposure to PM_{10} and $PM_{2.5}$ levels exceeding current standards can result in increased lung- and heart-related

respiratory illness. The USEPA has concluded that finer particles are more likely to contribute to health problems than those greater than 10 microns in diameter.

Airborne Lead. Airborne Pb can be inhaled directly or ingested indirectly by consuming lead-contaminated food, water, or non-food materials such as dust or soil. Fetuses, infants, and children are most sensitive to Pb exposure. Pb has been identified as a factor in high blood pressure and heart disease. Exposure to Pb has declined dramatically in the last 10 years as a result of the reduction in Pb in gasoline and paint, and the elimination of Pb from soldered cans.

Hazardous Air Pollutants (HAPs). The USEPA designated approximately 187 compounds as HAPs based on their toxicity and use throughout various industries. The USEPA has not established ambient air quality standards for the compounds, but regulates HAPs through industrial sources.

3.1.1.2 Clean Air Act Amendments

The Clean Air Act Amendments (CAAA) of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. Areas not in compliance with any of the NAAQS can be declared *nonattainment* areas by the USEPA. Nonattainment areas are declared for each pollutant addressed by the NAAQS. Once the USEPA declares an area as *nonattainment*, the USEPA requires each state to prepare a State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with the NAAQS. Should the state and local air agencies fail to develop adequate SIPs, then the USEPA will develop a Federal Implementation Plan to remedy the state's failure.

Table 3-1. National Ambient Air Quality Standards

Pollutant [Final Rule Citation]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 CFR Part 54294, Aug 31, 2011]		P	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 CFR Part 66964, Nov 12, 2008]		P & S	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide [75 CFR Part 6474, Feb 9, 2010] [61 CFR Part 52852, Oct 8, 1996]		P	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		P & S	Annual	53 ppb	Annual Mean
Ozone [80 CFR Part 65291, Oct 26, 2015]		P & S	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution [78 CFR Part 3086, Dec 14, 2012]	$PM_{2.5}$	P	Annual	12 µg/m^3	annual mean, averaged over 3 years
		S	Annual	15 µg/m^3	annual mean, averaged over 3 years
	PM_{10}	P & S	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
		P & S	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 CFR Part 35520, Jun 22, 2010] [38 CFR Part 25678, Sept 14, 1973]		P	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		S	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA 2016.
Notes:
FR = Federal Register
ppm = parts per million
ppb = parts per billion
µg/m^3 = micrograms per cubic meter

Under 40 CFR Part 93, the USEPA issued conformity regulations that mandate the Federal government not engage, support, or provide financial assistance for licensing, permitting, or approval of any activity that does not conform to an

approved SIP or Federal Implementation Plan. This rule applies to all Federal actions except for those projects requiring funding or approval from the U.S. Department of Transportation, Federal Highway Administration, Federal Transit Administration, or Metropolitan Planning Organization; such projects must instead comply with the conformity rules established by the U.S. Department of Transportation. The General Conformity Rule establishes conformity as a process in which economic, environmental, and social aspects of transportation and air quality planning are considered. This rule applies to any Federal action that results in direct or indirect emissions for criteria pollutants in a *nonattainment* or *maintenance* area.

3.1.2 Existing Conditions

3.1.2.1 Regional Climate

CCAFS is located in eastern Massachusetts, which is characterized by summer time thunderstorms and cold winter rain and snowstorms (USAF 2017d). Average temperatures in this region range from approximately 29.0 degrees Fahrenheit (°F) in January to approximately 71.4 °F in August (National Oceanic and Atmospheric Administration [NOAA] 2017). Mean annual rainfall is approximately 50.3 inches. Precipitation peaks between the months of October and December, as well as March and April; however, it is fairly evenly distributed throughout the rest of the year (NOAA 2017).

3.1.2.2 Local Air Quality

Air quality in Massachusetts is monitored by the MassDEP with monitoring sites for the six criteria pollutants widely dispersed throughout the state, typically near urban areas. CCAFS is located within Barnstable County within the Metropolitan Providence Intrastate Air Quality Control Region (USEPA 1972). Barnstable County has been designated as an *attainment* area by the USEPA for all criteria pollutants (USEPA 2017). Table 3-2 presents the most recently available baseline emissions inventory of criteria pollutants in Barnstable County.

Table 3-2. 2014 Emissions Inventories for Barnstable County, Massachusetts

Location and Emission Type	CO (tpy)	SO_2 (tpy)	NO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	VOC (tpy)
Barnstable County						
Point and Mobile Source Emissions	41,243.88	1,304.51	6,516.82	3,634.23	1,372.63	13,400.35

Source: USEPA 2014.
Note: Criteria pollutants measured in tons per year (tpy). NO_x and VOCs are the primary criteria pollutants that contribute to the formation of O_3 for which Barnstable County is currently in *nonattainment*.

3.1.2.3 Emissions at Cape Cod Air Force Station

Air quality management at USAF installations is established in AFI 32-7040, *Air Quality Compliance*. AFI 32-7040 requires installations to achieve and maintain compliance with all applicable Federal air quality standards.

Under the CAA, the Title V Operating Permit Program imposes requirements for air quality permitting on air emission sources. However, CCAFS does not operate under a Title V Operating Permit issued by MassDEP, as it is not a major source of criteria pollutants (USAF 2017a). Nevertheless, CCAFS inventories its criteria air emissions on a regular basis (see Table 3-3).

Table 3-3. 2016 Emissions Inventory at CCAFS

Emissions Type	Criteria Pollutant Emissions (tpy)						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOCs	Total HAPs
Stationary Source	3.63	14.89	4.22	2.71	0.04	0.42	0.06
Mobile Source (e.g., Aircraft Emissions)	--	--	--	--	--	--	--
Total	**3.63**	**14.89**	**4.22**	**2.71**	**0.04**	**0.42**	**0.06**

Source: USAF 2016.
Note: This Air Emissions Inventory covers the 2016 calendar year emissions.
The Air Program Information Management System (APIMS) utilizes emission factor sets taken from a variety of sources including AP-42, Air Quality Utility Information System (AQUIS) User's Manual, Institute for Environmental, Safety & Occupational Health Risk Analysis (IERA), Air Emission Inventory Guidance Document for Stationary Sources at Air Force Installations, and FIRE.

Also under the CAA, the National Emission Standards for Hazardous Air Pollutants (NESHAP) program specifies various provisions for regulated sources, including limits on HAP emissions, compliance demonstrations and performance testing, monitoring, recordkeeping, and reporting. CCAFS currently emits HAPs

during the course of daily operational activities; however, CCAFS is not a major source of HAPs. Total HAP and individual HAP emissions in 2016 were below the minor threshold limits (refer to Table 3-3; USAF 2017a).

While electrical power requirements for CCAFS are normally supplied from commercial power sources, the station has a backup diesel power plant capable of sustaining independent operations, and is used to guarantee 24-hour detection coverage for the PAVE PAWS. The five emergency diesel internal combustion engines in the backup diesel power plant are the major sources of potential air emissions on the station. These generators are permitted by MassDEP under a Restricted Emission Status (RES) permit that limits fuel usage and hours of operation (MassDEP 2012). Facilities operating under a RES permit are required to keep on-site records of operating parameters and are also often required to report emissions data monthly or annually to MassDEP.

3.2 BIOLOGICAL RESOURCES

3.2.1 Definition of Resource

Biological resources include native or naturalized plants, fish, wildlife, and the habitats in which they occur. Sensitive biological resources are defined as those plant, fish, and wildlife species, and their habitat that are federally listed and state-listed as threatened, endangered, of special concern, or candidate species. The Federal ESA of 1973 protects listed species against killing, harming, harassment, or any action that may damage their habitat. Pursuant to the Federal ESA, the USFWS and/or the National Marine Fisheries Service (NMFS) are responsible for listing federally protected species. Federal Species of Concern are not protected under the ESA; however, these species could become listed and protected at any time. Massachusetts state-listed species and their habitats are protected in accordance with the Massachusetts Endangered Species Act (MESA). The Massachusetts Division of Fisheries and Wildlife is responsible for identifying and listing state-protected species and habitat for the State of Massachusetts.

Migratory birds, as listed in 50 CFR § 10.13, are protected by the Migratory Bird Treaty Act (MBTA), as amended, which was enacted to protect migratory birds from capture, pursuit, hunting, or removal from natural habitat. Over 800 bird species are currently protected under the MBTA. In 2001, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued to ensure that Federal agencies consider environmental effects on migratory bird species and, where feasible, implement policies and programs supporting the conservation and protection of migratory birds.

Sensitive habitats include those areas designated by the USFWS and/or NMFS as critical habitat protected by the Federal ESA and sensitive ecological areas as designated by Federal or state rulings. Sensitive habitats also include wetlands, sensitive upland communities, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, feeding/forage areas, crucial summer/winter habitats). Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and EO 11990, *Protection of Wetlands*. Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and the USEPA as, "those

areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR § 328.3[b]). The USACE has the authority to regulate jurisdictional wetlands as *Waters of the U.S.* under Section 404 of the CWA; however, EO 11990, *Protection of Wetlands* and the related DoD Instruction (DoDI) 4715.3, *Natural Resources Conservation Program* provides guidance concerning how to mitigate or minimize any net loss of both jurisdictional and non-jurisdictional wetlands.

3.2.2 Existing Conditions

3.2.2.1 Regional Setting

JBCC is located on the western end of Cape Cod, within the Cape Cod and Islands Ecoregion of the Northeastern Coastal Zone. According to the Commonwealth's Bureau of Geographic Information (MassGIS), the Cape Cod and Islands Ecoregion was formed by three advances and retreats of the Wisconsin Ice Sheet (MassGIS 1999). The resulting terminal moraines, outwash plains, and coastal deposits formed the sandy beaches, grassy dunes, bays, marshes, and scrubby oak – pine forests that characterize the area. Kettle hole ponds, swamps, and bogs also occupy the region and a considerable amount of these surface waters are highly acidic (MassGIS 1999).

Within JBCC and CCAFS, the predominant ecosystem is upland forest. This ecosystem is dominated by mixed woods of pine and oak, while pitch pine - scrub oak barrens and hardwood forest comprise a smaller amount of the total acreage. Native grassland ecosystem comprises a relatively small portion of the JBCC, but is one of the primary habitats for state-listed species (USAF 2017d).

3.2.2.2 Vegetation

Based on a floristic inventory of CCAFS conducted by the Massachusetts Natural Heritage and Endangered Species Program (MNHESP), two naturally occurring pine barren vegetation communities were identified on CCAFS, including pitch pine (*Pinus rigida*) – scrub oak (*Quercus ilicifolia*) barren and northern pine (*Pinus sp.*) barren with oak trees. Other tree species present on CCAFS include scarlet oak

(*Quercus coccinea*), white oak (*Quercus alba*), black oak (*Quercus velutina*), and red maple (*Acer rubrum*). The shrub understory in these communities includes chinquapin oak (*Quercus muehlenbergii*), sweet fern (*Comptonia peregrine*), lowbush blueberry (*Vaccinium angustifolium*), hillside blueberry (*Vaccinium constablaei*), and huckleberry (*Gaylussacia dumosa*). The herbaceous layer is patchy and most diverse in roadside openings or breaks in the shrub oak thicket. Grassland species such as little blue stem (*Schizachyrium scoparium*), sedges (*Carex* spp.), bushclover (*Lespedeza sp.*), and pinweed (*Lechea* sp.) occur primarily along roadside and roadbed openings. The area on the east side of the access road just north of the station is northern pine barren with oak trees. Pitch pine and scarlet oak dominate the area with white oak, black oak, and red maple trees. The understory shrub layer consists of huckleberry, low blueberry, and occasional scrub oaks. The herb layer is sparse and includes bracken fern (*Pteridum aquilinum*), wintergreen (*Gaultheria procumbens*), sedges (*Cyperaceae*), and trailing arbutus (*Epigaea repens*).

Most of the landscaped area is limited to the station entrance at the end of the main access road across from the main surface parking lot. Plants in this area are predominately rhododendrons (*Rhododendrons* spp.), hackberry (*Celtis occidentalis*), Kentucky bluegrass (*Poa pratensis*), euonymus (*Euonymus spp.*), and mountain laurel (*Kalmia latifolia*) (USAF 2017d).

Ongoing invasive species management is conducted at CCAFS and is discussed in the CCAFS Invasive Plant Species Control Plan (USAF 2005). Management activities include planting of native species in landscaped areas, as well as annual prescribed burns (USAF 2005). Prescribed burns, which are well suited to plant communities surrounding the station, have kept the woodlands lush and reduced overall coverage of invasive plants. Invasive plants found within the landscaped areas on CCAFS include Japanese barberry (*Berberis thunbergii*), winged euonymus/burning bush (*Euonymus alatus*), Asiatic bittersweet (*Celastrus orbiculatus*), and autumn olive (*Elaegnus umbellata*).

3.2.2.3 Wildlife

Due to the lack of surface water or wetland habitats at CCAFS, no fish or other aquatic species are present on the station. According to the CCAFS Integrated Natural Resources Management Plan (INRMP) (USAF 2017d), the majority of

wildlife at the station occurs within the surrounding forested areas outside of the fenced developed area. Wildlife common to the lands surrounding CCAFS include red fox (*Vulpes vulpes*), grey fox (*Uricin cinereoargenteus*), whitetailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), southern flying squirrel (*Glaucomys volans*), woodchuck (*Marmota monax*), the eastern chipmunk (*Tams striatus*) and the New England cottontail (*Syvilagus transitionalis*). On 12 September 2006, the USFWS designated the New England cottontail as a candidate for Federal ESA protection with a Listing Priority Number (LPN) of 2. However, on 11 September 2015 it was announced that due to conservation efforts the New England cottontail would be excluded from the Endangered Species List (see Section 3.2.2.4, *Special Status Species* for further discussion of sensitive species within the vicinity of CCAFS).

Other common wildlife species that may occur on CCAFS include the raccoon (*Procyon lotor*), long-tailed weasel (*Mustela frenata*), red squirrel (*Tamiasciurus hudsonicus*), and many species of small mammals such as rodents, shrews, and bats.

3.2.2.4 Special Status Species

Regional

According to the USFWS Environmental Conservation Online System (ECOS), there are 16 ESA-listed species believed to or known to occur in the State of Massachusetts, including 13 animal species and 3 plant species (USFWS 2015). These federally listed threatened and endangered plant and wildlife species in Massachusetts are included in Table 3-4. Additionally, there are 169 species of wildlife and 258 species of plants that are protected under the MESA (Massachusetts Division of Fish and Wildlife 2017).

JBCC

JBCC, which encompasses a total area of 20,000 acres, contains a variety of habitats which provide habitat for sensitive species. Species that have been identified on JBCC and adjacent properties include the eastern box turtle (*Terrapene carolina*), a state-listed species of special concern, and NLEB, a federally listed and state-listed species. Due to the presence of NLEB on JBCC, wind turbine operations are currently being curtailed seasonally during the time period between dusk and dawn.

