



***– Final –***

# **Environmental Assessment for New Hampshire Tracking Station B-Side Remote Tracking Station Block Change at New Boston Air Force Station, New Hampshire**

*Prepared for:* **Satellite Control and Network Systems Division  
Space and Missile Systems Center  
Los Angeles Air Force Base, California**

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Los Angeles Air Force Base, California**

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| 14. ABSTRACT<br><br>This Environmental Assessment (EA) documents the potential environmental impacts of the construction and operation of the New Hampshire Tracking Station B-Side radome antenna at New Boston Air Force Station (NBAFS), New Hampshire. The Proposed Action also includes the decommissioning of one of the legacy antenna facilities at NBAFS. |                             |                              |                                          |                                 |                                                             |  |
| 15. SUBJECT TERMS                                                                                                                                                                                                                                                                                                                                                  |                             |                              |                                          |                                 |                                                             |  |
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**FINDING OF NO SIGNIFICANT IMPACT  
ENVIRONMENTAL ASSESSMENT FOR NEW HAMPSHIRE TRACKING STATION B-SIDE  
REMOTE TRACKING STATION BLOCK CHANGE AT  
NEW BOSTON AIR FORCE STATION, NEW HAMPSHIRE**

AGENCY: United States Air Force (USAF)

**BACKGROUND:** The USAF prepared an Environmental Assessment (EA) to evaluate the potential environmental consequences of the installation and operation of the New Hampshire Tracking Station B-Side (NHS-B) Remote Tracking Station Block Change (RBC) at New Boston Air Force Station (NBAFS), New Hampshire. The attached EA, which is hereby incorporated by reference, was prepared in accordance with the National Environmental Policy Act (NEPA); Executive Order 12114 (*Environmental Effects Abroad of Major Federal Actions*); Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); and 32 CFR Part 989 (*Environmental Impact Analysis Process*).

**DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:** The Proposed Action is the construction of a new NHS-B antenna facility and the decommissioning of the legacy Automated Remote Tracking Station (ARTS) B-Side antenna facility. Construction of the new B-Side antenna would occur at the same location of the recently demolished ARTS legacy A-Side antenna, which was previously analyzed in the USAF's *Environmental Assessment for Replacement of the NHS-A Satellite-Tracking Antenna at New Boston Air Force Station, New Hampshire* (2001) and is hereby incorporated by reference. Construction and installation requirements for the new antenna dish would include a foundation, ringwall, pedestal, and inflatable radome. The Proposed Action also includes installation of an electronics suite at the existing operations building and placement of a trenched cable link to the new antenna. The Proposed Action would bring the B-Side antenna configuration into compliance with the operational requirements for the Satellite Control System. Construction of the new antenna is expected to begin in mid-Calendar Year 2011.

**ENVIRONMENTAL EFFECTS:** The USAF assessed potential impacts of the Proposed Action at NBAFS. For this location, the following resources could be affected and were analyzed in the EA: air quality, noise, water resources, biological resources, cultural resources, safety and occupational health, and hazardous materials and waste management. Within the Global Atmosphere, potential impacts on global warming and the stratospheric ozone layer were also assessed. A summary of the analysis results is provided below.

**New Boston Air Force Station**

Short-term minor and long-term negligible effects on air quality would be expected. The total direct and indirect emissions from the Proposed Action would be *de minimis* (of minimal importance), not be regionally significant, and not contribute to a violation of NBAFS's air operating permit or any air regulation. Short- and long-term increases in noise would occur during construction activities, and the maintenance and operation of the antenna's backup generator. Operations would not likely generate disruptive noise levels for any sensitive receptors or for any off-station areas. Because of the protection measures to be implemented, and the lack of ponds, streams, wetlands, well-defined drainages, or water supply wells near the project area, no significant impacts to water resources are expected.

Impacts to biological resources would be minimal because all of the proposed activities would occur in already developed areas that have relatively low habitat value and species diversity. No Federally listed species are known to occur within the project area, and potential impacts to the state-listed Blanding's turtle and Eastern hognose snake would not be significant. In addition, radio frequency (RF) radiation from operation of the new antenna is not expected to harm bird or bat species flying in the area.

No archaeological resources have been identified within the proposed construction area, and the project area is previously disturbed and developed. Decommissioning of the ARTS legacy B-Side antenna facility would not constitute an adverse impact on a known Cold War facility. The USAF currently has no plans to alter or demolish the facility, or remove equipment from it. For the proposed activities at NBAFS, all program personnel would be required to comply with applicable USAF and Federal health and safety regulations and standards. All construction-related activities would occur well within the Station boundaries. By adhering to established and proven safety standards and procedures, the level of risk to all personnel and the public would be minimal. For RF transmissions, the new antenna would be operated and sustained in accordance with established USAF and industry health standards and requirements. During operations of the antenna, RF surveys would be conducted to validate the calculated and estimated safe distances and safe exposure limits for uncontrolled (general population) and controlled (employees) personnel. NBAFS personnel and contractors would manage all hazardous materials in accordance with well-established policies and procedures. In the event that unexploded ordnance is discovered during excavation activities, explosive safety procedures have been established to recover the material or detonate it in-place. Hazardous and non-hazardous wastes would be properly disposed of in accordance with applicable Federal, state, local, and USAF regulations. Hazardous material and waste-handling requirements would not exceed current capacities and management programs would not have to change.

#### **Global Atmosphere**

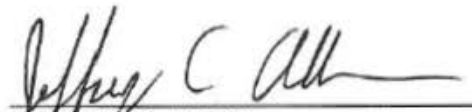
Regarding potential effects on the global atmosphere, the Proposed Action would not release any ozone-depleting gases that could impact the stratospheric ozone layer. Additionally, the limited amount of greenhouse gas emissions would not contribute significantly to global warming.

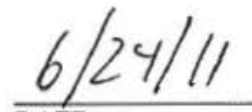
**PUBLIC REVIEW AND COMMENT:** For the Proposed Action at NBAFS, the USAF published an availability notice for public review of the Draft EA and Draft Finding of No Significant Impact (FONSI) in the New Hampshire *Union Leader* newspaper on April 12 and 13, 2011, initiating a 15-day review period that ended on April 27, 2011. During this time, the USAF placed copies of the Draft EA in local libraries. The USAF received no public comments during the review period. One agency, however, responded with their concurrence.

**POINT OF CONTACT:** The point of contact for questions, issues, and information relevant to the EA for NHS-B is Mr. Leonard Aragon, SMC/ENC, 483 North Aviation Boulevard, El Segundo, CA, 90245-2808. Mr. Aragon also can be reached by calling (310) 653-1222, by facsimile at (310) 653-1210, or by e-mail at [Leonard.Aragon@losangeles.af.mil](mailto:Leonard.Aragon@losangeles.af.mil).

**CONCLUSION:** An analysis of the Proposed Action concludes that its implementation will not have significant environmental impacts on the human and natural environment, either by itself or cumulatively with other actions. After thoroughly considering the facts herein, the undersigned finds that the Proposed Action is consistent with existing environmental policies and objectives set forth in NEPA and its implementing regulations. Therefore, an Environmental Impact Statement is not required.

#### **APPROVED:**

  
JEFFREY C. ALLEN  
SES, DAF  
Director of Logistics, Installations  
and Mission Support

  
DATE

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## **ACRONYMS AND ABBREVIATIONS**

|                 |                                                                       |
|-----------------|-----------------------------------------------------------------------|
| 50SW            | 50th Space Wing                                                       |
| AFB             | Air Force Base                                                        |
| AFI             | Air Force Instruction                                                 |
| AFOSH           | Air Force Occupational Safety and Health                              |
| AFSCN           | Air Force Satellite Control Network                                   |
| AFSPC           | Air Force Space Command                                               |
| ANL             | Argonne National Laboratory                                           |
| ANSI            | American National Standards Institute                                 |
| AOC             | Area of Concern                                                       |
| AoT             | Alteration of Terrain                                                 |
| AQCR            | Air Quality Control Region                                            |
| ARPA            | Archaeological Resources Protection Act                               |
| ARTS            | Automated Remote Tracking Station                                     |
| BMP             | Best Management Practice                                              |
| C               | Celsius or Carbon                                                     |
| CAA             | Clean Air Act                                                         |
| CEQ             | Council on Environmental Quality                                      |
| CERCLA          | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFC             | Chlorofluorocarbons                                                   |
| CFR             | Code of Federal Regulations                                           |
| CH <sub>4</sub> | Methane                                                               |
| cm              | Centimeter                                                            |
| CNHR            | Code of New Hampshire Rules                                           |
| CO              | Carbon monoxide                                                       |
| CO <sub>2</sub> | Carbon dioxide                                                        |
| CY              | Calendar Year                                                         |
| dB              | Decibel                                                               |
| dBA             | A-weighted decibels                                                   |
| DNL             | Day-night sound level                                                 |
| DoD             | Department of Defense                                                 |
| DRMO            | Defense Reutilization and Marketing Office                            |
| EA              | Environmental Assessment                                              |
| EG              | Emergency Generator                                                   |
| EIS             | Environmental Impact Statement                                        |
| EISA            | Energy Independence and Security Act                                  |
| F               | Fahrenheit                                                            |
| FICUN           | Federal Interagency Committee on Urban Noise                          |
| FONSI           | Finding of No Significant Impact                                      |
| FR              | Federal Register                                                      |
| ft              | Feet                                                                  |
| GHG             | Greenhouse gases                                                      |
| HAER            | Historic American Engineering Record                                  |
| HAP             | Hazardous air pollutant                                               |
| HPA             | High Powered Amplifier                                                |
| HVAC            | Heating, Ventilating, and Air Conditioning                            |
| Hz              | Hertz                                                                 |
| ICRMP           | Integrated Cultural Resources Management Plan                         |
| IEEE            | Institute of Electrical & Electronics Engineers, Inc                  |

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| INRMP             | Integrated Natural Resource Management Plan            |
| IRP               | Installation Restoration Program                       |
| km                | Kilometer                                              |
| kVA               | Kilovolt-amperes                                       |
| kW                | Kilowatt                                               |
| L <sub>eq</sub>   | Equivalent sound level                                 |
| m                 | Meter                                                  |
| MC                | Munitions Constituents                                 |
| MEC               | Munitions and Explosives of Concern                    |
| mi                | Mile                                                   |
| MMRP              | Military Munitions Response Program                    |
| mph               | Miles per Hour                                         |
| mW/sq cm          | milliwatt per centimeter squared                       |
| N <sub>2</sub> O  | Nitrous oxide                                          |
| NAAQS             | National Ambient Air Quality Standards                 |
| NAGPRA            | Native American Graves Protection and Repatriation Act |
| NBAFS             | New Boston Air Force Station                           |
| NEPA              | National Environmental Policy Act                      |
| NH                | New Hampshire                                          |
| NHDES             | New Hampshire Department of Environmental Services     |
| NHDFG             | New Hampshire Department of Fish and Game              |
| NHS-B             | New Hampshire Tracking Station B-Side                  |
| NIR               | Non-Ionizing Radiation                                 |
| NOAA              | National Oceanic and Atmospheric Administration        |
| NO <sub>x</sub>   | Nitrogen oxides                                        |
| NPDES             | National Pollutant Discharge Elimination System        |
| NRHP              | National Register of Historic Places                   |
| OSHA              | Occupational Safety and Health Administration          |
| PCB               | Polychlorinated Biphenyls                              |
| PEL               | Permissible Exposure Level                             |
| PM <sub>10</sub>  | Particulate matter less than 10 microns in diameter    |
| PM <sub>2.5</sub> | Particulate matter less than 2.5 microns in diameter   |
| RBC               | Remote Block Change                                    |
| RCRA              | Resource Conservation and Recovery Act                 |
| RF                | Radio Frequency                                        |
| RI                | Remedial Investigation                                 |
| ROI               | Region of Influence                                    |
| RTS               | Remote Tracking Station                                |
| SATCOM            | Satellite Communication                                |
| SHPO              | State Historic Preservation Officer                    |
| SMC               | Space and Missile Systems Center                       |
| SMC/ENC           | SMC Enterprise Compliance Engineering Division         |
| SMC/SN            | SMC Satellite Control and Network Systems Division     |
| SO <sub>2</sub>   | Sulfur dioxide                                         |
| SOPS              | Space Operations Squadron                              |
| SPCC              | Spill Prevention, Control, and Countermeasure          |
| TCP               | Traditional Cultural Properties                        |
| TSP               | Total Suspended Particulates                           |
| US                | United States                                          |
| USAF              | US Air Force                                           |
| USC               | United States Code                                     |

|       |                                    |
|-------|------------------------------------|
| USDOT | US Department of Transportation    |
| USEPA | US Environmental Protection Agency |
| USFWS | US Fish and Wildlife Service       |
| UXO   | Unexploded Ordnance                |
| VOC   | Volatile organic compound          |
| WMO   | World Meteorological Organization  |

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# 1.0 PURPOSE OF AND NEED FOR ACTION

## 1.1 INTRODUCTION

New Boston Air Force Station (NBAFS) is located in south-central New Hampshire (NH), (Figure 1-1), approximately 12 miles (mi) (19 kilometers [km]) west of Manchester, NH. NBAFS is operated by the 23rd Space Operations Squadron (SOPS) of the 50th Space Wing (50SW), United States Air Force (USAF). The Station is located on 2,826 acres (1,144 hectares) of land within the towns of New Boston, Amherst, and Mont Vernon in Hillsborough County.

The Space and Missiles Systems Center Satellite Control and Network Systems Division (SMC/SN) proposes to construct and operate the New Hampshire Tracking Station B-Side (NHS-B) Remote Tracking Station (RTS) Block Change (RBC) facility within NBAFS, and decommission one of the legacy antenna facilities at NBAFS.

In support of SMC/SN and NBAFS, the SMC Enterprise Compliance Engineering Division (SMC/ENC) determined that an environmental assessment (EA) is required to assess the potential environmental effects from the proposed construction activities and new antenna operations. This EA was prepared in accordance with the following regulations, statutes, and standards:

- National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321-4370f)
- Executive Order 12114 (*Environmental Effects Abroad of Major Federal Actions*) (Office of the President, 1979)
- The President's Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508) (CEQ, 2009)
- *Environmental Impact Analysis Process* (32 CFR Part 989) (USAF, 2009a)

## 1.2 BACKGROUND

From 1942 until 1956, the site (then known as the New Boston Bombing and Gunnery Range) was used as an air-to-ground bombing and strafing range. The USAF acquired rights to the site in 1957 for use as a satellite tracking station. In 1959, the 6594th Instrumentation Squadron was activated at NBAFS.

### The Purpose of an Environmental Assessment (EA)

An EA is prepared by a Federal agency to determine whether an action it is proposing would significantly affect any portion of the environment.

The intent of an EA is to provide project planners and Federal decision-makers with relevant information on the impacts that a proposed action might have on the human and natural environments.

If the study finds no significant impacts, then the agency shall record the results of that study in an EA and publish a Finding of No Significant Impact (FONSI). The agency may then proceed with the action.

However, if the results of the EA indicate that there would be potentially significant impacts associated with the action, then the agency must issue a Notice of Intent and prepare an Environmental Impact Statement (EIS).

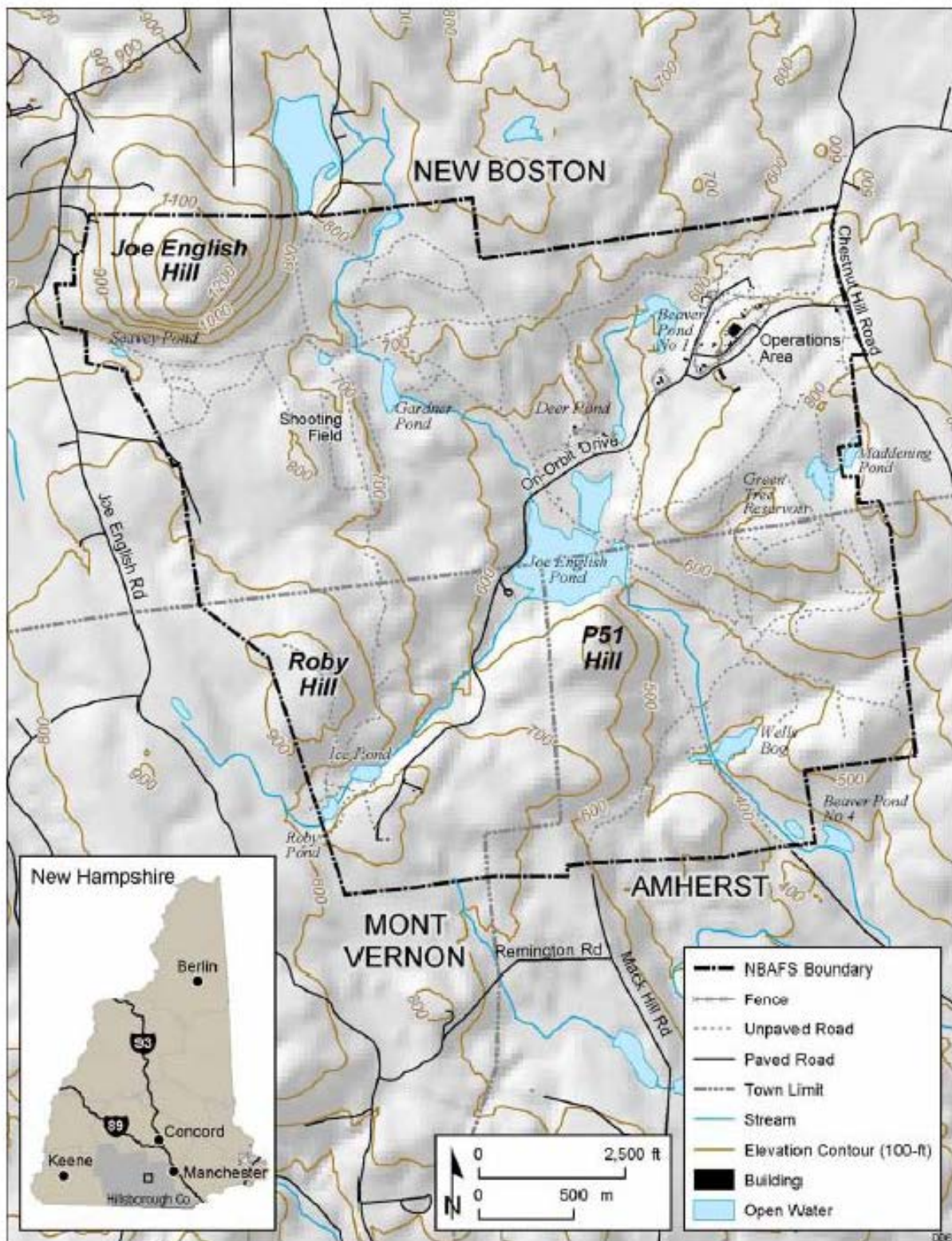


Figure 1-1. Location of New Boston Air Force Station, New Hampshire

Squadron activities began in 1960 with use of mobile radar units until permanent satellite tracking facilities were constructed and in operation by 1964. In the early 1960s, construction began in the Operations Area for permanent satellite tracking facilities. The site was formerly under the jurisdiction of the USAF Systems Command, and moved under the USAF Space Command in 1987.

