

*Final*

**ENVIRONMENTAL ASSESSMENT  
FOR INSTALLING AND OPERATING  
A THERMAL TREATMENT FACILITY**

**HOLSTON ARMY AMMUNITION PLANT, TN**

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## SECTION 1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

### 1.1 INTRODUCTION

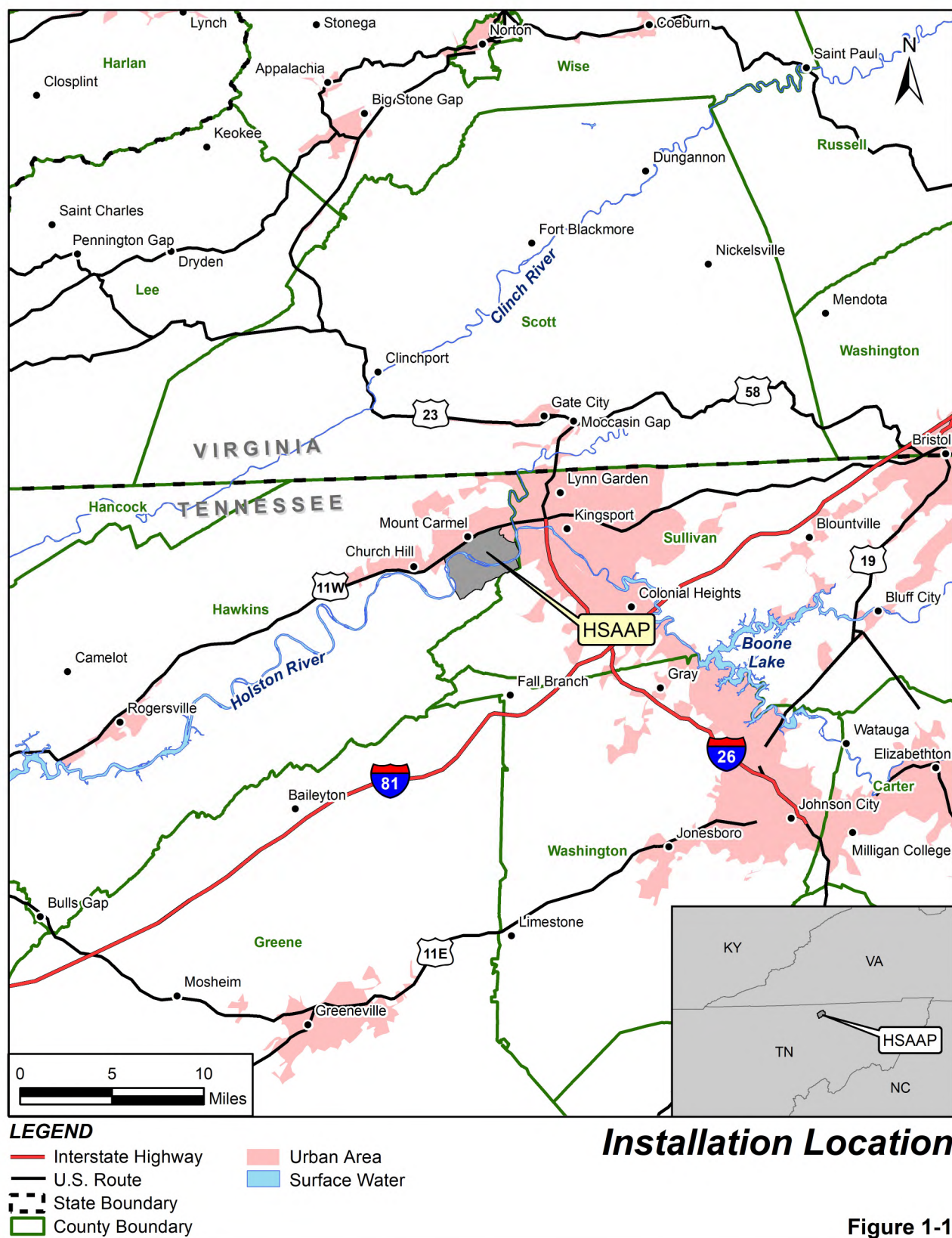
The U.S. Army is planning to pursue the installation of a thermal treatment facility at the Holston Army Ammunition Plant (HSAAP) Area B. HSAAP is an approximately 6,000-acre facility located west of downtown Kingsport, TN (see Figure 1-1). It is a U.S. Army government-owned, contractor-operated (GOCO) facility and part of the U.S. Army Materiel Command (AMC) and the U.S. Army Joint Munitions Command (JMC). BAE Systems Ordnance Systems Inc. (BAE OSI) has operated the installation since 1999.

Thermal treatment of explosives-contaminated wastes and waste explosives currently occurs through open burning at the HSAAP open burning grounds (OBG). The OBG consists of three areas, pans where waste explosives are burned, cages where lightweight explosives-contaminated combustibles are burned, and piles where larger, heavier items contaminated with explosives are burned. The pans are covered under the HSAAP Resource Conservation and Recovery Act (RCRA) subpart X permit (TNHW-148) and Area B Clean Air Act Title V Air permit (568188). The cages and piles are only covered under the HSAAP Area B Title V permit. As the HSAAP operating contractor, BAE OSI operates the OBG under these permits.

In 2014 HSAAP began a four-phased approach to evaluate alternatives to open burning. The goal of this approach was to utilize phases 1 and 2 to determine if any alternatives to open burning of HSAAP waste explosives or explosives-contaminated waste existed. Under the Title V and RCRA subpart X permits, open burning is permitted if no other safe means exists. If phases 1 and 2 identified alternative technologies applicable to HSAAP waste, then phases 3 (Design) and 4 (Construction) would pursue implementation. The first phase was a waste identification and quantification effort to determine how open burning alternative technologies should be evaluated in terms of throughput and size. The second phase was the actual evaluation of open burning alternative technologies in relation to HSAAP-specific wastes and the feasibility of their implementation at HSAAP. The second phase concluded in April 2019 by releasing to the Tennessee Department of Environment and Conservation (TDEC) the March 2019 Final Report: *Thermal/Non-Thermal Solutions to Open Burning Holston Army Ammunition Plant* detailing the specific technology evaluations.

As required by the Title V permit, alternative technologies based on the phase 2 effort and a plan for implementation were disclosed to TDEC. The Army and BAE OSI identified that a flashing furnace (FF) type technology was to be implemented to cover cage and pile waste streams. The Army and BAE OSI also identified the moving bed reactor (MBR), as discussed in the March 2019 Final Report provided to TDEC, as a promising technology for the waste explosives; however, additional information was required to determine if implementation of the MBR could be achieved at HSAAP. While both technologies have been implemented successfully in other locations, each unit must be specifically designed to meet Army safety standards for operations with HSAAP material and within the constraints of the installation. Therefore, the Army has moved forward with plans to implement the FF and attain the necessary information to determine if implementation of the MBR could be achieved at HSAAP.

The Army has prepared this EA in accordance with requirements of the National Environmental Policy Act (NEPA) (Title 42 of the United States Code [U.S.C.] § 4321 et seq.); Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (Title 40 of the Code of Federal Regulations [CFR] parts 1500–1508); Army Regulation 200-2, Environmental Analysis of Army Actions (32 CFR part 651); and AMC policy.



## 1.2 PURPOSE AND NEED

The purpose of the proposed action is to install and operate a technologically proven thermal treatment facility at HSAAP. The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V and RCRA subpart X permit.

## 1.3 REGULATORY COMPLIANCE

NEPA requires that federal agencies consider the environmental consequences of proposed actions during the decision-making process. The intent of NEPA is to protect, restore, and enhance the environment through well-informed decision-making. NEPA established the Council on Environmental Quality (CEQ) to implement and oversee federal policy in that process. Accordingly, the CEQ issued its regulations to implement the procedural provisions of NEPA. The Army has supplemented the CEQ NEPA regulations by promulgating its own NEPA regulations.

As part of this environmental assessment (EA), the Army considered applicable federal, state, and local regulations during analysis of the proposed action's impacts to individual environmental and social resources. The Army considered the following legislation:

- Archaeological Resources Protection Act of 1979 (ARPA) (16 U.S.C. § 470aa *et seq.*)
- Clean Air Act (CAA) (42 U.S.C. § 7401)
- Clean Water Act (CWA) (33 U.S.C. § 1251)
- Endangered Species Act (ESA) (16 U.S.C. §§ 1531–1543)
- National Historic Preservation Act of 1966 (NHPA) (16 U.S.C. § 470 *et seq.*, as amended)
- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901)

## 1.4 DECISION TO BE MADE

The Army must decide whether the socioeconomic and environmental impacts of the selected alternatives analyzed in the EA will support a finding of no significant impact (FNSI) or will require publishing in the *Federal Register* a notice of intent (NOI) to prepare an environmental impact statement (EIS). The Army will publish an NOI if the potential adverse environmental impacts associated with the selected alternatives analyzed remain significant even after all reasonable mitigation measures have been implemented.

## 1.5 PUBLIC PARTICIPATION

The Army invites and strongly encourages public participation in the NEPA process. Consideration of the views of and additional information from all interested parties promotes open communication and enables better decision-making. The Army specifically urges all agencies, organizations, and members of the public with a potential interest in the proposed action—including minority, low-income, disadvantaged, and Native American groups—to participate in the decision-making process.

Regulations in 32 CFR part 651 guide opportunities for public participation with respect to this EA and decision-making on the proposed action. The Army will make this EA, along with a draft FNSI, available to the public for 30 days, publishing a notice of availability of the EA in a newspaper local to HSAAP and on the HSAAP Facebook page. Interested parties will be able to review the documents by accessing them on the official home page of the JMC (Holston Army Ammunition Plant) at <https://www.jmc.army.mil/installations.aspx?id=HolstonProgress>. At the end of the 30-day public review period, the Army will consider all comments on the EA and/or the draft FNSI that individuals, agencies, and organizations have submitted. Then, as appropriate, the Army will

either execute a final FNSI and proceed with implementing the proposed action or publish an NOI to prepare an EIS.

## SECTION 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

### 2.1 PROPOSED ACTION

The proposed action is to install and operate a thermal treatment facility at HSAAP. The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V and RCRA subpart X permit. Installing the facility would also require installation of air pollution controls, installation and/or maintenance of security fencing, new road segments, existing road network improvements, demolition of a railroad spur, building demolition, and installation of associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filter water, and compressed air. The Army established screening criteria (section 2.2) to develop reasonable alternatives capable of meeting the purpose and need for the proposed action.

### 2.2 SCREENING CRITERIA

The Army and BAE OSI conducted a rigorous screening process for selecting alternatives for implementing the proposed action. For an alternative to be considered viable, it had to meet the purpose of and need for the proposed action as well as satisfy the screening criteria in Table 2-1.

**Table 2-1. Screening Criteria for the Proposed Action to Install a Thermal Treatment Facility at HSAAP**

Site Safety Arcs	The thermal treatment facility must be located outside all site safety arcs and prevent its own operational arcs from impacting any nonfederal land or existing HSAAP facilities in accordance with all HSAAP, Army, and Department of Defense regulations.
Designated Manufacturing Areas	The thermal treatment facility must be located outside all operational areas designated for current or future manufacturing areas.

The Army considered all technologies for alternative treatments to open burning. All technologies that were considered are included in the March 2019 Final Report: *Thermal/Non-Thermal Solutions to Open Burning Holston Army Ammunition Plant*. This document details the evaluation of the technologies considered for HSAAP. Based on this evaluation, the Army selected a technology best suited for the contaminated waste streams—a flashing furnace—and documented it in the 26 February 2019 *Memorandum for Distribution; Subject: Alternatives to Open Burning (OB) at Holston Army Ammunition Plant (HSAAP)*. A second technology for the waste explosives was identified for further investigation. While the MBR is the preferred technology, the other three potential candidates for destruction of explosives—static detonation chamber, contained burn chamber, and rotary kiln—are still being considered. As such, the technologies being considered for the waste explosives are referred to collectively as the “Explosives Treatment Technology” (ETT). Because all four technologies are thermal in nature and treat the waste similarly, the environmental impacts from any of the ETTs are considered equivalent. The FF is not under consideration as a primary technology to address the waste explosives, but primarily would be used for cage and pile waste streams. Because of the nature of the materials being addressed through the proposed facility and risks associated with their treatment, other technologies are not being considered by the Army at this time.

### 2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Based on the screening criteria, the alternatives in this evaluation are related to the potential locations for each facility. Only location 1 was considered feasible for the ETT because of the site

safety arcs that are anticipated to be generated from the facility. Location 2 is physically large enough to place the ETT, but the site safety arcs would cover the only ingress and egress to the active HSAAP magazines and landfill. Location 3 is both physically too small for the ETT and site safety arcs at the location would extend into the adjacent production area. All other HSAAP areas outside of the alternatives considered and described below did not meet the screening criteria documented in Table 2-1.

## **2.4 ALTERNATIVES CONSIDERED**

### **2.4.1 Alternative 1: No Action Alternative**

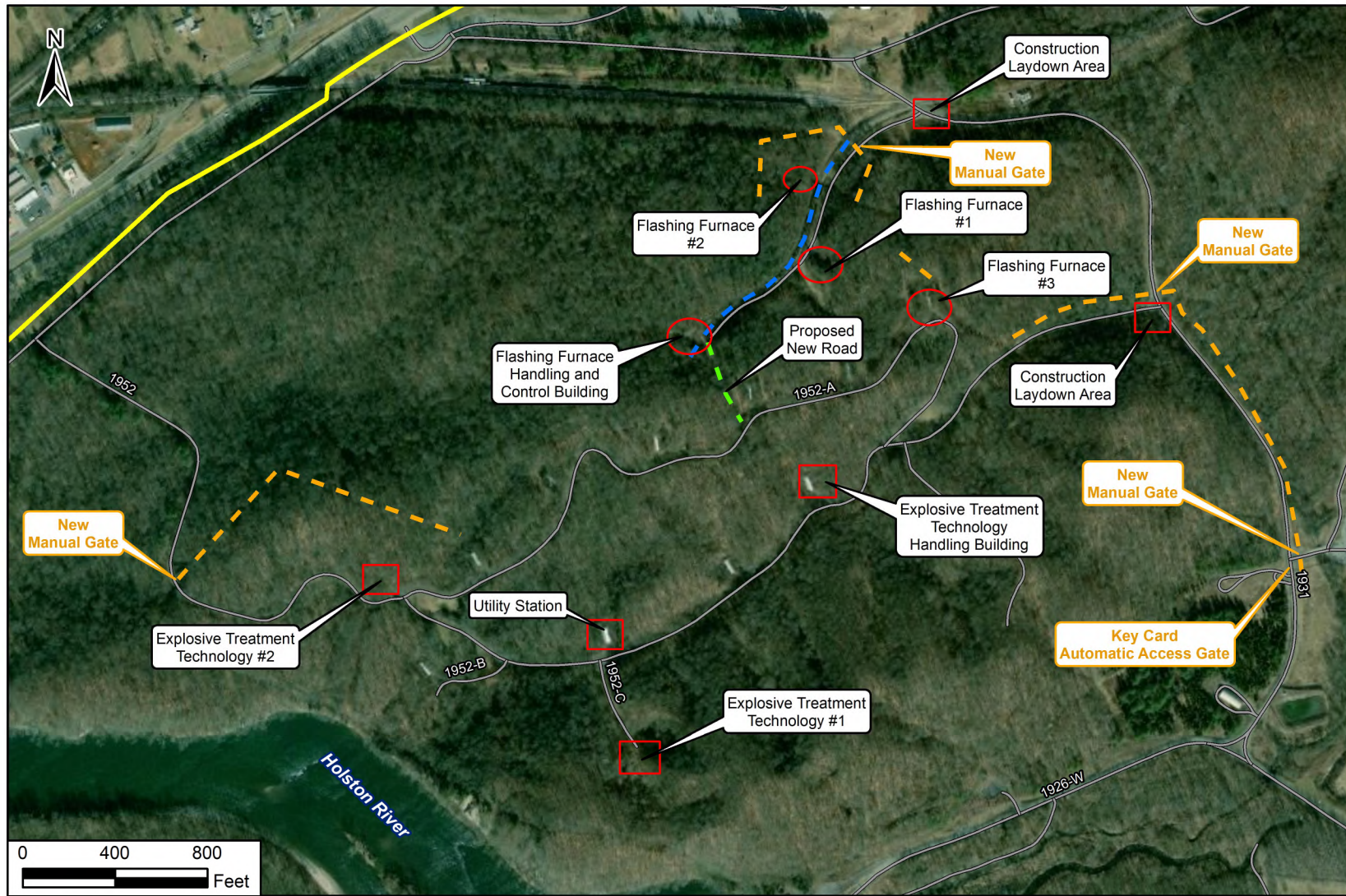
CEQ regulations require analysis of a No Action Alternative to provide a benchmark against which decision makers can compare the magnitude of potential environmental effects caused by the proposed action and alternatives. The No Action Alternative within this EA assumes that the Army would continue its ongoing mission at HSAAP, including open burning for the treatment of explosives-contaminated wastes and waste explosives. No thermal treatment technologies would be implemented, and no facilities constructed. This would put HSAAP out of compliance with the HSAAP Title V and RCRA subpart X permit conditions to comply with the prohibition of open burning in accordance with Tennessee air regulations when safe alternatives to open burning for specific waste streams have been identified (HSAAP can no longer meet the exclusion list for all waste streams). Although the No Action Alternative would not meet the purpose and need of the proposed action, it has been carried forward as a baseline against which other alternatives are evaluated within this EA, and to meet the requirements under NEPA.