Table 3-4. Federally-Listed Species in Massachusetts

Common Name	Scientific Name	Federal Status
Mammals		
Northern long-eared bat (NLEB)	*Myotis septentrionalis*	T
Birds		
Red knot	*Calidris canutus rufa*	T
Piping plover	*Charadrius melodus*	T
Reseate northeast tern	*Sterna dougallii*	E
Reptiles		
Hawksbill sea turtle	*Eretmochelys imbricata*	E
Leatherback sea turtle	*Dermochelys coriacea*	E
Bog turtle	*Clemmys muhlenbergii*	T
Plymouth redbelly turtle	*Pseudemys rubriventris bangsi*	E
Insects		
American burying beetle	*Nicrophorus americanus*	E
Rusty patched bumble bee	*Bombus affinis*	E
Northeastern beach tiger beetle	*Cicindela dorsalis*	T
Puritan tiger beetle	*Cicindela puritana*	T
Mollusks		
Dwarf wedgemussel	*Alasmidonta heterodon*	E
Plants		
Northeastern bulrush	*Scirpus ancistrochaetus*	E
Sandplain gerardia	*Agalinis acuta*	E
Small whorled pogonia	*Isotria medeoloides*	T

Source: USFWS 2015.
T = Threatened
E = Endangered

In addition, a number of state-listed endangered and threatened birds have been observed on JBCC, including the upland sandpiper (*Bartramia longicauda*), endangered; northern harrier or marsh hawk (*Circus cyaneus*), threatened; and the grasshopper sparrow (*Ammodramus savannarum*), endangered. The osprey (*Pandion haliaetus*), delisted under MESA but protected by other Federal and state statutes, and the short-eared owl (*Asio flammeus*), a state-listed endangered species, have also been observed on the JBCC (Natural Heritage and Endangered Species Program 1997; USAF 1999). Sensitive species observed on adjacent areas of JBCC provide similar habitats to those contained on CCAFS property and are likely to occur on or within the vicinity of the station.

No federally listed plant species are known to occur on JBCC; however, one state-listed rare plant species, sandplain flax (*Linum intercuts*) has been recorded as occurring on JBCC (USAF 2017a).

CCAFS

A survey for threatened and endangered Lepidoptera (i.e., moths and butterflies) species was conducted at CCAFS in 1996 by the Lloyd Center for Environmental Studies. In June 2010, the Lloyd Center for Environmental Studies conducted another survey for state-listed threatened species and species of special concern at CCAFS. These surveys were conducted to assess the presence of the state-listed moths and butterflies on the property and to evaluate the impact of habitat management practices, such as prescribed burning, on the species. The 2010 survey was performed between the months of May and October. Various methods were employed, including seven light trap locations, visual surveys and insect collections. The results of the 2010 survey indicate that a total of 307 species of moths and butterflies were identified during the survey. Eight state-listed species were found, three of which were also found during the 1996 survey. Of note, two of the species, Pines Barens Lycia (*Lycia ypsilon*) and Slender Clearwing (*Hemaris gravcillis*), are new not only to CCAFS but to Barnstable County as well. The report indicated that the 100 acres at CCAFS is an important component to species habitat (USAF 2017d). In particular, the vegetated areas generally located on the western portions of CCAFS consisting of open to partially open scrub oak barrens and blueberry/huckleberry heathlands are considered critical habitat for the documented MESA-listed moth and butterfly species (Lloyd Center for Environmental Studies 2010). Sensitive species observed on CCAFS in the 2010 survey are listed in Table 3-5.

NLEB are not known to occur on CCAFS and no known hibernacula occur within the station; however, given the presence of this species in forested areas of JBCC, acoustic surveys were initiated at the station in May 2017 to determine the presence of NLEB on CCAFS property. These surveys were completed in 2018 and no NLEB individuals were detected.

Currently, there are no federally listed threatened or endangered plant species occurring on CCAFS land. Narrow-leaf bushclover (*Lespedeza angustifolia*),

blackseed speargrass (*Piptochaetium avenaceum*), and Nuttall's milkwort (*Polygala nuttallii*), are Watch List species found on CCAFS and associated with openings and disturbed sites within the wooded landscape. The Watch List is a non-regulatory list of plants of known or suspected conservation concern tracked by the MNHESP. The management of Watch List species on CCAFS property is discussed in the CCAFS Prescribed Fire Management Plan, which coordinates ongoing mechanical vegetation clearing and annual prescribed burning at the station (USAF 2017d).

Table 3-5. Sensitive Species Present on Cape Cod Air Force Station

Scientific Name	Common Name	Federal Status	State Status
Lepidoptera (Moths and Butterflies)			
Hemileuca maia	Barrens Buckmoth	-	SC
Hemaris gracilis	Slender Clearwing	-	SC
Speranza exonerata	Pine Barrens Itame	-	SC
Lycia ypsilon	Pine Barrens Lycia	-	LT
Euchlaena madusaria	Sandplain Euchlaena	-	SC
Zale lunifera	Pine Barrens Zale	-	SC
Catocala herodias gerhardi	Gerhard's Underwing	-	SC
Bagisara rectifascia	Straight-lined Mallow	-	SC

Sources: Lloyd Center for Environmental Studies 2010.

Federal:
FE = Federally Endangered
FT = Federally Threatened

State:
LE = State Endangered
LT = State Threatened
SC = Special Concern

3.2.2.5 Migratory Birds

The MBTA of 1918 is the domestic law that affirms, or implements, the commitment of the U.S. to four international conventions (i.e., with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. Each of the conventions protect selected species of birds that are common to both countries (i.e., species occur in both countries at some point during their annual life cycle). The Act protects all migratory birds and their parts (including eggs, nests, and feathers). EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, directs Federal agencies to take certain actions to further implement the MBTA and to conserve migratory birds. The order prohibits the take of migratory

birds or their eggs, feathers, or nests. Many waterfowl, songbirds, raptors, and other species are migratory and are protected under the MBTA.

The geographical position of CCAFS underlies the Atlantic Flyway. According to the MNHESP, at least 89 species of birds are known to occur on JBCC (USAF 2017d). The trees and dense understory of the forested areas provide food and shelter for a variety of birds. In particular, the pitch pine - scrub oak barrens on CCAFS property generally support eastern towhee (*Pipilo erythrophilous*), pine warbler (*Dendroica pinus*), prairie warbler (*Dendroica discolor*), and ruffed grouse (*Bonasa umbellus*). In 1996, a bird survey was conducted at CCAFS as part of a general biological survey on the station. The most common species reported in the survey were the eastern towhee, the black-capped chickadee (*Parus atricapillus*), pine warbler, and common yellowthroat (*Geothlypis trichas*), respectively. Other birds known to occur at CCAFS include redtailed hawk (*Buteo jamaicensis*), ruffed grouse, brown thrasher (*Taxostoma rufum*), bluejay (*Cyanocitta cristata*), and mockingbird (*Mimus polyglottos*). Herring gull (*Larus argentatus*) may also occur at CCAFS but do not use the habitat on the station for breeding (USAF 2017d).

3.2.2.6 Wetlands

Jurisdictional wetlands are wetlands that are regulated by the USACE under Section 404 of the CWA, exhibit all three wetland characteristics (i.e., hydrology, hydric soils, and hydrophytic vegetation) as defined in the USACE Wetlands Delineation Manual (1987) and are further defined to have a connection and/or were evaluated as adjacent to Waters of the U.S.

As discussed in the CCAFS INRMP, the majority of wetlands at the JBCC are well-vegetated and lack open water. The nearest known wetlands to CCAFS are located approximately 1 mile to the southwest of the station on Camp Edwards' property (USAF 2017d). However, a review of the USFWS National Wetlands Inventory (NWI) Wetlands Mapper (USFWS 2017) and MassDEP aerial photographs of the station indicate there are no wetlands on CCAFS property (USAF 2017d).

3.3 GEOLOGY AND SOILS

3.3.1 Definition of Resource

Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors affecting the ability to support structural development include seismic properties (i.e., the potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography. The term *soil*, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support man-made structures. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use. *Topography* is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains) and their influence on human activities.

3.3.2 Existing Conditions

3.3.2.1 Regional Geology and Topography

CCAFS is located within the Sandwich high moraine and consists of glacial till, which is an unsorted and unstratified mixture of clay, silt, sand, gravel, cobbles, and boulders. The landform of Barnstable County is a result of the last phase of continental glaciations and a subsequent rise in sea level. Glacial deposits of Cape Cod were originally derived from the bedrock of southern New England. Moving ice picked up debris while it scraped and grooved the bedrock beneath it. Rock debris, referred to as drift, was carried southward by ice and deposited along the ice front to form the glacial landform of Cape Cod. Later, as the sea flooded the margins of the glacial Cape, the drift was eroded and deposited to beaches and spits. The glacier in southeastern Massachusetts was divided into lobes as it flowed southward through different basins in the underlying bedrock. The basins are the present sites of Buzzards Bay and Cape Cod Bay. The sediments on Cape Cod, deposited at or near the end of an ice sheet, consist of sandy terminal

moraines and an assortment of associated thick, sandy till, ice-contact, outwash, and glacial-lake deposits resting on crystalline bedrock. The bedrock surface slopes eastward from 80 feet to approximately 900 feet below sea level. The overlying glacial deposits range in thickness from 100 feet along the Cape Cod Canal to approximately 1,000 feet at the northern end of the peninsula (USAF 2017d).

3.3.2.2 Local Topography at Cape Cod Air Force Station

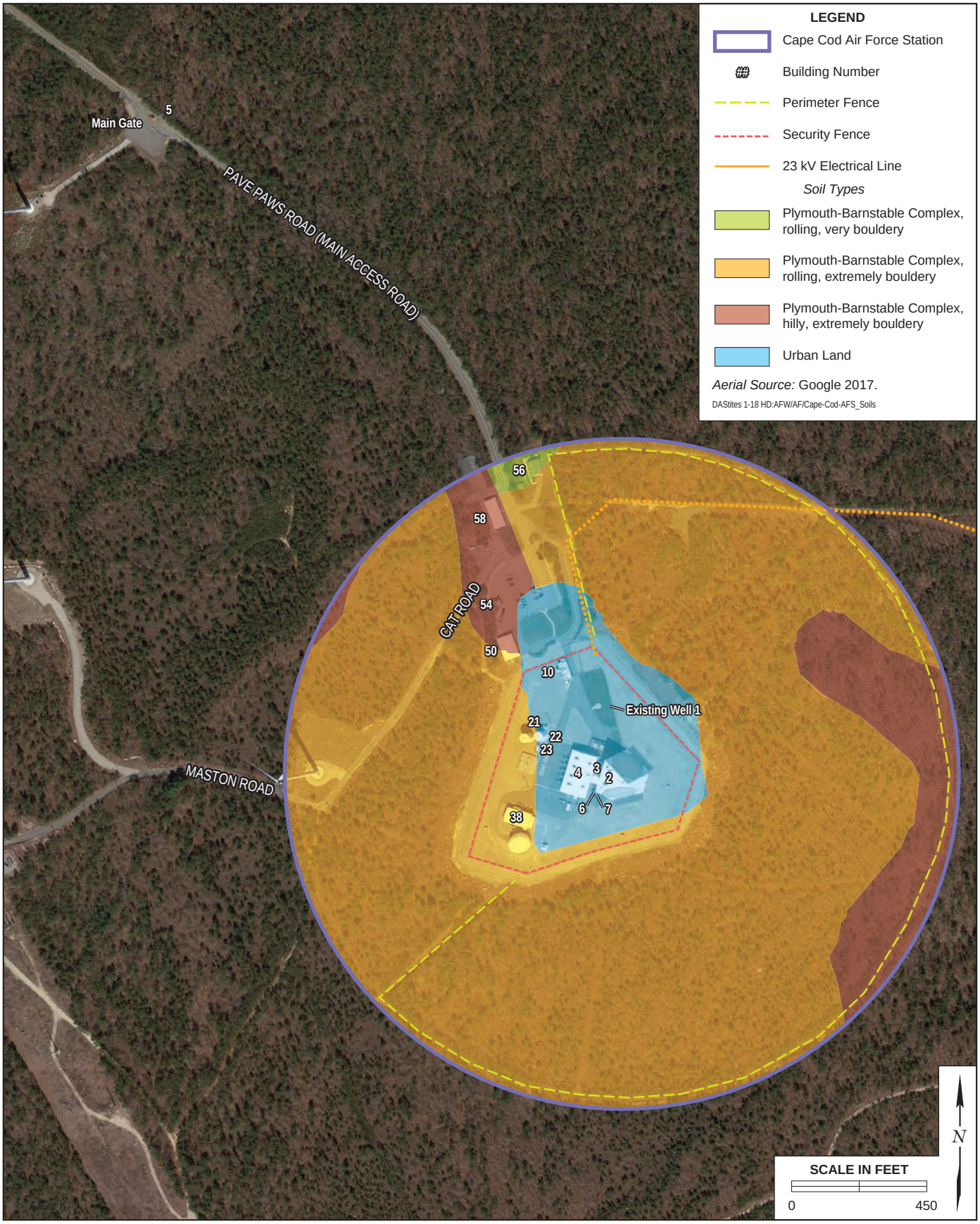
CCAFS occupies approximately 100 acres of leased land on Flatrock Hill, the second highest point on Cape Cod at approximately 264 feet above mean sea level. The land slopes away from Flatrock Hill in all directions at slopes ranging from 3-35 percent (USAF 2017c). As such, runoff in the area generally flows downhill in all directions. Other significant topographical features include the Cape Cod Canal, located approximately 1.5 miles northwest of CCAFS. The canal, approximately 8 miles in length, is 100 feet wide and fairly shallow, making it an unpopular route for mariners (USAF 2017d).

3.3.2.3 Soils at Cape Cod Air Force Station

Based on soil surveys conducted by the U.S. Department of Agriculture (USDA) National Resources Conservation Service (NRCS), soils underlying CCAFS include: Urban Land, Plymouth-Barnstable Complex (PxC), rolling, extremely bouldery; Plymouth-Barnstable Complex (PxD), hilly, extremely bouldery; and Plymouth-Barnstable Complex (PvC), rolling, very bouldery. All of the above soil types are characterized as rocky, well or excessively drained, and are not hydric (USDA 2017). Additionally, all of the Plymouth-Barnstable Complex soils are potentially highly erodible, particularly where slopes are steep. Due to the slow breakdown and accumulation of pine needles and other vegetative debris that cover these soils, they are generally acidic (USAF 2017d). The Barnstable-Plymouth Complex soils occur on side slopes and hills of glacial moraines. Slopes range from 3-25 percent. The surface layer of the soil is typically covered with approximately 1 inch of pine needles, leaves, and twigs, and approximately 2 inches of partly to well-decomposed organic material. The surface layer of the Barnstable soil is approximately 1-inch thick and is comprised of dark gray, very friable sandy loam. The subsoil is friable sandy loam approximately 22 inches

thick. Approximately 65 inches of coarse sand underlies this layer. The Plymouth soil consists of a surface layer of black, very friable loamy coarse sand grading to two inches of gray coarse sand. The subsoil, approximately 26 inches thick, consists of gravelly loamy coarse sand to gravelly coarse sand and approximately 65 inches of gravelly coarse sand underlies the subsoil of the Plymouth soil (USAF 2017d).

Within the station property, the predominant naturally occurring soil is Plymouth-Barnstable complex (PxC), rolling and extremely bouldery. This soil occurs throughout most of the forested area within CCAFS, with a range of 8- to 15-percent slopes and comprises approximately 73 percent of the of the overall station area. Plymouth-Barnstable complex (PxD), hilly and extremely bouldery, comprises approximately 15 percent of the station. This deep soil occurs along the northern and southeastern perimeters of the station, as well as along the main access road. Slopes range from 15-25 percent. The developed area of CCAFS is comprised of Urban Land soil, which consists of a mixture of unidentified soils which have been excavated and filled, and are covered by development. It is assumed this soil is heavily modified and no longer resembles its original form and composition. Urban Land is capable of supporting intensive development, and encompasses approximately 9 percent of the area at CCAFS (USDA 2017).