Under the 50th Space Wing, the current mission of NBAFS is to support the Air Force Satellite Control Network (AFSCN). The AFSCN is a global infrastructure of control centers, RTSs, and communications links that provide the highly reliable command and control, communications, and range systems required to support the nation's surveillance, navigation, communications, and weather satellite operations. The AFSCN is the DoD common user network that provides satellite state-of-health, tracking, telemetry, and commanding for various operational satellite systems including: Defense Meteorological Satellite Program, Global Positioning System, Defense Satellite Communications System, Defense Support Program, Military Strategic and Tactical Relay Satellite, Advanced Extremely High Frequency Satellite, and Skynet. Currently, the AFSCN consists of control centers in California and Colorado, eight RTSs located around the world (including NBAFS), and several transportable systems based out of the US.

The Air Force Space Command (AFSPC) performs operations, maintenance, modernization, and sustainment of the AFSCN system to provide operational capabilities validated by DoD Joint Staff and USAF requirements. As part of the ongoing AFSCN Improvements and Modernization program, the SMC/SN is implementing network upgrades which will meet operational requirements to replace non-standard, unsupportable equipment with more reliable, maintainable, and standardized hardware and software. This new equipment will simplify AFSPC satellite operations and significantly reduce hardware/software maintenance costs. The principal efforts within this program are Network Operations Upgrades, Communications Upgrades, and Range RTS Upgrades. The proposed new NHS-B antenna facility at NBAFS is part of the ongoing upgrade of RTSs and other range assets.

### **1.3 PURPOSE OF THE PROPOSED ACTION**

The DoD and USAF are continuing a significant investment to improve and modernize the AFSCN to meet the requirements of the growing inventory of operational and developmental DoD, National, Civil, and Allied satellite systems. In order for NBAFS to continue its mission supporting the AFSCN, the existing Automated Remote Tracking Station (ARTS) legacy B-Side antenna system must be upgraded with a newer system that is more reliable, maintainable, and interoperable with newer satellite systems to assure responsive, effective support to warfighting forces.

### **1.4 NEED FOR THE PROPOSED ACTION**

The nation's space launch; ballistic missile and aeronautical testing; and surveillance, navigation, communications, and weather satellite systems require the support of the AFSCN. Command and control upgrades of AFSCN antenna systems are needed to standardize, automate, and ensure the interoperability of the RTSs through the replacement of outdated systems with modern technology equipment in order to reduce failures, correct operational deficiencies, and reduce operating and sustainment costs. This modernization effort includes the replacement of the ARTS legacy B-Side antenna at NBAFS.

### **1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT**

The EA documents the environmental analysis of the construction and operation of a new NHS-B antenna facility to replace the ARTS legacy B-Side antenna. The Proposed Action includes installation of a tracking antenna, ringwall, and inflatable radome. The Proposed Action also includes installation of an electronics suite at the existing operations building and placement of a trenched cable link to the new antenna. The Proposed Action would bring the B-Side antenna configuration into compliance with the

operational requirements for the Satellite Control System. Construction for the new antenna is expected to begin in mid-Calendar Year (CY) 2011.

The Proposed Action would also include the decommissioning of the ARTS legacy B-Side antenna at NBAFS. Decommissioning activities would not occur until CY 2013 at the earliest.

In accordance with the CEQ and USAF regulations for implementing NEPA (40 CFR 1502.14(d) and 32 CFR 989.8(d), respectively), this EA also analyzes the No Action Alternative that serves as the baseline from which to compare the Proposed Action. Under the No Action Alternative, the new NHS-B antenna facility would not be constructed at NBAFS and the existing legacy antenna facility at the Station would not be decommissioned.

## **1.6 DECISIONS TO BE MADE**

Supported by the information and environmental analysis presented in this EA, the USAF will decide whether to implement the proposed antenna construction, operation, and decommissioning activities, or to select the No Action Alternative.

## **1.7 PUBLIC NOTIFICATION AND REVIEW**

In accordance with the CEQ (2009) and USAF (2009a) regulations for implementing NEPA, the USAF solicited comments on the Draft EA from interested and affected parties. A Notice of Availability for the Draft EA and Draft FONSI was published on April 12 and 13, 2011 in the New Hampshire *Union Leader* newspaper for the NBAFS region. Copies of the Draft EA/Draft FONSI were placed in these local libraries:

- Whipple Free Library, 67 Mont Vernon Road, New Boston, NH 03070
- Amherst Town Library, 14 Main Street, Amherst, NH 03031
- Daland Memorial Library, 5 North Main Street, Mont Vernon, NH 03057

A list of agencies that were sent copies of the document is provided in Chapter 8.0.

Following the 15-day public review period (as specified in the newspaper notice), the USAF received no public comments. The New Hampshire Division of Historical Resources, however, responded with their concurrence with the USAF's finding of no adverse effects to cultural resources from implementation of the Proposed Action. Appendix C of this Final EA contains a reproduction of the agency's written response. A copy of the Final EA and the enclosed signed FONSI has been sent to those agencies, organizations, and individuals who commented on the Draft EA/Draft FONSI, or who specifically requested a copy of the final documents.

## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Within this chapter, Section 2.1 provides a description of the Proposed Action, including the construction and operation of the NHS-B antenna facility at NBAFS. Section 2.2 provides a description of the No Action Alternative. Alternatives to the Proposed Action that were considered and eliminated from further study are discussed in Section 2.3. A summary comparison of the environmental consequences associated with the Proposed Action and the alternative actions is presented in Section 2.4. Finally, identification of the Preferred Action is presented in Section 2.5.

### 2.1 PROPOSED ACTION

#### 2.1.1 INSTALLATION OF NEW B-SIDE ANTENNA

##### 2.1.1.1 Site Preparation and Construction

The Proposed Action would require the construction of the new B-Side antenna at the same location of the recently demolished ARTS legacy A-Side antenna facility (see Figure 2-1). Demolition of the legacy A-Side antenna was previously analyzed in the *Environmental Assessment for Replacement of the NHS-A Satellite-Tracking Antenna at New Boston Air Force Station, New Hampshire* (USAF, 2001). The site for the new antenna would also require excavation for the foundation to support the antenna pedestal and ringwall.

General site plans for the new antenna facility are shown in Figure 2-2. The new antenna dish would be affixed on top of a pedestal surrounded by a 22-foot (ft) (6.7-meter [m]) high by 62-ft (18.9-m) diameter reinforced concrete ringwall. The antenna pedestal would include an internal room for housing the transmitters, High Powered Amplifiers (HPAs), and other electronic equipment utilized for signal reception, tracking, remote control, and status functions. The antenna would be enclosed by a 76-ft (23-m) diameter inflatable radome supported by the ringwall. Final height of the new radome would be approximately 83 ft (25 m) above ground level. Two anemometer towers would be installed adjacent to the radome at a height that is equal to the height of the radome's equator (approximately 42 ft [12.8 m] high).

Radome pressurization would be maintained by an electric-powered, multi-stage blower package consisting of a series of electric-powered fans. Multiple blowers provide redundancy to safeguard against failures. They are also used to vary air pressure levels inside the radome. As outside wind loads increase, the blower package increases inside air pressure to keep the radome stabilized.

The facility design would include a Heating, Ventilation, and Air Conditioning (HVAC) system to environmentally control the HPA Room as well as a Mechanical Room to house the new diesel-operated emergency generator (EG). The new EG would provide backup power to the radome blower package in the event site power is lost. Commercial electrical power is provided to the site via existing underground conduits. A new, aboveground, dual-walled diesel fuel tank (6,000-gallon [22,712-liter] capacity) for the EG and facility boiler would be located approximately 50 ft (15 m) southeast of the new antenna facility (Figure 2-2). The fuel tank would include overfill protection, along with visual and audible alarms. The tank would be installed on a secondary containment pad designed to contain a worst-case scenario release of 110 percent. A secondary diesel fuel tank (approximately 180-gallon [680-liter] capacity) would be

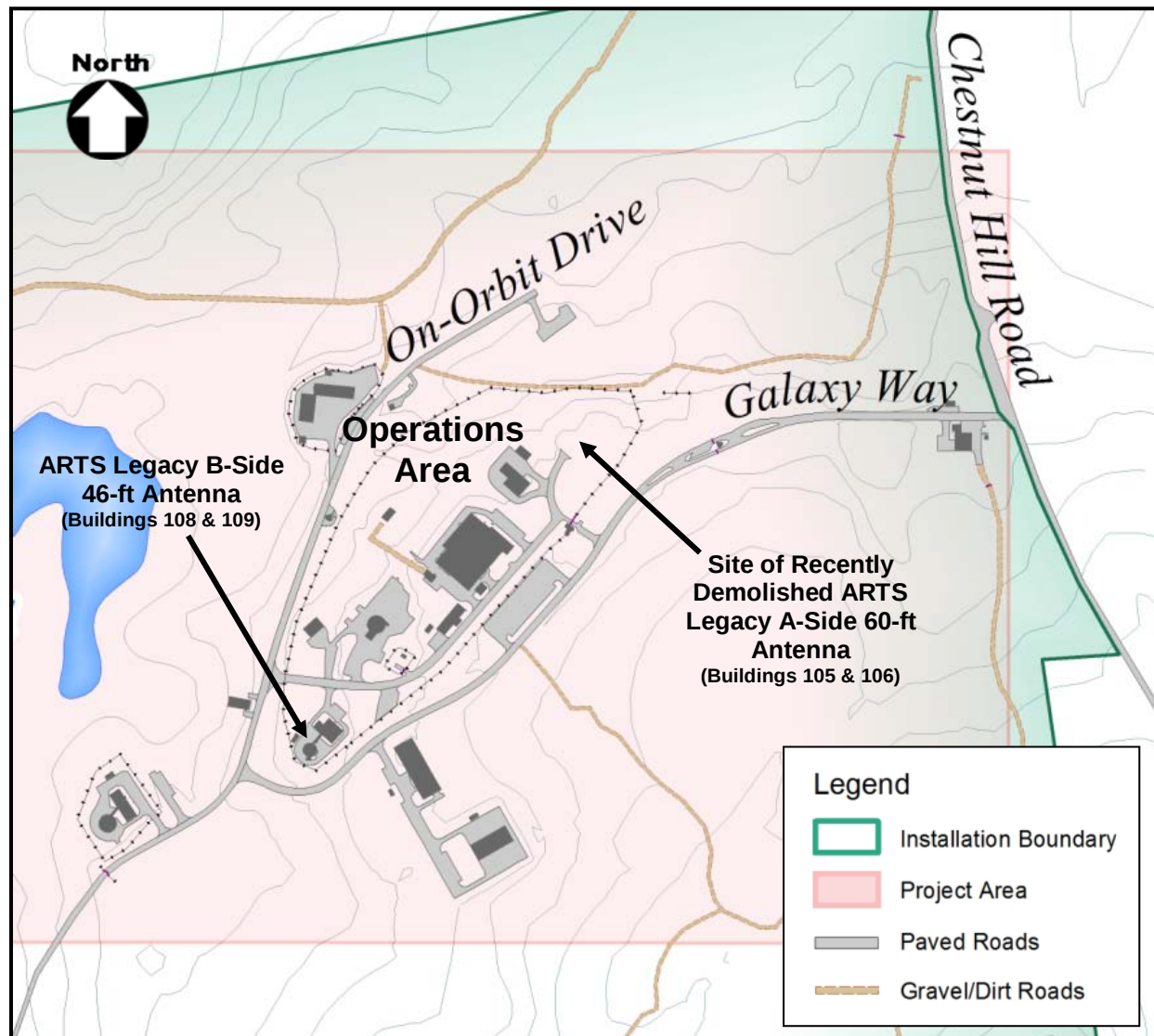


Figure 2-1. Map of Project Sites within NBAFS Operations Area

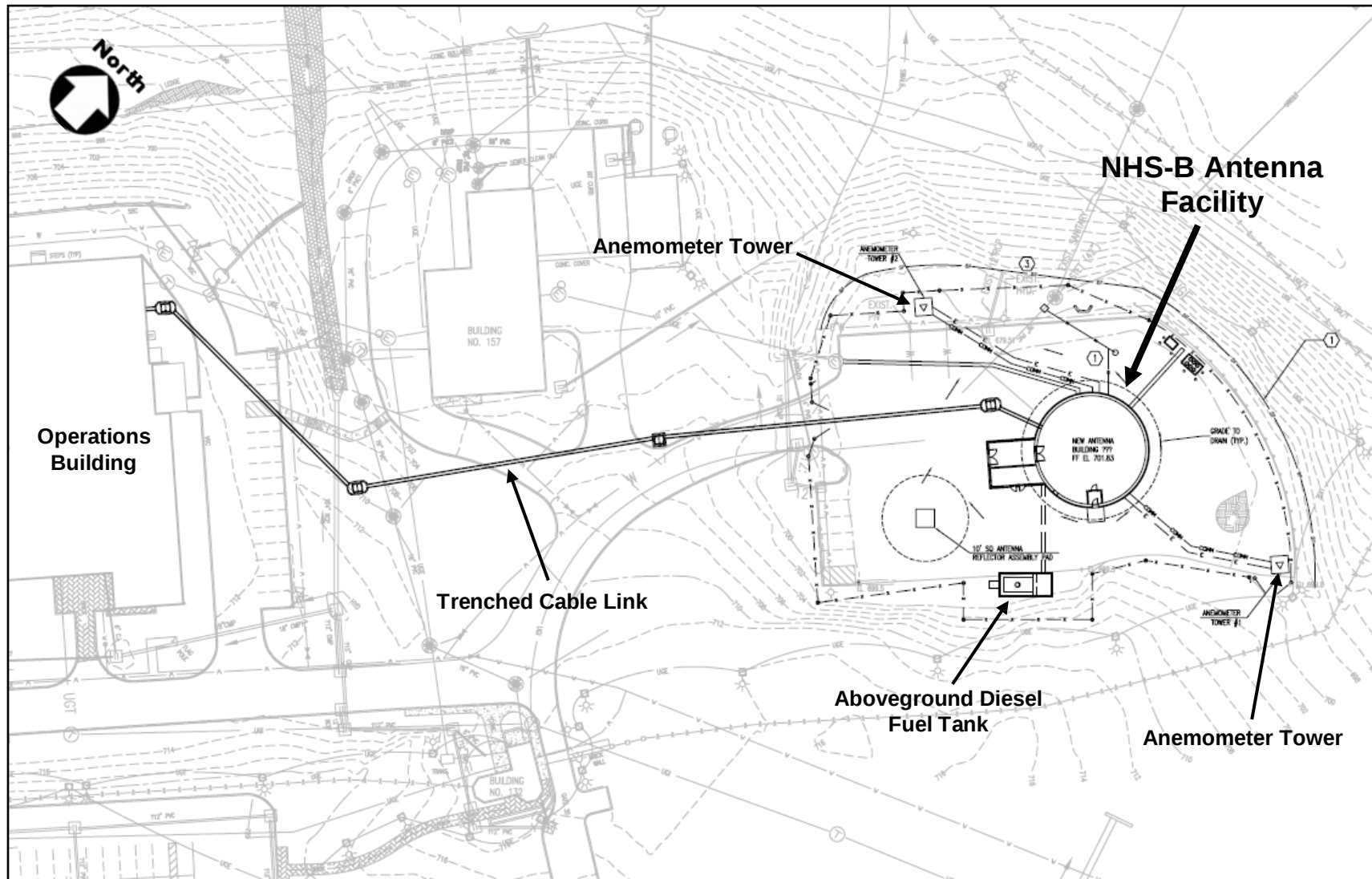


Figure 2-2. General Plan of Proposed NHS-B Antenna Facility

plumbed into the larger tank and installed beneath the EG in the Mechanical Room. The smaller tank would be dual-walled with overfill protection and visual/audible alarms. All tanks would have labels affixed that would meet the requirements of 40 CFR 80.572 (*Diesel Fuel Pump Labeling Requirements*).