### **2.4.2 Alternative 2: Construction and Operation of a Thermal Treatment Facility with FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

The Preferred Alternative co-locates up to two FFs, ETT facilities, and associated control room and handling facilities in a remote, hilly area of HSAAP (Figure 2-1). As shown in Figure 2-1, FF sites 1 and 2 would be selected for the FF facilities with site 3 being an alternate. Similarly, ETT sites 1 and 2 are the primary sites being considered for the ETT. Each FF facility would require about 1 acre of land and the FF handling facility would require about 2 acres. The ETT and associated control room and handling facility would require about 4 acres total land area.

Location 1 is remote from traditional HSAAP operations and thus prevents any site safety arcs from conflicting with one another. Given its remote location, it also is unfavorable for expansion of HSAAP manufacturing facilities and not located close to the community. Some development has historically occurred in this area, providing flat locations targeted for portions of the thermal treatment facility. Existing roads would be used, though a small connecting road(s) would need to be constructed. Existing roads could require improvement before or after facility construction to be able to handle the construction and/or operation of the facilities. Up to five buildings that have not been used in several years would be demolished. The buildings are all of similar construction and were constructed in the early 1950s and the footprint of each is approximately 1,600 square feet. Approximately 1,200 feet of a railroad spur at location 1 would be removed. Demolition and removal of the railroad spur would be needed to install portions of the treatment facility and/or utilities in favorable topographic areas while meeting safety siting requirements. A building survey to meet environmental and cultural resources requirements would be performed prior to building demolition. Also, the use of Location 1 is subject to an acceptable geologic investigation. Reuse of previously constructed areas would minimize vegetation and soil removal; however, the existing flat or open areas at each of the proposed FF and ETT sites at location 1 are not large enough for the proposed facilities, or flat or open areas do not currently exist at the proposed sites.





**Location 1**

**Figure 2-1**

Note: Project boundaries and locations are approximate.

The processes associated with each technology include materials handling, control rooms, technology units and similar post-treatment of waste streams. The air pollution control systems are considered part of the technology unit. For ETT site 1, demolition of existing structures would be required, while construction at ETT site 2 would occur in a mostly undisturbed area. The FF(s) would be constructed in previously disturbed areas where there is some existing infrastructure. The FF sites would require installation of new gates, about 4,850 feet of new security fencing, and/or maintenance of the existing security fence to meet Army standards. To support construction, laydown areas as shown in Figure 2-1 would be sited in cleared areas along access roads.

Co-locating the FF and ETT facilities at location 1 would allow for more efficient and streamlined operations and better use of the available land. Co-location at location 1 would also minimize environmental disturbance from installation of utilities and disruption to other HSAAP manufacturing areas. Rerouting the utilities from the existing production area to the southeast to location 1 would be required. Utilities needed at location 1 would include electric, natural gas, steam, wastewater (industrial and sanitary), filtered water, and compressed air.

#### **2.4.3 Alternative 3: Construction and Operation of a Thermal Treatment Facility with FF Technology at Location 2 and ETT at Location 1**

Alternative 3 is similar to the Preferred Alternative but sites the FF technology at location 2 (Figure 2-2) approximately one-half mile to the south. Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 2.

Location 2 would be used for up to two FFs and their associated processes. Location 2 has been previously disturbed and is currently flat with evergreen trees and one Quonset hut, which might require demolition. The Quonset hut was constructed in 1966 and has a footprint of about 4,000 square feet. A building survey to meet environmental and cultural resources requirements would be performed prior to building demolition. If this alternative is selected, this area would also be subject to a favorable geologic investigation. While location 2 has been previously disturbed, power is the only utility present. Therefore, the remaining utilities would have to be installed to this location. Location 2 is closer to existing operations at HSAAP, but still outside the immediate production area. Location 2 is not close to the community. Existing roads would be used, with the need for the construction of some small connecting roads.

#### **2.4.4 Alternative 4: Construction and Operation of a Thermal Treatment Facility with FF Technology at Location 3 and ETT at Location 1**

Alternative 4 is similar to the Preferred Alternative but sites the FF technology at location 3 (Figure 2-3) approximately 1½ miles to the southeast. Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 3.

Location 3 would be used for up to two FFs and their associated processes. Location 3 has been previously disturbed and is currently flat with an existing warehouse. Part of the warehouse is used to store clean pallets for use throughout the plant while the other portion of the warehouse would be renovated for use for the FF material handling and/or control room. A building survey to meet environmental requirements would be performed prior to building renovation. The remaining portion of location 3 is primarily covered with noncompacted clean fill underlain by a former sodium nitrate pond that achieved no further action under the corrective action program. The fill was generated from other facility modernization programs and was not placed to serve any structural functions. A coal tar solid waste management unit bounds location 3 to the west and

the floodplain demarcation bounds the area to the south. Because of the proximity of the floodplain and shallow water table along with the proximity of the coal tar unit, this area would also be subject to an acceptable geologic investigation prior to selection. Other infrastructure further to the east has had stability issues because of poor soil structure.

Location 3 is in the production area. Although the safety arcs between this facility and existing operations do not conflict and therefore do not screen location 3 out of consideration, they are close to safety arcs associated with other facilities on the production area. Additional engineering might be required to minimize risk of damage to the FF(s) or adjacent production buildings in the event of an incident.





**Figure 2-2**

Note: Project boundaries and locations are approximate.





Figure 2-3

Note: Project boundaries and locations are approximate.

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## SECTION 3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

### 3.1 INTRODUCTION

This section discusses the affected environment and environmental impacts associated with the No Action Alternative, the Preferred Alternative, Alternative 3, and Alternative 4, as described in section 2.4.

The Army took context and intensity into consideration in determining a potential impact's significance, as defined in 40 CFR 1508.27. The *intensity* of a potential impact is its severity and includes consideration of beneficial and adverse effects; the level of controversy associated with a project's impacts on human health; whether the action establishes a precedent for future actions with significant effects; the level of uncertainty about project impacts; and whether the action threatens to violate federal, state, or local law requirements imposed for the protection of the environment. The severity of an environmental impact is characterized as none/negligible, minor, moderate, significant, or beneficial.

- **None/negligible**—No measurable impacts are expected to occur.
- **Minor**—Primarily short-term but measurable adverse impacts are expected. Impacts might have a slight impact on the resource.
- **Moderate**—Noticeable adverse impacts that would have a measurable effect on a resource and are not short term.
- **Significant**—Adverse impacts would be obvious, would be both short and long term, and would have serious impacts on a resource. These impacts would be considered significant unless mitigable to a less-than-significant level.
- **Beneficial**—Impacts would benefit the resource/issue.

The Army used quantitative and qualitative analyses, as appropriate, to determine the level of impact. Based on the results of the analyses, this EA identifies whether a potential impact would be adverse or beneficial, and its severity.

CEQ regulations require that a proposed action's cumulative impacts be addressed as part of a NEPA document. Cumulative impacts are effects on the environment that result from the incremental effect of a project in combination with other past, present, or reasonably foreseeable future actions, regardless of jurisdiction or entity. Cumulative impacts can result from individually minor, but collectively significant actions occurring over time. Section 3.15 discusses cumulative impacts.

### 3.2 LAND USE

#### 3.2.1 Affected Environment

HSAAP land use generally is divided into the Area B production area, which encompasses approximately 700 acres (approximately 12 percent of the installation total), on which most industrial activities occur and facilities are located; and the Area B undeveloped area, which encompasses approximately 5,300 acres (approximately 88 percent of the installation total) and includes areas outside of the production area that are largely undeveloped. HSAAP is outside the Kingsport city limits, lying west and south of the city of Kingsport and east of the city of Church Hill. It is bordered by a county park and Bays Mountain Park to the south, residential and commercial properties and the Holston River to the west, U.S. Highway 11 West (U.S. 11W) to the north, and the Holston River and residential and agricultural properties to the east.

The Area B production area is industrial and dedicated to the HSAAP mission of explosives production and support facilities, has nearly 300 production facilities, and is classified as semi-improved grounds. Grounds surrounding the production facilities are primarily open fields mowed one or two times per year. Other than grass, vegetation in the area is limited to scattered mature trees and three small stands of upland hardwoods centrally located in the production area.

The Holston River physically divides the installation into two areas—an area north of the river that comprises the production area and the part of the undeveloped area along the northwestern HSAAP boundary where a former suspect yard and former Y-magazine storage area are located, and the area south of the river where a landfill, borrow pit, ammunition storage bunkers, roads leading to those facilities, and the north slopes of the Bays and Holston River mountains are located.

The former suspect area consists of approximately 165 predominantly wooded acres and was historically used to park vehicles or rail cars loaded with explosives for which there were safety concerns. Improvements within the area include an improved road, a railroad spur, fencing, and overhead power. Abutting the suspect area to the south is the Y-magazine area that consists of approximately 154 acres and contains 11 magazines once used to store production items. Other than the improved road network and magazines, the area is completely forested. The Y-magazine area is defined to the south and east by installation roads 1926-W and 1931 and the production area. Both the suspect and Y-magazine areas are used for deer hunting.

Portions of location 1 lie within both the suspect and the Y-magazine areas, and location 2 is situated within the Y-magazine area along installation road 1931 and the production area. Location 3 is sited within the production area. The proposed locations, including FF and ETT sites, handling areas, and associated improvements, are shown in Figures 2-1, 2-2, and 2-3. Most of the sites proposed within locations 1 and 2 were sited in previously developed areas to minimize tree removal. All proposed locations are situated north of the Holston River.

### **3.2.2 Impacts Associated with Alternative 1: No Action Alternative**

The No Action Alternative would have no effect on land use because no changes in zoning or land use on HSAAP would occur under the alternative.

### **3.2.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.2.3.1 Construction and Operation**

Long-term, minor adverse effects on land use would be expected from FF and ETT facility construction and operation. Some forested areas would be converted to industrial use, and the area would no longer be available for deer hunting. The zoning of Area B would not change under the Preferred Alternative, and because of prior uses, no new land-use conflicts with surrounding properties would be created.

#### **3.2.3.2 Mitigation Measures and BMPs**

No mitigation measures or best management practices (BMPs) would be required for land use if the Preferred Alternative was implemented.

### **3.2.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

#### **3.2.4.1 Construction and Operation**

Long-term, minor adverse effects on land use would be expected from FF and ETT facility construction and operation associated with Alternative 3. The discussion of effects under the



Preferred Alternative applies equally to Alternative 3.

#### **3.2.4.2 Mitigation Measures and BMPs**

No mitigation measures or BMPs would be required for land use if Alternative 3 was implemented.

### **3.2.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

#### **3.2.5.1 Construction and Operation**

Long-term, minor adverse effects on land use would be expected from ETT facility construction and operation at location 1. Those effects would be similar to the effects described under the Preferred Alternative. No adverse effects would be expected from FF facility construction and operation at location 3. Those activities would occur within the developed production area.

#### **3.2.5.2 Mitigation Measures and BMPs**

No mitigation measures or BMPs would be required for land use if Alternative 4 was implemented.

## **3.3 AESTHETICS AND VISUAL RESOURCES**

### **3.3.1 Affected Environment**

Location 1, within the suspect and Y-magazine areas, is on wooded land isolated from the production area and from surrounding off-post development. The Y-magazine area abuts the suspect area to the south. There are no visible signs of development except for roads, some utilities, and a few structures constructed to support those areas. Location 2 is also within the Y-magazine area but is less wooded and borders the western side of the production area. Although it abuts the production area, location 2 is more isolated from surrounding off-post development. Location 3 is within the production area and is also isolated from surrounding off-post development. No off-post developed areas (residential, industrial, or commercial) have views of any of the locations being considered. Wooded areas characterize the aesthetics of location 1, while a combination of wooded areas and aboveground steam piping, industrial facilities, and abandoned buildings characterize the aesthetics of the production area in the vicinity of locations 2 and 3.

### **3.3.2 Impacts Associated with Alternative 1: No Action Alternative**

No adverse effects on the aesthetics or visual resources would be expected from implementing the No Action Alternative. No visual changes to any location would occur under the alternative.

### **3.3.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.3.3.1 Construction and Operation**

Short-term, minor adverse effects would be expected from construction activities associated with the Preferred Alternative. Construction associated with the Preferred Alternative would result in short-term, minor adverse effects on aesthetics. Construction activities are generally considered unaesthetic, but they last only for a short time. The construction phase, therefore, would have a short-term adverse effect on aesthetics both because of the appearance of the area during construction activities and the noise associated with the activities (section 3.5 discusses noise effects). Replacement of forest with new construction would alter views in that immediate area, but the loss would not be within view of off-post development.

No effects on aesthetics would be expected from facility operations after the completion of construction activities. No changes to the aesthetics of the area would occur. No views from off-

post or on-post areas would be affected by site preparation or operation.

### **3.3.3.2 Mitigation Measures and BMPs**

No mitigation measures for aesthetics would be required. BMPs for aesthetics would include normal construction site organization and cleanup during and upon completion of individual construction tasks and projects. HSAAP would set aside specific areas for construction staging, and the contractor would remove materials and equipment for specific phases of each construction project when no longer needed and stabilize and replant any disturbed ground upon the completion of each project. Section 3.5 discusses mitigation and BMPs for noise effects.

### **3.3.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

#### **3.3.4.1 Construction and Operation**

Short-term, minor adverse effects on aesthetics and visual resources would be expected from construction under Alternative 3. The discussion of effects under the Preferred Alternative applies equally to Alternative 3. No effects on aesthetics or visual resources would be expected from operation under Alternative 3.

#### **3.3.4.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs for the Preferred Alternative in section 3.3.3.2 applies equally to Alternative 3.

### **3.3.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

#### **3.3.5.1 Construction and Operation**

Short-term minor adverse effects on aesthetics and visual resources would be expected from construction under Alternative 4. The discussion of effects under the Preferred Alternative applies equally to Alternative 4 except at location 3 there would be no tree removal and the location is within the developed production area where industrial operations occur. No effects on aesthetics and visual resources would be expected from operation under Alternative 4.

#### **3.3.5.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs for the Preferred Alternative in section 3.3.3.2 applies equally to Alternative 4.

## **3.4 AIR QUALITY**

Air pollution is the presence in the atmosphere of one or more contaminants (e.g., dust, fumes, gas, mist, odor, smoke, and vapor) that might be harmful to human, plant, or animal life. Air quality as a resource incorporates several components that describe the levels of overall air pollution within a region, sources of air emissions, and regulations governing air emissions.

### **3.4.1 Affected Environment**

This section includes a discussion of the National Ambient Air Quality Standards (NAAQS) and attainment status of the region, existing emissions at HSAAP, a regulatory overview, and a summary of climate and greenhouse gases (GHGs).

**NAAQS and Attainment Status.** U.S. Environmental Protection Agency (EPA) Region 4 and the TDEC regulate air quality in Tennessee. The CAA, as amended, assigns EPA the responsibility for establishing primary and secondary NAAQS (40 CFR part 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate

matter less than 10 microns [ $PM_{10}$ ] in diameter and particulate matter less than 2.5 microns [ $PM_{2.5}$ ] in diameter), sulfur dioxide ( $SO_2$ ), carbon monoxide (CO), nitrogen dioxide ( $NO_2$ ), ozone ( $O_3$ ), and lead (Pb). Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health effects. Each state has the authority to adopt standards stricter than those established under the federal program; however, the State of Tennessee accepts the federal standards.

Federal regulations designate air quality control regions (AQCRs) in violation of the NAAQS as nonattainment areas. Federal regulations designate AQCRs with pollutant levels below the NAAQS as attainment areas. Hawkins County is located within the Eastern Tennessee-Southwestern Virginia Interstate AQCR (40 CFR 81.57). EPA has designated Hawkins County as being in full attainment for all criteria pollutants (USEPA 2019a). Because all areas associated with the proposed action are in attainment, the General Conformity rule does not apply. EPA monitors levels of criteria pollutants at representative sites in each region throughout Tennessee. Table 3-1 shows the monitored concentrations of criteria pollutants at the monitoring location closest to HSAAP.  $PM_{10}$  is not considered a pollutant of concern in this region; therefore, it is not monitored at nearby stations.

**Table 3-1. Air Quality Standards and Monitored Data near HSAAP**

	Air Quality Standard		Monitored Concentrations		
Pollutant	Level	Averaging Period	2018	2017	2016
<b>CO</b>					
1-hour (ppm)	35	Not to be exceeded more than once per year	0.3	0.3	1.3
8-hour (ppm)	9		0.3	0.2	0.9
<b>NO<sub>2</sub></b>					
1-hour (ppb)	100	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	5	5	5
1-year (ppb)	53	Annual mean	1	1	1
<b>O<sub>3</sub></b>					
8-hour (ppm)	0.070	3-year average of the fourth highest daily maximum	0.065	0.065	0.068
<b>SO<sub>2</sub></b>					
1-hour (ppm)	75	98th percentile, averaged over 3 years	1	2	2
3-hour (ppb)	0.5	Not to be exceeded more than once per year	No Data	No Data	No Data
<b>PM<sub>2.5</sub></b>					
24-hour (µg/m <sup>3</sup> )	35	98th percentile, averaged over 3 years	16	16	17
Annual mean (µg/m <sup>3</sup> )	12	Averaged over 3 years	7.2	7.5	7.4
<b>PM<sub>10</sub></b>					
24-hour (µg/m <sup>3</sup> )	150	Not to be exceeded more than once per year over 3 years	No Data	No Data	No Data
<b>Pb</b>					
Rolling 3-month average (µg/m <sup>3</sup> )	0.15	Not to be exceeded	0	0	0

Sources: 40 CFR 50.1-50.12; USEPA 2019b.