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Soil Types at Cape Cod Air Force Station

FIGURE 3-1

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

3.4 CULTURAL RESOURCES

3.4.1 Definition of Resource

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations, and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight into living conditions in previous civilizations and may retain cultural and religious significance to modern groups. Several Federal laws and regulations have been established to manage cultural resources, including the National Historic Preservation Act (NHPA) of 1966, the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resource Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1990. Archaeological resources comprise areas where prehistoric or historic activity measurably altered the environment or deposits of physical remains (e.g., lithic materials, ceramics, historic refuse) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the U.S. More recent structures, such as Cold War Era resources, may warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture.

The principal Federal law addressing cultural resources is the NHPA of 1966, as amended (54 USC §§ 300101 et seq.), and its implementing regulations (36 CFR Part 800). Compliance with these regulations, commonly referred to as the Section 106 process, involves identifying and evaluating historic or potentially historic properties; assessing the effects of Federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the SHPO.

The term *historic properties* refers to cultural resources that meet specific criteria for eligibility for listing on the NRHP; historic properties need not be formally listed on the NRHP. According to the National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation*, historical significance is assigned to a property based on its association with individuals or events significant in local, state, or national history (Criterion A and B); its ability to embody the distinctive characteristics of a type, period, or method of construction (Criteria C); or its potential to yield information important to prehistory or history (Criteria D). Properties less than 50 years of age must possess exceptional historical importance to be included on the NRHP (Criteria G). Section 106 of the NHPA does not require the preservation of historic properties, but ensures that the decisions of Federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The Proposed Action is an undertaking as defined by 36 CFR § 800.3 and is subject to requirements outlined in Section 106.

In addition, DoDI 4710.02, *Department of Defense Interactions with Federally-Recognized Tribes* (2006) governs the DoD's interactions with federally recognized tribes. The policy outlines DoD trust obligations, communication procedures with tribes on a government-to-government basis, consultation protocols, and actions to recognize and respect the significance that tribes ascribe to certain natural resources and properties of traditional cultural or religious importance. The policy requires consultation with federally recognized tribes for proposed activities that could significantly affect tribal resources or interests. Additionally, EO 13175, *Consultation and Coordination with Indian Tribal Governments* (2000), charges Federal departments and agencies with regular and meaningful consultation with Native American tribal officials in the development of policies that may have potential tribal implications. There are two federally recognized tribes in Massachusetts, the Mashpee Wampanoag Tribe and Wampanoag Tribe of Gay Head (Aquinnah) of Massachusetts (USAF 2017c).

3.4.2 Existing Conditions

3.4.2.1 Regional History

The earliest pre-contact resources in the New England region are likely from the Paleo-Indian period (12,000-9,000 years before present [BP]) and are represented by fluted points and other types of stone artifacts (Davin and Gallagher 1989). The Archaic period (9,000-3,000 years BP) represents a time of hunting and gathering without evidence of horticulture. Archaeological resources from the Archaic period in New England include a variety of projectile point types but lack any pottery. There are limited isolated known resources dating Early Archaic age (9,000-7,000 years BP) on Cape Cod. However, Round Swamp, a site on the JBCC located approximately 5,000 feet south of CCAFS, contains evidence of both Middle Archaic (7,000-4,500 years BP) and Late Archaic (4,500-3,000 years BP) occupations. During the Woodland period (3,000-500 years BP), Native Americans in the Cape Cod region exploited marine resources more intensively than earlier periods and practiced some horticulture. Artifact assemblages from this period contain pottery, as well as various projectile points and other stone items (Massachusetts Historical Commission 1987). Many sites dating to the Woodland period have been found on Cape Cod, including a large number of shell middens along the seashore dating to the Middle and Late Woodland periods. Inland sites occurring on the JBCC include Round Swamp, the Spruce Swamp site, and the Orchard Point site. The Spruce Swamp site and the Orchard Point site are situated approximately 1 mile southeast and 0.5 miles southwest of CCAFS, respectively (Macomber 1996). European explorers arrived in the area in 1602 A.D., and several Contact period sites are known on Cape Cod, including Herring Run, located approximately 1.5 miles northwest of the station (Macomber 1996).

3.4.2.2 History at Cape Cod Air Force Station

The land on which the JBCC is currently located was initially acquired by the Commonwealth of Massachusetts in 1935 for ARNG training. This training area was named Camp Edwards. In 1948, the USAF assumed ownership of the airfield and subsequently acquired most of the installation facilities. The installation then became known as Otis AFB. Otis AFB was deactivated in 1973, and the major tenants at the base became the ARNG, ANG, and USCG. Otis AFB was renamed

Otis Air National Guard Base, and the entire installation (which occupies approximately 20,000 acres) was designated as the Massachusetts Military Reservation (MMR) in 1980. On 19 July 2013, Massachusetts Former Governor Duval Patrick signed EO 547, *Renaming of the Massachusetts Military Reservation to Joint Base Cape Cod*, thereby changing the name of the MMR to Joint Base Cape Cod (JBCC) to more accurately reflects the ongoing missions and joint partnerships that continue to take place on the base (USAF 2017c).

3.4.2.3 Archaeological Resources at Cape Cod Air Force Station

In April 1996, an archaeological field reconnaissance survey was conducted on CCAFS, along with a file search of existing records conducted at the Massachusetts Historical Commission. As described in further detail within the CCAFS Integrated Cultural Resources Management Plan (ICRMP) (USAF 2017c), the 1996 archaeological investigation encompassed 87 acres, including the entire developed area of CCAFS, with the exception of the main access road. The survey, which was performed with pedestrian linear transects separated by up to 65-foot intervals, uncovered no evidence of archaeological resources. An intensive survey was also conducted of selected areas on the station that could be affected by a water supply project completed in September 1992. The intensive survey for the proposed water project was conducted in areas north and west of Building 2, and included subsurface testing at intervals of approximately 30 feet along the route of a proposed water supply pipeline. Of the 15 test units excavated during the survey, 13 indicated past ground disturbance at varying depths from the surface (USAF 2017c). No archaeological resources were identified during either of the archaeological field surveys at CCAFS (USAF 2017c).

Due to the observed ground disturbance and lack of evidence of archaeological resources, there is a low potential for uncovering of archaeological resources during construction activities (Macomber 1996; USAF 2017c). While it remains a low probability, there is still potential for buried World War II resources in the form of evidence of former facilities and landfills.

3.4.2.4 Historic Built Resources at Cape Cod Air Force Station

As described in Section 1.1, *Introduction*, CCAFS was constructed as the first of four PAVE PAWS sites in the country, with major facility construction completed in 1978. The Cold War Era properties at CCAFS along with those constructed after the Cold War may have the potential for eligibility, per the NRHP Criteria G. However, as all of the facilities at CCAFS were constructed less than 50 years ago, and therefore must meet the criteria of "exceptional importance" to qualify for the NRHP per 36 CFR § 60.4(g).

In 1997, the USAF consulted with the Massachusetts, California, Georgia, and Texas SHPOs (i.e., the four states that contain PAVE PAWS sites), as well as the Advisory Council on Historic Preservation (ACHP). Together these agencies determined that the PAVE PAWS sites were eligible for inclusion in the NRHP because of their association with important historical events (i.e., its historical and historic engineering context of the Cold War). At CCAFS, only the Technical Facility (Building 2) and attached Power Plant (Building 4) were determined to be contributing elements to the historic PAVE PAWS network. The remaining buildings and structures were determined to be non-contributing elements and were determined not to be individually eligible for the NRHP. Following this determination, the USAF signed a Programmatic Agreement (PA) dated 30 May 2000 with the ACHP and SHPOs in the four states that contain PAVE PAWS sites for management of these historic properties. Any alterations that would affect those characteristics of the properties that make them eligible for the NRHP will adhere to the requirements of the PA. Under the PA, the USAF was required to prepare a volume on the history of the PAVE PAWS system including photographs and facility designs of the system. As a part of this effort, the USAF documented and filed the required documentation for Building 2 and Building 4 at CCAFS. As there are few built resources at CCAFS, no areas on CCAFS were determined to warrant additional survey for historic resources that have not yet been discovered or documented (USAF 2017c).

Table 3-6 presents the built resources at CCAFS dating to the Cold War Era. As shown in the table, only Buildings 2 and 4 are eligible for listing on the NRHP.

Table 3-6. Built Resources of the Cold War Era at Cape Cod Air Force Station

Building No.	Building Name	Date Constructed	NRHP status
2	Technical Facility	1978	Eligible
4	Power Plant	1978	Eligible
10	Entry Control Building	1978	Not Eligible
21	Chlorination Building	1978	Not Eligible
23	Electrical Power Station	1985	Not Eligible
50	Warehouse	1985	Not Eligible
54	Hazardous Materials Storage	1988	Not Eligible
58	Base Engineering	1978	Not Eligible

Source: Whorton, M. and J.F. Hoffecker 1998; USAF 2017c.

3.4.2.5 Federally-Recognized Native American Tribes

According to the CCAFS ICRMP (USAF 2017c), two Native American tribes have potential interest within the vicinity of JBCC, including the Wampanoag Tribe of Gay Head (Aquinnah) and Mashpee Wampanoag Tribe, both federally recognized tribes. All of Cape Cod and a large portion of Southeastern Massachusetts are considered "Ancestral Homelands of the Wampanoag." As such, CCAFS is located on Wampanoag ancestral homelands and the 6 SWS is required to coordinate with the two Wampanoag Tribes. Additionally, the USAF is required to consult with the Massachusetts SHPO and the Tribal Historic Preservation Officer (THPO) in the event of an inadvertent discovery of archaeological resources on CCAFS.

In 2009-2010, the 6 SWS attempted to establish consultation procedures and develop Cooperative Agreements (CAs) with the Wampanoag Tribes in order to identify sites and areas of potential concern, if any. Letters of invitation were sent to both Wampanoag Tribes (Mashpee and Gay Head) in November 2009. In February 2010, two members from the Mashpee tribe, the Natural Resource Department Director, and the THPO, met with the Commander and CCAFS Cultural Resources personnel, at CCAFS. Members from the Gay Head Tribe did not respond to the invitation and did not attend. The parties in attendance discussed activities, programs, projects, other actions, land use, and buildings of interest at CCAFS. During the meeting, the parties also established procedures to follow in the event of inadvertent discovery of Native American artifacts, burial

sites, or remains, and archeological or cultural items. Tribal attendees stated they are most interested in groundbreaking activities and natural resource studies.

A Draft CA, along with letters signed by the Commander requesting their comments or concerns, was sent to both tribes on 28 April 2010. After no response, the Cultural Resources Manager e-mailed tribal recipients of the Draft CA, inquiring about the status of their review, in July and again in September 2010. No responses have been received by the station from either Wampanoag tribe. However, CCAFS continues to reach out on a project-by-project basis. As a part of the Environmental Impact Analysis Process (EIAP) for the Proposed Action, the Installation Tribal Liaison Officer conducted coordination and consultation efforts with each of the two tribes that have identified ancestral ties on lands managed by CCAFS. A description of these coordination and consultation activities is outlined in Section 4.4, *Cultural Resources*. Copies of all correspondence and summaries of communication with these tribes are provided in Appendix C.

At present, there is no evidence that any Native American burial grounds, or sacred areas are located on CCAFS that would be subject to the provisions of the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, or NHPA (USAF 2017c).

3.5 HAZARDOUS MATERIALS AND WASTES

3.5.1 Definition of Resource

Hazardous wastes are defined by the *Resource Conservation and Recovery Act* (RCRA), as amended, as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment. Hazardous materials are defined by the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), as amended, as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, or incapacitating reversible illness; or pose a substantial threat to human health or the environment. Issues associated with hazardous materials and wastes typically center on underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, and use of pesticides, fuels and other petroleum-based products, lubricants, antifreeze, and paint solvents. When such resources are improperly used in any way, they can threaten the health and well-being of wildlife species, vegetation communities, soil systems, water resources, and people.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, USAF, through AFI 10-2510, *Air Force Emergency Management Program* and AFI 32-7086, *Hazardous Materials Management* has dictated that all facilities develop and implement Hazardous Materials Management Plans, Hazardous Waste Management Plans, and/or Spill Prevention, Control, and Countermeasure Plans. In addition, the DoD has developed the Environmental Restoration Program (ERP) to facilitate the thorough investigation and cleanup of contaminated sites located at military installations. These plans and programs, in addition to established legislation (e.g., CERCLA, RCRA, etc.), effectively form the "safety net" intended to protect the ecosystems on which most living organisms depend.

3.5.2 Existing Conditions

3.5.2.1 Hazardous Materials and Wastes

Minimal hazardous wastes are generated as a result of routine mission activities at CCAFS, which is classified as a small quantity generator (SQG) of hazardous waste (USAF 2017a). However, CCAFS is also classified as a Large Quantity Generator (LQG) of waste oil. There are two accumulation points, or areas where hazardous waste is collected and/or stored at CCAFS. The accumulation points at CCAFS are located in the Hazardous Waste Storage Shed (Building 8) adjacent to Building 4 south side egress and the Satellite Accumulation Point (SAP), located on the north side of Building 4. All hazardous waste containers are transported within 3 days of reaching capacity from the SAP to the Hazardous Waste Storage Shed where they are temporarily stored prior to disposal, for no longer than 180 days, if hazardous waste, or 90 days, if waste oil (USAF 2017b). Non-hazardous wastes and universal wastes, such as used oil, spent batteries, waste ethylene glycol, and fluorescent bulbs, are also stored at the SAP. Wastes are then shipped off-site for treatment, storage, or disposal at a local permitted facility.

3.5.2.2 Solid Wastes

The solid waste streams generated at CCAFS are consistent with that of a professional office environment. Refuse collected in trash cans located in individual offices is collected nightly by the custodian and staged in loading dock at Building 2. It is then transported to the dumpster where it is picked up routinely by a solid waste disposal subcontractor.

There are five septic systems with associated tanks and leaching fields at CCAFS. One system rated at 4,500 gallons per day collects wastewater from the Buildings 2 and 4, and the entry control point. Separate systems rated at 1,000 gallon each handle wastewater from Buildings 38, 50, and 58. Additionally, the new airmen support facility has a 2,000-gallon system with a leaching pit.

3.5.2.3 Fuel Storage

There are three above ground 500- and 1,000-gallon fuel storage tanks located adjacent to Buildings 10, 50, and 58. As described in Section 2.3, *Proposed Action*

and Alternatives, these tanks currently do not comply with several safety regulations and UFCs due to the proximity to buildings. In addition to these fuel storage tanks, a 1,000-gallon vaulted waste oil storage tank is located between Building 4 and the Hazardous Waste Storage Shed.

3.5.2.4 Environmental Restoration Program Sites

The ERP was developed by the DoD to identify and address environmental contamination from past military operations. Future development of sites identified through the ERP may be constrained depending on the severity of the contamination or the extent of the remedial action required. The overall objective of the ERP is to identify potential environmental problems and provide timely remedies to protect public health and the environment.

A Hazardous Waste Remedial Actions Program (HAZWRAP) Phase I Records Search Report, dated 11 December 1986, determined that there are no ERP sites at CCAFS. In 1990, a release of petroleum from a facility UST was reported at CCAFS. The release was abated and the Final Response Action Outcome (RAO) Report was submitted in June 1994 (USAF 2017d). The Final RAO Report asserts that response actions were sufficient to achieve a level of no significant risk or that all substantial hazards were eliminated. No other areas of potential contamination have been identified and no ERP sites are designated on CCAFS (USAF 2017d).

3.5.2.5 Asbestos

Asbestos is a mineral fiber that was historically added to products to strengthen them and provide heat insulation and fire resistance. Breathing high levels of asbestos has been associated with some types of cancer. Many building products contained asbestos prior to the 1970s. Consequently, as all of the buildings at CCAFS were constructed in or after the year 1978, there is a low potential for these facilities to contain asbestos. AFI 32-1052, *Facility Asbestos Management*, provides direction for the management of asbestos-containing material (ACM) on USAF installations.