In addition to the new facility, a suite of electronic equipment (core electronics) would be installed in the existing operations building. A new trenched cable (approximately 480 to 550 ft [146 to 168 m] long) would link the operations building to the new antenna. The general alignment for the trenched cable is shown in Figure 2-2. As an option, the new cable could be routed through an existing cable duct bank that parallels the existing roads shown on Figure 2-2.

Construction activities would require the use of heavy equipment and pneumatic tools, including mobile diesel-powered cranes, heavy trucks, bulldozers, backhoes, forklifts, trenchers, boring machines, and air compressors. Temporary electrical power for the construction site would likely come from portable diesel or gasoline powered generators. Construction staging areas would be located on adjacent cleared or paved areas. For NBAFS personnel safety during construction, a temporary construction fence would be erected around the construction site. The contractor would remove the fence following the completion of the construction phase.

#### **2.1.1.2 Operations and Maintenance**

The NHS-B antenna radome would be made of fabric that would require the continuous operation of a multi-stage blower package. The estimated electrical power requirement for the radome would be 155 kilovolt-amperes (kVA). Power requirements to operate the new antenna facility, including the blower package, would be within normal power usage levels for the Station. An EG would be on site to provide backup power to the radome blower package in the event site power is lost. The EG would be a 50 kilowatt (kW) diesel unit that would only be operated when commercial power is unavailable or for training/testing, for a maximum of 100 hours per year. Normal maintenance run-times for the EG would be 30 minutes per week. The EG would have the capability to run up to 3 days in order to keep the radome inflated if commercial power goes down due to bad weather or other conditions. In preparation for the new EG, NBAFS would apply for a new or modified General State permit that allows operation of stationary sources of air emissions. No additional personnel would be required on site for the operation and maintenance of the new facility.

Small quantities of glycol, lubricants, and coatings would be used to clean and maintain the antenna and the EG for the radome.

#### **2.1.2 DECOMMISSION OF LEGACY ANTENNA**

As part of the Proposed Action, the existing ARTS legacy B-Side antenna facility at NBAFS (Buildings 108 and 109, as shown in Figure 2-3) would be decommissioned (taken out of service) and the buildings no longer used. Decommissioning activities would not involve any modifications to the facility or removal of equipment. NBAFS would maintain electrical power to the buildings and provide low-level maintenance of the facility to minimize weather-related deterioration. ARTS-related control consoles and other core electronics in the operations building would also be deactivated and left in place. USAF decisions on the reuse or disposal of the antenna facility and equipment would be made at a later date and addressed in additional environmental analyses separate from this EA.



**Figure 2-3. Photograph of Buildings 108 (right front) and 109 (left rear)**

## **2.2 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the NHS-B antenna facility would not be constructed at NBAFS and the ARTS legacy B-Side antenna would continue to be used. Within the next several years, however, antenna reliability and maintainability issues, and/or incompatibilities with the AFSCN network, could force the USAF to terminate operational use of the legacy B-Side antenna. Such a scenario is unacceptable because it would result in loss of a critical US satellite communication link over the North Atlantic region.

## **2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION**

Because the location and lower elevation of the ARTS legacy B-Side antenna site would present excessive obscura caused by the operations building and Joe English Hill, reuse of the legacy facility for the new NHS-B antenna was eliminated as a viable option. The site selected for the new NHS-B antenna is at a higher elevation and thus provides a better field-of-view for satellite tracking.

An alternative site was also considered for the new NHS-B antenna; however, the alternative site would have impacted undisturbed areas and required the secured operational area at NBAFS to be expanded well beyond current boundaries. Because of the excessive cost and environmental impacts associated with the alternative site, the location was dropped from further consideration.

## **2.4 COMPARISON OF ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES**

Table 2-1 presents a comparison of the potential environmental consequences of the Proposed Action and the No Action Alternative for those locations and resources affected. Only those resource areas

potentially affected are addressed (see Chapter 3.0 for a rationale of resources analyzed). A detailed discussion of the potential effects is presented in Chapter 4.0 of this EA.

## **2.5 IDENTIFICATION OF THE PREFERRED ACTION**

The USAF's Preferred Action is to implement the Proposed Action at NBAFS, as described in Section 2.1 of this EA.

**Table 2-1. Comparison of Potential Environmental Consequences**

| <b>Locations and Resources Affected</b> | <b>Proposed Action</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>No Action Alternative</b>                                                                                                                                                                                                                      |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>New Boston Air Force Station, NH</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                   |
| Air Quality                             | Sources of air emissions would include construction activities, heavy equipment exhaust emissions, and emergency generator emissions. Short-term minor and long-term negligible effects would be expected. The total direct and indirect emissions from the Proposed Action would be <i>de minimis</i> (of minimal importance), not be regionally significant, and not contribute to a violation of NBAFS's air operating permit or any air regulation.                                                                                                                                                                                  | The proposed activities would not be implemented; therefore, project related impacts to air quality would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.1.1 of the EA.           |
| Noise                                   | Short- and long-term minor adverse impacts would be expected. Impacts would be related to construction activities and the maintenance and operation of the antenna's backup generator.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | The proposed activities would not be implemented; therefore, project related impacts to the noise environment would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.1.2 of the EA. |
| Water Resources                         | In accordance with Federal Stormwater Regulations, a stormwater Construction General Permit would be needed since the proposed project activities are expected to disturb 43,560 square ft (4,047 square m) or more of land area. To prevent erosion and sediment runoff, state-approved Best Management Practices would be implemented during construction. Because of the protection measures to be implemented, and the lack of ponds, streams, wetlands, well-defined drainages, or water supply wells near the project sites, no significant impacts to water resources are expected.                                               | The proposed activities would not be implemented; therefore, project related impacts to water resources would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.1.3 of the EA.       |
| Biological Resources                    | Impacts to biological resources would be minimal because all of the proposed activities would occur in already developed areas that have relatively low habitat value and species diversity. No Federally listed species are known to occur within the project area, and potential impacts to the state-listed Blanding's turtle and Eastern hognose snake would not be significant. In addition, radio frequency radiation from operation of the new antenna is not expected to harm bird or bat species flying in the area.                                                                                                            | The proposed activities would not be implemented; therefore, project related impacts to biological resources would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.1.4 of the EA.  |
| Cultural Resources                      | No archaeological resources have been identified within the proposed construction area, and the project area is previously disturbed and developed. Although the ARTS legacy B-Side antenna facility would be decommissioned, the USAF has no plans to alter or demolish the Cold War era facility, which is part of a proposed historic district. Thus, NBAFS considers decommissioning of the antenna facility to have "no adverse effect" on historic properties. In their written response to the consultation request, the New Hampshire State Historic Preservation Officer concurred with NBAFS's finding of "no adverse effect". | The proposed activities would not be implemented; therefore, project related impacts to cultural resources would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.1.5 of the EA.    |

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                      |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety and Occupational Health           | <p>For the proposed activities at NBAFS, all program personnel would be required to comply with applicable USAF and Federal health and safety regulations and standards. Surveys for potential buried munitions, including their recovery and disposal, would be conducted in accordance with DoD standards and established explosive safety procedures for NBAFS. Because all construction-related activities would occur well within installation boundaries, the general public would not be exposed to health and safety risks.</p> <p>For radio frequency (RF) transmissions, the new antenna would be operated and sustained in accordance with established USAF and industry health standards and requirements. During operations of the antenna, RF telemetry tests would be conducted to validate the calculated and estimated safe distances and safe exposure limits for uncontrolled (general population) and controlled (employees) personnel. Operation of the new antenna would not allow any land areas within 2,500 ft (762 m) to be exposed to the main beam. Antenna safety features, including low elevation mechanical stops and software limits, would be used to prevent personnel on the ground from being exposed to hazardous RF radiation levels.</p> <p>Based on the safety precautions that the USAF would have in place prior to project implementation, no significant impacts to safety and occupational health are expected.</p> | The proposed activities would not be implemented; therefore, project related impacts on safety and occupational health would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.1.6 of the EA.           |
| Hazardous Materials and Waste Management | NBAFS personnel and contractors would manage all hazardous materials in accordance with well-established policies and procedures. Hazardous and non-hazardous wastes would be properly disposed of in accordance with applicable Federal, state, local, and USAF regulations. Hazardous material and waste-handling requirements would not exceed current capacities and management programs would not have to change. As a result, no significant impacts from the management of project-related hazardous materials and waste are expected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The proposed activities would not be implemented; therefore, project related impacts on hazardous materials and waste management would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.1.7 of the EA. |
| <b>Global Atmosphere</b>                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                      |
| Greenhouse Gases and Global Warming      | Under the Proposed Action, all construction activities combined would generate approximately 593 tons (537 metric tons) of carbon dioxide (CO <sub>2</sub> ). Operational activities would generate approximately 671 tons (609 metric tons) of CO <sub>2</sub> each year. This amount of CO <sub>2</sub> is expected to be less than 0.0001 percent of the anthropogenic emissions for this gas released on a global scale annually. The greenhouse gas emissions associated with the Proposed Action would also fall well below thresholds for annual emissions specified in draft guidance by the CEQ. Thus, the Proposed Action would not contribute significantly to global warming.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The proposed activities would not be implemented; therefore, project related impacts on global warming would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.2.1 of the EA.                           |
| Stratospheric Ozone Layer                | There would be no ozone depleting substances used or released during the Proposed Action that would affect the stratospheric ozone layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The proposed activities would not be implemented; therefore, project related impacts on the stratospheric ozone layer would not occur. Conditions are not expected to change from that described for the Affected Environment in Section 3.2.2 of the EA.            |

## 3.0 AFFECTED ENVIRONMENT

This chapter describes the environmental resources or topical areas that could potentially be affected by the Proposed Action. The information and data presented are commensurate with the importance of the potential impacts in order to provide the proper context for evaluating impacts. Sources of data used and cited in the preparation of this chapter include available literature (such as EAs and other environmental studies), installation and facility personnel, and regulatory agencies.

The information contained in this chapter serves as the baseline against which the predicted effects of the Proposed Action can be compared. The potential environmental effects of the Proposed Action and No Action Alternative are discussed in Chapter 4.0.

### 3.1 NEW BOSTON AIR FORCE STATION

NBAFS is located in south-central New Hampshire about 12 mi (19 km) west of Manchester. The 2,826-acre (1,144-hectare) property falls within the town boundaries of New Boston, Amherst, and Mont Vernon in Hillsborough County. The Proposed Action would occur within the developed 44-acre (17.7-hectare) Operations Area located in the northeastern portion of the Station (see Figure 2-1). All activities associated with the satellite-tracking mission of the Station take place within the Operations Area.

In implementing the Proposed Action at NBAFS, air quality, noise, water resources, biological resources, cultural resources, safety and occupational health, and hazardous materials and waste management (including pollution prevention) are the only areas of concern requiring discussion. No other environmental resource topics for the Station are analyzed further because of the following reasons: (1) the Proposed Action requires limited ground-disturbing activities, thus no impacts to soils or geologic resources would be expected; (2) there would be a minor increase in temporary personnel and contractors during construction and no increase in personnel during long-term operations at the Station, thus no socioeconomic concerns are anticipated; (3) given that NHS-B project activities would have very little effect outside of the Station boundary, there would be no disproportionate impacts to minority populations and low-income populations under Executive Order 12898 (*Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*); (4) the Proposed Action would not require any changes to airspace usage; (5) no visual impacts are expected because the new NHS-B antenna facility would appear similar to, but smaller than, the ARTS legacy A-Side antenna previously located at the same site; and (6) the proposed activities are consistent with the NBAFS General Plan (NBAFS, 2004) and are well within the limits of current Station operations. As a result, there would be no adverse effects on land use, utilities, or transportation.

#### 3.1.1 AIR QUALITY

##### 3.1.1.1 National Ambient Air Quality Standards and Attainment Status

The US Environmental Protection Agency (USEPA) Region 1 and the New Hampshire Department of Environmental Services (NHDES) regulate air quality in New Hampshire. The Clean Air Act (CAA) (42 United States Code (USC) 7401-7671q), as amended, gives the USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) that set acceptable concentration levels for seven criteria pollutants: fine particulate matter (PM<sub>10</sub>), very fine particles (PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrous oxides (NO<sub>x</sub>), ozone, and lead. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants that contribute to

acute health effects, while long-term standards (annual averages) have been established for pollutants that contribute to chronic health effects. New Hampshire adopts the Federal standards.

Air Quality Control Regions (AQCRs) that exceed the NAAQS are designated nonattainment areas and those in accordance with the standards are attainment areas. The General Conformity Rule (40 CFR Part 51, Subpart W, and 40 CFR Part 93) ensures that the actions taken by Federal agencies in nonattainment and maintenance areas do not impede the state's ability to achieve the NAAQS in a timely fashion. NBAFS, and therefore all activities associated with the Proposed Action, are within the Merrimack Valley-Southern New Hampshire AQCR 121 (40 CFR 81.81), which includes Hillsborough County. Because the Proposed Action is situated entirely within the boundaries of New Boston—a designated attainment area—the air conformity regulations do not apply (40 CFR 95.153(b)).

### 3.1.1.2 Regulatory Requirements and Existing Emissions

The primary sources of air emissions at NBAFS are the power plant, an on-site gasoline fueling station, and fugitive emissions from various refrigeration units. The potential emissions of criteria pollutants generated at NBAFS could not physically exceed major source threshold for NO<sub>x</sub>. NBAFS operates under a General State Permit from NHDES Air Resources Division (permit number FP-S-0177). Table 3-1 outlines the total actual emissions of criteria pollutants—NO<sub>x</sub>, CO, SO<sub>2</sub>, total suspended particles (TSP), volatile organic compounds (VOC), and hazardous air pollutant (HAP)—at NBAFS in 2009. In addition, an Air Quality Management Plan is in place to assist NBAFS in managing its air quality program. The plan incorporates compliance planning requirements and provides air emission mitigation strategies for the Station (NBAFS, 2010a).

| Table 3-1. Criteria Air Pollutant Emissions for NBAFS in 2009<br>(tons [metric tons]) |             |                 |             |               |                 |
|---------------------------------------------------------------------------------------|-------------|-----------------|-------------|---------------|-----------------|
| NO <sub>x</sub>                                                                       | CO          | SO <sub>2</sub> | TSP         | VOC           | HAP             |
| 1.07 (0.97)                                                                           | 0.28 (0.25) | 0.05 (0.04)     | 0.02 (0.02) | 0.027 (0.025) | 0.0006 (0.0005) |

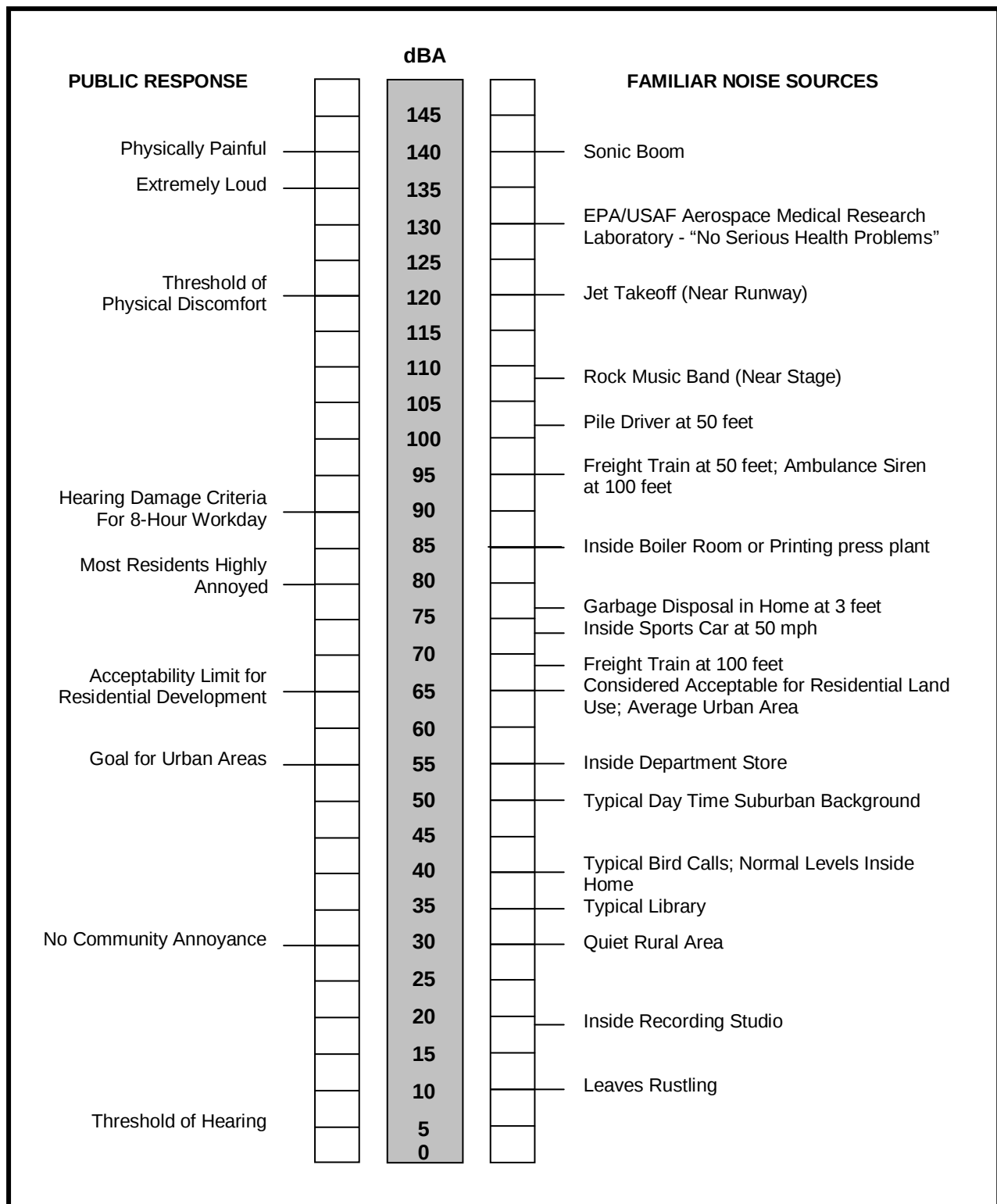
Source: NBAFS, 2010a

## 3.1.2 NOISE

### 3.1.2.1 Noise Basics and Regulatory Overview

Noise is most often defined as unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. Sources of noise may be transient (e.g., a passing train or aircraft), continuous (e.g., heavy traffic or air conditioning equipment), or impulsive (e.g., a sonic boom or a pile driver). Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz (Hz) are used to quantify sound frequency. The human ear responds differently to different frequencies. Sound-pressure levels are often adjusted for certain frequency bands, which are referred to as weighted sound levels. A-weighted decibels (dBA) approximate sound frequencies perceived by humans. Sounds encountered in daily life and their expected dBA levels are provided in Figure 3-1.