Notes:  $\mu g/m^3$  = micrograms per cubic meter; ppb = parts per billion; ppm = parts per million.

**HSAAP Operating Permits and Existing Emissions.** Title V of the CAA requires the State of Tennessee to establish an air operating permit program (40 CFR part 70). Based on its potential to emit (PTE), HSAAP is a major source of air emissions, and its current operating contractor

(BAE OSI) holds two Title V operating permits—No. 568191 for Area A and No. 568188 for Area B (TDEC 2018a, 2018b). Both permits will expire in June 2023. The proposed thermal treatment facility is completely confined to Area B; therefore, Area A is not carried forward in this discussion.

Existing sources of air emissions at HSAAP's Area B include a coal-fired boiler plant and internal combustion engines such as generators, pumps, and storage tanks. Other sources include natural gas combustion for steam generation, nitration, washing, RDX recrystallization processes, explosives fluid energy milling, IMX manufacturing processes, and open burning of contaminated materials. Engineering controls on existing sources include a flare with natural gas assist, water and caustic scrubbers, condensers, baghouses, electrostatic precipitators, and wetted material processing. As part of its Title V permit requirements, HSAAP periodically submits a comprehensive emissions statement. Table 3-2 summarizes the total annual HSAAP Area B emissions of criteria pollutants and from open burning activities.

**Table 3-2. Facility-wide Emissions at HSAAP Area B**

<b>Pollutant</b>	<b>Facility-wide Emissions (tpy)</b>	<b>Open Burning Emissions (tpy)</b>
CO	255.2	28.2
NO <sub>x</sub>	342.9	2.0
VOC	58.9	14.3
SO <sub>2</sub>	1,621.0	0.3
PM <sub>10</sub> /PM <sub>2.5</sub>	72.3	5.3

Source: HSAAP 2018.

Notes: NO<sub>x</sub> = oxides of nitrogen; tpy = tons per year; VOC = volatile organic compound.

**Regulatory Overview.** TDEC oversees programs for permitting the construction and operation of new sources of air emissions in Tennessee, requiring air permitting for many industries and facilities that emit regulated pollutants. Based on the size of the emissions units and types of pollutants emitted, TDEC sets permit rules and standards for emissions sources (TDEC 1200-03: *Air Pollution Control Regulations*). This section outlines the primary federal and state permitting regulations that might apply to the proposed thermal treatment facility.

The air quality permitting process begins with the application of one or more construction permits. Three types of construction permits are available through TDEC for construction and temporary operation of new emissions sources: Prevention of Significant Deterioration (PSD) permits in attainment areas; Major Source Construction permits in nonattainment areas (Nonattainment New Source Review [NNSR]); and Minor New Source Construction permits. Because HSAAP is already a major source in an attainment area, any new sources of air emissions at the installation would require either a Minor New Source Construction permit or a major modification to HSAAP's existing PSD permit. This section outlines these permits and some of their requirements. TDEC requires an NNSR permit only for major new sources in nonattainment areas. Because HSAAP is in an attainment area, that permit would not apply.

**Prevention of Significant Deterioration Permit.** The PSD permit regulations specify that major new sources and major modifications to existing sources in attainment areas (such as HSAAP) must undergo PSD review. TDEC bases its permitting requirements for modifying existing stationary sources on their overall PTE criteria pollutants. Thresholds that determine the type of construction permit required depend on both the quantity and the type of emissions. Any net increase of pollutants that would exceed the major modification thresholds outlined in Table 3-3 would be subject to the PSD review requirements and would require the installation to obtain a major modification to their existing permit (40 CFR 52.21; TDEC 1200-03-09-.01).

**Table 3-3. Major Modification Thresholds for Existing PSD Sources**

Pollutant	Threshold (tpy)
CO	100
NO <sub>x</sub>	40
SO <sub>2</sub>	40
PM	25
PM <sub>10</sub>	15
PM <sub>2.5</sub>	10
VOCs	40
Pb	0.6

Sources: 40 CFR 52.21; TDEC 1200-03-09-.01.

Notes: NO<sub>x</sub> = oxides of nitrogen; tpy = tons per year; VOCs = volatile organic compounds.

The PSD process applies to all criteria pollutants for which the region is in attainment (i.e., all criteria pollutants). The PSD permitting process typically takes 12–24 months to complete. TDEC typically requires sources subject to PSD to complete the following:

- Best Available Control Technology (BACT) review for each criteria pollutant;
- Maximum Achievable Control Technology (MACT) review for regulated Hazardous Air Pollutants (HAPs) and designated categories;
- Predictive air dispersion modeling;
- Establishing procedures for measuring and recording emissions and/or process rates;
- Meeting the New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements; and
- A public involvement process.

In addition, PSD permitting provides rigorous safeguards to prevent deterioration of the air quality in class I areas as specified in 40 CFR 51.166(e). The PSD program designates as EPA mandatory class I areas all international parks, all national wilderness areas, national memorial parks that exceed 5,000 acres, and national parks that exceed 6,000 acres. The class I areas closest to HSAAP are Great Smoky Mountains National Park and Joyce Kilmer-Slickrock Wilderness Area (USEPA 2017c), which are approximately 80–100 miles southeast of the installation.

**Minor New Source Construction Permit.** TDEC requires a Minor New Source Construction permit for construction of minor new sources, minor modifications of existing sources, and major sources not subject to PSD permit requirements. The Minor New Source permitting process typically takes 6–8 months to complete after the application is submitted to TDEC. The department could require sources subject to minor new source review to complete the following:

- BACT review for each criteria pollutant;
- MACT review for regulated HAPs and designated categories;
- Predictive air dispersion modeling as requested by TDEC; and
- Establishing procedures for measuring and recording emissions and/or process rates.

**NSPS and NESHAP.** In addition to the permitting requirements for constructing and operating new emissions sources, NSPS and NESHAP set emissions control standards for categories of

new stationary emissions sources of both criteria pollutants and HAPs. The NSPS program requires EPA to list categories of stationary sources that cause or contribute to air pollution that might reasonably be expected to endanger public health. The program sets uniform emissions limitations for many industrial sources. In addition, the CAA Amendments of 1990, under revisions to section 112, required EPA to list and promulgate NESHAP to reduce the emissions of HAPs such as benzene, formaldehyde, toluene, and xylene from categories of major and area sources (40 CFR parts 60, 61, 63).

**GHGs and Climate.** GHGs are gases that trap heat in the atmosphere. They contribute to an increase in the temperature of the Earth's atmosphere by allowing sunlight in, but not allowing its energy back out. Following are the principal GHGs that enter the atmosphere because of human activities:

- Carbon Dioxide (CO<sub>2</sub>). CO<sub>2</sub> enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, and trees and wood products and as a result of other chemical reactions.
- Methane. Coal, natural gas, and oil production and transport activities emit methane. Livestock and other agricultural practices as well as the decay of organic waste in landfills also produce methane emissions.
- Nitrous Oxide. Agricultural and industrial activities emit nitrous oxide as does the combustion of fossil fuels and solid waste.

Carbon dioxide equivalent (CO<sub>2</sub>e) is the amount of CO<sub>2</sub> emitted into the atmosphere that would produce the same greenhouse effects as a given amount of another GHG. CO<sub>2</sub>e is computed by multiplying the weight of the gas being measured (e.g., methane) by its estimated global warming potential (which is 21 for methane).

In addition, Executive Order (EO) 13834, *Efficient Federal Operations*, specifically requires agencies within the Department of Defense (DoD) to measure, report, and reduce their GHG emissions from both their direct and their indirect activities. HSAAP currently emits approximately 168,000 tons of CO<sub>2</sub>e each year, with a PTE of 551,117 tons per year (tpy) (BAE 2017a; HSAAP 2016). DoD has committed to reducing GHG emissions from noncombat activities by 34 percent by 2020 (U.S. Army 2016a).

Historically, Kingsport's average high temperature is 86.9 degrees Fahrenheit (°F) in the hottest month of July, and its average low temperature is 26.2 °F in the coldest month of January. Kingsport has average annual precipitation of 44.4 inches per year. The wettest month of the year is July, with an average rainfall of 4.6 inches (Idcide 2019).

### **3.4.2 Impacts Associated with Alternative 1: No Action Alternative**

The No Action Alternative would have no effects on air quality. Open burning would continue at the installation, and local and regional air quality would be unchanged when compared to existing conditions. Under the No Action Alternative, benefits from implementing new thermal treatment technologies and associated emission controls would not be realized.

### **3.4.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

Short- and long-term minor adverse effects on air quality would be expected from construction and operations associated with the Preferred Alternative. Short-term effects would be the result of the use of heavy equipment and the generation of fugitive dust during construction. Long-term effects would be the result of an increase in air emissions from the proposed thermal treatment facility. Emissions from open burning activities would be reduced. Changes in emissions would

not exceed the General Conformity rule *de minimis* threshold values, and the proposed action would not contribute to a violation of any federal, state, or local air regulation.

### 3.4.3.1 Construction and Operation

The proposed thermal treatment facility would be within a region EPA has designated as an attainment area for the NAAQS and the General Conformity rule does not apply. The General Conformity rule was established with NEPA in mind, and it is understood that actions of this size within an EPA-designated attainment area would have less than significant effects on air quality. Although the General Conformity rule would not apply, the Air Conformity Applicability Model was used to estimate the total direct and indirect emissions from construction and operation, which have been compared to the *de minimis* thresholds to determine the level of effects under NEPA (Table 3-4) (USAF 2019). Construction emissions were estimated for fugitive dust, operation of on- and off-road diesel equipment and vehicles, and worker trips. Total combined emissions would be below the *de minimis* threshold of 100 tpy of each pollutant; therefore, the level of effects would be minor. Moderate changes in the design of the facility would not substantially change these emission estimates and would not change the level of effects under NEPA. A record of non-applicability (RONA) to the General Conformity rule is provided in Appendix A.

**Table 3-4. Annual Air Emissions Compared to *De Minimis* Thresholds**

Activity	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	<i>De minimis</i> Threshold [tpy]	Exceeds <i>De Minimis</i> Thresholds? [Yes/No]
Construction	2.9	2.6	0.4	<0.1	0.6	0.1	100	No
Operations	41.2	31.7	12.3	1.1	1.1	1.1		
Net Change <sup>a</sup>	13.0	29.7	(2.0)	0.8	(4.2)	(4.2)		

Source: USAF 2019.

Notes: VOC = volatile organic compound.

<sup>a</sup> Net change in emissions assumes all open burning activities and associated emissions would be reduced.

**Permitting for New Emissions Sources.** Permitting scenarios might vary based on the final design, timing of the project, and types of controls ultimately selected. Permitting scenarios, design, timing, controls, and the estimated emissions might differ from the ones this EA describes. During the final design stage and the permitting process, however, either (1) the actual equipment, controls, or operating limitations would be selected to reduce the PTE to below the major modification threshold, or (2) the PSD permitting process would ensure that the NAAQS are not exceeded, ensuring the project would not interfere with the ability of the state to maintain air quality in accordance with the NAAQS. This permitting approach is inherent to federal and state air regulations and leads to a forced preservation of clean air in attainment regions. Therefore, regardless of the ultimate permitting scenario, effects would be less than significant.

The proposed thermal treatment facility likely would not meet the definition of a major modification as outlined in the PSD regulations, because it would not produce concentrations of PTE-regulated pollutants equal to or higher than those outlined in Table 3-3. Even though the estimates for pollutant concentrations are lower than the applicable thresholds, these estimates are based on the best information available at this time. Several conservative assumptions were made concerning the throughput rates, types of controls to be used, and control efficiencies of the proposed equipment. This approach could change with the final design; however, as outlined above and for similar reasons, regardless of the ultimate permitting scenario, effects from air quality permitting would be less than significant.

If it became required, the PSD permitting process would include all new sources of air emissions associated with the proposed thermal treatment facility. The PSD review process would require the following:

- **Installation of BACT**, an emission limitation based on the maximum pollution control that can be achieved. BACT would vary based on the process being controlled and would be implemented in the new facilities and equipment. It could be add-on control equipment or modification of the production methods, or it could be design criteria, add-on equipment, work practice, or operational standard.
- **A detailed air quality analysis** to demonstrate that new emissions resulting from the thermal treatment facility would not cause or contribute to a violation of the NAAQS. The analysis would involve (1) an assessment of existing air quality, and (2) dispersion modeling to predict future concentrations of pollutants resulting from the proposed expansion.
- **A public involvement process** that would include a public comment period on the permit application and possibly informational meetings and hearings.

Both the minor new source review and the PSD permitting process would include all requirements outlined in section 3.4.1.

Because the activities this EA describes would ultimately be conducted entirely on Area B, TDEC would require all new stationary sources of emissions to be added to the HSAAP Area B Title V permit and HSAAP to apply for the modification of the permit within 1 year of the first operation of a new source.

Although none have been identified at this time, any additional new stationary sources of air emissions such as backup generators would fully comply with TDEC permitting requirements. It is possible that a small backup generator would be required. The TDEC Division of Air Pollution Control has established the Tennessee Air Pollution Control Regulations (Air Pollution Control Rule Chapter 1200-03-01 *et seq.*) to implement the Tennessee Air Quality Act (Tennessee Code Annotated section 53-3408 *et seq.*). The regulations establish emission standards for numerous sources of air pollutants.

Under TDEC rules, anyone responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust (e.g., construction and operation of a thermal treatment facility) must take reasonable precautions to prevent that dust from becoming airborne. Reasonable precautions might include using water to control dust from building construction and demolition, road grading, or land clearing. In addition, construction and operation of the thermal treatment facility would proceed in full compliance with current TDEC requirements with compliant practices and/or products. These requirements are detailed in the following regulations:

- Rule Chapter 1200-03-05: *Visible Emission*
- Rule Chapter 1200-03-08: *Fugitive Dust*
- Rule Chapter 1200-03-18: *Volatile Organic Compounds*
- Rule Chapter 1200-03-23: *Visibility Protection*

This listing is not all-inclusive; the Army and any contractors would comply with all applicable air pollution control regulations.

**Climate Change and GHGs.** Under the proposed action, the thermal treatment facility would emit approximately 27,418 metric tpy of CO<sub>2</sub> (USEPA 2005). The estimated GHG emissions from the



thermal treatment facility would be minor compared to global, countrywide, and statewide GHG emissions (Table 3-5).

**Table 3-5. GHG Emissions from the Proposed Action**

Scale	CO <sub>2</sub> e Emissions (MMT)	Change from Proposed Action
Global	43,125.0	0.00006%
United States	6,870.0	0.0004%
Tennessee	103.5	0.03%
Proposed Action	0.027	0.0%

Sources: BAE 2017a; USEIA 2017; USEPA 2017d, 2017e, 2005.

Note: MMT = million metric tons.

Although the proposed action would result in an increase in GHG emissions, it would be within the context of the Army-wide effort to reduce GHG emissions. The Army's initiatives to reduce its GHG emissions include (1) increasing renewable and alternative energy power production to enhance mission capabilities and advance energy security, (2) improving its capabilities through better integration of operational energy considerations, (3) setting energy security and sustainability objectives, and (4) implementing a Net Zero initiative. These initiatives have reduced Army-wide GHG emissions by 0.8 MMT per year, an 8 percent reduction from 2008 levels.

Tennessee is in the Southeast climate region of the United States, an area that climate change leaves exceptionally vulnerable to extreme heat events, hurricanes, and decreased water availability. Average annual temperatures during the last century across the Southeast cycled between warm and cool periods, and temperatures increased from 1970 to the present by an average of 2 °F. The number of category 4 and 5 hurricanes has increased substantially since the early 1980s compared to the historical records that date back to the mid-1880s. This increase can be attributed to both natural variability and climate change (NCA 2014).

Table 3-6 lists climate stressors and their potential effects on the operation of the proposed thermal treatment facility. At this time, no future climate scenario or potential climate stressor would have appreciable effects on any element of the proposed action.

**Table 3-6. Effects of Potential Climate Stressors on Facility Operations**

Climate Stressor	Potential Effect on HSAAP Operations
More frequent and intense heat waves	Negligible
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increased drought	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Negligible

Source: NCA 2014.

### 3.4.3.2 Mitigation Measures and BMPs

No mitigation measures for air quality would be required because the effects would be less than significant. No activities other than compliance with existing regulations, permits, and plans would be required to reduce the level of impact to less than significant.

Both the FF(s) and ETT would be equipped with several emission controls that might include thermal oxidization, a baghouse, selective catalytic reduction, and a caustic scrubber. BMPs and other regulatory requirements would continue to be followed during the operation of the thermal treatment facility. The thermal treatment facility would proceed in full compliance with current TDEC requirements with compliant practices and/or products. These requirements include the following regulations:

- Rule Chapter 1200-03-04: *Open Burning*
- Rule Chapter 1200-03-05: *Visible Emission*
- Rule Chapter 1200-03-08: *Fugitive Dust*
- Rule Chapter 1200-03-18: *Volatile Organic Compounds*
- Rule Chapter 1200-03-23: *Visibility Protection*

This is not an all-inclusive listing. The Army and its contractors would comply with all applicable air pollution control regulations.