As discussed in the CCAFS Integrated Solid and Hazardous Waste Management Plan (ISHWMP) (USAF 2017b), asbestos-containing waste is managed on project-

by-project basis by a licensed ACM abatement contractor, with cooperation and oversite from the 6 SWS Environmental Office (BENV). Construction contractors at CCAFS are required to comply with all applicable Federal and state regulations on asbestos abatement. All ACM waste generated by abatement operations is properly containerized, stored in a designated area, and processed for disposal through a licensed contractor. Construction and demolition debris generated from construction, renovation or demolition activities known to disturb ACM must be treated as asbestos-containing waste. The debris must be labeled in accordance with 29 CFR § 1926.1101(k) and disposed of in accordance with 40 CFR § 61.150 as well as any applicable state and local requirements (USAF 2017b).

3.5.2.6 Lead-based Paint

Lead-based paints are also considered hazardous materials. Although these paints are no longer used at the station, many of the buildings on CCAFS were completed in 1978 and therefore may contain lead-based paint. Similar to the management of ACM, construction and demolition debris generated from construction, renovation and demolition activities known to disturb lead-containing materials must be managed in accordance with all applicable Federal and state transportation, occupational health, treatment, storage and disposal requirements. USEPA regulations require Toxicity Characteristic Leachate Procedure testing procedures on construction and demolition debris generated to determine if the lead in the waste stream is hazardous waste. The 6 SWS Civil Engineering oversees and coordinates lead-based paint activities, including disposal, in accordance with applicable Federal and state regulations (USAF 2017b).

3.6 SAFETY

3.6.1 Definition of Resource

The DoD has developed AT/FP standards, which are designed to reduce and minimize the likelihood of casualties from potential terrorist attacks. Requirements include mandated setbacks of parking areas from buildings, increased security measures such as barricades at military facility entrances and exits, and AT/FP-compliant perimeter fences. Requirements also include mandates regarding emergency notification systems and procedures. The *United States Air Force Installation Force Protection Guide* contains information on planning, engineering design, and construction techniques that can reduce the potential for terrorist attacks upon existing and future facilities. It addresses the comprehensive planning process, facility site design, and building systems design. Additional criteria are available in UFC 4-010-01 *DoD Minimum Antiterrorism Standards for Buildings*.

As no aircraft activity occurs at CCAFS, there are no safety concerns at the station associated with aircraft mishaps.

3.6.2 Existing Conditions

3.6.2.1 Wind Turbine and Radar Clear Zones

Approximately 75 percent of the land at CCAFS is constrained by the WTCZ and RCZ (USAF 2017a). CCAFS property includes one wind turbine and three turbines are located off station property, approximately 0.18 miles, 0.3 miles, and 0.5 miles west and north of the perimeter of the station. Surrounding each of these turbines is an 800-foot WTCZ, required to avoid the danger of accumulated snow or ice being thrown off of the blades. Approximately 21.2 acres of CCAFS land is unbuildable due to the wind turbine on the station, as only low value, unoccupied buildings are allowed within the WTCZ (USAF 2017a).

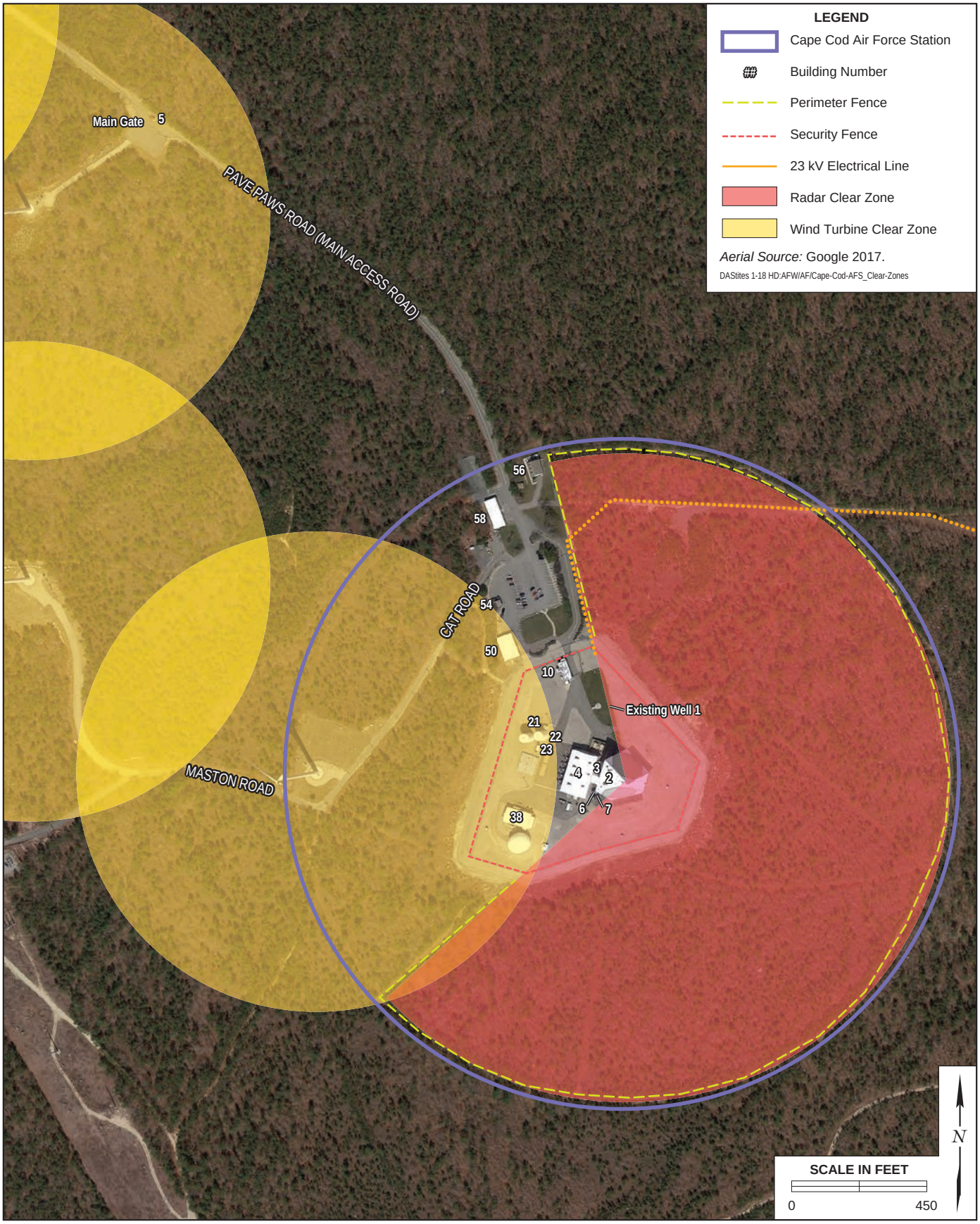
In addition to the WTCZ, the station contains a RCZ. Building 2 is a pyramid-shaped building with two radiating faces and the powerful radar beams can detect an object the size of a small automobile at a range of 3,000 nautical miles. The RCZ is defined by the angles of the radar faces and extended out for a distance of 1,000

feet. Over half (i.e., 54 acres) of the total acreage of the station is located within the RCZ, with approximately 1.12 acres overlapping with the WTCZ (USAF 2017a).

3.6.2.2 Anti-terrorism/Force Protection

AT/FP measures are a critical component of development projects at CCAFS. All roadway, parking, and facility construction projects at the station must comply with UFC 4-010-1, *Department of Defense Minimum Antiterrorist Standards for Buildings*. These guidelines prescribe the standoff distances between facilities, roadways, parking and the station boundary and can limit the development potential of areas within CCAFS.

There are currently several AT/FP concerns at CCAFS. As described in Section 2.3, *Proposed Action and Alternatives*, the existing main access road leading to the station is currently lacking proper fencing and therefore does not meet AT/FP requirements. In addition, the existing perimeter fence surrounding CCAFS is incomplete, leaving the station vulnerable to potential security and terrorism threats. An existing above ground 23-kV electrical line located along Flatrock Road is also currently vulnerable to security and terrorism threats, as well as lightning strikes, due to its current location above ground and outside the fenced area. Further, the existing main gate at CCAFS does not adequately comply with a number of AT/FP requirements. The gate is currently only monitored remotely by camera, is lacking vehicle denial capabilities (i.e. pop up bollards), and does not contain any defined areas with supporting infrastructure for delivery vehicle inspection.



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Wind Turbine and Radar Clear Zones at Cape Cod Air Force Station

FIGURE 3-2

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

SECTION 4
ENVIRONMENTAL CONSEQUENCES

Environmental impacts that are anticipated as a result of the implementation of the projects included in the Proposed Action and their alternatives, including the No-Action Alternative, are identified and evaluated in this section. Issues analyzed in detail in this EA are listed in Section 1.7, *Scope of the Environmental Assessment* and are presented by resource area, as described in Section 3, *Affected Environment*. Per the NEPA and CEQ regulations, environmental resource areas that are anticipated to experience either no impacts or negligible environmental impacts under implementation of the Proposed Action are not examined in detail in this document. As discussed in Section 2, *Description of the Proposed Action and Alternatives*, the Proposed Action includes the implementation of seven construction, renovation, and demolition projects from the IDP at CCAFS. Alternatives were considered for each project included in the Proposed Action; however, none of these alternatives would satisfy the purpose and need for the projects and therefore were not carried forward for further analysis. Because CEQ regulations stipulate that the No-Action Alternative be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented, the No-Action Alternative has also been carried forward for analysis and provides a baseline against which the projects in the Proposed Action can be compared.

Guidelines established by the CEQ (40 CFR § 1508.27) specify that significance should be determined in relationship to both context and intensity (i.e., severity). The assessment of potential impacts and the determination of their significance are based on the requirements of 40 CFR § 1508.27. Three levels of impact have been identified:

- *No impact* – No impact is predicted;
- *Less than significant impact* – An impact is predicted, but the impact does not meet the intensity/context significance criteria for the specific resource; and
- *Significant impact* – An impact is predicted that meets the intensity/context significance criteria for the specific resource.

4.1 AIR QUALITY

4.1.1 Approach to Analysis

AFI 32-7040, *Air Quality Compliance and Resource Management*, provides a framework for ensuring that USAF actions conform to appropriate implementation plans and requirements. Section 3.4 of AFI 32-7040, *Conformity Rule Planning*, ensures that such actions conform to the applicable implementation plan through the USEPA General Conformity Rule. Section 3.5 of AFI 32-7040, *NEPA and Environmental Impact Analysis Process Planning*, outlines requirements under NEPA for analysis of air quality impacts with respect to the Prevention of Significant Deterioration/New Source Review (40 CFR Part 51), HAP emissions, and emissions of any other pollutants regulated under the CAA, such as O_3-depleting substances. Direct and indirect emissions of criteria pollutants or their precursors associated with the Proposed Action must be calculated for all non-exempt emission sources, including mobile and stationary emissions.

4.1.2 Impacts

4.1.2.1 Proposed Action

The air quality analysis was conducted using the USAF's Air Conformity Applicability Model (ACAM) which compares all net (i.e., increases and decreases) direct and indirect emissions associated with the Proposed Action. Although the Proposed Action is located in Barnstable County which is designated *attainment* for all NAAQS and is not subject to *de minimis* thresholds for a General Conformity determination, the net change in emissions associated with the Proposed Action were compared against General Conformity *de minimis* values as an indicator of significance (see Table 4-1).

Construction – Fugitive Dust Emissions

Under the Proposed Action, fugitive dust would be generated during ground-disturbing construction activities, including site preparation, clearing, and grading. Fugitive dust would also be generated by the use of construction-related vehicles and heavy equipment. Dust emissions generated by such activities can vary substantially depending on levels of activity, specific operations, and prevailing meteorological conditions. The standard dust emission factor for

general non-residential construction activity is conservatively estimated at 0.19 tons of PM_{10} generated per acre per month of activity (USEPA 2011). Per procedures documented in the National Emissions Inventory (USEPA 2011), $PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. The USEPA National Emission Inventory documentation assumes that the emissions resulting from construction-related activities are uncontrolled. However, fugitive dust resulting from activities related to implementation of the Proposed Action could be reduced through standard dust minimization practices (e.g., regularly watering exposed soils, soil stockpiling, etc.). These dust minimization measures can reduce dust generation by up to 50 percent (USEPA 2011).

It has been estimated that the proposed projects included in the Proposed Action would disturb a total area of approximately 3.2 acres (see Appendix D). This conservative estimate accounts for site preparation activities, materials staging, and heavy equipment storage, which may occur outside of and adjacent to the proposed project footprints. Fugitive dust emissions would be greatest during FY 2021 during which four projects would be implementing including the renovation of the Building 2 loading dock, relocation and replacement of the three fuel storage tanks, undergrounding of the 23-kV electrical line, and replacement and upgrade of the existing main gate. These construction and demolition activities would disturb a total of 2.34 acres, approximately 73 percent of the total ground disturbance included in the Proposed Action. Emissions calculations provided in Appendix D conservatively assume all construction activities would occur in the same year during FY 2018. The total amount of uncontrolled dust (including both PM_{10} and $PM_{2.5}$) generated by the proposed construction and demolition activities would be as much as 0.844 tons per year (tpy) with the implementation of standard dust minimization practices (e.g., regularly watering exposed soils, soil stockpiling, etc.) (USEPA 2006).

Although any increase in dust generation is inherently adverse, implementation of dust minimization measures would limit the total quantity generated during each year of project implementation. Additionally, increased fugitive dust emissions associated with the Proposed Action would be short-term and temporary. Therefore, air quality impacts associated with fugitive dust would be considered minor and less than significant.

Construction – Combustion Emissions

Operation of construction equipment with internal combustion engines, and off-site vehicles (e.g., construction employee vehicles, etc.) would result in emission of criteria air pollutants (i.e., CO, N_2O, O_3, SO_2, Pb, and particulate matter [PM_{10} and $PM_{2.5}$]). In addition to on-site construction emissions, minor regional emissions associated with haul truck trips for the delivery of supplies/materials and removal of solid waste (e.g., any construction debris) would also occur under the Proposed Action. Emissions associated with construction equipment (e.g., grader, backhoe, dozer, etc.) would be minimal because most equipment would be driven to and kept on-site for the duration of construction activities. Additionally, idling equipment would be shut off when not in use. Emissions associated with construction worker commutes and the transportation of materials would also be minimal given the temporary nature of the activities.

Table 4-1 describes annual combustion emissions that would be anticipated as a result of the projects included in the Proposed Action. For a full list of assumptions, emission factors, and emission category subtotals see Appendix D. Impacts due to combustion emissions from construction are generally not considered significant because they are temporary and of short duration. Anticipated combustion emissions during construction activities would remain below *de minimis* threshold values and result in less than significant, short-term impacts to air quality.

Table 4-1. Potential Annual Emissions from Construction Related Combustion under the Proposed Action

Year	CO (tpy)	NO_x (tpy)	PM (tpy)	SO_x (tpy)	VOC (tpy)
2018	1.224	1.487	0.844	0.003	0.240
Total Emissions	**1.224**	**1.487**	**0.844**	**0.003**	**0.240**
de minimis thresholds	100	100	100	100	100
Significant?	**No**	**No**	**No**	**No**	**No**

Note: Installation of the perimeter fence and main access road fence would require one-time materials delivery and only minor excavations; therefore, these projects were not included in the ACAM analysis due to negligible and short-term emissions.
See Appendix D for calculations and a detailed description of assumption.