The dBA noise metric describes steady noise levels. Very few noises are, in fact, constant, so a noise metric day-night sound level (DNL) has been developed. DNL is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to nighttime levels (10 PM to 7 AM). DNL is a useful



Source: Modified from US Army Strategic Defense Command, 1991

**Figure 3-1. Typical Noise Levels of Familiar Noise Sources and Public Responses**

descriptor for noise because it averages ongoing yet intermittent noise, and it measures total sound energy over a 24-hour period. In addition, equivalent sound level (Leq) is often used to describe the overall noise environment. Leq is the average sound level in dB.

Air Force Occupational Safety and Health (AFOSH) Standard 48-20 (*Occupational Noise and Hearing Conservation Program*) describes the USAF Hearing Conservation Program procedures used at NBAFS. Similarly, under 29 CFR 1910.95 (*Occupational Noise Exposure*), employers are required to monitor employees whose exposure to noise could equal or exceed an 8-hour time-weighted average of 85 dBA. USAF standards require hearing protection whenever a person is exposed to steady-state noise of 85 dBA or more, or impulse noise of 140 dB sound pressure level or more, regardless of duration. Personal noise protection is required when using noise-hazardous machinery or entering hazardous noise areas.

The Noise Control Act of 1972 (Public Law 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses, such as residences, schools, churches, and hospitals (USEPA, 1974). Neither the State of New Hampshire nor Hillsborough County has noise ordinances.

### **3.1.2.2 Existing Noise Environment**

For noise analysis purposes in this EA, the Region of Influence (ROI) at NBAFS is defined as those areas in proximity of the Operations Area. Existing sources of noise near the proposed site include aircraft overflights, light industrial activities, and generally light traffic along local roads. The facility is approximately 1.4 mi (2.3 km) southeast of the privately-owned Huff Memorial Airport and approximately 10 mi (16 km) northwest of Manchester – Boston Regional Airport, which is a regional general aviation airport with approximately 100 operations each day (AirNav, 2010). The primary sources of noise within the NBAFS Operations Area are the power plant generators and HVAC systems at several of the buildings. The generators typically run between 100-500 hours per year (NBAFS, 2010a).

Existing noise levels (DNL and Leq) were estimated for the proposed site and surrounding areas using the techniques specified in the American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present (ANSI, 2003). The overall noise environment is comparable to a quiet rural area. There are residences within approximately 1,850 ft (564 m) of the project site, and a school and church about 4,220 ft (1,286 m) from the site. There are no hospitals in the vicinity. The existing noise environment would consist of no acoustical events that are either loud enough or frequent enough to interfere with communication or sleep (FICUN, 1980).

### **3.1.3 WATER RESOURCES**

The NHDES's Water Division regulates statewide water management issues, including groundwater and surface water supplies, wastewater control, and wetlands protection. In New Hampshire, the USEPA administers the National Pollutant Discharge Elimination System (NPDES) program for the regulation of pollutant discharges, including treated wastewater, process water, and construction-related stormwater.

At NBAFS, the ROI for water resources includes those local surface water features and groundwater that could be adversely affected by the proposed construction activities (e.g., drainage alteration or water quality degradation).

### 3.1.3.1 Surface Water

Most of NBAFS is located within the Joe English Brook watershed. The Station contains a number of large freshwater ponds, stream segments, and nearly 200 acres (81 hectares) of wetlands (see Figure 1-1). However, there are no open waters, streams, or other well-defined drainages in proximity of the proposed project area for the new NHS-B antenna facility. Although there are no wetlands within the Operations Area, there is a palustrine forested wetland area located a few hundred feet north and down slope of the proposed NHS-B antenna site. No floodplains have been identified within the Operations Area (ANL, 2006).

### 3.1.3.2 Groundwater

Groundwater levels at NBAFS range from 73 ft (22 m) below surface to flowing artesian conditions near Joe English Pond. The NBAFS potable water supply is provided by groundwater from five wells, two of which are within the Operations Area (ANL, 2006).

## 3.1.4 BIOLOGICAL RESOURCES

This section describes the existing vegetation and wildlife, including protected species and habitats, occurring at NBAFS. For purposes of analyzing biological resources, this EA limits the ROI to the Operations Area and adjacent areas.

### 3.1.4.1 Vegetation

Vegetation within the Operations Area is mostly cultivated lawn grass and forbs on slopes (hard fescue, birdsfoot trefoil, crown vetch, and white clover). Some areas are also landscaped with plantings of native tree and shrub species (e.g., white pine, maples, dogwood, and junipers (ANL, 2006).

Deciduous and mixed forests are the primary undeveloped habitats adjacent to the Operations Area. Northern red oak, sugar maple, white oak, black birch, beech, and paper birch make up the tree canopy in deciduous forest habitat. Mixed forest habitat includes areas with a tree canopy comprised of a nearly even mix of coniferous and deciduous trees (ANL, 2006).

### 3.1.4.2 Wildlife

Wildlife species near the Operations Area are typical for the Station and region. Commonly encountered species include red-spotted newt, American toad, wood frog, pickerel frog, painted turtle, garter snake, blue jay, black-capped chickadee, rufous-sided towhee, dark-eyed junco, raccoon, Eastern chipmunk, woodchuck, red squirrel, and white-tailed deer (ANL, 1997). Several of the bird species observed in the area are migratory birds protected at the Federal level by the Migratory Bird Treaty Act.

### 3.1.4.3 Threatened and Endangered Species

Currently, no Federally listed threatened or endangered species are known to occur at NBAFS. The only state-listed species occurring in the vicinity of the Operations Area are the endangered Blanding's turtle (*Emydoidea blandingii*) and endangered Eastern hognose snake (*Heterodon platirhinos*). There are no state-listed plant species in the Operations Area.

Blanding's turtle typically resides in the local wetland areas, but individuals have been sighted in the Operations Area. Such sightings generally occur when the turtles move between seasonal habitats and during the nesting period. One Blanding's turtle nesting site has been identified on the slope behind the

operations building. Steep-sided roadside curbs and fences that cannot be traversed present a hazard to traveling turtles in the Operations Area. Several Blanding's turtles have been killed by automobiles in the Operations Area (ANL, 2006, 2010).

The Eastern hognose snake prefers woodland habitats, but is well documented throughout the area including the occasional use of buildings (ANL, 2006; NBAFS, 2008).

Several state-listed birds (e.g., pied-billed grebe, bald eagle, and northern harrier) could occur as transients during migration, but none are likely to nest, roost, or forage within the Operations Area because of the lack of suitable habitat (ANL, 2006).

### **3.1.5 CULTURAL RESOURCES**

Cultural resources include prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason. Cultural resources are limited, nonrenewable resources whose potential for scientific research (or value as a traditional resource) may be easily diminished by actions impacting their integrity.

Numerous laws and regulations require that possible effects to cultural resources be considered during the planning and execution of Federal undertakings. These laws and regulations stipulate a process of compliance and consultation, define the responsibilities of the Federal agency proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Officer [SHPO] and the Advisory Council on Historic Preservation). In addition to NEPA, the primary laws that pertain to the treatment of cultural resources during environmental analysis are the National Historic Preservation Act (especially Sections 106 and 110), the Archaeological Resources Protection Act (ARPA), the Antiquities Act of 1906, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act (NAGPRA). Depending on the integrity and historical significance of a site or property, it may be listed or eligible for listing on the National Register of Historic Places (NRHP).

The protection and management of cultural resources at NBAFS are guided by the Station's Integrated Cultural Resources Management Plan (ICRMP) (NBAFS, 2010b). The ICRMP identifies measures and procedures to protect cultural resources on the Station.

In general, the ROI<sup>1</sup> for cultural resources encompasses areas requiring ground disturbance, off-road operations, or are in proximity of Proposed Action facilities and buildings. For ease of discussion, cultural resources have been divided into archaeological resources (prehistoric and historic), historic buildings and structures, and Traditional Cultural Properties (e.g., Native American sacred or ceremonial sites).

#### **3.1.5.1 Archaeological Resources**

NBAFS contains a diverse and wide-ranging array of archaeological sites and structures representative of human occupation of the region beginning with the Archaic Period (10,000 to 3,000 years before present) and ending with the use of the land as a bombing range during World War II and the early Cold War period. Because of the historic significance of various sites found on the Station, the USAF nominated a multi-component archaeological district for listing on the NRHP. In 2006, the New Hampshire SHPO

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<sup>1</sup> The term ROI is synonymous with the "area of potential effect" as defined under cultural resources regulations, 36 CFR 800.16(d).

concurrent with the determination of eligibility for the NBAFS Archaeological District, which contains 47 contributing properties. The properties include rural homesteads, industrial complexes, roads and cart-paths, bridges and stone culverts, dams, stone walls, and military sites (plane crashes, practice ranges, observation towers, and other structures). The contributing properties can be found all over the district, but are concentrated centrally around Joe English Pond and in the northwest and southeast corners of the Station. None of the archaeological sites, however, are located in the vicinity of the Proposed Action sites within the Operations Area (NBAFS, 2008, 2010b).

### **3.1.5.2 Historic Buildings and Structures**

NBAFS is one of three US satellite tracking and communications stations established for the military space program in 1959. A 1999 Survey and Evaluation of Cold War Resources at NBAFS identified 31 buildings and structures on the Station associated with the Cold War. Of these, five of the structures remaining today were identified as contributing resources to a proposed Cold War historic district within the Operations Area: the operations building (Satellite Control and Headquarters), and buildings 102 (base engineering facility), 108/109 (the ARTS legacy B-Side antenna facility), 142/143 (Satellite Communication support building and antenna), and the Bore Site Tower. The operations building, and buildings 102 and 108/109, were originally constructed in 1960. Building 142/143 was constructed in 1978. The Bore Site Tower is a metal radio tower topped by a satellite antenna that has been in operation since 1970. The district is considered eligible for listing on the NRHP because of its association with the Cold War and development of strategic defense capabilities for the Nation (NBAFS, 2010b).

### **3.1.5.3 Traditional Cultural Properties**

Significant traditional cultural properties (TCPs) are subject to the same regulations as other types of historic properties and are afforded the same protection. Traditional resources for recognized Native American tribes can include archaeological sites, burial sites, mounds, ceremonial areas, caves, hillocks, water sources, plant habitat or gathering areas, or any other natural area important to a culture for religious or heritage reasons. Currently there are no known Native American TCPs at NBAFS (NBAFS, 2010b).

## **3.1.6 SAFETY AND OCCUPATIONAL HEALTH**

Safety and occupational health includes consideration of any activities, occurrences, or operations that have the potential to affect the well-being, safety, or health of workers or members of the general public. The primary goal is to identify and prevent accidents or impacts to onsite workers and the general public. Regarding health and safety at NBAFS, the ROI is limited to the existing Station facilities supporting the Proposed Action. The safety and health ROI includes Station personnel, contractors, and the general public.

For the Proposed Action, safety and health risks exist primarily due to the potential for accidents occurring during transportation and construction activities, and facility operations and maintenance. Typical hazards and accidents can include the following:

- Fires
- Electrical shock or burns
- Non-ionizing radio frequency (RF) radiation from communication antennas
- Inhalation or dermal exposure to hazardous materials or waste
- Asphyxiation from inert atmospheric conditions
- Spills of chemicals and fuels

- Falling debris related to construction
- Falls from structures
- Accidents related to earth-moving equipment, power tools, and other machinery
- Transportation accidents

To help ensure the safe conduct of operations at NBAFS and other bases, the USAF has developed policies and procedures for implementing safety and health requirements. Air Force Policy Directive 91-2 (*Safety Programs*) establishes the USAF's key safety policies and also describes success-oriented feedback and performance metrics to measure policy implementation. More specific safety and safety-related USAF requirements, procedures, and standards relevant to the Proposed Action are listed below.

- Air Force Instruction (AFI) 91-202, AFSPC Supplement 1 (*The US Air Force Mishap Prevention Program*) implements the USAF's Safety Program for determining and applying standards to help eliminate unsafe acts or conditions that cause mishaps.
- AFI 91-204 (*Safety Investigations and Reports*) provides guidance that is common to investigating and reporting all USAF mishaps.
- AFI 91-301, AFSPC Supplement 1 (*Air Force Occupational and Environmental Safety, Fire Protection, and Health*) summarizes USAF requirements for the protection of safety and health. Safety and health hazards are to be minimized through appropriate engineering controls, personal protective equipment, and administrative procedures.
- AFOSH Standard 48-9 (*Radio Frequency Radiation Safety Program*) specifies RF radiation safety requirements and identifies permissible exposure limits (PELs).<sup>2</sup>

Contractors working on NBAFS would follow applicable Occupational Safety and Health Administration (OSHA) regulatory requirements (29 CFR), except when DoD or USAF-specific requirements apply. Implementation of these regulatory requirements and procedures ensure that there is minimal risk to the health and safety of installation personnel and contractors, as well as to the general public, from installation operations.

### 3.1.7 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

For the analysis of hazardous materials and waste management at NBAFS, the ROI is defined as those project-related facilities that store and handle hazardous materials, or are in proximity to environmental restoration sites or other contaminates.

Hazardous materials and waste management activities at NBAFS are governed by specific environmental regulations. For the purposes of the following discussion, the term "hazardous materials or hazardous waste" refers to those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC Section 9601-9675, as amended. In general, this includes substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to the public health, welfare, or the environment when released. Regulated under the Resource Conservation and Recovery Act (RCRA), 42 USC Section 6901-6991, hazardous waste is further defined in 40 CFR 261.3 as any solid waste that possesses any of the hazardous characteristics of toxicity, ignitability, corrosiveness, or reactivity.

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<sup>2</sup> The PEL is the exposure value to which an individual may be exposed to RF radiation without exhibiting damaging biological effects.

### 3.1.7.1 Hazardous Materials Management

NBAFS stores and uses small amounts of paints, thinners, cements, adhesives, acids, cleaners, and other hazardous materials. All hazardous materials are procured and stored by the Hazardous Materials Pharmacy (Hazmart) in Building 120 where they are controlled and tracked by Air Force Enterprise Environmental Safety and Occupational Health Management Information System software. Once purchased, the materials are either stored in the Hazmart for distribution or given directly to various shops for day-to-day use. In most instances, these materials are stored in flammable material storage lockers. (ANL, 2006)

The transportation of hazardous materials on public roads outside NBAFS boundaries is governed by US Department of Transportation (USDOT) regulations within 49 CFR 100-185.

### 3.1.7.2 Hazardous Waste Management

NBAFS is permitted by the State as a small quantity hazardous waste generator. All hazardous wastes are stored at their generation points in proper containers and then staged at the Central Accumulation Area before being shipped off site. NBAFS uses the Defense Reutilization and Marketing Office (DRMO) in Portsmouth, NH to arrange transport and disposal of all waste. NBAFS also operates under a Hazardous Waste Management Plan and Spill Prevention Control and Countermeasures Plan to control any spills of oil or hazardous substances (NBAFS, 2007). All future facilities must comply with the permits and plans.

The transportation of hazardous wastes on public roads outside NBAFS boundaries is governed by USDOT regulations within 49 CFR 100-185.