In addition, no one would handle, transport, or store any material in a manner that might allow unnecessary amounts of contaminants to become airborne. Reasonable measures might be required to reduce fugitive dust, including the following:

- Using water for control of dust from building construction and demolition, grading roads, or clearing land;
- Paving roadways and maintaining them in a clean condition;
- Covering open equipment for conveying or transporting material likely to create objectionable air pollution when airborne; and
- Promptly removing spilled or tracked dirt or other materials from paved streets.

#### **3.4.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

Alternative 3 would have short- and long-term, minor adverse effects on air quality. The nature and overall level of effects would be similar to those outlined under the Preferred Alternative; however, they would occur at locations 1 and 2. Short-term effects would be due to the use of heavy equipment and the generation of fugitive dust during construction. Long-term effects would be the result of an increase in air emissions from the proposed thermal treatment facility. Emissions from open burning activities would be reduced. Changes in emissions would not exceed the General Conformity rule *de minimis* threshold values, and the proposed action would not contribute to a violation of any federal, state, or local air regulation. These effects would be less than significant.

##### **3.4.4.1 Construction and Operation**

Effects of construction and operation would be as described for the Preferred Alternative in section 3.4.3.1.

##### **3.4.4.2 Mitigation Measures and BMPs**

Mitigation measures would be similar to those described under Preferred Alternative. The discussion of mitigation measures and BMPs in section 3.4.3.2 applies equally to Alternative 3.

#### **3.4.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

Alternative 4 would have short- and long-term, minor adverse effects on air quality. The nature and overall level of effects would be similar to those outlined under the Preferred Alternative; however, they would occur at locations 1 and 3. Short-term effects would be due to the use of heavy equipment and the generation of fugitive dust during construction. Long-term effects would be due to the increase in air emissions from the proposed thermal treatment facility. Emissions from open burning activities would be reduced. Changes in emissions would not exceed the

General Conformity rule *de minimis* threshold values, and the proposed action would not contribute to a violation of any federal, state, or local air regulation. These effects would be less than significant.

### 3.4.5.1 Construction and Operation

Effects of construction and operation would be as described for the Preferred Alternative in section 3.4.3.1.

### 3.4.5.2 Mitigation Measures and BMPs

Mitigation measures would be similar to those described under Preferred Alternative. The discussion of mitigation measures and BMPs in section 3.4.3.2 applies equally to Alternative 4.

## 3.5 NOISE

### 3.5.1 Affected Environment

Sound is a physical phenomenon consisting of vibrations that travel through a medium such as air and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's daily life such as construction or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, measured 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 are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighting," measured in A-weighted decibels (dBA), approximates a frequency response expressing the perception of sound by humans. Representative sounds encountered in daily life and their dBA levels are provided in Table 3-7.

**Table 3-7. Common Sounds and Their Levels**

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998.

The dBA noise metric describes steady noise levels, although very few noises are, in fact, constant. Therefore, A-weighted 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 the nighttime levels (10 p.m. to 7 a.m.). DNL is a useful descriptor for noise because it (1) averages ongoing yet intermittent noise, and (2) measures total sound energy over a 24-hour period. In addition,

equivalent sound level ( $L_{eq}$ ) is often used to describe the overall noise environment.  $L_{eq}$  is the average sound level in dB.

The Noise Control Act of 1972 (Public Law 92-574) directs federal agencies to comply with applicable federal, state, and local noise control regulations. In 1974, the EPA provided information suggesting 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. Tennessee does not have a statewide noise regulation. Neither Hawkins County nor Sullivan County maintain noise ordinances that set strict not-to-exceed sound levels.

Existing sources of noise at and around HSAAP include commercial and private aircraft overflights, railroad and vehicle traffic, and other noises such as lawn maintenance equipment, construction noise, and bird and animal vocalizations. Other noise sources on the installation include operation of manufacturing facilities, and heavy equipment use. The vegetation surrounding the complex and the natural areas that generally buffer the installation attenuate much of the already limited noise generated on the installation. However, small explosives demonstrations, and research and development testing are conducted at two small sites adjacent to the existing burn pans approximately once per month. Occasional noise complaints are received about these activities.

HSAAP is surrounded by mixed residential, other commercial, and light industrial areas. Existing noise levels ( $L_{eq}$  and DNL) were estimated for the surrounding areas using the techniques specified in American National Standard Institute (ANSI) S12.9-1993 (R2003), *Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present*. Table 3-8 outlines the land-use category and the estimated background noise levels for nearby areas (ANSI 2013).

**Table 3-8. Estimated Background Noise Levels**

Direction	Land-Use Category	Background Noise (dBA)		
		$L_{eq}$		DNL
		Daytime	Nighttime	
West	Rural Quiet residential	40	34	42
North	Light Industrial Commercial Quiet residential	52	53	47
South				
East				

Source: ANSI 2013.

### 3.5.2 Impacts Associated with Alternative 1: No Action Alternative

The No Action Alternative would have no effects on the noise environment. No short- or long-term changes to the ambient noise environment because a thermal treatment facility would not be constructed or operated. The noise environment would remain unchanged when compared to existing conditions.

### 3.5.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)

Short-minor adverse effects and long-term negligible adverse effects on the existing noise environment would be expected under the Preferred Alternative. Short-term effects would be the result of incremental increases in heavy equipment noise during construction activities. Long-term effects would be due to the potential for a detonation in the FF or ETT, and the occasional testing

and use of backup generators. These effects would not result in the violation of applicable federal, state, or local noise regulations, or create appreciable areas of incompatible land use.

### 3.5.3.1 Construction and Operation

Table 3-9 presents typical noise levels (dBA at 50 feet) that the EPA has estimated for the main phases of outdoor construction. Individual pieces of construction equipment typically generate noise levels of 80–90 dBA at 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise typically extends to distances of 400–800 feet from the site of major equipment operations.

**Table 3-9. Noise Levels Associated with Outdoor Construction**

Construction Phase	$L_{eq}$ (dBA)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971.

Given the temporary nature of proposed construction activities and the limited amount of noise that construction equipment would generate, these effects would be minor. In addition, limited truck and worker traffic might be audible at some nearby locations. These effects would be minor.

Noise from operational activities would be similar in nature and overall levels to current operational conditions. There may be the potential for noise from a detonation in the FF, ETT, or the occasional testing and use of backup generators. Changes in the noise environment from these activities would be indistinguishable from existing conditions. There would be no military training activities, use of weaponry, or demolitions training. There would be no changes in the noise environment associated with these activities. There would be no change in the explosives testing or demonstration activities at the two small sites adjacent to the existing burn pans. These effects would be negligible.

### 3.5.3.2 Mitigation Measures and BMPs

No mitigation measures would be required for adverse effects on the noise environment. Although construction-related noise effects would be minor, the following BMPs would be performed to reduce further any realized noise effects:

- Heavy equipment use would occur primarily during normal weekday business hours;
- Heavy equipment mufflers would be properly maintained and in good working order; and
- Personnel, particularly equipment operators, would don adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

In the final design stages, all facilities and operational equipment would be designed and constructed so as not to generate intrusive noise beyond the property boundary.

## 3.5.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1

Short-term minor and long-term negligible adverse effects on the existing noise environment would be expected under Alternative 3. The nature and overall level of effects would be similar to

those outlined under Alternative 2; however, they would occur at locations 1 and 2. Short-term effects would be due to incremental increases in heavy equipment noise during construction activities. Long-term effects would be due to the potential for a detonation in the FF, ETT, and the occasional testing and use of backup generators. These effects would not result in the violation of applicable federal, state, or local noise regulations, or create appreciable areas of incompatible land use. BMPs would be the same as outlined under Alternative 2.

#### **3.5.4.1 Construction and Operation**

Effects of construction and operation would be as described in section 3.5.3.1.

#### **3.5.4.2 Mitigation Measures and BMPs**

Mitigation measures would be similar to those described under Alternative 2.

### **3.5.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

Short-term minor and long-term negligible adverse effects on the existing noise environment would be expected under Alternative 4. The nature and overall level of effects would be similar to those outlined under Alternative 2; however, they would occur at locations 1 and 3. Short-term effects would be due to incremental increases in heavy equipment noise during construction activities. Long-term effects would be due to the potential for a detonation in the FF, ETT, and the occasional testing and use of backup generators. These effects would not result in the violation of applicable federal, state, or local noise regulations, or create appreciable areas of incompatible land use. BMPs would be the same as outlined under Alternative 2.

#### **3.5.5.1 Construction and Operation**

Effects of construction and operation would be as described in section 3.5.3.1.

#### **3.5.5.2 Mitigation Measures and BMPs**

Mitigation measures would be similar to those described under Alternative 2.

## **3.6 GEOLOGY AND SOILS**

### **3.6.1 Affected Environment**

**Geology.** HSAAP is underlain by two major rock units, the limestones and dolomites of the Knox Group and the Sevier Shale (Rogers 1953). The Knox Group consists generally of fine-grained dolomite and dolomitic limestone with limestone. This layer is subject to dissolution by slightly acidic surface water and groundwater, making it susceptible to karst formation. The Sevier Shale is the uppermost layer at the proposed project sites.

**Topography.** HSAAP slopes from the hilly area in the north to the flat area bordering the Holston River and from the ridge in the south to the Holston River. The proposed sites for the location 1 facilities are hilly and vary from approximately 1,360 feet above mean sea level (amsl) to 1,240 feet amsl (USGS 2019). Location 2 is gently sloped to the southeast from 1,200 amsl to 1,180 amsl. The proposed location 3 site is flat at 1,160 amsl.

**Soils.** The primary soil types found at proposed location 1 are the Dandridge shaly silty clay loam and the Talbott-Rock outcrop complex in the center portion of the site. This area has been disturbed only by the construction of storage bunkers and the associated access roads. The proposed site of the facilities includes disturbed and undisturbed areas. The soils have very low permeability and available water capacity and are rated as very limited for construction mostly because of the sloping topography.

The soil type at location 2 is the Holston-Urban land complex. This area has been previously disturbed. There is an existing facility in the southwestern portion of the site, but the rest of the site is currently undeveloped. The Holston-Urban land complex soil type is not rated for suitability for construction. Most of the developed part of HSAAP is underlain by this type of soil.

The main type of soil at location 3 is the Holston-Urban land complex with Altavista silt loam in the southern portion of the site. This site is completely disturbed. The Holston-Urban land complex soil type is not rated for suitability for construction. The Altavista silt loam is rated as somewhat limited for construction because of the moderate depth to the saturated zone.

Complete details on the soils of HSAAP are available online on the Web Soil Survey page of the website of the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) (USDA-NRCS 2019a).

**Prime Farmland.** The Altavista silt loam at location 3 is the only soil type at any of the proposed locations considered prime farmland soil. NRCS defines *prime farmland* as "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these land uses" (USDA-NRCS 2019b). The Farmland Policy Protection Act (7 U.S.C. § 4208(b)) was passed to minimize the impact that federal programs have on the conversion of farmland to nonagricultural uses. Use of farmland by a federal agency for national defense purposes, however, is exempted from the provisions of the act.

### **3.6.2 Impacts Associated with Alternative 1: No Action Alternative**

The No Action Alternative would have no impacts on geology, the local topography, or soils in the proposed locations since no changes would occur.

### **3.6.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.6.3.1 Construction and Operation**

No adverse effects on geology or topography would be expected from construction associated with the implementing the Preferred Alternative. The potential for karst features, however, might affect the final siting of the proposed facilities. Siting of the facilities will be determined once a geologic investigation of each site is completed.

Short-term, minor adverse effects on soils would be expected from construction of facilities under the Preferred Alternative. The ETT and its control room and handling facility would be constructed on about 4 acres of land and about 1 acre of land for each FF facility (up to two FFs) and about 2 acres for the FF control room and handling facility. Improving the existing roads, laying new utilities, and installing new fencing would disturb an additional 14 acres. A total of approximately 22 acres would be disturbed under this alternative. Some of this disturbance would involve previously disturbed soils along the existing roads and for the removal of the railroad spur.

TDEC requires operators of construction sites involving clearing, grading, or excavation that result in a cumulative (project total) area of disturbance of 1 or more acres to hold a National Pollutant Discharge Elimination System (NPDES) Stormwater Construction permit. The Army or its contractor for the proposed project would obtain the permit. A requirement for obtaining the permit is developing and implementing a site-specific Stormwater Pollution Prevention Plan (SWPPP), which would include measures to limit soil erosion and stormwater runoff from disturbed areas. It would cover all aspects of the proposed project, including facility demolition, refurbishment, and construction; laydown area(s); pipeline replacement; and the like. Any disturbed sites would be stabilized at the end of construction activities.

Once the Army has completed construction activities and stabilized disturbed soils, and the facilities are operational, no effects on geology, topography, or soils would be expected.

### **3.6.3.2 Mitigation Measures and BMPs**

No mitigation measures would be required for adverse effects on geology or soils. Under the terms of the NPDES Stormwater Construction permit, the Army or its contractor would prepare a site-specific SWPPP that would provide details on the BMPs to be used to limit soil erosion and stormwater runoff resulting from the construction activities. BMPs typically used on relatively level sites like the production area include straw bale barriers, silt fences, diversion dikes or berms, and temporary sediment traps.

## **3.6.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

### **3.6.4.1 Construction and Operation**

No adverse effects on geology or topography would be expected from construction under Alternative 3. The potential for karst features, however, might affect the final siting of the proposed facilities in location 2 as well as in location 1. The areas will undergo a geologic investigation to determine site suitability.

Short-term, minor adverse effects on soils would be expected from the same types of activities as would occur under the Preferred Alternative, with minor differences. The disturbance for the ETT facility, roads, fences, and utilities would still occur in location 1. The soils in location 2 would be disturbed for construction of up to two of the FF facilities a control room and a handling facility. The installation of new fencing, new utilities, and small connecting roads at location 2 would also result in disturbance of soils.

Once the Army has completed construction activities and stabilized disturbed soils, and the facilities are operational, no effects on geology, topography, or soils would be expected.

### **3.6.4.2 Mitigation Measures and BMPs**

Mitigation measures would be similar to those described under Alternative 2.

## **3.6.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

### **3.6.5.1 Construction and Operation**

No adverse effects on geology or topography would be expected from construction associated with implementing Alternative 4. The potential for karst features, however, might affect the final siting of the proposed facilities in location 1. The area will undergo a geologic investigation. Because of the proximity of the floodplain and shallow water table along with the proximity of a coal tar solid waste management unit at the west boundary, location 3 would also be subject to an acceptable geologic investigation prior to selection.

Short-term, minor adverse effects on soils would be expected from the same types of activities as would occur under the Preferred Alternative, with minor differences. The disturbance for the ETT facility, roads, fences, and utilities would still occur in location 1. The soils in location 3 would be disturbed for construction of up to two of the FF facilities. Location 3 is in the production area and would not require the installation of new fencing, new utilities corridors, or new roads.

Once the Army has completed construction activities and stabilized disturbed soils, and the facilities are operational, no effects on geology, topography, or soils would be expected.



### 3.6.5.2 Mitigation Measures and BMPs

Mitigation measures would be similar to those described under Alternative 2.

## 3.7 WATER RESOURCES

### 3.7.1 Affected Environment

**Surface Waters.** Two major flowing water bodies on HSAAP are Arnott Branch and the Holston River. Arnott Branch is a tributary of the Holston River on the western portion of the Area B production area and has itself tributary streams extending into the Y-magazine area and the western half of the Area B production area. Arnott Branch proper begins north of HSAAP in Mt. Carmel. TDEC lists Arnott Branch as an impaired waterbody for sedimentation/siltation over 2.8 miles of its length (TDEC 2019). Proposed location 1 is just west of Arnott Branch as it flows from north of the installation to the Holston River. Two unnamed streams with minor side tributaries also drain portions of location 1 and flow to the Holston River. The Holston River flows through HSAAP for approximately 4.5 miles. Other unnamed ponds and drainage ditches in Area B drain to Arnott Branch and the Holston River. HSAAP holds two NPDES permits that allow the discharge of stormwater, cooling water, and treated industrial and domestic wastewater to these waterbodies through various outfalls.

**Floodplains.** The 100-year floodplain on HSAAP is limited to low-lying areas along the Holston River south of the 1,172-foot elevation railroad berm at the south end of the plant, and areas of 500-year floodplain border the 100-year floodplain at some locations. Locations 1 and 2 and most of the production area are outside the 100- and 500-year floodplains of the Holston River and Arnott Branch (Figure 3-1) (HSAAP GIS 2017). A portion of the 500-year floodplain extends to the periphery of location 3 but it does not extend onto location 3.

**Wetlands.** The U.S. Fish and Wildlife Service (USFWS) has completed National Wetlands Inventory mapping for all of HSAAP. Results of this inventory are available in the HSAAP Natural Resources Office. The mapping effort did not indicate the presence of any jurisdictional wetlands on any of the proposed project areas (Figure 3-1). Mapped wetlands nearest to any of the proposed sites are across an access road southeast of location 3. Wetlands smaller than those mapped by USFWS (that is, smaller than an acre or two) could be present on or near project sites, particularly locations 2 and 3.