Operational Emissions

Under the Proposed Action, existing facilities at CCAFS would be replaced and optimized (e.g., main gate) and there would be no substantial changes to the operations or missions at CCAFS. As such, there would be no long-term changes to operational emissions at CCAFS. The implementation of the projects included in the Proposed Action would not cause an exceedance of the NAAQS, nor exceed a *de minimis* threshold for any criteria pollutant. Therefore, operational emissions under the Proposed Action would have no impact on long-term air quality and operational emissions would remain similar to those described in Section 3.1, *Air Quality*.

General Conformity

As described in Section 3.1.2.2, *Local Air Quality*, Barnstable County is currently designated as an *attainment* area by the USEPA for all NAAQS criteria pollutants (USEPA 2017). Consequently, emissions from construction and operations activities associated with the Proposed Action are not subject to *de minimis* thresholds for a General Conformity determination.[1]

4.1.2.2 No-Action Alternative

If the No-Action Alternative were selected, there would be no construction-related emissions associated with the Proposed Action. Consequently, no changes to local air quality would occur and conditions would remain as described in Section 3.1, *Air Quality*. Therefore, there would be no impacts to air quality under the No-Action Alternative.

4.1.3 Proposed BMPs

The following BMPs, although not required to reduce potential impacts to less than significant levels, would be implemented in order to further reduce short-term, construction-related air quality impacts as a result of the implementation of

[1] Federal Register Volume 58, No. 228 "Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule, page 63227. Clarifies interpretation of the rule to mean that a general conformity analysis is only required in nonattainment areas (http://www.epa.gov/air/genconform/documents/58FR63214.pdf).

the projects included in the Proposed Action. Fugitive dust and air quality control measures to be implemented during earthmoving and evacuation would include the following:

- All construction equipment would be maintained in good operating condition to minimize exhaust emissions.
- Vehicular traffic associated with construction and operation activities would remain on paved areas to the maximum extent practicable.
- Vehicle speed would be limited on unpaved surfaces.
- All excavated, graded, or unpaved areas would be watered to prevent excess dust generation.
- The areas of disturbance on the station would be limited to the extent practicable.
- Where soil is excavated during construction, displaced soils would be stockpiled.
- Idling equipment would be shut off when not in use.

4.2 BIOLOGICAL RESOURCES

4.2.1 Approach to Analysis

Determination of the significance of potential impacts to biological resources is based on applicable Federal, state, and local legal protection of sensitive resources including the Federal ESA, MBTA, and Bald and Golden Eagle Protection Act. Significance of impacts to biological resources would be based on: 1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications. Impacts to biological resources would be significant if implementation of the Proposed Action would adversely affect a federally listed or state-listed threatened or endangered species; greatly diminish habitat for a plant or wildlife species; substantially diminish a regionally or locally important plant or wildlife species; interfere with wildlife movement or reproductive behavior; and/or result in an infusion of invasive plant or wildlife species.

Data from the USFWS, Massachusetts Division of Fisheries and Wildlife, as well as the CCAFS INRMP (USAF 2017d) were reviewed to determine the presence or potential occurrence of sensitive species and habitats on CCAFS. Potential physical impacts such as habitat loss and impacts to surface water were evaluated to assess potential impacts to biological resources resulting from implementation of the projects included in the Proposed Action and their alternatives. For federally listed threatened and endangered species and federally designated critical habitat, formal consultation with the USFWS under Section 7(a)(2) of the ESA is triggered when: 1) it is determined that a proposed action "may affect" federally listed species or designated critical habitat, unless the USFWS concurs in writing that the action is not likely to adversely affect any listed species or critical habitat; or 2) the USFWS does not concur with the determination that the proposed action is not likely to adversely affect federally listed species or federally designated critical habitat.

4.2.2 Impacts

4.2.2.1 Proposed Action

Vegetation

The projects included in the Proposed Action at CCAFS have largely been sited within existing building footprints or on developed or previously disturbed lands within or immediately adjacent to existing developed land at CCAFS. For example, the proposed perimeter fence has been sited within an existing fire break surrounding the perimeter of CCAFS and would not require substantial vegetation removal. As such implementation of this project as well as the majority of the other projects included in the Proposed Action (i.e., renovation of the Building 2 loading dock, relocation and replacement of fuel storage tanks, undergrounding of the 23-kV electrical line, and replacement and upgrade of the main gate) would have negligible impacts to vegetation within the developed or previously disturbed portions of the station.

The proposed relocation of Well #1 and the proposed installation of the main access road fence would be sited in a previously disturbed but currently undeveloped area of CCAFS. As discussed in Section 3.2, *Biological Resources*, the forested areas surrounding and within CCAFS industrial area are pine and oak trees with oak, fern, and berry included in the shrub understory (USAF 2017d). Relocation of Well #1 and installation of the main access road fence would require limited removal of vegetation, including limited tree removal. However, BMPs and control measures would be implemented to ensure that impacts to vegetation would be kept to a minimum (e.g., flagging of the approved limits of construction, locating staging areas and equipment storage on previously disturbed lands, etc.). Additionally, the vegetation that would be removed is not unique within CCAFS or JBCC and would comprise a negligible reduction in the overall forested area within the region. For example, the entire Well #1 project site would be approximately 475 sf (i.e., far less than 1 percent of the undeveloped forested area within JBCC). Therefore, implementation of the Proposed Action would result in less than significant impacts to vegetation.

Wildlife

Implementation of the projects included in the Proposed Action could potentially indirectly impact wildlife species through short-term disturbances resulting from increased noise and human presence during construction activities at CCAFS. These short-term, temporary increases in noise levels could cause wildlife to temporarily relocate to similar habitat types in the surrounding vicinity.

With the exception of the proposed installation of the perimeter fence, main access road fence, and relocation of Well #1, the construction projects included in the Proposed Action would occur within the developed area of CCAFS. As described in Section 3.2, *Biological Resources*, there is very little habitat for wildlife within the developed area of the station. Much of the vegetation within this developed area consists of landscaped grounds with relatively small areas of fragmented native plant communities (USAF 2017d). While construction activities could temporarily displace wildlife from otherwise suitable habitat in the immediate vicinity of project areas, any wildlife disturbed by construction activities could temporarily or permanently relocate to similar, potentially more suitable habitat nearby. Many proposed construction activities involving vegetation removal would occur adjacent to existing roadways and developed areas, which currently provide limited wildlife habitat and are also likely impacted by edge effects.[2] Consequently, the short-term, temporary addition of construction-related noise would have a less than significant minor impact on wildlife relative to existing conditions.

In addition to indirect impacts related to temporarily increased noise levels, some of the projects included in the Proposed Action would also result in the potential for direct impacts to wildlife species within CCAFS. Under the Proposed Action removal of vegetation to support the installation of the main access road fence and relocation of Well #1 could remove suitable habitat for birds, insects, or mammals. However, vegetation removal required for these projects would be relatively small compared to the total area of vegetation on the station and in the vicinity on JBCC. Additionally, these habitats are not unique within CCAFS or JBCC and it would

[2] The edges of fragmented forest habitats are more exposed to indirect disturbances (e.g., noise, human presence, etc.). Consequently, overall abundance and diversity of wildlife is typically reduced in these areas.

be anticipated that wildlife could temporarily or permanently relocate to similar, potentially more suitable habitat nearby. Further, construction activities would follow all appropriate seasonal restrictions on vegetation removal described in the CCAFS INRMP (USAF 2017d) in order to avoid potential impacts to birds and bats that may use undeveloped forested areas at the station. Overall impacts to wildlife species as a result of the Proposed Action would be minor and less than significant.

Special Status Species

Wildlife

As described in Section 3.2.2.4, *Special Status Species*, several federally listed and state-listed wildlife species may occur in the vicinity of CCAFS. The majority of these species do not have suitable habitat on CCAFS and have never been observed on the station. The NLEB, a federally listed and state-listed species that has been documented on JBCC, has not been observed within CCAFS and no known hibernacula exist within the station. Acoustic surveys were initiated at CCAFS in May 2017 to determine the presence of NLEB on the station. These surveys were completed in 2018 and no NLEB individuals were detected. Relocation of Well #1 and installation of the main access road fence would require minor vegetation removal, including tree removal, which would have the potential to affect NLEB, if present. In order to avoid impacts to potentially occurring NLEB and associated maternity roost trees to the maximum extent feasible, vegetation removal and other construction activities in the forested areas at CCAFS would avoid pup season (i.e., June 1 through July 31). The 6 SWS sent a Section 7 consultation letter to the USFWS on 15 May 2018. The USFWS responded indicating the need to complete and submit a NLEB 4(d) Rule Streamlined Consultation Form, the process of which relies upon the finding of the Programmatic Biological Opinion for the Final 4(d) Rule to fulfill their project-specific Section 7 responsibilities (USFWS 2016). As such, the 6 SWS submitted a NLEB 4(d) Rule Streamlined Consultation Form to the USFWS on 3 July 2018. No response or requests for additional information were received from the USFWS within 30 days; therefore, per USFWS guidance under the NLEB 4(d) Rule, Section 7 consultation responsibilities are complete (see Appendix B).

As further discussed in Section 3.2.2.4, *Special Status Species*, surveys of the station in 1996 and 2010, found that the only sensitive species observed within CCAFS are of the order Lepidoptera (i.e., moth and butterfly species). These species generally occur in open to partially open scrub oak barrens and blueberry/huckleberry heathlands, predominately located on the western portion of the station. As described previously, limited vegetation removal associated with the Proposed Action (i.e., relocation of Well #1 and installation of the main access road fence) could result in minimal impacts to wildlife species on the installation, including these state-listed threatened and endangered moth and butterfly species. In order to avoid impacts to known special status moth and butterfly species within CCAFS, vegetation removal would avoid moth and butterfly breeding periods. With the implementation of these conditions, impacts to sensitive species as a result of the projects included in the Proposed Action would be less than significant.

Plants

No federally listed plant species are known to occur at CCAFS. Although one state-listed rare plant species, sandplain flax (*Linum intercuts*), has been documented on the JBCC, this species has not been observed on CCAFS property. Narrow-leaf bushclover (*Lespedeza angustifolia*), blackseed speargrass (*Piptochaetium avenaceum*), and Nuttall's milkwort (*Polygala nuttallii*), are Watch List species found on CCAFS and associated with openings and disturbed sites within the wooded landscape. Prior to the initiation of any construction-related activities, the 6 SWS natural resources staff would perform a visual survey of the area in order to ensure that the area is clear of these sensitive species. Areas within the immediate vicinity of recorded occurrences would be avoided. As such, impacts to these sensitive plant species would be minimized to the maximum extent feasible. Therefore, impacts to sensitive plant species under the Proposed Action would be minor and less than significant.

Migratory Birds

Many waterfowl, songbirds, raptors, and other species are migratory and are protected under the MBTA. As discussed in Section 3.2.2.5, *Migratory Birds*, the pitch pine – scrub oak barrens on CCAFS supports a variety of birds during their

migratory route along the Atlantic Flyway. A majority of the projects included in the Proposed Action would be sited on previously developed land with limited potential nesting locations. However, the relocation of Well #1 and the installation of the main access road fence would require minor tree removal, which could result in the potential for impacts to migratory birds. As such, avoidance BMPs discussed in Section 4.2.3, *Proposed BMPs*, would be implemented to avoid impacts to migratory bird species. For example, to the maximum extent feasible all construction activities requiring vegetation removal would occur outside of the bird nesting season (i.e., February 1 to July 15). In the event that avoidance of the nesting season is not feasible, preconstruction surveys would be performed to identify any active nests and to establish construction buffers in these areas.

4.2.2.2 No-Action Alternative

Implementation of the No-Action Alternative would result in no changes to existing vegetation, wildlife, or sensitive species occurring in or around CCAFS. Conditions would remain as described in Section 3.2, *Biological Resources*.

4.2.3 Proposed BMPs

The following BMPs, although not required to reduce potential impacts to less than significant levels, would be implemented in order to further reduce short-term construction-related impacts to biological resources as a result of the implementation of the projects included in the Proposed Action.

<u>Vegetation</u>

- For all projects requiring vegetation removal, including tree removal, the 6 SWS would minimize the total amount of ground disturbance and preserve overall vegetative cover to the maximum extent practicable.

- Prior to construction, the limits of construction would be delineated with flagging, lathe, orange construction fencing or other readily identifiable marker to ensure personnel work within the approved limits of construction.

- Construction staging areas would only be located in previously disturbed areas. Equipment storage and fueling would be located away from any

suitable habitat and pollution control measures would be in place during construction.

- Upon completion of the construction activities, the Project impact area would be restored to its original pre-construction conditions to the extent feasible.

Special Status Species

- To the maximum extent feasible, construction activities would be phased such that smaller areas of land are disturbed at one period of time. This would result in less soil compaction and construction-related noise exposure at any one given time.

- Tree removal activities would not occur within a 150-foot radius of any identified maternity roost trees during the NLEB pup season (i.e., June 1 through July 31).

- Tree removal activities would not occur during the moth and butterfly breeding season (i.e., February 1 to July 15).

- Prior to the initiation of any construction-related activities, the 6 SWS natural resources staff would perform a visual survey of the area in order to ensure that the area is clear of sensitive species.

- Construction workers at the site would receive an orientation regarding the possible presence of sensitive species with instructions to avoid disturbing, if encountered.

Nesting Birds

- To the maximum extent feasible, any ground disturbing construction activities requiring the removal of trees would be performed outside of the bird nesting season (i.e., February 1 to July 15) or after all young have fledged to avoid incidental take of migratory birds.

- If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds should be performed immediately prior to construction by a qualified biologist.

- If nesting birds are found during the survey, 500-foot buffer areas would be established around nests, as necessary. Construction would be deferred in buffer areas until birds have left the nests. Confirmation that all young have fledged would be assessed and determined by a qualified biologist.

4.3 GEOLOGY AND SOILS

4.3.1 Approach to Analysis

An impact to geological resources would be considered significant if implementation of the Proposed Action would: 1) increase potential occurrences of erosion, siltation, or geological hazards (e.g., landslides); 2) incorporate engineering or construction techniques that do not adequately address potential geologic hazards; or 3) expose people or structures to major geological hazards. Generally, impacts with regard to geological resources can be avoided or minimized if proper construction techniques, erosion/siltation control measures, and structural engineering designs are incorporated into project development. Since potential impacts to geological resources would be limited to the individual project sites within the boundaries of CCAFS, there would be no impacts to regional geology and further analysis of off-site resources has been eliminated.

4.3.2 Impacts

4.3.2.1 Proposed Action

Geology

Potential impacts to geological resources associated with the Proposed Action at CCAFS would be limited to ground-disturbing activities occurring during project site preparation (e.g., minor vegetation clearing) and construction. A majority of the proposed projects, including renovation of the Building 2 loading dock, removal of Well #1, relocation and replacement of the three fuel storage tanks, and replacement and upgrades to the existing main gate would occur on previously developed (i.e., paved) land adjacent to existing facilities within the installation. As such, the underlying geology at the proposed project sites are capable of supporting such development. Additionally, installation of the perimeter fence and undergrounding of the 23-kV electrical line would occur on previously cleared and disturbed land on the station. Installation of the perimeter fence and undergrounding of the 23-kV electrical line would not require major excavation and would result in the construction of unoccupied, ancillary structures, rather than buildings. While relocation of the of Well #1 and installation of the main access road fence would occur on previously undeveloped lands, the proposed

project sites are located immediately adjacent to developed lands at CCAFS. These projects would also result in unoccupied ancillary structures. Further, while construction activities may require minor grading and excavation, none of the proposed construction activities would affect the underlying bedrock geology. Consequently, implementation of the Proposed Action would have a less than significant impact on geology at CCAFS.