### 3.1.7.3 Site Restoration

The Installation Restoration Program (IRP) is the DoD's CERCLA-based environmental restoration program, which serves to identify, characterize, and remediate past environmental contamination on DoD installations. Within the USAF, AFI 32-7020 (*The Environmental Restoration Program*) provides guidance and procedures for executing the IRP at USAF installations.

An ongoing IRP evaluation conducted at NBAFS indicated that several sites required no further action. Five remaining sites, however, were recommended for further remedial investigations. Within the Proposed Action areas, one Area of Concern (Site 9) is located at the former ARTS A-Side antenna site, which was recently demolished. The site is a former location of ethylene glycol spills located adjacent to the former antenna. Records indicate approximately 100 gallons of ethylene glycol antifreeze were disposed of annually during fluid exchange at the site. By 1985, waste ethylene glycol was disposed off-site. Sampling activities were conducted to determine the absence/presence of contamination and its impact on groundwater. No VOCs, semi VOCs, or ethylene glycol were detected in any of the groundwater samples collected. A total of 12 metals were detected in one or more groundwater samples; however, no metals were detected above NHDES or Federal screening criteria. NHDES requirements for VOC analyses established subsequent to the completion of the site investigation require an analytical program that includes 1,4-dioxane, among other VOCs not included in the original site investigation analysis. Additional sampling is ongoing (USAF, 2009b).

### 3.1.7.4 Unexploded Ordnance

From 1941 until 1956 sections of NBAFS (then known as the New Boston Bombing and Gunnery Range) were used as an air-to-ground bombing and strafing range. While most of the munitions dropped during

that time period were practice bombs and inert rockets, some of the munitions contained explosive materials that could present a hazard today.

Over the years, most of the munitions have been removed from NBAFS. In the early 1960s, the Operations Area was cleared of unexploded ordnance (UXO) before the permanent facilities for the satellite tracking mission were constructed (NBAFS, 2008). However, documentation on UXO removal efforts is inadequate considering that additional munitions and explosives of concern (MEC) have been found in and around the Operations Area. Various other areas of NBAFS are also known to contain MEC and munitions constituents (MC).

The Military Munitions Response Program (MMRP) is a DoD environmental restoration program that addresses MEC and MC associated with NBAFS historic use as a bombing range. Under the NBAFS MMRP, areas of the Station are continuing to be surveyed and cleared of MEC (US Army Corp of Engineers, 2008).

## **3.2 GLOBAL ATMOSPHERE**

In addition to actions at NBAFS, this EA also considers global environmental effects, including the global atmosphere, in accordance with the requirements of Executive Order 12114. This section describes the baseline conditions that may be affected by the Proposed Action.

### **3.2.1 GREENHOUSE GASES AND GLOBAL WARMING**

Greenhouse gases (GHG) are components of the atmosphere that contribute to the greenhouse effect and global warming. GHGs may occur naturally in the atmosphere or result from human activities, such as the burning of fossil fuels. Federal agencies, states, and local communities address global warming by preparing GHG inventories and adopting policies that will result in a decrease of GHG emissions produced by humans. According to the Kyoto Protocol, there are six GHGs: carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (United Nations Framework Convention on Climate Change, 2007). Although some GHG (CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O) occur naturally in the atmosphere, human activities have changed GHG atmospheric concentrations. From the pre-industrial era (i.e., ending about 1750) to 2004, concentrations of CO<sub>2</sub> have increased globally by 35 percent. Within the US, fuel combustion accounted for 94 percent of all CO<sub>2</sub> emissions released in 2005. On a global scale, fossil fuel combustion added approximately 30 x 10<sup>9</sup> tons (27 x 10<sup>9</sup> metric tons) of CO<sub>2</sub> to the atmosphere in 2004, of which the US accounted for about 22 percent (USEPA, 2007).

Since 1900, the Earth's average surface air temperature has increased by about 1.2° to 1.4° Fahrenheit (F) (0.7° to 0.8° Celsius [C]). The warmest global average temperatures on record have all occurred within the past 15 years, with the warmest 2 years being 1998 and 2005 (USEPA, 2010). With this in mind, the USAF is supporting government environmental agencies, as well as funding and managing climate-change initiatives globally, while preserving military operations, sustainability, and readiness by working, where possible, to reduce GHG emissions.

### **3.2.2 STRATOSPHERIC OZONE LAYER**

The stratosphere, which extends from 32,800 ft (10,000 m) to approximately 164,000 ft (50,000 m) in altitude, contains the Earth's ozone layer (National Oceanic and Atmospheric Administration [NOAA], 2007). The ozone layer plays a vital role in absorbing harmful ultraviolet radiation from the sun. Over the last 20 years, ozone concentrations in the stratosphere have been threatened by anthropogenic (human-made) gases released into the atmosphere—primarily chlorine related substances. Such materials

include chlorofluorocarbons (CFCs), which have been widely used in electronics and refrigeration systems, and the lesser-used Halons, which are effective fire extinguishing agents. Once released, the dynamics of the atmosphere mix the gases worldwide until they reach the stratosphere, where ultraviolet radiation releases their chlorine and bromine components.

Through global compliance with the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and amendments, the worldwide production of CFCs and other ozone-depleting substances has been drastically reduced and banned in many countries. A continuation of these compliance efforts is expected to allow for a slow recovery of the ozone layer (World Meteorological Organization [WMO], 2006).

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## 4.0 ENVIRONMENTAL CONSEQUENCES

This chapter presents the potential environmental consequences of the Proposed Action and No Action Alternative, described in Chapter 2.0 of this EA, when compared to the affected environment described in Chapter 3.0. The amount of detail presented in each section of the analysis is proportional to the potential for impact. The discussions address both *direct* and *indirect* impacts,<sup>3</sup> where applicable, in addition to any *cumulative* effects that might occur. Also included in the discussions, where necessary, are appropriate environmental monitoring and management actions and requirements, which are summarized in Section 4.4.

Chapter 6.0 lists the agencies, organizations, and personnel consulted as part of this analysis.

### 4.1 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The following sections describe the potential environmental consequences of implementing the Proposed Action. For each environmental resource or topical area, impacts are described that potentially could be affected at NBAFS and within the global environment.

#### 4.1.1 NEW BOSTON AIR FORCE STATION

Various management controls and engineering systems are in place at NBAFS to manage and implement environmental and safety requirements. Required by Federal, state, DoD, and agency-specific regulations, these measures are implemented through normal operating procedures. To help ensure that procedures are followed, installation personnel and contractors receive periodic training on applicable environmental and safety requirements. In addition, environmental audits by both internal offices and external agencies are conducted at the Station to verify compliance.

##### 4.1.1.1 Air Quality

###### 4.1.1.1.1 Facility Construction

Because the Proposed Action at NBAFS falls within the boundaries of New Boston—an air quality attainment area—the General Conformity Rule does not apply. Although the conformity regulations are not applicable, the total direct and indirect emissions associated with the Proposed Action were estimated and compared to the *de minimis* thresholds to determine the level of effects under NEPA. This comparison is presented in Table 4-1. Detailed air emissions calculations for the Proposed Action are provided in Appendix A. The following sources of construction-related air emissions were accounted for:

- Construction of the proposed NHS-B antenna facility (including fugitive dust, equipment exhaust, workers commutes, painting, the use of adhesives, and paving)
- Delivery of equipment and supplies

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<sup>3</sup> *Direct* impacts are caused by the action and occur at the same time and place. *Indirect* impacts occur later in time or are farther removed in distance, but are still reasonably foreseeable.

**Table 4-1. Estimated Emissions of Criteria Pollutants for the Proposed Action**

| <b>Activity/Source</b>                       | <b>CO</b>  | <b>NO<sub>x</sub></b> | <b>VOC</b> | <b>SO<sub>x</sub></b> | <b>PM<sub>10</sub></b> | <b>PM<sub>2.5</sub></b> |
|----------------------------------------------|------------|-----------------------|------------|-----------------------|------------------------|-------------------------|
| Total Construction Emissions (tons)          | 5.57       | 6.93                  | 1.19       | <0.01                 | 0.84                   | 0.43                    |
| Total Operational Emissions (tons per year)  | 0.03       | 0.14                  | 0.01       | <0.01                 | <0.01                  | <0.01                   |
| <b>De Minimis Thresholds (tons per year)</b> | <b>100</b> | <b>100</b>            | <b>100</b> | <b>100</b>            | <b>100</b>             | <b>100</b>              |
| <b>Exceeds De Minimis Threshold</b>          | <b>No</b>  | <b>No</b>             | <b>No</b>  | <b>No</b>             | <b>No</b>              | <b>No</b>               |

Because the estimated emissions would be *de minimis*, the effects on air quality would be minor. Emissions outlined herein represent conservative estimations of the types of equipment to be used and the duration of activities, and can be considered the upper bound for the Proposed Action. In addition, all activities associated with the proposed facility construction would be accomplished in full compliance with other (non-permitting) regulatory requirements through the use of compliant practices and/or products. Construction activities would be in strict accordance with the Code of New Hampshire Rules (NHDES, 2010), and all Federal emissions performance laws and standards.

As a result, the proposed construction activities would not cause significant impacts on local or regional air quality.

#### **4.1.1.1.2 Operations**

Short-term minor and long-term negligible effects would be expected. The proposed antenna would have a 50 kW diesel-powered EG to provide power for the radome blower package. In preparation for the new EG, NBAFS would apply for a new or modified General State permit that allows operation of stationary sources of air emissions. No impacts are anticipated from the proposed decommissioning of the ARTS legacy B-Side antenna facility. The total direct and indirect emissions from the Proposed Action (Table 4-1) would be *de minimis*, not be regionally significant, and not contribute to a violation of NBAFS's air operating permit or any air regulation.

#### **4.1.1.2 Noise**

##### **4.1.1.2.1 Facility Construction**

Short- and long-term minor adverse impact would be expected. Noise impacts would be from the operation of heavy equipment and pneumatic tools during construction activities. Individual pieces of construction equipment typically generate short-term noise levels of 80 to 90 dBA at a distance of 50 ft (15 m) (USEPA, 1974). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within a few hundred feet of the construction site. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 ft (122 to 244 m) from the site of major equipment operations. However, the closest sensitive receptors to the project site are residences located approximately 1,850 ft (564 m) away, and are separated from the site by dense forest and undulating terrain.

NBAFS personnel and contractors in the immediate vicinity of construction activities where noise levels approach 70 dB would utilize proper ear protection to protect their hearing. Construction workers and Station personnel would comply with the USAF Hearing Conservation Program requirements (as described in Section 3.1.2) and other applicable occupational health and safety regulations.

As a result, no significant noise impacts are expected from construction activities.

#### **4.1.1.2.2 Operations**

The EG for the antenna would be operated weekly for testing and maintenance. This would temporarily result in elevated noise levels near the new NHS-B antenna facility. Because of the noise generated by the radome pressurization blower package, hearing protection would be required for personnel at all times while inside the radome. Operation of the new antenna would not cause an increase in personnel-related traffic to and from the Station. Thus, no significant noise impacts would occur during long-term operation of the new antenna. In addition, no impacts are anticipated from the proposed decommissioning of the ARTS legacy B-Side antenna facility.

#### **4.1.1.3 Water Resources**

##### **4.1.1.3.1 Facility Construction**

The construction, and related excavation and grading activities, have the potential to cause storm runoff, erosion, and sedimentation in local areas. The estimated area of excavation and grading for the new antenna is 60,000 square ft (5,574 square m). Because the area of contiguous ground disturbance is not expected to exceed 100,000 square ft (1,076 square m), a New Hampshire Alteration of Terrain (AoT) permit would not be required from the AoT Bureau within NHDES. However, under the USEPA NPDES program, a stormwater Construction General Permit would be needed since the proposed project activities are expected to disturb 43,560 square ft (4,047 square m) or more of land area.

Under Section 438 of the Energy Independence and Security Act (EISA) of 2007, all Federal projects greater than 5,000 square ft (465 square m) shall incorporate site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of stormwater flow. The intention of EISA Section 438 is to preserve or restore the hydrology of the site during the development or redevelopment process. The USAF and the construction contractor would ensure that the final design for the proposed NHS-B antenna facility would comply with the EISA Section 438 requirements, which might include the re-vegetation of construction areas, vegetated swales, and use of porous pavements (USEPA, 2009).

The construction contractor would also be required to apply state-approved Best Management Practices (BMPs) for soil erosion control at the site and along adjacent slopes, and for the collection and disposal of waste concrete and wastewater from concrete truck washout. No concrete wastes or wastewater would be allowed to enter drainages or surface waters. Temporary erosion controls (e.g., silt fences) would not be removed until soil areas are permanently stabilized. Long-term erosion controls (e.g., fiber mulch mats) would remain in place following construction activities.

To minimize potential impacts from spills, the construction contractor would be required to prepare a hazardous material Spill Prevention, Control, and Countermeasure (SPCC) Plan and obtain concurrence from the NBAFS Environmental Office. The plan would include the implementation of BMPs, such as daily inspections of construction vehicles and equipment for fluid leaks, secondary containment provisions for equipment fueling sites, and proper handling and disposal of vehicle wastes.

Because of the protection measures to be implemented, and the lack of ponds, streams, wetlands, well-defined drainages, or water supply wells near the construction area, no significant impacts to surface waters or groundwater resources are expected.

#### **4.1.1.3.2 Operations**

Long-term operations of the new antenna facility would not impact water resources. Secondary containment systems and spill alarms would be in place for the new fuel tanks. In addition, waste fluids (e.g., oil, antifreeze) from periodic maintenance of the EG and other mechanical systems would be collected and disposed of in accordance with applicable Federal, state, and USAF regulations.

No impacts are anticipated from the proposed decommissioning of the ARTS legacy B-Side antenna facility.

#### **4.1.1.4 Biological Resources**

In February 2011, NBAFS personnel sent a letter to the New Hampshire Department of Fish and Game (NHDFG) requesting information or concerns in regards to the effects that the Proposed Action might have on state-listed species (see Appendix B, pages B-2 and B-3). As of April 27, 2011, no response has been received from the NHDFG. Thus, the USAF and NBAFS assume that the NHDFG has no concerns with the project.

##### **4.1.1.4.1 Facility Construction**

Impacts to biological resources would be minimal because all of the proposed activities would occur in already developed areas that have relatively low habitat value and species diversity. Impacts to ecological resources would be limited primarily to the immediate construction area. Clearing or other vegetation damage would be limited to previously landscaped areas.

Wildlife occurring in the project vicinity would be disturbed by construction-related noise and activities. Such disturbances, however, would be temporary and occur in a limited area. Because migratory bird species are primarily transient within the Operations Area, no adverse impacts to such species are expected.

The state-listed endangered Blanding's turtle and Eastern hognose snake do occur occasionally within the Operations area during the months of March through November. Any individual turtles or snakes occurring within the construction area or on Station roads could be harmed or killed by vehicles and equipment. In addition, the noise and disturbance activities of the Proposed Action may affect the Blanding's turtle movement to the nesting site behind the operations building. As a preventive measure, the NBAFS Environmental Office would instruct construction personnel to be aware of such species. If either Blanding's turtles or Eastern hognose snakes were found within the construction area, the NBAFS Environmental Office would be contacted to relocate the individuals to a safe location on Station property.

If new curbing is to be installed in association with the proposed construction activities, only Cape Cod (ramped) curbing would be used so as not to create new barriers that would restrict the movement of Blanding's turtles and other reptilian or amphibian species within the project area.

Overall, project activities are not expected to result in significant impacts on vegetation or wildlife species. The implementation of protective measures for protected species, as described above, would minimize the potential for adverse impacts on such species.

#### **4.1.1.4.2 Operations**

During long-term operations of the new antenna facility, continuous or occasional noise from HVAC systems and the EG would potentially disturb wildlife in adjacent habitat areas. However, wildlife typically habituates to such noises in a relatively short period of time (Larkin, 1996; Mancini et al., 1988).

Just as for other satellite tracking antennas at NBAFS, the continuous operation of the new NHS-B antenna would potentially expose flying birds and bats to RF radiation. On the basis of conservative assumptions regarding bird and bat weights, cross-sectional areas, and flight speed, and the antenna's narrow pencil-beam pattern, a flying bird or bat would not be harmed by RF radiation as it crossed the beam of an operating antenna (USAF, 1995).

As a result, no significant impacts to biological resources are expected from antenna-related operations. In addition, no impacts are anticipated from the proposed decommissioning of the ARTS legacy B-Side antenna facility.

#### **4.1.1.5 Cultural Resources**

In February 2011, NBAFS personnel initiated a National Historic Preservation Act Section 106 consultation with the New Hampshire SHPO. The SHPO was requested to review the proposed project and the potential effects on historical resources. In their written response to the consultation request, the SHPO concurred with NBAFS's finding that the project would have "no adverse effect" on historic properties (see Appendix B, page B-4).

##### **4.1.1.5.1 Facility Construction**

Because no archaeological resources have been identified within the proposed construction area, and the project area is previously disturbed and developed, no impacts on archaeological resources are expected. In the unlikely event that previously undocumented archaeological sites are discovered during the excavations, work would be temporarily suspended within 100 ft (30 m) of the discovered item and the Station's Environmental Office would be notified immediately. Excavation work would not resume until after the site had been secured and properly evaluated.