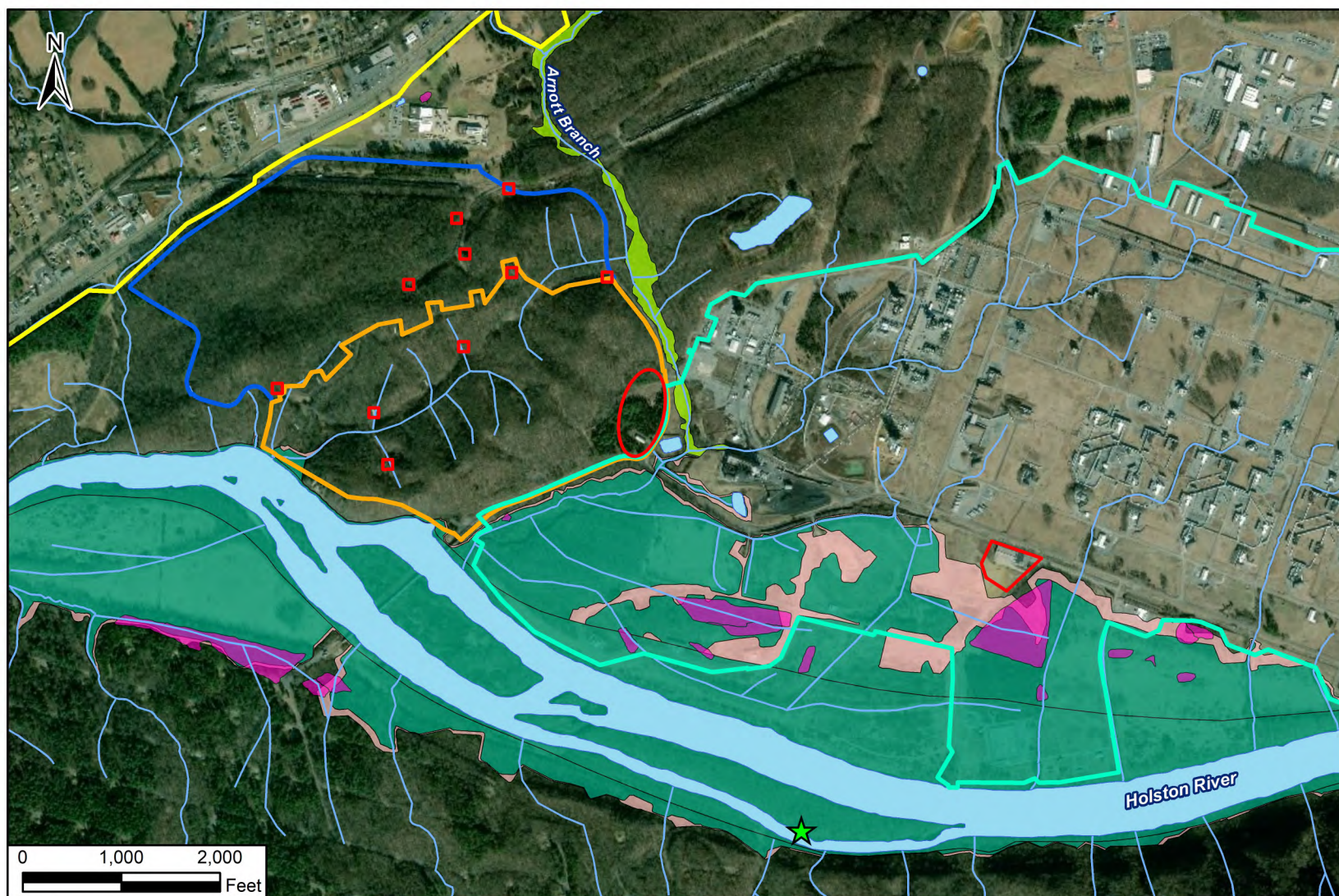
### 3.7.2 Impacts Associated with Alternative 1: No Action Alternative

The No Action Alternative would not be expected to have any adverse effects on water resources because no construction activities would occur and operations would continue as they are currently conducted.

### 3.7.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)

#### 3.7.3.1 Construction and Operation

**Construction.** Short-term, minor adverse effects on surface waters and no adverse effects on floodplains or wetlands would be expected from construction activities associated with the Preferred Alternative. No floodplain areas or wetlands are on or near any of the sites proposed to be used under the Preferred Alternative. Ground disturbance associated with construction activities would be expected to result in some soil erosion and sediment-laden stormwater runoff. Stormwater runoff would also be expected to contain minor amounts of pollutants (e.g., lubricants) leaked from construction vehicles. The Army or its contractor would minimize these impacts by implementing BMPs outlined in the SWPPP developed for the project (see section 3.6.3.1) and stabilize all disturbed areas upon completion of construction activities.



- LEGEND**
- |                       |                 |                   |
|-----------------------|-----------------|-------------------|
| Y Magazine Area       | Streams         | FloodZone 0.2 PCT |
| Proposed Action Sites | Ponds/River     | FloodZone A       |
| Production Area       | Wetland         | FloodZone AE      |
| Suspect Area          | Bald Eagle Nest |                   |

## Natural Resources

Figure 3-1

Note: Project boundaries and locations are approximate. Source: HSAAP GIS 2017.

When a final project footprint has been determined a qualified biologist will inspect the footprint to determine whether any wetlands are on a site. If jurisdictional wetlands are found on a project site, then HSAAP would either avoid the wetlands or obtain a Clean Water Act section 404 permit to impact the wetlands from the U.S. Army Corps of Engineers and conduct all necessary mitigation to offset the wetland impact as specified in the permit. (Note that determination of whether the wetlands are jurisdictional would require a formal delineation effort.) Compliance with the mitigation requirements of a section 404 permit would result in no net loss of wetlands from implementing the proposed action and, therefore, no significant adverse effect on wetlands.

**Operation.** Long-term, minor adverse effects on surface waters would be expected from operational activities associated with the Preferred Alternative. Operations at the ETT and FF facilities would not involve any discharges of pollutants to surface waters, wetlands, or floodplains, but increased and daily traffic to the sites along installation roads, including road 1931 that parallels Arnett Branch near the Y-magazine area and roads in the Y-magazine area, would be expected to contribute increased amounts of pollutants such as lubricants and soil dislodged from vehicles to stormwater draining to the streams. The Army and its contractors would employ standard BMPs to protect water quality such as removing excess dirt from vehicles traveling on installation roads and maintaining vehicles in good condition to limit pollutant leaks from the vehicles. No adverse effects on floodplains or wetlands would be expected from operations under the Preferred Alternative.

### 3.7.3.2 Mitigation Measures and BMPs

No mitigation measures would be required for water resources. The Preferred Alternative would not be expected to create any significant adverse impact on water resources.

BMPs to protect water resources are the same as those discussed for geology and soils (section 3.6.3.1). Under the terms of the NPDES Stormwater Construction permit, the Army or its contractor would prepare a site-specific SWPPP that provides details on BMPs to limit soil erosion and pollution in stormwater runoff resulting from construction activities. After construction was completed, the Army and its contractors would employ standard BMPs to protect water quality such as removing excess dirt from vehicles traveling on installation roads and maintaining vehicles in good condition to limit pollutant leaks from the vehicles.

## 3.7.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1

### 3.7.4.1 Construction and Operation

**Construction.** Short-term, minor adverse effects on surface waters and no adverse effects on floodplains or wetlands would be expected from construction activities associated with Alternative 3. Ground disturbance associated with construction activities at location 1 and location 2 would be expected to result in some soil erosion and sediment-laden stormwater runoff. The discussion of effects under the Preferred Alternative applies equally to Alternative 3: Stormwater runoff would be expected to contain minor amounts of pollutants leaked from construction vehicles that could enter streams and the Holston River, but no impacts on floodplains or wetlands would be expected.

**Operation.** Long-term, minor adverse effects on surface waters would be expected from operational activities associated with Alternative 3. The discussion of effects under the Preferred Alternative applies equally to operations under Alternative 3.

### 3.7.4.2 Mitigation Measures and BMPs

No mitigation measures would be required for water resources. Alternative 3 would not be



expected to create any significant adverse impact on water resources. BMPs to protect water resources are the same as those discussed in section 3.7.3.2.

### **3.7.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

#### **3.7.5.1 Construction and Operation**

**Construction.** Short-term, minor adverse effects on surface waters and no adverse effects on floodplains or wetlands would be expected from construction activities associated with Alternative 4. The discussion of effects under the Preferred Alternative applies equally to Alternative 4. Although location 3 is close to a 500-year floodplain, the site itself is outside the floodplain so any modification of structures on the site would have no effect on flooding or human health and safety. No impacts on wetlands would be expected.

**Operation.** Long-term, minor adverse effects on surface waters would be expected from operational activities associated with Alternative 4. The discussion of effects under the Preferred Alternative applies equally to operations under Alternative 4.

#### **3.7.5.2 Mitigation Measures and BMPs**

No mitigation measures would be required for water resources. Alternative 3 would not be expected to create any significant adverse impact on water resources. BMPs to protect water resources are the same as those discussed in section 3.7.3.2.

## **3.8 BIOLOGICAL RESOURCES**

### **3.8.1 Affected Environment**

The proposed action would occur within two or three HSAAP land management areas. The FF facilities would be in the Suspect Area or Y-magazine land management units (under the Preferred Alternative and Alternative 3) or in the Area B production area land management unit (under Alternative 4). The ETT facilities would be in the Suspect Area and Y-magazine land management units under all alternatives. Each land management unit is described briefly below.

**Suspect Area Land Management Unit.** This land management unit encompasses approximately 165 acres along the northern installation boundary in the north-central portion of the installation. Within it is the old suspect yard—an area of approximately 15 acres and was historically used to park vehicles loaded with explosives for which there were safety concerns. The area surrounding the old suspect yard is known as the Suspect Area and encompasses approximately 165 acres. The old Suspect Area is no longer used and a new suspect yard has been constructed in the quarry area, which is west of the Suspect Area, also along the installation boundary. Loblolly pine (*Pinus taeda*) was the dominant species in the area immediately around the suspect yard, but most of the trees were killed by the southern pine beetle (*Dendroctonus frontalis*) some years ago. The outer perimeter of the suspect area is composed primarily of hardwood stands consisting of a mixture of white and red oaks (*Quercus alba* and *Q. rubra*), hickory (*Carya* spp.), and maple (*Acer* spp.). There are some very old white oak trees scattered throughout the suspect area—some of which are probably more than 200 years old. The hardwoods in the area provide an important source of mast to species such as the southern fox squirrel (*Sciurus niger*), white-tailed deer (*Odocoileus virginianus*), and wild turkey (*Meleagris gallopavo*). Many of the pine stands in the center of the area were destroyed by an ice storm, resulting in large gaps in the canopy and numerous piles of dead trees on the ground. This area is a deer hunting area.

**Y-Magazine Area Land Management Unit.** The Y-magazine area consists of approximately 154 acres and contains 11 magazines that at one time were used to store production items. The area is no longer used and other than those areas that were once mowed and maintained as buffers

around the magazines, fence lines and road shoulders, the area is completely forested, dominated by upland hardwood species such as oaks, beech (*Fagus grandifolia*), hickory, and maple, which, as in the suspect area, provide an important source of mast to animals. The lack of development in the Y-magazine area and its distinct boundaries make this area suitable for hunting, and deer hunting is allowed within the area.

**Area B Production Area.** The Area B production area is classified as semi-improved grounds, consisting, for the most part, of open fields that are generally mowed one or two times per year. Scattered mature trees are on the production area, but location 3 has no mature trees. The open portion of location 3 is overgrown with tall grasses. Roads surrounding the site are lined by mowed grass. Deer forage in the short and tall grasses. Natural resources management activities in the Area B production area are restricted to installing and maintaining nest boxes for cavity-nesting birds such as the eastern bluebird (*Sialia sialis*) and American kestrel (*Falco sparverius*). No hunting is allowed in the production area for safety reasons.

**Protected Species.** The USFWS indicates that three federally listed threatened or endangered (T/E) terrestrial species potentially could be present on HSAAP: gray bat (*Myotis grisescens*), Indiana bat (*M. sodalis*), and northern long-eared bat (NLEB) (*M. septentrionalis*) (USFWS 2019). The only T/E species verified to occur on the installation are the gray bat and the NLEB. Gray bats were captured while foraging during surveys in 2001 and 2015. During the 2015 survey biologists conducted an acoustic survey of two caves on HSAAP that could serve as roosting habitat for the bats. They observed no gray bat presence at either cave. One of the caves is approximately 100 yards east of the proposed FF site in location 1. Caves on the installation are not the type gray bats typically use for roosting—few caves meet their specific roost requirements. (For hibernation, the roost site must have an average temperature of 42 to 52 °F. Most caves used by gray bats for hibernation have deep vertical passages with large rooms that function as cold air traps. Summer caves must be warm, between 57 and 77 °F, or have small rooms or domes that can trap the body heat of roosting bats. Summer caves are normally close to rivers or lakes where the bats feed. These requirements result in about 95 percent of the populations hibernating in only eight or nine caves [KBWG 2020].) It is doubtful, therefore, that gray bats roost on HSAAP.

The Indiana bat has the potential to occur on HSAAP because the installation's forested areas provide suitable summer roosting habitat for the species, but the species has never been identified on the installation. NLEBs also were captured during the 2001 survey, but none were captured during a 2015 survey, indicating that the population on the installation has declined, as has the species' overall abundance across its entire range. That decline led USFWS to list the species as threatened under the ESA.

Three federally listed species of fish and eight species of mollusk potentially occur in the waters of the Holston River where it passes through the installation, but none have been found in surveys conducted on the installation (BIO-WEST 2019). USFWS considers one of the fish species, the spotfin chub (*Erimonax monachus*), to be a potential transient in the Holston River at HSAAP but not a resident in the installation's waters. The species was not observed during a 2015 survey conducted specifically to look for it or in a 2019 survey for T&E fish and mussels in the Holston River and its tributaries on the installation. The study surveyors opined that a resident spotfin chub population likely does not persist in the Holston River at HSAAP (BIO-WEST 2019).

USFWS listed the rusty patched bumblebee (*Bombus affinis*) as endangered under the ESA effective March 21, 2017. USFWS categorizes the current distribution of the rusty patched bumblebee as zones of low and high potential for the species to occur. Under section 7 of the ESA, presence of the species should be presumed only in zones of high potential (USFWS 2017). There are no zones of high-potential presence in Tennessee, and the closest zone of low-potential

presence is in Sevier County, which is three counties southwest of HSAAP.

A pair of bald eagles (*Haliaeetus leucocephalus*) has nested on the installation since 2005. A second pair began nesting on the plant in 2017. Active and inactive bald eagle nests are protected by a 660-foot management zone to ensure that development activities do not disrupt the birds' ability to forage, nest, roost, or breed. The nest nearest to the project sites is approximately 2,780 feet (one-half mile) from location 3 and 3,740 feet (seven-tenths of a mile) from location 2. Federal protection for the bald eagle under the ESA has been removed, but the species is still protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). Migratory birds are protected under the MBTA. Some species nest on HSAAP, although most migrating birds are transients on HSAAP.

Tri-colored bats (*Perimyotis subflavus*), the most common bat species in Tennessee, occur in more caves in eastern North America than any other bat species (TWRA 2020). Their distribution is state-wide in Tennessee. During the 2015 bat survey conducted on the installation acoustic monitoring indicated that there was a high probability that the cave near the proposed FF site at location 1 was being used by tri-colored bats. Although the species is not currently federally listed, their status under the ESA is under review by USFWS to determine whether the species warrants listing. The USFWS received a petition from the Center for Biological Diversity and Defenders of Wildlife on June 14, 2016 requesting that the tri-colored bat be listed as endangered or threatened and that critical habitat be designated for the species under the ESA (82 CFR 60362). If the species is listed prior to the start of construction for this project, HSAAP will coordinate with USFWS to determine mitigation requirements near this location.

### 3.8.2 Impacts Associated with Alternative 1: No Action Alternative

The No Action Alternative would have no impacts on biological resources because no area on the installation would be disturbed.

### 3.8.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)

#### 3.8.3.1 Construction and Operation

**Construction.** Long-term, minor adverse effects on vegetation communities and wildlife would be expected from construction associated with the Preferred Alternative. Impacts on vegetation (habitat) would result from clearing vegetation for the facilities, road improvements, and fence installation. Under the Preferred Alternative, all cleared areas would be in location 1 in the suspect area and in the Y-magazine area. Table 3-10 presents an estimate of the total area that would be cleared under each alternative.

**Table 3-10. Estimated Area (acres) Cleared under Each Alternative**

Alternative	Location 1	Location 2	Location 3	Total
No Action Alternative	0	0	0	0
Preferred Alternative	18	0	0	18
Alternative 3	15	2	0	17
Alternative 4	16	0	0	16

Much of the vegetation in the immediate areas surrounding the proposed sites and existing roads is new growth that has developed since the sites were originally cleared or low-lying herbaceous vegetation that has been mowed to maintain access to the areas. There is an abundance of similar

and better habitat in the suspect and Y-magazine areas, and adjacent forested areas on HSAAP. The reservoir area to the east is approximately 205 acres of forested land populated mostly with upland hardwoods (oak, beech, hickory, and yellow poplar [*Liriodendron tulipifera*]) and small, scattered stands of loblolly pine and white pine. The quarry area to the west encompasses approximately 175 acres and has some of the most diverse habitats of any of the areas on the installation, including numerous pine plantations, thickets of eastern red cedar (*Juniperous virginiana*), and scattered areas of upland hardwoods (oak and hickory). Including these adjacent areas, the approximately 18 acres of land that would be cleared under the Preferred Alternative constitutes about 3 percent of the wooded area in the northern part of the installation. Areas to be cleared under the Preferred Alternative are mostly already open and scattered (i.e., the clearings would be separated and surrounded by forested areas). Impacts on local wildlife and vegetation communities would be long term but minor because of the small amount of area to be cleared relative to the amount of similar habitat available nearby and that the areas to be cleared are at noncontiguous sites.