Topography

Implementation of the Proposed Action at CCAFS would include minor excavation and grading activities associated with proposed construction projects. For example, undergrounding the 23-kV electrical line would require minor excavation and trenching in a previously cleared area and renovation of the Building 2 loading dock would require compaction of the existing subgrade. However, none of the proposed projects would require substantial excavation or the import of large amounts of fill. Consequently, none of the projects included in the Proposed Action would result in substantial changes to the existing topography at CCAFS and overall impacts to topography at the station would be negligible and less than significant.

Soils

Implementation of the Proposed Action would include site preparation activities and excavation associated with construction activities. As described in Section 3.3, *Geology and Soils*, there are four soil types within the boundaries of CCAFS, including: Urban Land; Plymouth-Barnstable Complex, rolling, extremely bouldery; Plymouth-Barnstable Complex, hilly, extremely bouldery; and Plymouth-Barnstable Complex, rolling, very bouldery. Soil types underlying the proposed project sites are described in further detail below.

Renovation of the Building 2 loading dock, removal of Well #1, and relocation and replacement of the storage tank adjacent to Building 10 would be located on Urban Land soils, which are paved and capable of supporting intensive development. Relocation of Well #1, installation of the perimeter fence, relocation and replacement of the fuel storage tank adjacent to Building 50, and undergrounding of the 23-kV electrical line would occur on Plymouth-Barnstable Complex, rolling

and extremely boulder soils, which are excessively drained and often covered in stones and boulders. Additionally, erosion is generally a hazard on these soils during and after construction (Fletcher 1993). However, implementation of standard BMPs, such as revegetation of the disturbed area with well suited grasses immediately following soil disturbance, would minimize potential erosion hazards to less than significant levels. Consequently, relocation of Well #1, installation of the perimeter fence, replacement of the fuel storage tank adjacent to Building 50, and undergrounding of the 23-kV electrical line would have a less than significant impact on Plymouth-Barnstable Complex, rolling and extremely boulder soils.

Installation of the perimeter fence and a portion of main access road fence would be sited on Plymouth-Barnstable complex, rolling and very boulder soils, which are also excessively drained and limited for development due to their erosion potential (Fletcher 1993). However, installation of these fences would not require major excavation and would result in unoccupied, ancillary structures, rather than developed buildings. Additionally, these fences would be designed to conform with the natural slope of the land. Implementation of standard BMPs listed in Section 4.3.3, *Proposed BMPs*, would further reduce any potential hazards and installation of the perimeter fence and main access road fence would have a less than significant impact on Plymouth-Barnstable complex, rolling and very boulder soils.

A portion of the perimeter fence installation as well as relocation and replacement of the fuel storage tank adjacent to Building 58 and replacement and upgrades to the existing main gate would occur on Plymouth-Barnstable Complex, hilly and extremely boulder soils. Similar to the majority of soils underlying the installation, these soils pose an erosion hazard during and after construction due to the natural sloping of the land (Fletcher 1993). However, replacement of the fuel storage tank adjacent to Building 58 and the existing main gate would be constructed on existing paved land, which is capable of supporting such development. Additionally, these projects would be replacing existing unoccupied structures at the station; therefore, implementation of these projects would not expose people or structures to geologic hazards. While the perimeter fence would be located on undeveloped land, this land has previously been disturbed (i.e., cleared to create a firebreak). In addition, as previously described, installation of the fence would not require major excavation or ground disturbance. Therefore, installation of the

perimeter fence, relocation and replacement of the fuel storage tank adjacent to Building 58, and replacement and upgrades to the main gate would result in less than significant impacts to Plymouth-Barnstable Complex, hilly, and extremely boulder soils. Overall, the Proposed Action would result in a short-term increase in soil disturbance; however, construction-related impacts as well as long-term impacts to soils would be less than significant.

4.3.2.2 No-Action Alternative

Under the No-Action Alternative, no construction, renovation, or demolition activities would occur at CCAFS. Consequently, there would be no ground disturbing activities at CCAFS and geological resources at the station including geology, topography, and soils would remain as described in Section 3.3, *Geology and Soils*. Implementation of the No-Action Alternative would result in no impact to geology and soils.

4.3.3 Proposed BMPs

The following BMPs, although not required to reduce potential impacts to less than significant levels, would be implemented in order to minimize potential occurrences of erosion, siltation, and soil compaction during construction activities.

- Stockpiled soils and excavated and trenched areas would be covered during rain events.
- Erosion and siltation prevention measures would be incorporated into project design and construction (e.g., minimal watering for dust suppression, use of netting and silt fencing, etc.).
- Surface water flow would be channeled away from excavated and trenched areas.
- All excavated soils would be backfilled to their original location where feasible.
- Surface areas would be revegetated as soon as soils are backfilled into excavated and trenched areas.
- Heavy equipment use would be limited to the maximum extent practicable.

4.4 CULTURAL RESOURCES

4.4.1 Approach to Analysis

Cultural resources are subject to review under both Federal and state laws and regulations. Section 106 of the NHPA empowers the ACHP to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the NRHP.

Once cultural resources have been identified, an eligibility determination is made according to the criteria set forth in the NHPA. The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

a) That are associated with events that have made a significant contribution to the broad patterns of our history;
b) That are associated with the lives of persons significant in our past;
c) That embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
d) That have yielded, or may be likely to yield, information important in prehistory or history.

Significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the NHPA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it is deteriorated

or destroyed. Direct impacts can be assessed by identifying the types and locations of proposed actions and determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and facilities' subsequent use can disturb or destroy cultural resources.

4.4.2 Impacts

4.4.2.1 Proposed Action

Archaeological Resources

As described in Section 3.4, *Cultural Resources*, the 1996 archaeological field reconnaissance survey encompassed approximately 87 acres on CCAFS, including the entire circular tract of the station within the firebreak. The survey, which was performed with pedestrian linear transects separated by up to 65-foot intervals, uncovered no evidence of archaeological resources (USAF 2017c). An intensive survey was also conducted of selected areas on the station that could be affected by a water supply project completed in September 1992. The intensive survey for the proposed water project was conducted in areas north and west of Building 2, and included subsurface testing at intervals of approximately 30 feet along the route of a proposed water supply pipeline. Of the 15 test units excavated during the survey, 13 indicated past ground disturbance at varying depths from the surface (USAF 2017c). No archaeological resources were identified during either of the archaeological field surveys at CCAFS (USAF 2017c). Further, as described in the CCAFS ICRMP, the station is expected to have low potential for on-site archaeological resources due to previous ground disturbance and development activities in the 1970s and 1980s associated with construction of CCAFS (Macomber 1996; USAF 2017c). Past construction activities within the developed area have not uncovered any archaeological resources.

While highly unlikely, the potential still exists for buried archaeological resources or human remains or historic artifacts to be uncovered during ground-disturbing activities. The relocation of Well #1, which would be located within an existing undeveloped lease area adjacent to Cat Road, could result in limited potential to

uncover previously undiscovered archaeological resources. However, this proposed project site is located within the 87-acre circular tract of land at CCAFS that has been surveyed for archaeological resources and no discoveries were made during the investigation. In addition, the area surrounding the main access road at CCAFS is also undeveloped and was not surveyed during the 1996 archaeological survey; therefore, there is limited potential to uncover archaeological resources during the fence installation. However, this area is immediately adjacent to the paved main access road and was likely disturbed during road construction. Consequently, the potential to uncover unknown archaeological resources during installation of the main access road fence remains low.

In the highly unlikely event that buried archaeological resources are uncovered during construction activities under the Proposed Action, the Massachusetts SHPO would be immediately notified and construction activities would be suspended or otherwise redirected until a qualified archaeologist could document and evaluate the resource(s) for NRHP eligibility, in accordance with the CCAFS ICRMP Section 7.4, *Cultural Discoveries*, and the provisions of applicable law(s) such as Section 106 of the NHPA (36 CFR § 800.13).

Historic Built Resources

As described in Section 3.4, *Cultural Resources*, Building 2 (Technical Facility) and the attached Building 4 (Power Plant) were determined to be eligible for the NRHP, as contributing elements to the historic PAVE PAWS network and its historical role in the Cold War. Under the PA for the PAVE PAWS sites, the USAF was required to prepare a volume on the history of the PAVE PAWS system including photographs and facility designs of the system. As a part of this effort, the USAF documented and filed the required documentation for Building 2 and Building 4 at CCAFS. All of the other facilities of CCAFS are not eligible for listing on the NRHP.

With the exception of the proposed demolition and replacement of the existing loading dock adjacent to Building 2, the projects included in the Proposed Action would not involve modifications to the historic built resources on CCAFS. Replacement of loading dock adjacent to Building 2 would be consistent with the

existing and historic industrial nature/use of the existing facilities. The loading dock is ancillary to the main building, and does not constitute a character defining feature of the facility. Further, replacement and renovation of the loading dock would be completed with in-kind materials, and would not substantially alter the size or location of the existing loading dock. Consequently, the project would not substantially alter the appearance of the building or affect any of the criteria that made it eligible for listing on the NRHP. Complete project plans and specifications would be consistent with the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* and would be submitted to the Massachusetts SHPO for review in accordance with the provisions of 36 CFR Part 800. In addition, the Massachusetts SHPO was contacted on 15 May 2018 regarding the Proposed Action as a part of the agency coordination and Section 106 consultation process associated with this EA (see Appendix B). The Massachusetts SHPO concurred with the determination of *no historic properties affected* on 30 May 2018 (see Appendix B). Based on the information available, demolition and replacement of the loading dock would not substantially affect the exterior of the building and there would be *no effect* to historic built resources at CCAFS.

Federally-Recognized Native American Tribes

Two federally-recognized Native American Tribes have expressed interest in the area of the JBCC, including the Wampanoag Tribe of Gay Head (Aquinnah) and Mashpee Wampanoag Tribe. These tribes were notified of the Proposed Action and consulted on 3 May 2018 as required by AFI 90-2002, which implements DoDI 4710.02, *DoD Interactions with Federally-Recognized Tribes*, as a part of the tribal coordination process associated with this EA. No comments or concerns were received in response to the initial consultation letter or subsequent follow-up communications (see Appendix C).

As described in Section 3.4.2.5, *Federally-Recognized Native American Tribes*, there is currently no evidence that any Native American burial grounds or sacred areas are located on CCAFS that would be subject to the provisions of the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, or NHPA. In addition, the CCAFS ICRMP states that there are no known archaeological resources at CCAFS (USAF 2017c). As previously discussed, while highly unlikely, the potential remains for currently buried,

unknown archaeological resources to be uncovered during ground-disturbing activities, particularly in previously undisturbed areas, such as relocation of Well #1 and installation of the main access road fence. If such resources were uncovered during construction activities under the Proposed Action, the Wampanoag tribes would be notified and construction activities would be suspended or otherwise redirected until a qualified archaeologist could document and evaluate the significance of the resource(s).

Based on current information, tribal trust resources would not have the potential to be impacted by implementation of the Proposed Action. Consequently, implementation of the projects included in the Proposed Action would not significantly impact Native American cultural resources.

4.4.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no construction, renovation, or demolition activities at CCAFS. As there would be no ground disturbance under the No-Action Alternative, this alternative would not result in a potential for human disturbance of previously unknown, buried archaeological resources at CCAFS. Additionally, the existing loading dock adjacent to Building 2 would remain in its current condition, as described in Section 3.4, *Cultural Resources*. No impacts to cultural resources would occur at CCAFS under the implementation of this alternative.

4.4.3 Proposed BMPs

The following BMPs, although not required to reduce potential impacts to less than significant levels, would be implemented in order to avoid potential impacts associated with inadvertent discoveries of buried archaeological resources.

- Although the likelihood of discovering buried archaeological resources would be low, inadvertent discoveries would be processed in accordance with the CCAFS ICRMP, Section 7.4, *Cultural Discoveries*, and the provisions of applicable law(s) such as Section 106 of the NHPA (36 CFR § 800.13).

- The 6 SWS would submit the complete project plans specifications for the renovation of the Building 2 loading to the Massachusetts SHPO for review and approval in accordance with the provisions of 36 CFR Part 800.

4.5 HAZARDOUS MATERIALS AND WASTES

4.5.1 Approach to Analysis

Numerous Federal, state, and local laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The severity of potential impacts associated with hazardous substances is based on their toxicity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be considered significant if the storage, use, transportation, or disposal of hazardous substances substantially increases the human health risk or environmental exposure.

4.5.2 Impacts

4.5.2.1 Proposed Action

Hazardous Materials and Wastes

Implementation of the projects included in the Proposed Action would result in a short-term increase in hazardous materials associated with heavy construction vehicles (e.g., fuel and other petroleum, oils, and lubricants [POLs]) and removal, replacement, and relocation of the three ASTs adjacent to Buildings 10, 50, and 58. Any potential minor spills or releases from heavy construction vehicles would be handled immediately in accordance with the procedures outlined in the CCAFS Spill Prevention Control and Countermeasures Plan. Further, prior to removal, replacement, and relocation of the existing ASTs, all fuels would be drained, removed from the station, and disposed of in accordance with all appropriate Federal and state regulations. All construction, renovation, and demolition activities generating hazardous wastes, including relocation and replacement of three fuel storage tanks, would be conducted consistent with procedures established in the station's ISHWMP. Overall, impacts relating to storage, handling, or exposure to hazardous materials and wastes during construction would be less than significant.

Operationally, implementation of the Proposed Action would not result in any changes to the storage or volume of hazardous materials at CCAFS described in

Section 3.5, *Hazardous Materials and Wastes*. CCAFS would continue to operate as a SQG of hazardous wastes. Hazardous wastes at CCAFS would continue to be accumulated in containers at the SAP located on the north side of the Power Plant before being transferred to the Hazardous Waste Storage Shed adjacent to the Power Plant's south side egress where wastes are transported off-site by Defense Logistics Agency (DLA) Disposition Services for treatment, storage, or disposal at a local permitted facility (USAF 2017b). Additionally, implementation of the Proposed Action would not result in any substantial or long-term increase in the use or generation of hazardous materials or hazardous wastes at CCAFS as no additional use or generation of hazardous materials or hazardous wastes would result from operations associated with the Proposed Action at CCAFS. Therefore, there would be no long-term operational impacts as a result of implementation of the Proposed Action. Further, minor long-term beneficial impacts would result from the replacement and relocation of the existing, corroded fuel storage tanks on new 6-foot by 10-foot concrete pads.

Environmental Restoration Program Sites

As described in Section 3.5.2.4, *Environmental Restoration Program Sites*, there are no known ERP sites at CCAFS. While there was report of a release of petroleum from a facility UST at CCAFS in 1990, the release was abated and the final report determined the response actions were sufficient to eliminate all substantial hazards (USAF 2017b). There have been no other reports of hazardous materials releases, hazardous spills, or potential contamination on the station.

In the highly unlikely event that potentially hazardous materials or wastes that are inadvertently unearthed during construction activities, these materials would be subject to a hazardous waste determination and would be managed appropriately in accordance with Federal and state regulations and in compliance with the procedures included in the station's ISHWMP (USAF 2017b).

Asbestos and Lead-based Paint

According to the CCAFS ISHWMP, all construction and demolition debris generated from construction, renovation or demolition activities known to disturb ACM are treated as asbestos-containing waste (USAF 2017b). As described in

Section 3.5.2.5, *Asbestos*, asbestos-containing waste is managed on project-by-project basis by a licensed ACM abatement contractor, with cooperation and oversite from the 6 SWS BENV. All ACM waste is properly containerized, stored in a designated area, and processed for disposal through a licensed contractor, who is required to comply with all applicable Federal and state regulations on asbestos abatement.