By implementing the measures described above, no significant impacts to cultural resources are expected.

##### **4.1.1.5.2 Operations**

Operational activities for the new NHS-B antenna would have no impact on cultural resources.

Although the ARTS legacy B-Side antenna facility (Buildings 108 and 109) is a known Cold War facility that is a contributing property to the proposed Cold War historic district within the NBAFS Operations Area, decommissioning of the facility would not constitute an adverse effect. The USAF currently has no plans to alter or demolish the ARTS legacy B-Side antenna facility. NBAFS would maintain electrical power to the buildings and provide low-level maintenance of the facility to minimize weather-related deterioration. In anticipation of future actions that might affect the two buildings, NBAFS has prepared a Historic American Engineering Record (HAER) document on the facility. A Federal agency must conduct HAER documentation of structures related to engineering and industry that will be demolished or otherwise significantly altered if they are on or eligible for NRHP listing. The HAER for Buildings 108 and 109 was completed in April 2010 (NBAFS, 2010c). USAF decisions on the potential reuse or disposal of the legacy antenna facility and equipment would be made at a later date and would require additional Section 106 consultations with the New Hampshire SHPO prior to implementation.

#### **4.1.1.6 Safety and Occupational Health**

##### **4.1.1.6.1 Facility Construction**

During the proposed construction activities within the NBAFS Operations Area, workers (including both military personnel and contractors) would be required to comply with applicable AFOSH and OSHA regulations and standards. Because all construction-related activities would occur well within Station boundaries, the general public would not be exposed to health and safety risks.

Because of the potential for MEC or MC to occur within the construction area, surface and subsurface surveys for such materials would be conducted by a UXO technician prior to excavating in any previously undisturbed areas. Such surveys may include use of magnetometers or other detection technologies. Surveys for potential munitions, including their recovery and disposal, would be conducted in accordance with DoD Manual 6055.09-M, Volume 7 (*DoD Ammunition and Explosives Safety Standards: Criteria for Unexploded Ordnance, Munitions Response, Waste Military Munitions, and Material Potentially Presenting an Explosive Hazard*), and established explosive safety procedures for NBAFS (US Army Corps of Engineers, 2008).

Consequently, no significant impacts to health and safety are expected during construction activities.

##### **4.1.1.6.2 Operations**

Continuous operation of the electric-powered blower package is necessary in maintaining air pressure inside the new radome. A total failure of the blower package would cause the radome to deflate. However, the redundancy of multiple blower fans would minimize such risks. Similar blower packages have been operating at NBAFS since 2002 with no occurrences of total system failure.

Snow and ice build-up on the new radome exterior would present a hazard to personnel entering or exiting the facility. To protect personnel from falling snow and ice during the winter months, personnel would be required to enter and exit the radome through the covered vehicle entrance and walkway located on the southeast side of the facility. A protective canopy over the entrance would deflect snow and ice falling from the radome and help to minimize snow accumulation from blocking the entrance. Also, in accordance with procedures specified in New Hampshire Tracking Station Operating Instruction 21-04 (*Inflatable Radome Snow and Ice Removal*), Station personnel performing snow and ice removal from radomes are required to use personal protective equipment (i.e., hard hats, eye protection, and footwear).

Of particular importance during operation of the new NHS-B RBC antenna facility are the potential health risks from the RF (non-ionizing) radiation emitted. Non-ionizing radiation (NIR) can have harmful health effects (e.g., heating of body tissue) if uncontrolled. To prevent such health risks, the new antenna would be operated and sustained in accordance with AFOSH Standard 48-9 and the NIR exposure limits set by the Institute of Electrical & Electronics Engineers, Inc. (IEEE) Standard C95.1 (*IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz*), which serves as a consensus standard developed by industry, the scientific community, and government agencies.

Based on the NIR hazard study of the proposed NHS-B antenna conducted for the USAF (Sacks, 2010), the NIR exposure limits for the new antenna would be 1 milliwatt per centimeter squared (mW/sq cm) averaged over 30 minutes for the general population (uncontrolled exposure), and 6 mW/sq cm averaged over 6 minutes for on-site employees (controlled exposure). “Controlled exposures” refer to locations where there is exposure that may be incurred by persons who are aware of the potential for exposure as a

concomitant of employment and “uncontrolled exposure” includes all locations where potential exposure to the general public may exist.

Figure 4-1 is taken from the NIR hazard study and shows where the antenna power density levels were calculated as a function of distance from the antenna for three different sampling paths: (1) along the antenna axis; (2) along the antenna rim; and (3) 6 ft (1.8 m) above the ground with the antenna pointed at its minimum operational angles of zero and three degrees. Figure 4-2 shows the expected computed NIR power levels for these three distances away from the vertex of the proposed NHS-B antenna. The safe controlled and uncontrolled exposure level thresholds are met at all locations 6 ft (1.8 m) above the ground. In addition, both the controlled and uncontrolled exposure levels along the antenna rim are below the IEEE recommended exposure limits. The study also showed that ground reflections added little modification to expected exposure levels (Sacks, 2010).

Based on calculations of minimum safe distances from the proposed NHS-B antenna, NIR hazard zones would extend up to 2,500 ft (762 m) along the antenna beam center axis (Sacks, 2010). Operation of the new antenna, however, would not allow any land areas within 2,500 ft (762 m) to be exposed to the main beam. This would include all residences, schools, churches, and other private/public areas in the project vicinity. Antenna safety features, including low elevation mechanical stops and software limits, would be used to prevent USAF personnel, contractors, and the general public on the ground from being exposed to hazardous NIR levels. In addition, signs, warning lights, and key interlocks would be used to warn or prevent NBAFS personnel from entering areas where main beam NIR limits might be exceeded (e.g., building roof tops). To temporarily remove or disable such safety features or interrelated subsystems for maintenance or repairs would require authorization from the NBAFS Commander. However, at no time would RF radiation safe distances and safe exposure limits be exceeded.

Upon completion of the proposed NHS-B antenna installation, an RF radiation survey would be conducted in accordance with AFOSH Standard 48-9 and DoD Instruction 6055.11 (*Protecting Personnel from Electromagnetic Fields*). The purpose of this survey would be to validate the calculated and estimated safe distances and safe exposure limits for uncontrolled (general population) and controlled (employees) personnel described above. This would confirm that the proposed antenna system is in compliance with regulatory radio frequency exposure limit requirements. Following the survey, the established safe distances and safe exposure limits would be maintained at all times during antenna operations.

Based on the above safety precautions that the USAF would implement as part of new antenna operations, no significant impacts to safety and occupational health are expected. In addition, no impacts are anticipated from the proposed decommissioning of the ARTS legacy B-Side antenna facility.

#### **4.1.1.7 Hazardous Materials and Waste Management**

##### **4.1.1.7.1 Facility Construction**

During construction activities, the contractor would be required to prepare and submit a SPCC Plan to the NBAFS Environmental Office for approval. Excavation of the new antenna foundation would occur at the location of the former ARTS A-Side antenna. As part of the demolition and removal of the former antenna in 2010, non-contaminated soil material was used to fill in the antenna’s foundation. Thus, excavation of the new antenna foundation is not expected to involve soil previously contaminated by ethylene glycol or other spills. If during construction, however, were excavated soils to exhibit hazardous characteristics (e.g., odors and color discolorations), work in the excavation area would be suspended until a remedial investigation of the soils are conducted by trained specialists. Also, in the event that MEC or MC is discovered during excavation activities, explosive safety procedures have been established

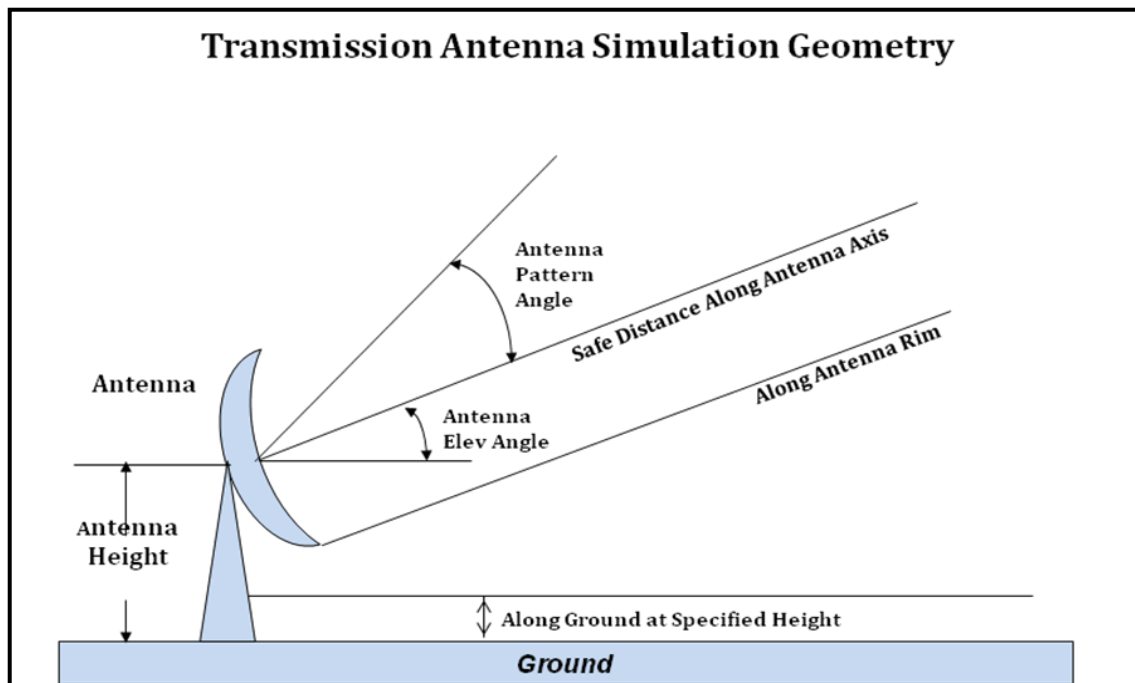


Figure 4-1. Transmission Radio Frequency Antenna Simulation Geometry

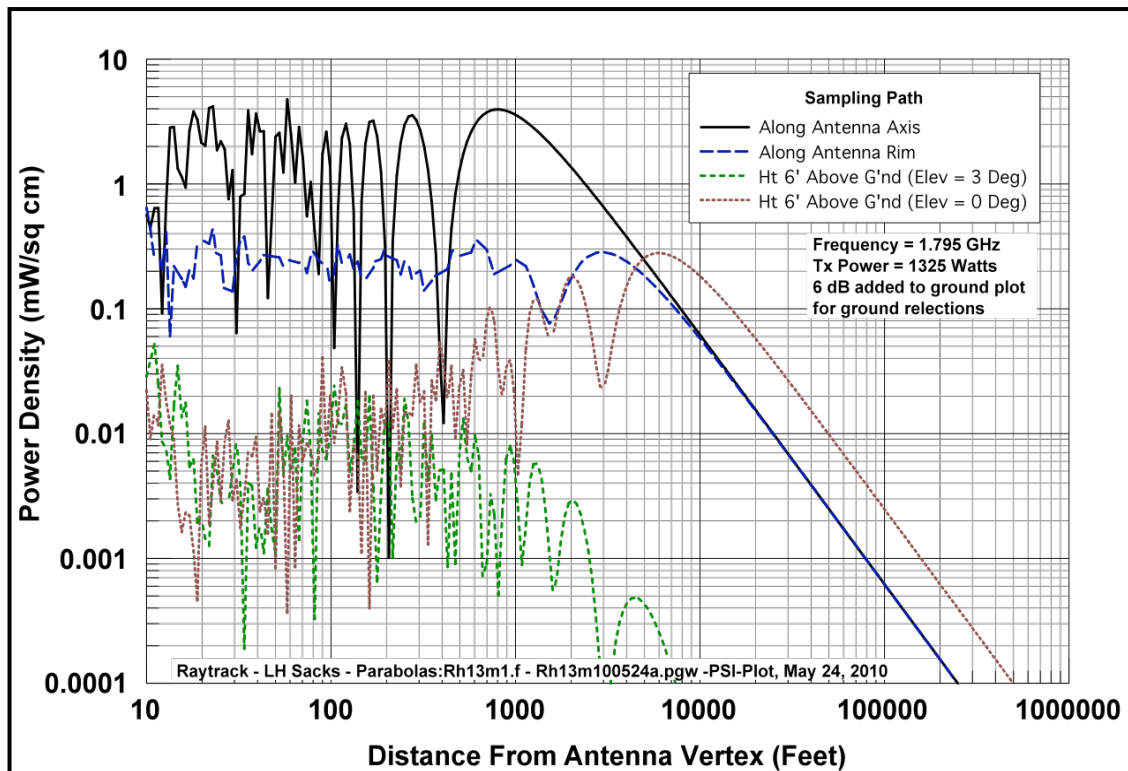


Figure 4-2. Computed Power Density of the NHS-B RBC Antenna

to recover the material or detonate it in-place (US Army Corps of Engineers, 2008). Station personnel would coordinate with community leaders prior to any detonation because the sound might be heard for long distances.

During modifications to the operations building for the core electronics, hazardous materials could be encountered. Potential hazardous materials present in the building include asbestos, trichloroethylene, lead paint, cadmium, and polychlorinated biphenyls (PCBs). Prior to building modifications, a hazardous materials survey would be performed and a plan developed for removal and disposal off-site. The contractor would be required to comply with applicable Federal, state, and USAF requirements for hazardous materials handling and disposal.

The DRMO in Portsmouth, NH would be responsible for the disposal of construction waste materials (e.g., concrete, rebar, sheetrock).

All hazardous and non-hazardous wastes generated during construction activities would be properly disposed of in accordance with applicable Federal, state, local, and USAF regulations. Hazardous material and waste-handling capacities would not be exceeded and management programs would not have to change. As a result, no significant impacts from the management of project-related hazardous materials and waste are expected.

#### **4.1.1.7.2 Operations**

All hazardous materials and associated wastes for new NHS-B antenna operations and for the decommissioned ARTS legacy B-Side antenna facility would be responsibly managed in accordance with the well-established policies and procedures identified in Section 3.1.7. Hazardous material and waste-handling capacities at NBAFS would not be exceeded, and management programs would not have to change. For example, waste fluids (e.g., oil, antifreeze) from periodic maintenance of the new antenna's EG and other mechanical systems would be collected and disposed of in accordance with applicable Federal, state, and USAF regulations. If a spill of such materials were to occur, spill containment and cleanup procedures would be implemented in accordance with NBAFS plans and policies. Thus, no significant impacts from the management of project-related hazardous materials and waste are expected.

### **4.1.2 GLOBAL ATMOSPHERE**

#### **4.1.2.1 Facility Construction**

The Proposed Action would not induce a long-term addition to GHG in the atmosphere. Under the Proposed Action, all construction activities combined would generate approximately 593 tons (537 metric tons) of CO<sub>2</sub>. Detailed air emissions calculations for the Proposed Action are provided in Appendix A. The amount of CO<sub>2</sub> released by the Proposed Action would be less than 0.0001 percent of the anthropogenic emissions for this gas released on a global scale annually (USEPA, 2007).

#### **4.1.2.2 Operations**

Operational activities would generate approximately 671 tons (609 metric tons) of CO<sub>2</sub> each year, as shown in Appendix A. The CEQ recently released draft guidance on when and how Federal agencies should consider GHG emissions and climate change in NEPA analyses. The draft guidance includes a presumptive effects threshold of 27,558 tons (25,000 metric tons) of CO<sub>2</sub> equivalent emissions from a Proposed Action on an annual basis (CEQ, 2010). The GHG emissions associated with the Proposed Action fall well below the CEQ threshold. Although this limited amount of emissions would not likely

contribute to global warming, any emission of GHG represents a minute increase that could have incremental effects on the global atmosphere.

Notably, there would be no CFCs or other ozone depleting substances used or released during the Proposed Action. Therefore, the Proposed Action would have no effect on the stratosphere ozone layer.

## **4.2 ENVIRONMENTAL CONSEQUENCES OF THE NO ACTION ALTERNATIVE**

Under the No Action Alternative, the USAF would not construct and operate the NHS-B antenna facility at NBAFS, nor would the ARTS legacy B-Side antenna (Buildings 108 and 109) be decommissioned. As a result, potential impacts from proposed facility construction would not occur. NBAFS would continue ongoing operations, with environmental conditions expected to remain unchanged from that described for the Affected Environment in Chapter 3.0 of this EA.

## **4.3 CUMULATIVE EFFECTS**

Cumulative effects are considered to be those resulting from the incremental effects of an action when considering past, present, and reasonably foreseeable future actions, regardless of the agencies or parties involved. In other words, cumulative effects can result from individually minor, but collectively potentially significant, impacts occurring over the duration of the Proposed Action and within the same geographical area.

### **4.3.1 NEW BOSTON AIR FORCE STATION**

Other recent or near-term projects that have or will take place in the vicinity of the Operations Area at NBAFS include a new main gate; demolition of the Bore Site Tower and Buildings 130, 141, and 257; an addition to Building 133; a generator project; and realignment of a portion of the restricted area fence. Because most of these projects would occur over a period of several months or years, no significant cumulative impacts would be expected when combined with the impacts from the Proposed Action. Air emissions and noise would have little effect on ambient conditions, and just as for the Proposed Action, various resource protection measures would be applied to each individual project. As an example, applicable erosion and stormwater control measures would be implemented for each construction project in accordance with Federal and state regulations.