Implementing the Preferred Alternative is not likely to adversely affect federally listed species. There is no indication that gray bats roost on HSAAP and construction to implement the Preferred Alternative would not be expected to affect caves on the installation. (Note that until a geotechnical survey of the location 1 has been completed impacts on caves at the location cannot be fully determined.) The gray bat and NLEB are known to be present on HSAAP and evidence indicates a high probability that tri-colored bats could roost in caves on HSAAP. Also, some trees at the construction sites could be suitable for bat roosting. The Army would avoid adverse impacts on protected bat species by removing trees from the project sites only between October 15 and March 31 (when bats are not present), and would avoid impacting cave habitats to the extent practicable.

No project activities would occur in the Holston River or its tributaries on the installation. Minor amounts of sediment would be expected to be carried to installation streams in stormwater runoff during construction (see section 3.7, *Water Resources*), but the use of BMPs to limit erosion and stormwater runoff from project sites would protect water quality in the streams and river.

The nearest bald eagle nest is well outside the 660-foot management zone required under the BGEPA, and there are no zones of high potential for occurrence of the bee species in Hawkins County.

The nesting season for migratory birds at HSAAP is from March 15 to August 31. Vegetation would be cleared from September to mid-March to avoid adverse impacts on migratory birds.

**Operation.** Long-term minor adverse effects on vegetation communities and wildlife at location 1 would be expected from operations associated with the Preferred Alternative. Activities associated with operations—consisting of vehicle traffic along the access roads and personnel working in the facilities—would not be expected to adversely affect vegetation or wildlife. Closure and fencing of the area because of safety concerns related to explosive safety arcs, however, could over time adversely affect the ecology of the area. Closure to non-mission personnel would mean a loss of the 28 deer stands on location 1, which is about one-third of HSAAP's deer stands. Without the population effect that hunting pressure has on the deer population, and that deer would not be able to migrate into or out of the fenced-off area, the deer population could grow unchecked and overbrowsing could adversely affect the vegetation in location 1. How the deer population would respond and the extent to which predators would control the deer population are difficult to predict, so the long-term adverse effects of isolating the deer on location 1 are unknown.

No adverse effects on protected species would be expected from operations under the Preferred Alternative.

### **3.8.3.2 Mitigation Measures and BMPs**

The Army would mitigate potential adverse effects of the Preferred Alternative on species protected under the ESA and MBTA by limiting all vegetation removal for construction under any of the alternatives to times when species that could be affected are not present. Potential bat roosting trees would be removed only between October 15 and March 31 of any year, when bats are not present, and vegetation where migratory birds could be nesting would be removed only between September 1 and March 15 of any year, when migratory birds are not nesting. No mitigation would be necessary to protect bald eagles nesting on HSAAP because the nearest nest is not within a distance from the proposed sites at which project activities would disturb the birds. Implementing BMPs to limit stormwater runoff and sediment delivery to streams near the project sites would adequately protect water quality and aquatic biota in installation streams.

Because the effects of isolating the deer population on location 1 are difficult to predict, HSAAP would monitor the deer population and vegetation on location 1 and determine a course of action, if any, based on the monitoring data.

### **3.8.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

#### **3.8.4.1 Construction and Operation**

**Construction.** Long-term, minor adverse effects on vegetation communities and wildlife would be expected from construction associated with Alternative 3. Impacts on vegetation (habitat) would result from the same types of activities as would occur under the Preferred Alternative, with minor differences. At location 1, the Army would clear sites for the ETT facilities, road improvements, utility and fence installation, and construction laydown. It would partially or completely clear location 2. Location 2 has a large open area, a Quonset hut, and a stand of mixed evergreen trees around the Quonset hut. Facilities at location 2 would be partially located where the Quonset hut is, so less vegetation disturbance would be expected for the FF facilities than under the Preferred Alternative. In all approximately 17 acres of land would be cleared under Alternative 3. Effects on vegetation and wildlife under Alternative 3 would be similar to but slightly less than effects under the Preferred Alternative.

No adverse impacts on protected species, including those protected under the ESA, BGEPA, and MBTA, would be expected from implementing Alternative 3. The discussion of effects on protected species under the Preferred Alternative applies equally to Alternative 3.

**Operation.** No adverse effects on vegetation communities, fish and wildlife, or protected species would be expected from operations under Alternative 3. The discussion of effects resulting from operations under the Preferred Alternative applies equally to Alternative 3.

#### **3.8.4.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.8.3.2 applies equally to Alternative 3.



### 3.8.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1

#### 3.8.5.1 Construction and Operation

**Construction.** Long-term, minor adverse effects on vegetation communities and wildlife would be expected from construction under Alternative 4. Impacts on vegetation (habitat) and wildlife would be the same as those under Alternative 3, except no area would be cleared of vegetation at location 3. Approximately 16 acres would be cleared under Alternative 4. Effects on vegetation and wildlife under Alternative 4 would be similar to but slightly less than effects under the Preferred Alternative.

No adverse impacts on protected species, including those protected under the ESA, BGEPA, and MBTA, would be expected from implementing Alternative 4. The discussion of effects on protected species under the Preferred Alternative applies equally to Alternative 4.

**Operation.** No adverse effects on vegetation communities, fish and wildlife, or protected species would be expected from operations under Alternative 4. The discussion of effects resulting from operations under the Preferred Alternative applies equally to Alternative 4.

#### 3.8.5.2 Mitigation Measures and BMPs

The discussion of mitigation measures and BMPs in section 3.8.3.2 applies equally to Alternative 4.

### 3.9 CULTURAL RESOURCES

#### 3.9.1 Affected Environment

Cultural resources include archaeological sites, architectural historic resources in the built environment such as buildings and structures 50 years or older (or otherwise potentially eligible for the National Register of Historic Places [NRHP]), Native American traditional cultural properties (TCPs), and other historic resources (e.g., cemeteries and historic sites or districts). Section 106 of the NHPA requires federal agencies to consider the impact of their actions on historic properties and to consult with the State Historic Preservation Office (SHPO) as required.

The nature and location of cultural resources on HSAAP cannot be disclosed to the public unless the federal land manager determines that such disclosures would provide further protection and there is no risk of harm to the site or resource. Section 304 of the NHPA, as amended, and section 9(a) of the ARPA provide the legal authority to restrict dissemination of cultural resources information. In compliance with these laws, this section discusses only the general types of cultural resources present at HSAAP.

The Area B production area was considered potentially eligible for listing as an historic district on the NRHP by the Tennessee SHPO; however, in 2006, the Advisory Council on Historic Preservation signed into effect the *Program Comment for World War II and Cold War Era (1939–1974) Army Ammunition Production Facilities and Plants*. Under this Program Comment, any structure on U.S. Army ammunition plants constructed between 1939 and 1974 may be modified or demolished without any additional NHPA section 106 coordination with the SHPO. The Program Comment also allows new construction adjacent to buildings constructed during that time frame (see appendix B for a copy of this Program Comment and HSAAP's October 2010 letter to the SHPO regarding the Program Comment).

Under the proposed action, HSAAP could demolish magazines in the Y-magazine area and a Quonset hut (building 134) and modify building Y1/Y1A in the production area. Construction dates of these facilities are 1966 (Quonset hut), 1951–1952 (Y-magazines), and 1966 (building

Y1/Y1A). The Program Comment covers all these structures. The rail spur in location 1 that would be removed is of no historic significance.

Three farmstead sites close to the proposed action sites in the Y-magazine area were found during a 1998 archaeological survey on HSAAP (Brockington 1998). The farmsteads date from the mid-19th through mid-20th centuries. Each of the sites appeared to have been severely disturbed, with disturbance ranging from 50 to 99 percent of the sites, and little of the sites remained intact when the survey was conducted. The surveyors recommended that none of the sites be considered eligible for NRHP listing. Upon review of the survey report, the Tennessee SHPO agreed with the recommendations. Location 2 abuts the production area and has been surveyed for cultural resources. It was previously used for a cement plant for construction. The Quonset hut also is on the site.

Location 3 is within the production area but was not considered as part of the production area that was exempted from further cultural resources investigation under the Program Comment mentioned above. The site was surveyed as part of the 1998 archaeological survey (Brockington 1998), and no sites considered eligible for NRHP listing were found. Other archaeological or historic sites on HSAAP are situated along the Holston River and well outside any area that would be used for the proposed action.

No TCPs or Native American sacred places are known to exist at HSAAP. One cemetery is located on HSAAP, but it is not located near the project area.

HSAAP sent coordination letters to the Tennessee SHPO and three Native American tribes (Cherokee Nation, Eastern Band of Cherokee Indians, and United Keetoowah Band of Cherokee Indians in Oklahoma) in February 2020 (see appendix C). The Tennessee SHPO and Cherokee Nation responded. The Tennessee SHPO provided its concurrence with HSAAP's opinion that the proposed action would have no adverse effect on any archaeological site on the installation and that it had no objection to the implementation of the project as described in section 2.4. The Cherokee Nation did not object to the project as long as stipulations are observed. Those stipulations were to contact their office if there are any changes to the activities or scope of the area of potential effect, to halt project activities and contact their office if items of cultural significance are discovered, and to conduct inquiries with other Native American tribes. Copies of the letters sent and responses received are in appendix C.

### **3.9.2 Impacts Associated with Alternative 1: No Action Alternative**

No effects on cultural resources would be expected under the No Action Alternative. Existing conditions would remain unchanged.

### **3.9.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.9.3.1 Construction and Operation**

**Construction.** No effects on cultural resources would be expected from construction related to the Preferred Alternative. The proposed demolition and construction of facilities is covered under the 2006 Program Comment, which allows such activities, and no known archaeological sites are located within the project areas.

The possibility exists that previously unrecorded archaeological deposits could be encountered during construction. If that was to occur, disturbance at the site would cease and, in accordance with the inadvertent discovery protocols of the HSAAP Integrated Cultural Resources Management Plan (ICRMP), an evaluation would be performed in compliance with federal statutes before any further disturbance to the site. In the event that human remains were

discovered, all work would stop and Native American tribes would be informed of the discovery. In all cases in which a cultural resource was discovered during project implementation, the HSAAP Cultural Resources Manager would be informed and proper authorities would be consulted immediately.

**Operation.** No effects on cultural resources would be expected from operations under the Preferred Alternative. No ground-disturbing activities would be associated with operations at project facilities after construction was completed.

### **3.9.3.2 Mitigation Measures and BMPs**

No mitigation measures would be required for cultural resources. Activities related to construction and operation under all alternatives would not be expected to have an adverse impact on cultural resources. BMPs for cultural resources would include adhering to the protocols in the HSAAP ICRMP for inadvertent discoveries of cultural resources during ground-disturbing activities and ensuring proper communication with the SHPO and potentially affected Native American tribes before and during project implementation.

## **3.9.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

### **3.9.4.1 Construction and Operation**

**Construction.** No effects on cultural resources would be expected from construction related to Alternative 3. The discussion of effects under the Preferred Alternative applies equally to Alternative 3. If previously unrecorded archaeological deposits were encountered during construction, disturbance would cease and an evaluation of the site would be performed. If human remains were discovered, all work would stop, Native American tribes would be informed, the HSAAP Cultural Resources Manager would be informed, and proper authorities would be consulted immediately.

**Operation.** No effects on cultural resources would be expected from operations under Alternative 3. No ground-disturbing activities would be associated with operations at project facilities after construction was completed.

### **3.9.4.2 Mitigation Measures and BMPs**

The discussion of mitigation and BMPs under the Preferred Alternative in section 3.9.3.2 applies equally to Alternative 3.

## **3.9.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

### **3.9.5.1 Construction and Operation**

**Construction.** No effects on cultural resources would be expected from construction related to Alternative 4. The discussion of effects under the Preferred Alternative applies equally to Alternative 4. If previously unrecorded archaeological deposits were encountered during construction, disturbance would cease and an evaluation of the site would be performed. If human remains were discovered, all work would stop, Native American tribes would be informed, the HSAAP Cultural Resources Manager would be informed, and proper authorities would be consulted immediately.

**Operation.** No effects on cultural resources would be expected from operations under Alternative 4. No ground-disturbing activities would be associated with operations at project facilities after construction was completed.

### 3.9.5.2 Mitigation Measures and BMPs

The discussion of mitigation and BMPs under the Preferred Alternative in section 3.9.3.2 applies equally to Alternative 4.

## 3.10 SOCIOECONOMICS

### 3.10.1 Affected Environment

This section describes the economy and sociological environment of the region of influence (ROI) surrounding HSAAP. The socioeconomic ROI is defined as Hawkins and Sullivan counties, TN. The ROI covers an area of about 900 square miles in northeast Tennessee. Data for Tennessee and the United States are provided for comparative purposes.

#### 3.10.1.1 Population

The ROI's 2018 population was 214,198 (Table 3-11). The population increased 3.7 percent between 2000 and 2018. That growth was lower than the state's (19 percent) and the nation's (16.3 percent) during the same time period. This population growth in the ROI occurred mostly between 2000 and 2010; between 2010 and 2018, the population in Hawkins County decreased slightly (about 300 people, or -0.5 percent), and Sullivan County's increased slightly (about 870 people, or 0.6 percent). The ROI's population is projected to remain about the same in the next decade, with a projected increase in population of only 0.2 percent between 2018 and 2030 (UTK Boyd Center 2019).

Based on population, Sullivan County ranks as the ninth largest and Hawkins County as the 24th largest of the 95 counties in Tennessee (US Census Bureau 2019a). Sullivan County has almost three times the population of Hawkins County, with a higher population density of 381 people per square mile than the 116 people per square mile in Hawkins County. For comparison, the Tennessee population density is 164 people per square mile and the nation's is 93 (U.S. Census Bureau 2019b).

**Table 3-11. Population Trends**

Location	2000 Population	2010 Population	2018 Population	Change in Population, 2000–2018	People per square mile, 2018
Hawkins County	53,563	56,829	56,530	5.5%	116
Sullivan County	153,048	156,800	157,668	3.0%	381
ROI	206,611	213,629	214,198	3.7%	238
Tennessee	5,689,283	6,346,286	6,770,010	19.0%	164
United States	281,421,906	308,758,105	327,167,434	16.3%	93

Sources: U.S. Census Bureau 2000, 2019b.

#### 3.10.1.2 Employment, Industry, and Income

The top five industries in the ROI (based on employment by industry) were manufacturing, health care and social assistance, retail trade, government and government enterprises (federal civilian, military, and state and local government), and construction. Together, these five industry sectors accounted for 55 percent of the ROI's total employment. The largest industry was manufacturing, which provided 14 percent of the county's total employment (BEA 2019). HSAAP has a government staff payroll budget of \$2.1 million. Contractor statistics are considered proprietary and, therefore, are not available (HSAAP 2019).

Table 3-12 shows civilian labor force data. The ROI's labor force decreased by 5.4 percent between 2010 and 2018. Hawkins County's labor force shrunk by 7.2 percent and Sullivan County's by 4.8 percent. During the same time period, Tennessee's labor force increased by 5 percent and the United States' labor force increased by 5.3 percent.

The national, state, and county unemployment rates all decreased between 2010 and 2018 (Table 3-12). The ROI 2018 annual unemployment rate was 3.8 percent, similar to the state and national unemployment rates of 3.5 percent and 3.9 percent, respectively.

**Table 3-12. Labor Force and Unemployment**

Location	2010 Civilian Labor Force	2018 Civilian Labor Force	Change in Labor Force, 2010–2018	2010 Annual Unemployment Rate	2018 Annual Unemployment Rate
Hawkins County	25,559	23,706	-7.2%	10.9%	4.0%
Sullivan County	73,637	70,100	-4.8%	9.0%	3.7%
ROI	99,196	93,806	-5.4%	9.5%	3.8%
Tennessee	3,090,795	3,244,921	5.0%	9.7%	3.5%
United States	153,889,000	162,075,000	5.3%	9.6%	3.9%

Source: BLS 2019.

ROI annual average income levels were lower than state and national levels (Table 3-13). The ROI per capita personal income (PCPI) of \$24,044 was 88 percent of the state PCPI of \$27,277 and 77 percent of the national PCPI of \$31,177. The ROI median household income of \$40,490 was 83 percent of the state median household income of \$48,708 and 70 percent of the national median household income of \$57,652. Within the ROI, income levels in Sullivan County were higher than in Hawkins County. The cost of living index for Hawkins County is 87 and for Sullivan County is 86, lower than the U.S. average of 100 and lower than Tennessee's cost of living index of 96 (Sperling's 2019).<sup>1</sup>

**Table 3-13. Income, 2013–2017 5-Year Estimates**

Location	PCPI	Median Household Income
Hawkins County	\$22,141	\$38,728
Sullivan County	\$25,946	\$42,251
ROI	\$24,044	\$40,490
Tennessee	\$27,277	\$48,708
United States	\$31,177	\$57,652

Source: U.S. Census Bureau 2019b.

Note: Income reported in 2017 dollars.