Similarly, construction and demolition debris generated from the construction, renovation, or demolition activities known to disturb lead-containing materials would be managed in accordance with all applicable Federal and state transportation, occupational health, treatment, storage and disposal requirements. 6 SWS Civil Engineering oversees and coordinates lead-based paints activities, including disposal, in accordance with applicable Federal and state regulations (USAF 2017b). Therefore, implementation of the Proposed Action would not result in substantial impacts associated with hazardous wastes, including ACM or lead-based paint, or result in any increase in the use or long-term generation of hazardous materials or hazardous wastes.

4.5.2.2 No-Action Alternative

Under the No-Action Alternative, the projects included in the Proposed Action would not be implemented. Consequently, the three exterior fuel storage tanks in close proximity to Buildings 10, 50, and 58 would not be replaced and relocated on new concreate pads to meet safety regulations and UFCs. No short-term increase in hazardous materials due to construction activities would occur and conditions would remain as described in Section 3.5, *Hazardous Materials and Wastes*. Therefore, there would be no beneficial impact to hazardous materials and wastes under the No-Action Alternative.

4.5.3 Proposed BMPs

The following BMPs, although not required to reduce potential impacts to less than significant levels, would be implemented in order to avoid potential impacts associated with accidental spills and potential inadvertent discoveries of hazardous materials.

- Construction equipment would be regularly inspected for leaks daily throughout the duration of construction. Any potential minor spills or releases would be handled according to procedures outlined in the CCAFS Spill Prevention Control and Countermeasures Plan.

- To reduce worker exposure potential during construction, a Site-Specific Health and Safety Plan would be implemented. The Health and Safety Plan would be designed to evaluate each of the chemicals present in the work area and the potential exposure scenarios/paths. Based on this evaluation, the Health and Safety Plan identifies levels of personal protection through personal protective equipment (PPE), engineering mechanisms and/or worker practices. In the event hazardous material is discovered, or used, it would be identified, accumulated and removed in accordance with Federal, state, and local laws/regulations and in compliance with the procedures included in the ISHWMP, Section 4.5.3, *Hazardous Waste Turn-In Procedures*.

4.6 SAFETY

4.6.1 Approach to Analysis

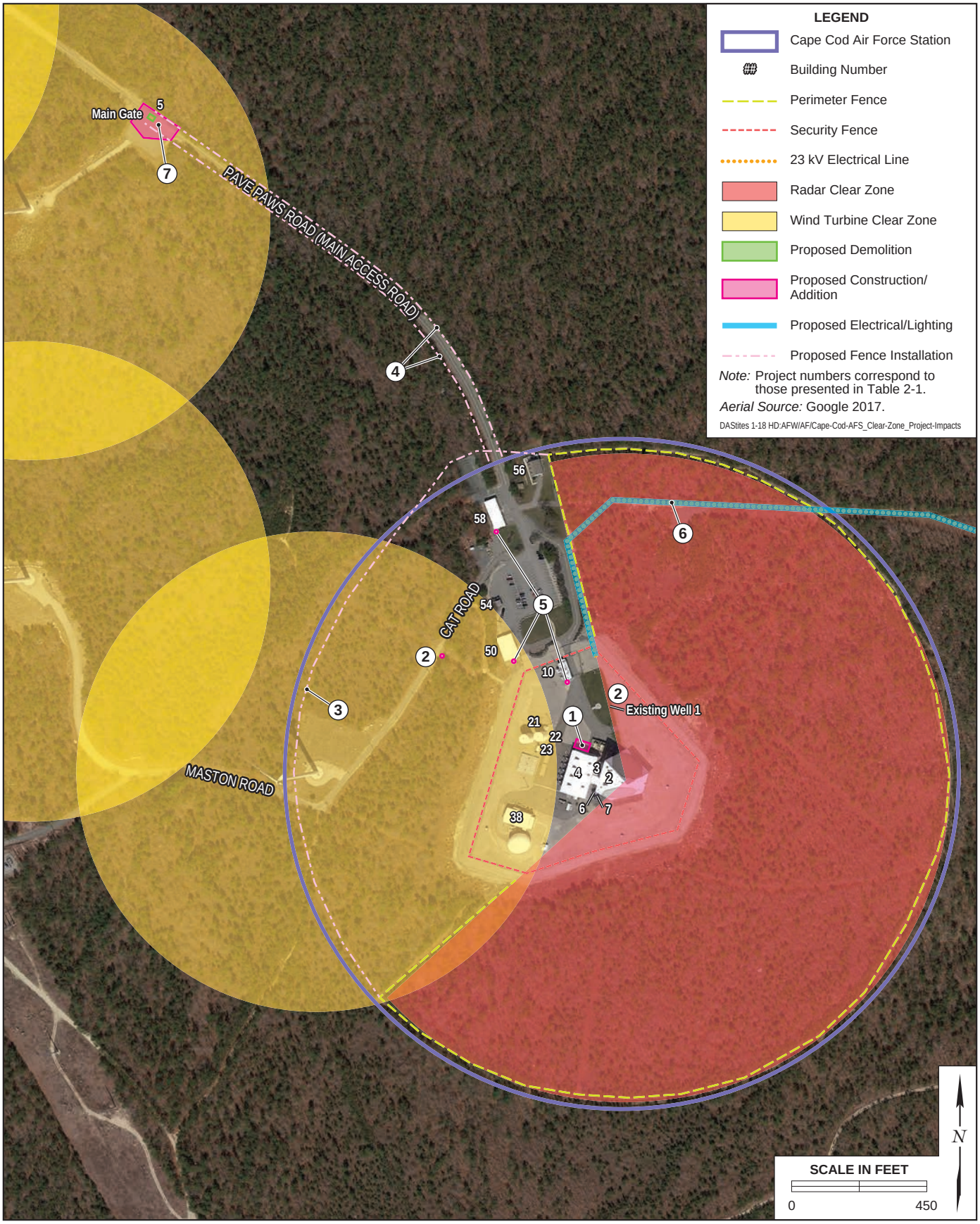
Human health and safety are defined as the conditions, risks, and preventative measures associated with a facility and its ability to potentially affect the health and safety of facility personnel or the general public. The OSHA, USEPA, and National Fire Protection Agency issue standards regarding personnel training, preventative controls, and other occupational health and safety matters. If implementation of an action would substantially increase safety risk relevant to the public or the environment, it would represent a significant impact.

Further, if implementation of the Proposed Action would result in incompatible land use with regard to safety criteria such as WTCZs or RCZs, or AT/FP setbacks, impacts would be considered to be significant.

4.6.2 Impacts

4.6.2.1 Proposed Action

All of the projects included in the Proposed Action are sited and designed to comply with appropriate safety criteria. Under the Proposed Action, the existing loading dock adjacent to Building 2 would be demolished and renovated to provide additional space when the loading doors are opening. The new loading dock would include a 10-foot by 10-foot concrete pad and stairs with handrails leading up to the docking platform, as well as an exterior passive infrared (PIR) motion sensor light over the loading dock. With these proposed improvements to the existing loading dock adjacent to Building 2, the new loading dock would be compliant with all applicable IBC and OSHA codes (e.g., 29 CFR Part 1910, § 1910.176, *Handling Materials*). In addition to the proposed new loading dock, Well #1, which is currently located in the Restricted Area, would be removed and relocated outside of all clear zones at CCAFS to meet MassDEP standards for Zone I wellheads (310 CMR 22.00, *Drinking Water Regulations*). Consequently, implementation of the projects included in the Proposed Action would generally result in minor beneficial impacts to safety at the station.



EA

Clear Zone Project Impacts

FIGURE 4-1

No warranty is made by the USAF as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

Wind Turbine Clear Zones and Radar Clear Zones

Four projects included in the Proposed Action would be sited within WTCZs, including the relocation of Well #1, the installation of the perimeter fence, the relocation and replacement of fuel storage tank adjacent to Building 50, and the replacement and upgrades to the existing main gate. However, the guard shack at the existing main gate would remain unoccupied (i.e., monitored remotely by camera) following replacement and upgrades to the main gate in order to avoid safety risks to personnel. As such, consistent with safety requirements in the station's IDP, all of the proposed facilities (e.g., ground water well, fencing, aboveground storage tank, main gate) sited within WTCZs are low-value, unoccupied facilities or ancillary structures. Additionally, construction of facilities sited within the WTCZs would occur between late spring and early fall to avoid potential safety risks to construction personnel associated with falling snow or ice debris from adjacent wind turbines. Therefore, the proposed Projects would be compatible with implementation of the station's land use requirements and the Proposed Action would not result in danger or public safety risks. Potential impacts associated with the WTCZs at CCAFS would be considered less than significant.

Implementation of the Proposed Action would not site any buildings or structures within the RCZ. Therefore, the Proposed Action would result in no impacts associated with the RCZ.

Anti-Terrorism/Force Protection

Several projects included in the Proposed Action address existing AT/FP-related deficiencies at CCAFS, including installation of the perimeter fence, installation of a main access road fence, undergrounding the 23-kV electrical line, and replacement and upgrades to the existing main gate. The existing incomplete perimeter fence surrounding CCAFS consists of an approximate 2,500-foot gap, leaving the station vulnerable to security and terrorism threats. Implementation of the Proposed Action would include installation of a chain link fence across the gap to address this issue and reduce potential vulnerabilities at the station. CCAFS is also lacking a main access road fence. The proposed fence would line both sides of the main access road, setback approximately 10 feet from the road, to meet

AT/FP requirements. Additionally, the existing above ground 23-kV electrical line located along Flatrock Road, which is integral to powering the radar at CCAFS, is vulnerable to tampering due to its current location above ground and outside of the fenced area. Under the Proposed Action, approximately 4,000 feet of utilities would be undergrounded in the area adjacent to Flatrock Road to prevent security and terrorism threats. Further, the existing main gate at CCAFS consists of several AT/FP concerns. The existing main gate is only monitored remotely by camera, and does not contain any defined areas with supporting infrastructure for vehicle inspection or vehicle denial capabilities (i.e., pop-up bollards). Consequently, the current configuration of the main gate does not provide adequate security to CCAFS and does not meet AT/FP requirements (e.g., UFC 4-16 022-01, *DoD Minimum Antiterrorism Standards for Buildings*). The Proposed Action would include demolition and replacement of the existing guard shack with the addition of a vehicle inspection pit and stationary and pop-up bollards to provide vehicle denial capabilities at the main gate.

The construction, renovation, and demolition activities included in the Proposed Action would address security and AT/FP concerns with the existing infrastructure at CCAFS. Therefore, implementation of the Proposed Action would result in beneficial impacts associated with AT/FP issues at CCAFS.

4.6.2.2 No-Action Alternative

Under the No-Action Alternative, the construction, renovation, and demolition activities would not occur. Consequently, there would be no beneficial impacts to existing AT/FP concerns, associated with installation of a perimeter fence, installation of a main access road fence, undergrounding of the 23-kV electrical line, and replacement and upgrade of the existing main gate. For example, the lack of proper fencing and vehicle denial capabilities at the existing main gate would leave the station susceptible to security risks. Additionally, there would be no beneficial safety impacts associated with proposed renovated loading dock adjacent to Building 2.

SECTION 5
CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of an individual action when combined with other past, present, and reasonably foreseeable future projects in an affected area. Cumulative impacts generally result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (e.g., Federal, state, or local) or persons. In accordance with NEPA, a discussion of cumulative impacts resulting from projects proposed, under construction, recently completed, or anticipated to be implemented in the near future is required.

5.1 CUMULATIVE IMPACTS ANALYSIS

5.1.1 Approach to Cumulative Impacts Analysis

Cumulative effects may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the Proposed Action can be reasonably expected to have more potential for cumulative effects on "shared resources" than potential actions that may be geographically separated. Similarly, actions that coincide temporally would tend to offer a greater potential for cumulative effects. CEQ guidelines require that potential cumulative impacts be considered over a specified time period (i.e., from past through future). The appropriate time for considering past, present, and reasonably foreseeable future projects can be the design life of a project, or future timeframes used in local master plans and other available predictive data. Determining the timeframe for the cumulative impacts analysis requires estimating the length of time the impacts of an action would last and considering specific resources in terms of their history of degradation (CEQ 1997).

Per CEQ guidelines for considering cumulative effects under NEPA (CEQ 1997), this cumulative impact analysis includes three primary considerations to:

1. Determine the scope of the cumulative analysis, including relevant resources, geographic extent, and timeframe;
2. Conduct the cumulative effects analysis; and

3. Determine the cumulative impacts to relevant resources.

The Proposed Action is limited to infrastructure improvements and upgrades at CCAFS. As such potential impacts associated with the Proposed Action would be limited to short-term, temporary impacts during construction. The only potential operational impacts that would result from implementation of the Proposed Action would be minor beneficial impacts related to safety and addressing existing AT/FP concerns at the station (refer to Section 4.5, *Hazardous Materials and Wastes* and Section 4.6, *Safety*).

5.1.2 Cumulative Projects Off-Station

5.1.2.1 Local Residential and Commercial Development

The majority of the proposed construction, renovation, and demolition projects included in the Proposed Action are located within the central developed area of CCAFS, with the exception of the main access road fence and the replacement and upgrades to the existing main gate, which are located closer to the Mid Cape Connector, a public road to the north of the station. All of the proposed construction, demolition, and renovation activities included in the Proposed Action are located more than 0.5 miles from residential and commercial development within Sagamore and the Town of Bourne. As such, with the exception of negligible increases in heavy haul truck activities, and associated negligible short-term temporary impacts to air quality, the projects included in the Proposed Action at CCAFS would not have a noticeable effect on local off-site developments.

The Cape Cod Commission recently completed the Bourne Bridge Rotary Study in March 2014 to initiate preliminary planning for replacement of the Bourne Rotary, which has been identified as a high-accident location in Barnstable County. Reconfiguration of the transportation network surrounding the Bourne Rotary is expected to be implemented in 1-3 years. This project is anticipated to result in short-term temporary impacts to air quality, noise, and transportation and circulation during construction. However, the rotary is located more than 2.5 miles east of the CCAFS and would not be used by heavy haul trucks supporting proposed construction, demolition, and renovation activities at the station. As such, potential short-term, temporary construction-related impacts at

CCAFS as a result of the Proposed Action would not substantially contribute to cumulative impacts associated with this project.

5.1.2.2 JBCC

CCAFS is located within JBCC, a military commands training installation with ongoing airborne search and rescue missions as well as intelligence command and control. The Massachusetts Military Reservation Joint Land Use Study Update was recently completed in October 2013 at the JBCC. The primary goal of the program is to plan for future community growth and development that will be compatible with the training and operational missions of the base. In particular, the plan update focused on Land Use Restriction and Acquisition, Water Supply and Wastewater Infrastructure, Transportation, Communication, Air Safety, and Noise issues at the base. As such, it is expected that the highest-priority concerns at the JBCC include land use, water resources, transportation and circulation, and noise. However, while the projects included in the Proposed Action would result in short-term, temporary less than significant construction impacts, they would not have impacts on these resource areas evaluated in the Joint Land Use Study Update (refer to Section 1.7, *Scope of the Environmental Assessment*) and therefore would not substantively contribute to any potential cumulative impacts.

5.1.3 Cumulative Projects at Cape Cod Air Force Station

For the purposes of this EA, a review of recently completed, in-progress, and planned construction and demolition projects was conducted. The projects described below are planned for development at CCAFS within the next 15 years:

5.1.3.1 Massachusetts Army National Guard Property Acquisition for New Dorm and Fitness Center

CCAFS has long-term plans (i.e., 2028 and beyond) to acquire 14 acres of land from the Massachusetts ARNG to support a new dormitory and fitness center for CCAFS airmen. The edges of this acquisition area would be bound by the WTCZs currently outside of CCAFS property.