The proposed addition of the new NHS-B antenna with other existing transmitting antenna systems at NBAFS was also evaluated for potential cumulative NIR effects (Sacks, 2010, 2011). Power density plots similar to Figure 4-2 have been generated for the other existing antenna systems operating in the vicinity of the proposed NHS-B antenna. A summary of the safe operational distances for the existing and proposed antenna systems is provided in Table 4-2. The antenna locations are shown in Figure 4-3. Safe operational levels are met at all distances and operational configurations for the antenna systems listed. The addition of the new NHS-B antenna is not expected to add any cumulative impact to the existing NIR environment at NBAFS.

Fixed and rotary wing aircraft would not fly within the main beam distances shown in Table 4-2 for uncontrolled exposure. Therefore, the Proposed Action does not add any risk of exceeding the maximum permissible exposure for personnel in aircraft. Just as described in Section 4.1.1.6.2 for the new NHS-B antenna, the other antenna systems have operational safe guards (low elevation mechanical stops and software limits) to prevent personnel on the ground from being exposed to hazardous NIR levels. In addition, signs, warning lights, and key interlocks are used to warn or prevent NBAFS personnel from entering areas where main beam NIR limits might be exceeded (e.g., building roof tops).

**Table 4-2. Safe Operating Distances for NBAFS Antennas**

| <b>Antenna</b>    | <b>Transmission Frequency</b> | <b>Safe Distance (Controlled Exposure)</b>                                       | <b>Safe Distance (Uncontrolled Exposure)</b>                                              |
|-------------------|-------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Proposed NHS-B    | 1.8 GHz                       | All Distances                                                                    | 2,500 ft in Main Beam<br>All Distances on Ground                                          |
| ARTS Legacy NHS-B | 1.75-1.85 GHz                 | All Distances                                                                    | 2,000 ft in Main Beam<br>All Distances on Ground                                          |
| SET-3             | 1.75-1.85 GHz                 | All Distances                                                                    | 1,000 ft in Main Beam<br>All Distances on Ground                                          |
| NHS-A             | 1.75-1.85 GHz                 | 1600 ft in Main Beam<br>All Distances on Ground                                  | 4,300ft in Main Beam<br>All Distances on Ground                                           |
| SATCOM            | 7.9-8.4 GHz                   | 260 ft in Main Beam<br>All Distances on Ground<br>All Distances at 5 watts power | 30,000 ft in Main Beam<br>All Distances on Ground<br>All Distances at 5 watts power level |
| NBES-1            | 5.925-6.425 GHz               | All Distances                                                                    | All Distances                                                                             |

#### 4.3.2 GLOBAL ATMOSPHERE

On a global basis, the Proposed Action would release a minute quantity of CO<sub>2</sub> compared to anthropogenic releases worldwide and the CEQ's draft threshold guidance. This limited amount of emissions would not contribute significantly to cumulative global warming; however, any emissions of GHG represent an incremental increase that could have incremental effects on the global atmosphere.

Because the NBAFS operations would not release ozone-depleting substances, there would be no cumulative impacts on the stratospheric ozone layer.

#### 4.4 SUMMARY OF ENVIRONMENTAL MANAGEMENT AND MONITORING ACTIONS

Throughout this EA, various management controls and engineering systems are described. Required by Federal, state, DoD, USAF environmental, health, and safety regulations, the Det 4, 23 SOPS/CE implements these measures through normal operating procedures. Although the USAF does not expect significant or other major impacts to result from implementation of the Proposed Action, some specific environmental management activities have been identified to minimize the level of impacts that might occur at NBAFS. These are summarized below and include the relevant sections of the EA where they are further described.

- Construction workers and base personnel would comply with the USAF Hearing Conservation Program requirements and other applicable occupational health and safety regulations. (Section 4.1.1.2.1)
- Because of the noise generated by the radome pressurization blower package, hearing protection would be required for personnel at all times while inside the radome. (Section 4.1.1.2.2)

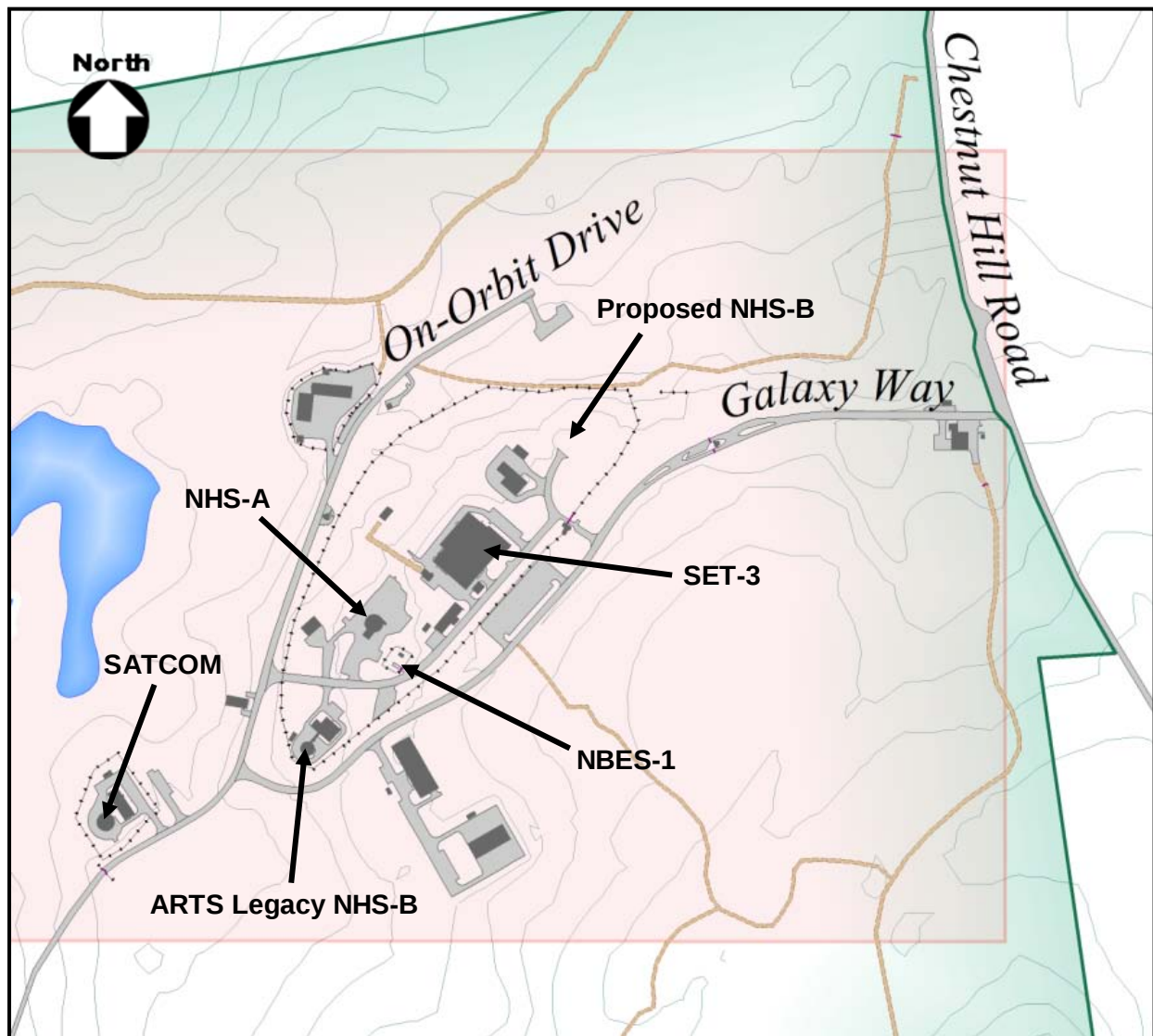


Figure 4-3. Locations of Existing and Proposed Antenna Systems at NBAFS

- Under the USEPA NPDES program, a stormwater Construction General Permit would be needed since the proposed project activities are expected to disturb 43,560 square ft (4,047 square m) or more of land area. (Section 4.1.1.3.1)
- The USAF and the construction contractor would ensure that the final design for the proposed NHS-B antenna facility would comply with the EISA Section 438 requirements for stormwater flow. (Section 4.1.1.3.1)
- The construction contractor would be required to apply state-approved BMPs for soil erosion control, and for the collection and disposal of waste concrete and wastewater from concrete truck washout. No concrete wastes or wastewater would be allowed to enter drainages or surface waters. Temporary erosion controls would not be removed until soil areas are permanently stabilized. (Section 4.1.1.3.1)
- The construction contractor would be required to prepare a hazardous material SPCC Plan and obtain concurrence from the NBAFS Environmental Office. (Section 4.1.1.3.1)
- The NBAFS Environmental Office would instruct construction personnel to be aware of protected Blanding's turtles or Eastern hognose snakes. If individuals of these species were found within construction areas, the NBAFS Environmental Office would be contacted to relocate the turtles or snakes to a safe location on Station property. (Section 4.1.1.4.1)
- If new curbing is to be installed in association with the proposed construction activities, only Cape Cod (ramped) curbing would be used so as not to create new barriers that would restrict the movement of Blanding's turtles and other reptilian or amphibian species within the project area. (Section 4.1.1.4.1)
- In the unlikely event that previously undocumented archaeological sites are discovered during the excavations, work would be temporarily suspended within 100 ft (30 m) of the discovered item and the Station's Environmental Office would be notified immediately. Excavation work would not resume until after the site had been secured and properly evaluated. (Section 4.1.1.5.1)
- Following decommissioning of the ARTS legacy B-Side antenna facility (Buildings 108 and 109), NBAFS would maintain electrical power to the buildings and provide low-level maintenance of the facility to minimize weather-related deterioration. (Section 4.1.1.5.2)
- Because of the potential for MEC or MC to occur within the construction area, surface and subsurface surveys for such materials would be conducted by a UXO technician prior to excavating in any previously undisturbed areas. Surveys for potential munitions, including their recovery and disposal, would be conducted in accordance with DoD 6055.09-M, Volume 7 and established explosive safety procedures for NBAFS (US Army Corps of Engineers, 2008). (Section 4.1.1.6.1)
- To protect Station personnel from snow and ice falling from the new radome during the winter months, personnel would be required to enter and exit the radome through the covered vehicle entrance and walkway. Also, in accordance with procedures specified in New Hampshire Tracking Station Operating Instruction 21-04, Station personnel performing snow and ice removal from radomes are required to use personal protective equipment (i.e., hard hats, eye protection, and footwear). (Section 4.1.1.6.2)

- New NHS-B antenna safety features would include low elevation mechanical stops and software limits to prevent USAF personnel, contractors, and the general public on the ground from being exposed to hazardous NIR levels. In addition, signs, warning lights, and key interlocks would be used to warn or prevent NBAFS personnel from entering areas where main beam NIR limits might be exceeded (e.g., building roof tops). (Section 4.1.1.6.2)
- Upon completion of the proposed NHS-B antenna installation, an RF radiation survey would be conducted in accordance with AFOSH Standard 48-9 and DoD Instruction 6055.11. The purpose of this survey would be to validate the calculated and estimated safe distances and safe exposure limits for uncontrolled (general population) and controlled (employees) personnel. Following the survey, the established safe distances and safe exposure limits would be maintained at all times during antenna operations. (Section 4.1.1.6.2)
- If during construction, were excavated soils to exhibit hazardous characteristics (e.g., odors and color discolorations), work in the excavation area would be suspended until a remedial investigation of the soils are conducted by trained specialists. (Section 4.1.1.7.1)
- In the event that MEC or MC is discovered during excavation activities, explosive safety procedures have been established to recover the material or detonate it in-place. Station personnel would coordinate with community leaders prior to any detonation because the sound might be heard for long distances. (Section 4.1.1.7.1)
- Prior to any modifications to the operations building for the new core electronics, a hazardous materials survey for asbestos, lead based paint, and other materials would be performed and a plan developed for removal and disposal off-site. The contractor would be required to comply with applicable Federal, state, and USAF requirements for hazardous materials handling and disposal. (Section 4.1.1.7.1)

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## 8.0 DISTRIBUTION LIST

The following agencies were sent a copy of the Draft EA/FONSI.

- US Fish and Wildlife Service, New England Field Office, Concord, NH
- New Hampshire Division of Historical Resources, State Historic Preservation Office, Concord, NH
- New Hampshire Department of Fish and Game, Concord, NH

The following libraries were sent a copy of the Draft EA/FONSI.

- Whipple Free Library, New Boston, NH
- Amherst Town Library, Amherst, NH
- Daland Memorial Library, Mont Vernon, NH

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***APPENDIX A***

***AIR EMISSIONS CALCULATIONS***

| Table A-1. Construction Equipment Use |                 |              |               |                 |
|---------------------------------------|-----------------|--------------|---------------|-----------------|
| Equipment Type                        | Number of Units | Days on Site | Hours Per Day | Operating Hours |
| Excavators Composite                  | 1               | 115          | 4             | 460             |
| Rollers Composite                     | 1               | 173          | 8             | 1384            |
| Rubber Tired Dozers Composite         | 1               | 115          | 8             | 920             |
| Plate Compactors Composite            | 2               | 115          | 4             | 920             |
| Trenchers Composite                   | 2               | 58           | 8             | 928             |
| Air Compressors                       | 2               | 115          | 4             | 920             |
| Cement & Mortar Mixers                | 2               | 115          | 6             | 1380            |
| Cranes                                | 2               | 115          | 7             | 1610            |
| Generator Sets                        | 2               | 115          | 4             | 920             |
| Tractors/Loaders/Backhoes             | 2               | 230          | 7             | 3220            |
| Pavers Composite                      | 1               | 58           | 8             | 464             |
| Paving Equipment                      | 2               | 58           | 8             | 928             |

| Table A-2. Heavy Equipment Emission Factors (lbs/hour) |        |                 |        |                 |                  |                   |                 |
|--------------------------------------------------------|--------|-----------------|--------|-----------------|------------------|-------------------|-----------------|
| Equipment                                              | CO     | NO <sub>x</sub> | VOC    | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> |
| Excavators Composite                                   | 0.5828 | 1.3249          | 0.1695 | 0.0013          | 0.0727           | 0.0727            | 119.6           |
| Rollers Composite                                      | 0.4341 | 0.8607          | 0.1328 | 0.0008          | 0.0601           | 0.0601            | 67.1            |
| Rubber Tired Dozers Composite                          | 1.5961 | 3.2672          | 0.3644 | 0.0025          | 0.1409           | 0.1409            | 239.1           |
| Plate Compactors Composite                             | 0.0263 | 0.0328          | 0.0052 | 0.0001          | 0.0021           | 0.0021            | 4.3             |
| Trenchers Composite                                    | 0.5080 | 0.8237          | 0.1851 | 0.0007          | 0.0688           | 0.0688            | 66.8            |
| Air Compressors                                        | 0.3782 | 0.7980          | 0.1232 | 0.0007          | 0.0563           | 0.0563            | 63.6            |
| Cement and Mortar Mixers                               | 0.0447 | 0.0658          | 0.0113 | 0.0001          | 0.0044           | 0.0044            | 7.2             |
| Cranes                                                 | 0.6011 | 1.6100          | 0.1778 | 0.0014          | 0.0715           | 0.0715            | 128.7           |
| Generator Sets                                         | 0.3461 | 0.6980          | 0.1075 | 0.0007          | 0.0430           | 0.0430            | 61.0            |
| Tractors/Loaders/Backhoes                              | 0.4063 | 0.7746          | 0.1204 | 0.0008          | 0.0599           | 0.0599            | 66.8            |
| Pavers Composite                                       | 0.5874 | 1.0796          | 0.1963 | 0.0009          | 0.0769           | 0.0769            | 77.9            |
| Paving Equipment                                       | 0.0532 | 0.1061          | 0.0166 | 0.0002          | 0.0063           | 0.0063            | 69.0            |