### 3.10.1.3 Housing

Table 3-14 presents housing data. There are no residential areas on HSAAP (USACE 2007). The ROI has 101,640 housing units. ROI housing costs (mortgage and rent) are lower than state and national averages. The ROI homeowner vacancy rate (2.4 percent) is slightly higher than the rates for the state (1.8 percent) and the nation (1.7 percent). The ROI rental vacancy rate (4.1 percent)

<sup>1</sup> The cost of living index is based on a U.S. average of 100. An amount below 100 means it is less expensive to live in a place than the U.S. average, and above 100 means it is more expensive (Sperling's 2019).

is lower than the state (7 percent) and national (6.1 percent) rates. The ROI has about 11,877 vacant housing units (U.S. Census Bureau 2019c).

**Table 3-14. Housing Data, 2013-2017 5-Year Estimates**

Location	Number of Housing Units	Vacant Housing Units	Homeowner Vacancy Rate <sup>a</sup>	Rental Vacancy Rate <sup>b</sup>	Median Selected Monthly Owner Costs for Housing Units with a Mortgage	Median Monthly Gross Rent
Hawkins County	27,060	3,685	3.2%	3.9%	\$958	\$613
Sullivan County	74,580	8,192	1.6%	4.3%	\$1,018	\$633
ROI	101,640	11,877	2.4%	4.1%	\$988	\$623
Tennessee	2,903,199	356,005	1.8%	7.0%	\$1,196	\$808
United States	135,393,564	16,567,643	1.7%	6.1%	\$1,515	\$982

Source: U.S. Census Bureau 2019c.

Notes: a The homeowner vacancy rate is the proportion of the homeowner housing inventory that is vacant for sale.

b The rental vacancy rate is the proportion of the rental inventory that is vacant for rent.

#### **3.10.1.4 Law Enforcement, Fire Protection, and Medical Services**

HSAAP has its own fire department and provides for its own physical security. HSAAP has mutual aid agreements with the city of Kingsport Fire Department and the Hawkins County Fire Department. The nearest off-post fire station is the Mount Carmel Volunteer Fire Department in Hawkins County on Hammond Avenue near the intersection with U.S. 11W, less than 1 mile from HSAAP. ROI law enforcement is provided by the Hawkins and Sullivan county sheriffs along with municipal police departments (e.g., from Mount Carmel and Kingsport) and Tennessee state police law enforcement officers.

HSAAP has a medical clinic for BAE personnel. The Holston Valley Medical Center hospital, with a level 1 trauma center, is in Kingsport about 5 miles east of HSAAP.

#### **3.10.1.5 Recreation**

HSAAP permits hunting on the installation. Public deer hunts are restricted to weekends during open season. The hunts support management of the deer population on the installation (Cole 2015).

#### **3.10.1.6 Schools**

The ROI has five public school districts (two in Hawkins County and three in Sullivan County) with a total of 61 schools and a student enrollment of about 28,900 students. Sullivan County also has eight private schools with a student enrollment of about 950 students (NCES 2019). There are no primary or secondary schools on HSAAP. The public schools closest to HSAAP are George Washington and Mount Carmel elementary schools in Hawkins County (about 2 miles north), John Sevier Middle School in Sullivan County (about 5 miles east), and Dobyns-Bennett High School in Sullivan County (about 7 miles east).

#### **3.10.1.7 Environmental Justice**

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, was issued by President Clinton on February 11, 1994. The EO requires that

federal agencies take into consideration disproportionately high and adverse human health or environmental effects of federal government decisions, policies, projects, or programs on minority and low-income populations and identify alternatives that could mitigate those effects.

To identify potential environmental justice populations for which adverse health or environmental effects might be disproportionately high, researchers collected census data on those populations on census tracts in the ROI.<sup>2</sup> Figure 3-2 shows the tracts that correspond to HSAAP and the tracts that are contiguous with the boundaries of the installation. Census tracts 505.03, 506.02, and 507 each contains a portion of HSAAP as well as property outside the installation's boundaries. Proposed alternative locations 2, 3, and 4 are in census tract 506.02.

CEQ guidance on environmental justice states that minority populations should be identified in areas in which either the minority population exceeds 50 percent or the minority population percentage is meaningfully higher than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Analysts used the latter guidance for this project, identifying census tracts with minority population percentages exceeding those for Tennessee, which has a lower threshold than the 50 percent threshold (26 percent). Minority populations included in the census are identified as Black or African American, American Indian, Alaska Native, Asian, Native Hawaiian, Pacific Islander, Hispanic or Latino, or persons of two or more races.

Poverty thresholds established by the U.S. Census Bureau are used to identify low-income populations (CEQ 1997). Per CEQ guidance, low-income populations in an affected area should be identified using the annual statistical poverty thresholds from Census Bureau reports on income and poverty. The Census Bureau reports poverty status as the number of people or families with income below a defined threshold level, defining the poverty threshold level as annual income of \$12,784 or less for an individual and \$25,465 or less for a family of four (U.S. Census Bureau 2019d). The Census Bureau defines a "poverty area" as a census tract where 20 percent or more of the residents have incomes below the poverty threshold, and an "extreme poverty area" as one with 40 percent or more of the population below the poverty threshold (U.S. Census Bureau 1995).

Table 3-15 lists minority population and low-income statistics for the census tracts as well as for the counties, Tennessee, and the United States. Of the census tracts including or bordering HSAAP, none had a higher percentage of minority residents than Tennessee or the United States. None of the census tracts had poverty rates above 20 percent. None of the counties within the ROI had higher percentages of minority residents than the state or the nation or poverty rates exceeding 20 percent.

### 3.10.1.8 Protection of Children

President Clinton issued EO 13045, *Protection of Children from Environmental Health and Safety Risks*, on April 21, 1997. It seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of federal policies, programs, activities, or standards. The EO recognizes a body of scientific knowledge that demonstrates children might suffer disproportionately from environmental health and safety risks. These risks arise because children's bodily systems are not fully developed; children eat, drink, and breathe

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<sup>2</sup> The U.S. Census Bureau defines *census tracts* as small, relatively permanent statistical subdivisions of a county or equivalent entity that are updated by local participants prior to each decennial census. The primary purpose of census tracts is to provide a stable set of geographic units for the presentation of statistical data. Census tracts generally have a population between 1,200 and 8,000.



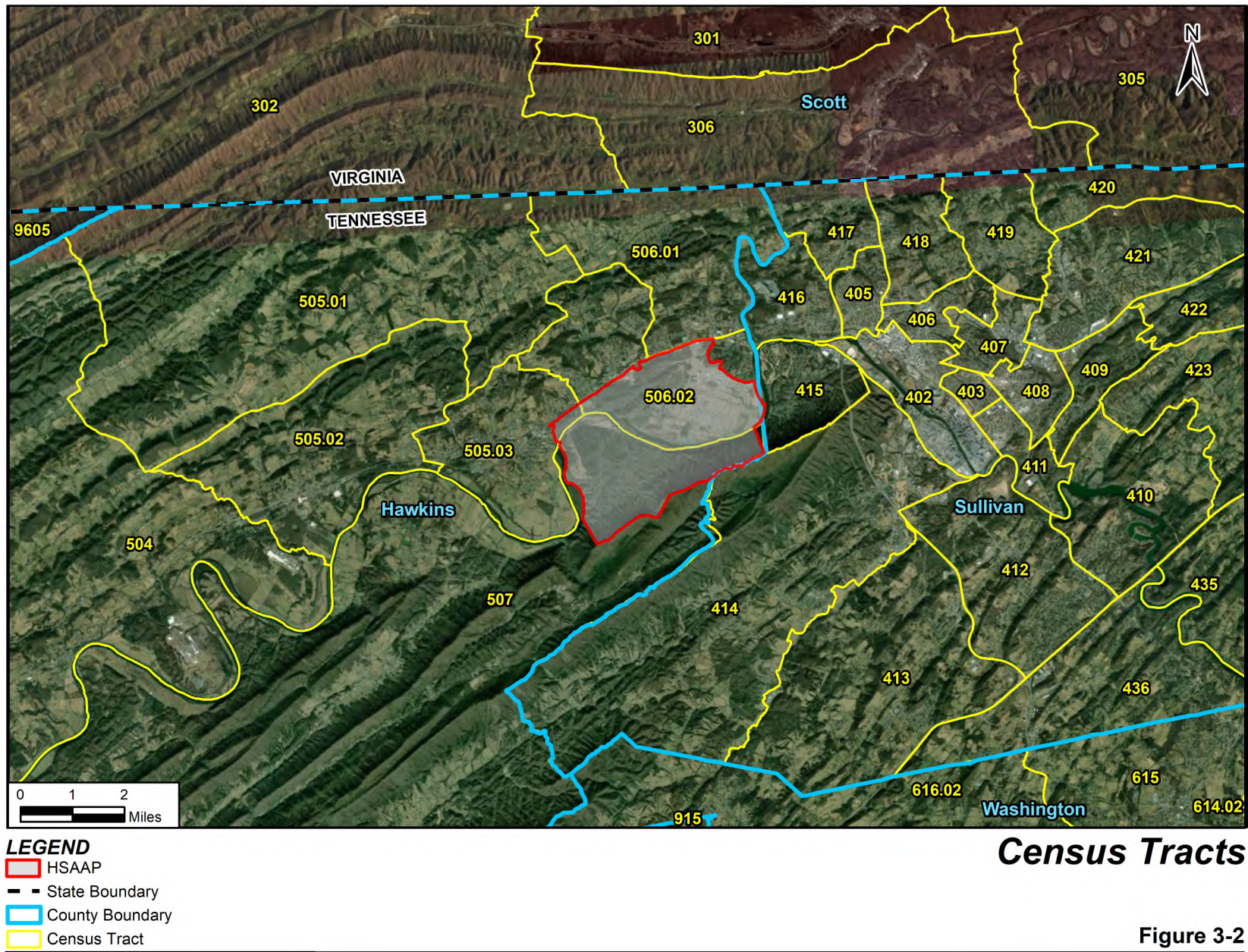


Figure 3-2



more in proportion to their body weight; their size and weight might diminish protection from standard safety features; and their behavior patterns might make them more susceptible to accidents. To the maximum extent permitted by law and mission, EO 13045 requires federal agencies to identify and assess environmental health and safety risks that might disproportionately affect children.

**Table 3-15. Minority and Low-Income Population Data**

<b>Location</b>	<b>Minority (percent)</b>	<b>Persons below poverty (percent)</b>
Census tract 414	6%	17%
Census tract 415	2%	4%
Census tract 416	7%	13%
Census tract 505.01	1%	10%
Census tract 505.03	5%	11%
Census tract 506.01	11%	17%
Census tract 506.02	5%	16%
Census tract 507	2%	15%
Hawkins County	5%	17%
Sullivan County	7%	16%
ROI	6%	16%
Tennessee	26%	15%
United States	40%	12%

Sources: U.S. Census Bureau 2019b, 2019c.

The proposed HSAAP action would be located within the installation's secure boundary. There are no residential areas or other types of facilities where children are typically present (e.g., day care centers, schools, churches, libraries, or playgrounds) on or off the installation that would be adjacent to or near the locations of alternatives 2, 3, or 4.

### **3.10.2 Impacts Associated with Alternative 1: No Action Alternative**

No effects on socioeconomics, environmental justice, or the protection of children would be expected under the No Action Alternative. No changes would be made to the existing condition of regional socioeconomic resources.

### **3.10.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.10.3.1 Construction and Operation**

**IMPLAN Economic Model.** Modelers developed a quantitative estimate of economic effects on the ROI from the proposed action using the Impact Analysis for Planning (IMPLAN) model (IMPLAN 2019). IMPLAN is an economic model originally developed in 1976 by the U.S. Forest Service for natural resources planning, and later updated and adapted by other government agencies and private sector analysts to use in economic impact analysis. It is now owned by the IMPLAN Group, LLC. IMPLAN is a regional input-output model derived by using local data combined with national input-output accounts. The model uses the most current available data obtained from the Department of Commerce, Bureau of Labor Statistics, and other federal and state agencies. IMPLAN uses trade flow characteristics to trace economic changes in a regional economy arising from fluctuations in the level of activity in one or more identified industry sectors (IMPLAN 2019).

IMPLAN estimates economic changes (direct, indirect, and induced) for a defined region. *Direct effects* are the initial production changes or expenditures made by producers/consumers because of an activity or policy; *indirect effects* are secondary effects of local industries buying goods and services from other local industries (business-to-business transactions); and *induced effects* are the tertiary effects from spending of labor income (consumer spending by the workforce for housing, food, transportation, healthcare, entertainment, and so forth). The IMPLAN model estimates changes in regional employment, labor income, value added, and output as a result of a proposed action. *Employment* is the annual average number of monthly jobs in an industry (full time or part time). *Labor income* is all forms of employment income, including employee compensation (wages and benefits) and proprietor's income. *Value added* is the difference between an industry's or establishment's total output and the cost of its intermediate inputs. *Output* is the value of industry production (i.e., business sales dollars) (IMPLAN 2019).

The IMPLAN model estimates the total multiplier effect on the ROI's economy from increased expenditures associated with a proposed action. For this proposed action, the modeler estimated impacts on an annual basis for an estimated 6-year design and construction period. The estimated maximum total construction cost of \$150 million was divided evenly (\$25 million per year) across the estimated 6-year build-out period and was entered into the IMPLAN model as the construction industry change for 1 year (the IMPLAN model is designed to evaluate on an annual basis) (IMPLAN 2019).

**Employment, Industry, and Income.** Short-term, minor beneficial economic effects would be expected as a result of implementing the proposed action. The economic benefits of construction would be short term and diminish as the project reaches completion. The project is estimated to directly employ about 200 construction workers during the construction period and to generate additional indirect and induced employment in associated industry sectors (see Table 3-16). The employment numbers are based on the project's estimated construction expenditures and IMPLAN's estimate of construction workers employed per dollar of expenditure.

Total annual direct, indirect, and induced employment created during the construction phase is estimated to be about 281 jobs per year, with indirect jobs being created in sectors such as architectural and engineering and related services, truck transportation, and wholesale trade. Induced jobs would be created in the food and beverage, health services, and retail sectors. The increase in employment would be modest relative to the size of the ROI's economy and workforce. Total annual labor force in the ROI was about 93,806 in 2018, so the total jobs created would represent a 0.3 percent increase over that baseline. About 9,000 people are employed in the construction industry in the ROI (BEA 2019). Based on the resident workforce data, the modeler estimated that the regional labor force would fill many of the construction jobs and, if needed, construction workers could commute from surrounding communities without moving their place of residence, as the construction jobs would be temporary. HSAAP might need to hire additional employees to operate the thermal treatment facility; however, they do not know at this time if that will be necessary or how many jobs would be created. If HSAAP would need to hire additional employees to operate the thermal treatment facility, long-term, minor beneficial effects on the ROI economy would result.

**Population.** No adverse effects on population change would be expected as a result of implementing the proposed action. Because it is anticipated that workers would be drawn from the ROI or commute from surrounding communities, there would be no effect on population.

**Housing.** No adverse effects on the housing market would be expected as a result of implementing the proposed action because the ROI population would remain unchanged from baseline conditions.

**Table 3-16. IMPLAN Model Output—Annual Construction Economic Impacts**

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	200	\$10,353,595	\$11,783,756	\$25,340,322
Indirect Effect	35	\$1,641,805	\$2,618,052	\$4,910,020
Induced Effect	46	\$1,932,099	\$3,210,718	\$5,847,708
Total Effect	281	\$13,927,499	\$17,612,526	\$36,098,051

Source: IMPLAN model.

**Law Enforcement, Fire Protection, and Medical Services.** No adverse effects on emergency or medical services would be expected from the proposed action. The site would be in a restricted area on HSAAP that is closed to public access and would be served by HSAAP's own fire and security departments, which would continue to respond to emergencies on the installation.

**Recreation.** Long-term, minor adverse effects on recreation would occur from a loss in recreational opportunity and a loss in revenue for the HSAAP Fish and Wildlife Management Program. If locating the thermal treatment plant facility in the Y-magazine area would make the area off-limits for hunting, it would reduce the amount of available hunting stands on the installation. That would decrease the number of hunters HSAAP could accommodate. Fewer hunters would reduce the installation's sale of hunting permits, resulting in a reduction in revenue generated for the HSAAP's Fish and Wildlife Management Program, which is operated entirely from funding generated by the sale of hunting and fishing permits (primarily hunting permits).

**Schools.** No adverse effects on schools would be expected from the proposed action. The population would remain unchanged from baseline conditions and would not change the demand for public school services.

**Environmental Justice.** No environmental justice effects would be expected from implementing the proposed action. No communities meeting the environmental justice minority or low-income thresholds were identified in the ROI.

**Protection of Children.** No adverse effects would be expected as a result of implementing the proposed action. The proposed project site would be in a restricted area on HSAAP that is closed to public access. There are no residential areas or other types of facilities where children are typically present near the proposed project site.

### 3.10.3.2 Mitigation Measures and BMPs

No mitigation measures for socioeconomic effects, including environmental justice and the protection of children, would be required under the Preferred Alternative.

### 3.10.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1

#### 3.10.4.1 Construction and Operation

Socioeconomic impacts would be the same as discussed in section 3.10.3.1.

#### 3.10.4.2 Mitigation Measures and BMPs

No mitigation measures for socioeconomic effects, including environmental justice and the protection of children, would be required under Alternative 3.

### 3.10.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1

#### 3.10.5.1 Construction and Operation

Socioeconomic impacts would be the same as discussed in section 3.10.3.1.