The existing housing provided for CCAFS airmen is located on USCG property and in towns throughout the Cape Cod region. Additionally, the existing facility used for physical training tests for CCAFS airmen is in Hanscomb, 60 miles away from the station. In order to provide on-site housing, reduce traffic, and promote operational efficiency, CCAFS is proposing to construct a new dorm and fitness center within the acquisition area described above. This new facility would require an Environmental Baseline Survey (EBS) to evaluate potential existing contamination on the proposed site and in the immediate vicinity. An alternative location for this new dorm and fitness center would be on USCG property. Since this alternative property is a former USAF housing area, sewer and other utilities would be readily available on-site. However, new housing structures would still need to be constructed due to the substandard, unsuitable units currently at the site. Implementation of this alternative would also require installation of an all-weather road, as well as regular snow/weather maintenance.

While the Proposed Action would result in short-term, temporary construction-related impacts, construction activities would be completed by FY 2021 and would not interact with or contribute to potential cumulative impacts associated with longer-term development at CCAFS.

5.1.3.2 Secondary Access Road

Due to the isolated location of CCAFS and dense forest surroundings, the station is vulnerable to downed trees, flooding, fire, and other causes of potential road closures. A maintainable road providing secondary access to and from the station would resolve this basic life and safety issue. There are two route options for a secondary access road. The first option runs southwest along Cat Road and then northwest along Maston Road. The second option follows Flatrock Road east away from the station, and is the preferred option for a secondary access road at CCAFS. However, this proposed road alignment is currently comprised of dirt and gravel along large segments. This long-term project (i.e., 2028 and beyond) would require improvements to establish an all-weather road through the JBCC. The proposed roadway would pass through active impact areas, with unexploded ordnance (UXO) issues.

While the Proposed Action would result in short-term, temporary construction impacts, construction activities would be completed by FY 2021 and would not interact with or contribute to potential cumulative impacts associated with longer-term development at CCAFS.

5.1.3.3 Wildland Fire Management Plan

The original Wildland Fire Management Plan for CCAFS was prepared in 2000 with an EA that was completed in 2002. However, recent surveys have observed NLEB on adjacent JBCC property within the vicinity of CCAFS. Acoustic surveys were initiated at CCAFS in May 2017 to determine the presence of NLEB on the station. These surveys were completed in 2018 and no NLEB individuals were detected. However, development and implementation of a new Wildland Fire Management Plan could still potentially trigger Section 7 consultation under the Federal ESA and may require preparation of a new Biological Assessment for potential impacts to federally listed species, including NLEB.

5.1.4 Cumulative Impact Analysis

Implementation of the Proposed Action would involve several construction, renovation, and demolition projects planned for in the CCAFS IDP. The projects included in the Proposed Action include minor vegetation clearing along approximately 1,650 feet of the main access road as well as limited vegetation removal required to support the proposed relocation of Well #1. Implementation of the projects included in the Proposed Action would bring CCAFS into compliance with safety regulations and UFC 4-010-01, *Minimum Antiterrorism Standards for Buildings*. Under the Proposed Action construction, demolition, and renovation activities would occur in FY 2018 and FY 2021.

The following resource analyses address potential impacts associated with cumulative project activities in addition to the projects analyzed under the Proposed Action at CCAFS. No significant cumulative impacts would result from implementation of the projects included in the Proposed Action, when evaluated in conjunction with the projects identified above in Section 5.1.3, *Cumulative Projects at Cape Cod Air Force Station*.

5.1.4.1 Air Quality

Implementation of the projects included in the Proposed Action would result in a short-term temporary increase in construction-related fugitive dust and combustion emissions. However, implementation of these projects as well as all individual cumulative projects would be required to implement standard construction BMPs to reduce fugitive dust and combustion emissions during construction activities to acceptable levels below *de minimis* thresholds (refer to Section 4.1.3, *Proposed BMPs*). As shown in Table 4-2 in Section 4.1, *Air Quality*, annual construction emissions associated with the projects included in the Proposed Action would not exceed *de minimis* thresholds. As such, these projects would not significantly contribute to potential cumulative construction impacts at CCAFS associated with the new dorm and fitness center, secondary access road. While the new Wildland Fire Management Plan has the potential to result in impacts to air quality, CCAFS currently follows the existing Wildland Fire Management Plan and impacts to air quality are expected to remain similar. Further, the projects included in the Proposed Action would not result in a long-term overall increase in operational air emissions. Therefore, the Proposed Action along with the other identified cumulative projects would not contribute substantially to any potential cumulative impacts to regional air quality.

5.1.4.2 Biological Resources

Overall cumulative impacts to biological resources would be minor at CCAFS. It is not anticipated that implementation of the projects included in the Proposed Action and the other individual cumulative projects would result in the substantial loss of valuable habitat in the regional. Tree and vegetation clearing may be required for implementation of the proposed new dorm and fitness center at CCAFS. However, these forested habitats are present throughout a majority of the 20,000-acre JBCC property and are not unique to the area proposed for acquisition. While tree removal may also be required for construction of a secondary access road, this would be minor since Flatrock road has already been cleared of vegetation. The new Wildland Fire Management Plan has the potential to result in impacts to vegetation from prescribed burns; however, CCAFS currently follows the existing Wildland Fire Management Plan and impacts to vegetation are expected to remain similar to existing conditions. A majority of the projects

included in the Proposed Action would be implemented in previously developed areas and would not require vegetation removal. Though two projects included in the Proposed Action (i.e., relocation of Well #1 and installation of the main access road fence), these project sites are located immediately adjacent to existing development and would involve only minor tree clearing. Further, BMPs would be implemented during all construction projects to minimize impacts to vegetative cover at CCAFS (refer to Section 4.2.3, *Proposed BMPs*).

Implementation of the projects included in the Proposed Action could potentially impact wildlife species through short-term disturbances resulting from increased noise and human presence associated with construction activities at the station. In order to avoid impacts to known special status moth and butterfly species within CCAFS, vegetation removal would avoid the breeding season for these species. Vegetation removal would also avoid nesting bird season as well as NLEB pup season (refer to Section 4.2.3, *Proposed BMPs*). With the implementation of standard construction BMPs, the projects included in the Proposed Action would not contribute to cumulative impacts to biological resources.

5.1.4.3 Geology and Soils

Overall cumulative impacts to geology and soils at CCAFS would be minor. Individual projects included in the Proposed Action would be located on or immediately adjacent to previously developed lands at CCAFS. As such, the proposed project sites are capable of supporting development. Further, projects included in the Proposed Action may require minor grading and excavation, however none of the proposed construction activities would affect the underlying bedrock geology. The majority of CCAFS property is underlain by Plymouth-Barnstable complex, rolling, and extremely bouldery soil, which is capable of supporting development. Additionally, overlapping cumulative projects at the JBCC would be subject to the environmental review process, and would require consideration of project effects on geology and soils. Cumulative projects would also likely implement similar sedimentation and erosion control BMPs as planned for construction associated with the Proposed Action. Therefore, cumulative projects would not result in adverse effects to geology and soils.

5.1.4.4 Cultural Resources

Individual projects at CCAFS require consultation with the SHPO prior to commencement of construction activities, in accordance with Section 106 of the NHPA. Concurrence from the SHPO on individual projects would ensure that implementation of overlapping cumulative projects would not result in significant cumulative impacts to historic or archaeological resources. Additionally, the Installation Tribal Liaison Officer at CCAFS maintains ongoing consultation efforts with the two Wampanoag tribes with interest in the area on a project-by-project basis. As such, tribal concerns would be considered for each individual action and overlapping cumulative construction projects at CCAFS would not have a cumulative impact on tribal cultural resources.

5.1.4.5 Hazardous Materials and Wastes

The potential for overlapping cumulative construction projects at CCAFS could have a cumulative impact associated with the temporary increase in the storage, use, or generation of hazardous materials and wastes at the station. However, as with the Proposed Action, during construction of the new dorm and fitness center as well as the secondary access road the use and disposal of hazardous materials and wastes (e.g., ACM) would be handled in accordance with all appropriate Federal and state regulations as well as the CCAFS ISHWMP (USAF 2017b). Therefore, cumulative projects are not expected to increase impacts to areas of concern at CCAFS and cumulative impacts to hazardous materials and wastes would be less than significant.

5.1.4.6 Safety

The Proposed Action includes several projects designed to improve safety and security at CCAFS. Implementation of the Proposed Action as well as implementation before other identified cumulative projects (i.e., secondary access road) would address existing safety risks and AT/FP threats on CCAFS. Several projects included in the Proposed Action (i.e., completion of the perimeter fence, installation of the main access road fence, undergrounding of the 23-kV electrical line and replacement of the main gate) are specifically designed to reduce vulnerability to security and terrorism threats and to bring the station into

compliance with UFC 4-010-01, *Minimum Antiterrorism Standards for Buildings*. Renovation of the loading dock adjacent to Building 2 would bring the existing loading dock into compliance with applicable IBC and OSHA codes (e.g., 29 CFR § 1910.176, *Handling Materials*). In addition, installation of a secondary access road would reduce potential safety hazards associated with downed trees, flooding, fire, and other causes of potential road closures. Further, all projects, including those included in the Proposed Action as well as those identified as other cumulative projects, would comply with OSHA requirements to ensure protection of workers and the general public during construction. Consequently, there would be no significant cumulative impacts to safety or occupational health as a result of the implementation of the projects included in the Proposed Action.

5.1.5 Relationship Between Short-Term Uses and Enhancement of Long-Term Productivity

CEQ regulations (40 CFR § 1502.16) specify that environmental analyses must address "…the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity." Special attention should be given to impacts that narrow the range of beneficial uses of the environment in the long-term or pose a long-term risk to human health or safety. A short-term use of the environment is generally defined as a direct consequence of a project in its immediate vicinity. Changes to long-term productivity generally refer to negative impacts to the long-term quality of the land, air, or water.

The Proposed Action would primarily involve the use of previously developed areas within the station. Minor tree and vegetation removal would be required for the relocation of Well #1 and the installation of the fence along the main access road. However, tree removal would be limited to areas adjacent to existing development (e.g., along the main access roadway) and would be negligible relative to the existing undeveloped forested areas at JBCC. Additionally, as described in Section 4.2, *Biological Resources*, BMPs would be implemented to ensure that impacts to vegetation would be kept to a minimum (refer to Section 4.2.3, *Proposed BMPs*). No croplands, pastureland, or wetlands would be modified or affected as a result of implementing the Proposed Action and, consequently, productivity of the area would not be degraded.

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SECTION 6
REFERENCES

Council on Environmental Quality (CEQ). 1997. Guidance under the National Environmental Policy Act. Accessed: 7 September 2017. Retrieved from: https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf

Davin, A.K., and J. Gallagher. 1989. "Cultural Resource Reconnaissance of Camp Edwards Training Site." Report submitted to Corps of Engineers, New England Division, and Massachusetts Army National Guard by The Public Archaeology Laboratory, Inc., Pawtucket, RI.

Fletcher, Peter C. 1993. "Soil Survey of Barnstable County, Massachusetts."

Lloyd Center for Environmental Studies. 2010. "Inventory of Threatened and Endangered Species / Species of Special Concern at Cape Cod Air Force Station, Massachusetts."

Macomber, G.M. 1996. "Archaeological Investigations at the Cape Cod Air Force Station in Bourne, Massachusetts." Report submitted to Martin Marietta Energy Systems, Inc., Oak Ridge, TN.

Massachusetts Department of Environmental Protection (MassDEP). 2012. "Modified Restricted Emissions Status Approval."

——. 2017. Ambient Air Quality Standards for the Commonwealth of Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/service/regulations/310cmr06.pdf.

Massachusetts Division of Fish and Wildlife. 2017. List of Endangered, Threatened, and Special Concern species. Mass.gov. Accessed: 8 January 2018. Available at: https://www.mass.gov/service-details/list-of-endangered-threatened-and-special-concern-species

Massachusetts Historical Commission. 1987. "Historic and Archaeological Resources of Cape Cod and the Islands."

Massachusetts Office of Geographic Information (MassGIS). 1999. MassGIS Data - U.S. EPA Ecoregions. Available at: http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/eco-reg.html

National Oceanic and Atmospheric Administration (NOAA). 2017. "1981-2010 Normals - East Wareham, MA US." 2017. Available at: https://www.ncdc.noaa.gov/cdo-web/datatools/normals.

Natural Heritage and Endangered Species Program. 1997. "Biological Survey of Cape Cod Air Force Station, Bourne, Massachusetts." Bourne, Massachusetts.

U.S. Air Force (USAF). 1999. "Endangered Lepidoptera Study."

——. 2005. Invasive Plant Species Control Plan Cape Cod Air Force Station, Massachusetts.

——. 2016. "2016 Criteria Pollutant Emissions." Comprehensive Stationary Air Emissions Inventory. Cape Cod Air Force Station.

——. 2017a. "Installation Development Plan for Cape Cod Air Force Station, Massachusetts."

——. 2017b. "Integrated Solid and Hazardous Waste Management Plan."

——. 2017c. "U.S. Air Force Integrated Cultural Resources Management Plan - Cape Cod Air Force Station."

——. 2017d. "U.S. Air Force Integrated Natural Resources Management Plan - Cape Cod Air Force Station."

U.S. Department of Agriculture (USDA). 2017. "Custom Soil Resource Report for Barnstable County, Massachusetts." Web Soil Survey. 2017. Available at: https://websoilsurvey.sc.egov.usda.gov/WssProduct/n2v542maiiqnn0asgvrwnqpk/GN_00001/20171019_13525701027_44_Soil_Report.pdf.

U.S. Environmental Protection Agency (USEPA). 1972. "Federal Air Quality Control Regions. U.S. Environmental Protection Agency, Rockville, Maryland." 1972. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P10054HI.PDF.

——. 2006. "Supplements to the Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources." Available at: http://www.epa.gov/ttn/chief/publications.html.

——. 2011. "AP-42: Compilation of Air Emission Factors, Fifth Edition, Volume I: Stationary Point and Area Sources. U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1995 - December 2002. Last Update in 2011." Policies and Guidance. 2011. Available at: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors.

——. 2014. "2014 National Emissions Inventory (NEI) Data." Policies and Guidance. 2014. Available at: https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data.

——. 2016. National Ambient Air Quality Standards Table. Policies and Guidance. Accessed: 7 October 2016. Available at: https://www.epa.gov/criteria-air-pollutants/naaqs-table

——. 2017. "Current Nonattainment Counties for All Criteria Pollutants | Green Book." 2017. Available at: https://www3.epa.gov/airquality/greenbook/ancl.html.

USEPA and U.S. Department of Transportation, National Highway Traffic Safety Administration. 2012. Final Rule for Model Year 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards.

U.S. Fish and Wildlife Service (USFWS). 2015. Listed species believed to or known to occur in Massachusetts. Environmental Conservation Online System (ECOS). Accessed: 8 January 2018. Available at:

https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=MA&status=listed

——. 2016. Key to the Northern Long-Eared Bat 4(d) Rule for Federal Actions that May Affect Northern Long-Eared Bats. Accessed: 18 January 2018. Available at: https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/KeyFinal4dNLEB_FedAgencies17Feb2016.pdf

Whorton, M. and J.F. Hoffecker. 1998. Historic Properties of the Cold War Era: Cape Cod Air Station, Massachusetts. Report prepared by Argonne National Laboratory for the 21st Space Wing, Air Force Space Command, Colorado Springs, CO.

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