Source: CARB, 2009

| Table A-3. Construction Equipment Emissions (tons) |             |                 |             |                 |                  |                   |                 |
|----------------------------------------------------|-------------|-----------------|-------------|-----------------|------------------|-------------------|-----------------|
| Equipment                                          | CO          | NO <sub>x</sub> | VOC         | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> |
| Excavators Composite                               | 0.1341      | 0.3047          | 0.0390      | 0.0003          | 0.0167           | 0.0167            | 27.5            |
| Rollers Composite                                  | 0.3004      | 0.5956          | 0.0919      | 0.0005          | 0.0416           | 0.0416            | 46.4            |
| Rubber Tired Dozers Composite                      | 0.7342      | 1.5029          | 0.1676      | 0.0011          | 0.0648           | 0.0648            | 110.0           |
| Plate Compactors Composite                         | 0.0121      | 0.0151          | 0.0024      | 0.0000          | 0.0010           | 0.0010            | 2.0             |
| Trenchers Composite                                | 0.2357      | 0.3822          | 0.0859      | 0.0003          | 0.0319           | 0.0319            | 31.0            |
| Air Compressors                                    | 0.1740      | 0.3671          | 0.0567      | 0.0003          | 0.0259           | 0.0259            | 29.3            |
| Cement and Mortar Mixers                           | 0.0309      | 0.0454          | 0.0078      | 0.0001          | 0.0031           | 0.0031            | 5.0             |
| Cranes                                             | 0.4839      | 1.2961          | 0.1432      | 0.0011          | 0.0576           | 0.0576            | 103.6           |
| Generator Sets                                     | 0.1592      | 0.3211          | 0.0494      | 0.0003          | 0.0198           | 0.0198            | 28.1            |
| Tractors/Loaders/Backhoes                          | 0.6542      | 1.2470          | 0.1939      | 0.0012          | 0.0964           | 0.0964            | 107.6           |
| Pavers Composite                                   | 0.1363      | 0.2505          | 0.0455      | 0.0002          | 0.0178           | 0.0178            | 18.1            |
| Paving Equipment                                   | 0.0247      | 0.0492          | 0.0077      | 0.0001          | 0.0029           | 0.0029            | 32.0            |
| <b>Total</b>                                       | <b>3.08</b> | <b>6.38</b>     | <b>0.89</b> | <b>0.0057</b>   | <b>0.38</b>      | <b>0.38</b>       | <b>540.4</b>    |

| Table A-4. Painting    |             |              |           |            |
|------------------------|-------------|--------------|-----------|------------|
| VOC Content            | 0.84        | lbs/gallon   |           |            |
| Coverage               | 400         | sqft/gallon  |           |            |
| Emission Factor        | 0.0021      | lbs/sqft     |           |            |
| Building/Facility      | Area [sqft] | Wall Surface | VOC [lbs] | VOC [tons] |
| All Buildings Combined | 15000       | 30000        | 63.0      | 0.032      |
| Total                  | 15000       | 30000        | 63.00     | 0.03       |

Source: SCAQMD, 1993

| Table A-5. Delivery of Equipment and Supplies |        |                 |        |                 |                  |                   |                 |
|-----------------------------------------------|--------|-----------------|--------|-----------------|------------------|-------------------|-----------------|
| Number of Trips/day                           | 4      |                 |        |                 |                  |                   |                 |
| Miles Per Trip                                | 30     |                 |        |                 |                  |                   |                 |
| Days of Construction                          | 230    |                 |        |                 |                  |                   |                 |
| Total Miles                                   | 27600  |                 |        |                 |                  |                   |                 |
| Pollutant                                     | CO     | NO <sub>x</sub> | VOC    | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> |
| Emission Factor (lbs/mile)                    | 0.0219 | 0.0237          | 0.0030 | 0.0000          | 0.0009           | 0.0007            | 2.7             |
| Total Emissions (lbs)                         | 605.80 | 654.47          | 82.60  | 0.71            | 23.63            | 20.41             | 75056.4         |
| Total Emissions (tons)                        | 0.30   | 0.33            | 0.04   | 0.0004          | 0.01             | 0.01              | 37.5            |

Source: CARB, 2009

| Table A-6. Paving Off Gasses |              |           |            |
|------------------------------|--------------|-----------|------------|
| VOC Emissions Factor         | 2.62         | lbs/acre  |            |
| Building/Facility            | Area [acres] | VOC [lbs] | VOC [tons] |
| All Combined Parking         | 0.46         | 1.21      | 0.0006     |
| Total                        | 0.46         | 1.21      | 0.0006     |

Source: SCAQMD, 1993

| Table A-7. Surface Disturbance      |              |          |                        |                         |                         |                          |
|-------------------------------------|--------------|----------|------------------------|-------------------------|-------------------------|--------------------------|
| TSP Emissions                       | 80           | lb/acre  |                        |                         |                         |                          |
| PM <sub>10</sub> /TSP               | 0.45         |          |                        |                         |                         |                          |
| PM <sub>2.5</sub> /PM <sub>10</sub> | 0.15         |          |                        |                         |                         |                          |
| Period of Disturbance               | 30           | days     |                        |                         |                         |                          |
| Capture Fraction                    | 0.5          |          |                        |                         |                         |                          |
| Building/Facility                   | Area [acres] | TSP[lbs] | PM <sub>10</sub> [lbs] | PM <sub>10</sub> [tons] | PM <sub>2.5</sub> [lbs] | PM <sub>2.5</sub> [tons] |
| All Facilities                      | 0.8          | 1932     | 869                    | 0.43                    | 65                      | 0.03                     |
| Total                               | 0.8          | 1932     | 869                    | 0.43                    | 65                      | 0.03                     |

Sources: USEPA, 1995, 2005

| Table A-8. Worker Commutes |         |                 |        |                 |                  |                   |                 |
|----------------------------|---------|-----------------|--------|-----------------|------------------|-------------------|-----------------|
| Number of Workers          | 30      |                 |        |                 |                  |                   |                 |
| Number of Trips            | 2       |                 |        |                 |                  |                   |                 |
| Miles Per Trip             | 30      |                 |        |                 |                  |                   |                 |
| Days of Construction       | 230     |                 |        |                 |                  |                   |                 |
| Total Miles                | 414000  |                 |        |                 |                  |                   |                 |
| Pollutant                  | CO      | NO <sub>x</sub> | VOC    | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> |
| Emission Factor (lbs/mile) | 0.0105  | 0.0011          | 0.0011 | 0.0000          | 0.0001           | 0.0001            | 1.1             |
| Total Emissions (lbs)      | 4367.05 | 456.59          | 446.79 | 4.45            | 35.21            | 21.91             | 30347.1         |
| Total Emissions (tons)     | 2.18    | 0.23            | 0.22   | 0.0022          | 0.02             | 0.01              | 15.2            |

Source: CARB, 2009

| Table A-9. Total Construction Emissions (tons) |      |                 |      |                 |                  |                   |                 |
|------------------------------------------------|------|-----------------|------|-----------------|------------------|-------------------|-----------------|
| Activity/Source                                | CO   | NO <sub>x</sub> | VOC  | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> |
| Construction Equipment                         | 3.08 | 6.38            | 0.89 | 0.0057          | 0.38             | 0.38              | 540.4           |
| Painting                                       | 0.00 | 0.00            | 0.03 | 0.0000          | 0.00             | 0.00              | 0.0             |
| Delivery of Equipment and Supplies             | 0.30 | 0.33            | 0.04 | 0.0004          | 0.01             | 0.01              | 37.5            |
| Paving Off Gasses                              | 0.00 | 0.00            | 0.00 | 0.0000          | 0.00             | 0.00              | 0.0             |
| Surface Disturbance                            | 0.00 | 0.00            | 0.00 | 0.0000          | 0.43             | 0.03              | 0.0             |
| Worker Commutes                                | 2.18 | 0.23            | 0.22 | 0.0022          | 0.02             | 0.01              | 15.2            |
| Total Construction Emissions                   | 5.57 | 6.93            | 1.19 | 0.0083          | 0.84             | 0.43              | 593.1           |

| Table A-10. Emergency Generators |               |                             |       |                 |        |                 |                  |                   |                 |
|----------------------------------|---------------|-----------------------------|-------|-----------------|--------|-----------------|------------------|-------------------|-----------------|
|                                  |               |                             | CO    | NO <sub>x</sub> | VOC    | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> |
| Generator Rating                 | 65 kW         | Emission Factor (lbs/hp-hr) | 0.007 | 0.031           | 0.002  | 0.002           | 0.002            | 0.002             | 154             |
| Annual Run Time                  | 100 hr/yr     | Total Emissions (lbs)       | 58.2  | 270.2           | 21.5   | 17.9            | 19.2             | 19.2              | 1342341.0       |
| Annual Power                     | 8717 hp-hr/yr | Total Emissions (tons)      | 0.029 | 0.135           | 0.0107 | 0.0089          | 0.0096           | 0.0096            | 671.2           |

Note: Calculations conservatively assumed a 65 kW generator and used AP-42 emission factors.

Source: USEPA, 1995

## References

California Air Resources Board (CARB). 2009a. *EMFAC 2007 (v2.3) Emission Factors (On-Road)*.URL: <http://www.aqmd.gov/CEQA/handbook/onroad/onroad.html>, accessed March 16, 2010.South Coast Air Quality Management District (SCAQMD). 1993. *CEQA Air Quality Handbook*.US Environmental Protection Agency (USEPA). 1995. Compilation of Air Pollutant Emission Factors, AP-42, 5th edition, Vol. I: *Stationary Point and Area Sources*.\_\_\_\_\_. 2005. *Methodology to Estimate the Transportable Fraction (TF) of Fugitive Dust Emissions for Regional and Urban Scale Air Quality Analyses*.

***APPENDIX B***

***AGENCY COORESPONDENCE***

**DEPARTMENT OF THE AIR FORCE**

50TH SPACE WING (AFSPC)

11 FEB 11

MEMORANDUM FOR MR. GLENN NORMANDEAU  
EXECUTIVE DIRECTOR  
NEW HAMPSHIRE DEPARTMENT OF FISH AND GAME  
11 HAZEN DRIVE  
CONCORD NH 03301-6500

FROM: 23 SOPS/CC  
317 Chestnut Hill Road  
New Boston AFS NH 03070-5125

SUBJECT: Preparation of an Environmental Assessment (EA) for New Hampshire Tracking Station B-Side Remote Tracking Station Block Change at NBAFS, New Boston, NH

1. I am requesting information from your office regarding State-listed threatened and endangered plant and animal species that may occur on or in the vicinity of NBAFS, NH. NBAFS is a satellite tracking station that occupies approximately 2,826 acres in Hillsborough County, NH (see Attachment 1).
2. The United States Air Force (USAF) plans to construct and operate a new B-Side antenna/radome to replace the Automated Remote Tracking Station (ARTS) legacy B-Side antenna. This new antenna construction will occur on the already disturbed footprint of the former ARTS legacy A-Side antenna (Attachment 2). Construction and installation requirements for the new B-Side antenna would include a foundation, ring-wall, pedestal, and inflatable radome. The Proposed Action also includes installation of an electronics suite at the existing operations building and placement of a trenched cable link to the new antenna (Attachment 3). As part of the Proposed Action, the ARTS legacy B-Side facility would be decommissioned and left in place, but no longer used in support of the Air Force satellite tracking mission.
3. Vegetation within the Operations Area is mostly cultivated lawn grass and forbs. Some areas are also landscaped with plantings of native tree and shrub species. Deciduous and mixed forests are the primary undeveloped habitats adjacent to the Operations Area. State-listed species known to occur in the vicinity of the Operations Area are the endangered Blanding's turtle (*Emydoidea blandingii*) and endangered Eastern hognose snake (*Heterodon platirhinos*). Several state-listed birds (e.g., pied-billed grebe [*Podilymbus podiceps*], bald eagle [*Haliaeetus leucocephalus*], and northern harrier [*Circus cyaneus*]) could occur as transients during migration, but none are likely to nest, roost, or forage within the Operations Area because of the lack of suitable habitat. No state-listed plant species have been identified in the Operations Area. The noise and disturbance activities of the proposed action may temporarily interfere with the Blanding's turtle movement to a nesting site behind the operations building. As a preventive measure during construction activities, the NBAFS Natural Resources Office would instruct contractors to be aware of Blanding's turtles and Eastern hognose snakes. If either of these

species were found within the project areas, the NBAFS Natural Resources Office would be contacted to relocate the individuals to a safe location on Station property. If new curbing is to be installed in association with the proposed construction activities, only Cape Cod (ramped) curbing would be used so as not to create new barriers that would restrict the movement of Blanding's turtles and other reptilian or amphibian species within the project areas.

4. I would appreciate any information or concerns you may have regarding effects of the proposed construction on State-listed species, as well as any other concerns you may have regarding the effects of the project on ecological resources. The USAF will use the information you provide in preparing the EA.

5. If you have any questions regarding this matter, please contact the NBAFS Natural Resources Planner, Mr. Stephen Najjar, at (603) 471-2346.



CLARK H. RISNER, Lt Col USAF  
Commander

Attachments:

1. Map of NBAFS
2. Map of Project Sites within NBAFS Operations Area
3. General Map of Proposed B-Side Antenna Facility



DEPARTMENT OF THE AIR FORCE  
50TH SPACE WING (AFSPC)

RECEIVED

FEB 16 2011

cc: CE  
CEA 2751  
(Najjar) 11 FEB 11

RECEIVED

MEMORANDUM FOR MS. ELIZABETH H. MUZZEY  
STATE HISTORIC PRESERVATION OFFICER  
NH DIVISION OF HISTORICAL RESOURCES  
19 PILLSBURY STREET  
CONCORD NH 03301-3570

FROM: 23 SOPS/CC  
317 Chestnut Hill Road  
New Boston AFS NH 03070-5125

SUBJECT: Finding of No Historic Properties Adversely Affected for New Boston Air Force Station (NBAFS)  
B-Side Automated Remote Tracking Station (ARTS) Block Change at NBAFS, New Boston, NH

1. Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, we are informing your office of the United States Air Force (USAF) proposal to decommission the ARTS Legacy B-Side Antenna (Buildings 108 and 109) and construct a new B-Side antenna/radome. The ARTS Legacy B-Side antenna (46' dish antenna/radome) will be left in place but no longer used in support of the Air Force satellite tracking mission. The ARTS Legacy B-Side antenna controls (electronics suite) located at the operations building will also be left in place and no longer used. Construction and installation requirements for the new B-Side antenna would include a foundation, ring-wall, pedestal, and inflatable radome. The Proposed Action also includes installation of an electronics suite at the existing operations building and placement of a trenched cable link to the new antenna. The area of potential effect (APE) for the new construction is the already disturbed footprint of the former ARTS legacy A-Side 60' antenna and support building (former Buildings 105 and 106) (see Attachment 1). The Proposed Action would bring the B-side antenna configuration into compliance with the operational requirements of the Air Force Satellite Control Network (AFSCN). Construction of the new antenna is expected to begin in early 2011.

2. Currently, NBAFS (see Attachment 2) is one of eight worldwide AFSCN remote tracking stations that provide critical satellite command and control capability to Department of Defense, national, and civilian satellites. Because of its history as a satellite tracking station, NBAFS contains several structures within the Operations Area (see Attachment 3) that are contributing resources to a Cold War historic district, eligible for listing on the National Register of Historic Places. The ARTS legacy B-Side antenna and support building (Buildings 108 and 109) are included as contributing properties.

3. The USAF recently submitted a completed Historic American Engineering Record to the National Park Service for Buildings 108 and 109 and submitted a HABS/HAER to the NHDHR standard during 2010. If you have any questions regarding this matter, please contact the NBAFS Natural Resources Planner, Mr. Stephen Najjar, at (603) 471-2346.

*Clark H. Jensen*  
CLARK H. JENSEN, COL USAF  
Commander

|                                                                                                                                                                             |                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Conditions required for NEPA & Section 106 of the NHPA have been met.                                                                                                       |                                                                       |
| <input type="checkbox"/>                                                                                                                                                    | No Known Historic Resources                                           |
| <input type="checkbox"/>                                                                                                                                                    | No Resources Present                                                  |
| <input checked="" type="checkbox"/>                                                                                                                                         | No Adverse Effect                                                     |
| If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation. |                                                                       |
| 2/13/11                                                                                                                                                                     | <i>Wade Ray Wilson</i> ASHP<br>NH State Historic Preservation Officer |

Attachments:

1. General Map of Proposed B-Side Antenna Facility
2. Map of NBAFS
3. Map of Project Sites within NBAFS Operations Area

## ***APPENDIX C***

### ***COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL ASSESSMENT***

**From:** Peterson, Nadine [mailto:Nadine.Peterson@dcr.nh.gov]  
**Sent:** Tuesday, April 19, 2011 10:19 AM  
**To:** Aragon, Leonard A Civ USAF AFSPC SMC/ENF  
**Subject:** Draft EA for the New Hampshire Tracking Station B-side

Dear Mr. Aragon:

The New Hampshire Division of Historical Resources has reviewed the Draft EA for the above-referenced document and has no comment. The document incorporated information on the cultural resources presenting the area of potential effects. Our office had concurred with the finding of No Adverse Effect on 2/23/11.

Thank you for the opportunity to comment.

Sincerely,

Nadine Peterson

Nadine Peterson, Preservation Planner  
NH Division of Historical Resources  
19 Pillsbury Street  
Concord NH 03301-3570  
T 603-271-6628  
F 603-271-3433  
Nadine.Peterson@dcr.nh.gov <mailto:Nadine.Peterson@dcr.nh.gov>

<http://www.nh.gov/nhdhr> <blocked::blocked::http://www.nh.gov/nhdhr>

The New Hampshire Division of Historical Resources (NHDHR) was established in 1974 as the "State Historic Preservation Office (SHP0). The historical, archaeological, architectural and cultural resources of New Hampshire are among its most important environmental assets. The DHR trifold brochure <blocked::blocked::http://rs6.net/tn.jsp?et=1102532489386&s=517&e=0012Ha-b-E8ZS\_yFAwCap5oIffnX0GbJTgkgbi\_GmJbQmpoxz2D4lyiScevt8dJHRw5Qc6Ery\_IsLQ0I2RiOmb1SsC94x5E4jLO5pRmyFvJPhGNIY1sSsdFjjaKo5Ve-zZwGDmK94Xy4LrXy-kX\_pBOxQ==> is now online at the DHR's "About Us" web page. Download it for distribution -- or save paper and historic places by sharing the web link widely.