#### 3.10.5.2 Mitigation Measures and BMPs

No mitigation measures for socioeconomic effects, including environmental justice and the protection of children, would be required under Alternative 4.

### 3.11 TRANSPORTATION

#### 3.11.1 Affected Environment

Regional access to HSAAP is via Interstate (I-) 26 and I-81, which intersect 6.3 miles to the southeast of the HSAAP boundary. I-81 is a major north-south highway that connects to east-west I-40 to the south in Dandridge, TN. Areawide access is provided by U.S. 11W and I-26, which is also designated as U.S. Route 23 in this area. Direct access to the installation is provided by University Boulevard off U.S. 11W.

*Level of service* (LOS) is a measure of the operational conditions on a roadway or at an intersection. LOS ranges from A to F, with “A” representing the best operating conditions (free flow, little delay) and “F” representing the worst conditions (congestion, long delays). LOSs A, B, and C are typically considered good operating conditions. Table 3-17 lists the routes near Area B, their annual average daily traffic (AADT) counts, and their estimated existing LOSs. Notably, U.S. 11W is currently congested during peak traffic periods (i.e., LOS D).

**Table 3-17. Existing AADT and LOS on Nearby Roadways**

Roadway Segment	Number of Lanes	AADT	Peak Hour Volume per Lane (vph)	Volume to Capacity [V/C] Ratio <sup>a</sup>	LOS
I-26	4	28,645	1,009	0.63	C
U.S. 11W	4	34,614	1,255	0.76	D
U.S. Route 23 North	4	11,920	517	0.26	B
University Boulevard	2	3,539	188	0.16	A

Source: TDOT 2019a.

Note: vph = vehicles per hour.

<sup>a</sup> 15 percent of the daily traffic, divided by the number of lanes, divided by a capacity of 1,700 vehicles per hour.

**Air, Rail, and Public Transportation.** The Tri-Cities Regional Airport is approximately 15 miles southeast of HSAAP off I-81. The closest international airport is Charlotte Douglas International Airport (CLT), which is 168 miles away and has 1,522 operations per day (AirNav 2019). Other nearby airports include Elizabethton Municipal Airport and Hawkins County Airport, both approximately 25 miles away.

CSX Transportation and Norfolk Southern Railroad freight systems provide rail service in the area (CSX 2019). HSAAP has several tenants that include the Appalachian Tank Car Services, Inc. with spurs connecting areas A and B by an interplant railroad (U.S. Army 2016b; HSAAP 2015). Area A and the Eastman Chemical transfer station are approximately 5 miles east of HSAAP. The closest Amtrak station is 115 miles away in Spartanburg, SC (Amtrak 2017).

Public transportation is provided to the Kingsport area by NET Trans and Kingsport Area Transit Service. Net Trans provides bus service to rural areas of seven counties in the region and

Kingsport Area Transit Service provides local service (NET Trans 2017). HSAAP is outside the city limits of Kingsport, and neither NET Trans nor the Kingsport Area Transit Service provides direct bus service to the installation.

### **3.11.2 Impacts Associated with Alternative 1: No Action Alternative**

No effects on transportation resources would be expected under the No Action Alternative. No construction or changes in operations would occur, and no long-term changes in transportation would take place. Traffic and transportation conditions would remain unchanged.

### **3.11.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.11.3.1 Construction and Operation**

**Construction.** Short- and long-term, minor adverse effects on existing transportation conditions would be expected from implementing the Preferred Alternative. Temporary increases in heavy equipment use and delivery of materials and supplies during construction activities would cause short-term effects. A short-term increase in traffic would also be expected from construction personnel during construction.

**Operation.** The operation of the new thermal treatment facilities might require the hiring of additional personnel; however, it is unknown how many existing personnel would transfer from current HSAAP operations. The long-term impacts to traffic are expected to be minor. There would be no additional long-term impacts to rail or truck traffic. The amount of materials to be shipped or received associated with the new operations is expected to remain about the same as current operations. The proposed action would have no appreciable effect on air traffic or public transportation.

#### **3.11.3.2 Mitigation Measures and BMPs**

No mitigation measures would be required for transportation. The proposed action would not be expected to create a significant adverse effect on the transportation system. During construction, contractors would route and schedule heavy equipment and other vehicles to minimize conflicts with traffic and strategically place staging areas to minimize traffic effects. All temporary detours and road closures would be posted with proper signage.

### **3.11.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

#### **3.11.4.1 Construction and Operation**

The impacts to transportation from construction and operation under Alternative 3 would be the same as discussed in section 3.11.3 for the Preferred Alternative.

#### **3.11.4.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.11.3.2 applies equally to Alternative 3.

### **3.11.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

#### **3.11.5.1 Construction and Operation**

The impacts to transportation from construction and operation under Alternative 4 would be the same as discussed in section 3.11.3 for the Preferred Alternative.

### 3.11.5.2 Mitigation Measures and BMPs

The discussion of mitigation measures and BMPs in section 3.11.3.2 applies equally to Alternative 4.

## 3.12 UTILITIES

### 3.12.1 Affected Environment

**Potable Water.** HSAAP is supplied with potable water from the city of Kingsport Public Works Department. The city of Kingsport operates a 29-million gallon per day (-MGD) treatment plant on the South Fork of the Holston River. The plant and water intake are located on the river about 1 mile downstream of the Patrick Henry Dam, which is about 9 miles upstream of HSAAP Area B. The city of Kingsport complies with EPA Office of Water and TDEC drinking water standards. The city's drinking water quality exceeds those standards (City of Kingsport 2019a, 2019b). HSAAP uses approximately 105,000 gallons of potable water per day and has a storage capacity of approximately 450,000 gallons in two storage tanks.

**Wastewater.** Domestic wastewater generated at HSAAP is treated at the installation's sewage treatment plant (STP). The STP has a designed maximum capacity of 0.5 MGD and includes an ultraviolet backup system to assist with peak flow. Sludge generated from anaerobic digestion during pretreatment is disposed of at the HSAAP landfill annually. Typical domestic wastewater generation is between 80,000 and 120,000 gallons per day, leaving between 0.38 and 0.42 MGD of available capacity. All treated effluent from the STP is discharged to Holston River outfall 025 under HSAAP's NPDES permit (U.S. Army 2018).

HSAAP also operates an industrial wastewater treatment plant (IWWTP). Pretreatment of industrial wastewater occurs at generation points throughout the plant via settling basins. The waste explosives collected are later treated at the open burning grounds.

**River Water.** HSAAP uses 40–50 MGD of water from the Holston River as single-pass, untreated, noncontact cooling water and treated filtered water to support its explosives production process. The untreated water is directed through dedicated piping that passes through production facilities before being returned to the Holston River through multiple outfalls and the Arnott Branch through one outfall (U.S. Army 2018).

**Stormwater.** HSAAP has a multisector stormwater NPDES permit for the installation's discharges of stormwater. Storm drainage structures for surface runoff include a combination of open drainage channels, flumes, spillways, curb and gutter, and drop inlets. The principal drainage channel in the Area B administrative area is an open, man-made ditch vegetated with fescue that follows a natural drainage line that channels surface runoff from the administrative area toward the production area and then to the Holston River (U.S. Army 2018).

**Energy.** Appalachian Power provides HSAAP with electricity. Steam is generated on-site using coal and natural gas-fired boilers. A new cogeneration (CoGen) facility has been approved to provide additional steam and electricity to the site fueled by natural gas. HSAAP purchases natural gas from Tenngasco (U.S. Army 2018).

### 3.12.2 Impacts Associated with Alternative 1: No Action Alternative

No effect on utility usage at HSAAP would be expected under the No Action Alternative. No construction or changes in operations would occur, and utility usage would remain at current levels.

### **3.12.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.12.3.1 Construction and Operation**

**Construction.** The new facilities would require the extension of overhead electrical power lines and telephone lines as well as underground pipelines for lines for natural gas, sanitary sewer, industrial wastewater, filter water, steam, potable water, and compressed air from the production area to location 1. The construction of the facilities would result in a short-term increase in electricity and water usage at the proposed sites. The existing HSAAP utility infrastructure is adequate to meet the expected construction needs. Contractors supplying their own equipment, water, and portable toilets would likely offset some of the construction demand for utility usage.

No adverse effects on river water use or stormwater infrastructure would be expected. Construction operations would not require the use of river water. Section 3.6.3.1 addresses construction impacts on stormwater quality.

**Operation.** Long-term, minor adverse effects on utilities demand and infrastructure would be expected from operations. During operations, the potable water requirement for the proposed FF technology is estimated to be less than 300 gallons per minute (gpm). The energy requirements are estimated at 40–60 megawatts per year (MW/yr) of electricity and 35–46 million cubic feet per year (MMcf/yr) of natural gas. Less than 30 gpm of industrial wastewater and less than 40 gpm of sanitary sewer capacity would be required by the proposed FF facilities.

The energy requirements of the ETT facilities are estimated at 200–3,500 MW/yr of electricity and 33–50 MMcf/yr of natural gas, depending on the technology chosen to be implemented. Less than 30 gpm of industrial wastewater and less than 40 gpm of sanitary sewer capacity would be required by the proposed ETT facilities.

The number of new personnel that would be involved with the operation of the proposed facilities is not known at this time. Some personnel would transfer from current operations. The estimated potable water and sanitary sewer water demand associated with personnel is 50 gallons per day per person (USGS 2016). It is expected that the city of Kingsport would have sufficient supply to meet this increased demand. New facilities would be connected to the existing potable water infrastructure, which is adequate to handle the increased demand.

Based on these estimates of utility usage, HSAAP would maintain the ability to provide the utility needs for the new facilities.

#### **3.12.3.2 Mitigation Measures and BMPs**

No mitigation measures would be required for utilities. Implementing the Preferred Alternative would not be expected to create any significant adverse impact on utilities, and no activities outside compliance with existing regulations, permits, and plans would be required.

### **3.12.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

#### **3.12.4.1 Construction and Operation**

The impacts to utility usage from construction and operation under Alternative 3 would be the same as discussed for the proposed action in section 3.12.3. The new facilities would require the same increase in demand for utilities wherever they are located on HSAAP.

#### **3.12.4.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.12.3.2 applies equally to Alternative

3.

### **3.12.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

#### **3.12.5.1 Construction and Operation**

The impacts to utility usage from construction and operation under Alternative 4 would be the same as discussed for the proposed action in section 3.12.3. The new facilities would require the same increase in demand for utilities wherever they are located on HSAAP.

#### **3.12.5.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.12.3.2 applies equally to Alternative 4.

### **3.13 HAZARDOUS AND TOXIC MATERIALS**

#### **3.13.1 Affected Environment**

HSAAP uses hazardous and toxic materials throughout construction activities and the explosives production process. The installation manages those materials in accordance with local, state, and federal regulations and with established installation standard operating procedures (SOPs).

#### **3.13.2 Impacts Associated with Alternative 1: No Action Alternative**

No effects on hazardous and toxic materials would be expected under the No Action Alternative because existing conditions would remain unchanged.

#### **3.13.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

##### **3.13.3.1 Construction and Operation**

**Construction.** Short-term, minor adverse effects on hazardous and toxic materials would be expected from construction of the Preferred Alternative because additional quantities of those materials (greases, oils, fuels, and so forth) would be used during the construction process. The effects would result from having more of the materials on-site.

Petroleum products and hazardous materials would be used, and wastes, including hazardous wastes, would be generated during construction and demolition activities. Construction contractors would be responsible for complying with applicable laws and regulations for hazardous waste handling, use, storage, and disposal. They would prevent spills by implementing proper storage and handling procedures and by following installation procedures. If a spill did occur, the contractors would be responsible for responding to it and cleaning it up in consultation with installation personnel.

**Operation.** Implementing the Preferred Alternative would result in long-term minor adverse effects from an increase in the use of hazardous and toxic materials that would be expected to operate and maintain treatment equipment. The increase in such materials would be within permit limits and be properly managed

##### **3.13.3.2 Mitigation Measures and BMPs**

No mitigation measures would be required for hazardous and toxic materials. BMPs are in place to manage the materials used at HSAAP. The Army follows strict SOPs for managing hazardous materials; therefore, no new procedures would need to be implemented. All hazardous materials would be handled and managed in accordance with local, state, and federal regulations and with



established installation procedures.

### **3.13.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

#### **3.13.4.1 Construction and Operation**

The discussion of construction and operation under the Preferred Alternative in section 3.13.3.1 applies equally to Alternative 3.

#### **3.13.4.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.13.3.2 applies equally to Alternative 3.

### **3.13.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

#### **3.13.5.1 Construction and Operation**

The discussion of construction and operation under the Preferred Alternative in section 3.13.3.1 applies equally to Alternative 4.

#### **3.13.5.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.13.3.2 applies equally to Alternative 4.

## **3.14 SOLID AND HAZARDOUS WASTE**

### **3.14.1 Affected Environment**

Solid and hazardous wastes are managed and generated at HSAAP throughout the explosives production process. The wastes are managed through a network of regulated on-site facilities, SOPs, and management plans.

Explosives production wastes that cannot be disposed in HSAAP's permitted class II industrial landfill are treated at HSAAP's burning ground facility. The facility consists of four burn pans, two burn cages, two burn pile areas, and the Burning Ground Office. The four burn pans are operated under a RCRA subpart X permit and are used for the treatment of explosive waste—RDX-, HMX-, TNT-, and IMX-based materials—that either do not meet product specifications or have become contaminated through contact with the production facility floors and catch basins. The waste treated on the burn pans is typically wet when delivered to the pans, which are used to dry the material before it is burned. The burn cages and burn piles are both operated under a Title V permit issued by the state of Tennessee. The burn cages are used to burn explosives-contaminated material such as bagged items, cotton, and plastics that can float away; and the burn piles are used to treat heavier explosives-contaminated material such as metal and wood. Open burning is used to safely eliminate the potential for unintentional detonation of or deflagration of these items. Some waste items generated within the production area that are cleared (i.e., not likely explosive hazards) can be diverted from burning and sent to the on-site class II landfill for disposal. Such diverted waste cannot be sent off-site because it was part of HSAAP's explosives production processes and poses the risk of potentially unsafe material being transferred outside DoD control.

HSAAP is not an EPA National Priorities List, or Superfund site. Thirty-two sites under DoD's Installation Restoration Program (IRP) are located on HSAAP, however, and overseen by TDEC; 23 of those sites have been closed. The remaining nine sites have been investigated and are in long-term monitoring. They include former landfills, surface disposal areas, and contaminated

groundwater. One additional site has been deferred for cleanup because of the proximity of the active steam plant operations. The site is eligible for the IRP once the steam plant operations have transferred to the new facility, which is currently being built. The site is also in long-term monitoring until the investigation moves forward. Contaminants of concern in soil, sediment, and/or groundwater include explosives, metals, pesticides, polycyclic aromatic hydrocarbons, semi-volatiles, and volatiles.

### **3.14.2 Impacts Associated with Alternative 1: No Action Alternative**

The No Action Alternative would have no effects on solid or hazardous waste because existing conditions would remain unchanged.

### **3.14.3 Impacts Associated with Alternative 2: FF Technology and ETT Co-Located at Location 1 (Preferred Alternative)**

#### **3.14.3.1 Construction and Operation**

**Construction.** Short- and long-term, minor adverse effects would be expected from construction because of an increase in solid waste generation and disposal. The short-term effects would result from adding debris to the on-site class II industrial landfill from a combination of new construction and demolition. While construction would occur over the short-term, long-term minor adverse effects on HSAAP's landfill capacity would be expected from the disposal of construction and demolition waste. Because FF and ETT designs have not been completed and are conceptual the square footage of the facilities cannot be determined; however, each FF and ETT facility would be constructed on sites less than 2 acres. The construction generation debris rate for such projects is about 4.4 pounds per square foot of construction, which is much less than demolition and renovation rates. The HSAAP landfill capacity would be expected to accommodate construction waste not diverted for recycling or other uses. Implementing the proposed action at location 1 would require the demolition of up to 5 former storage buildings that total about 8,000 square feet (ft<sup>2</sup>). Prior to building demolition, each building would be assessed for hazardous building components such as asbestos to ensure that demolition meets appropriate disposal and safety requirements. Approximately 50 percent of generated debris from construction and demolition would be recycled, with the remaining debris being disposed in HSAAP's on-site class II industrial landfill. About 1,200 feet of a railroad spur would also require demolition. The rail, ties and gravel making up the spur would likely be recycled or reused.

Prior to implemented, HSAAP would undergo rigorous environmental review and permitting, including RCRA permit evaluation. TDEC is the regulating authority who issues the permits in accordance with federal and state regulations.

**Operation.** Long-term, minor adverse effects would be expected from the waste material generated from each treatment process. Such material, i.e. ash would be handled and disposed in accordance with HSAAP Solid and Hazardous Waste Management Plan (SHWMP). Other wastes generated from operations might include emission control equipment such as filters or other disposable materials that must occasionally be replaced. Such material would also be properly managed.

#### **3.14.3.2 Mitigation Measures and BMPs**

No mitigation measures would be required for solid or hazardous waste. BMPs are in place to manage those materials produced at HSAAP. BAE OSI operates the installation's solid and hazardous waste management program in accordance with RCRA, TSCA, OSHA, Army regulations, and the HSAAP SHWMP. As part of the SHWMP, BAE OSI has provided an overview of all managed wastes, their stored locations, and location of SOPs and permits associated with particular waste streams.

### **3.14.4 Impacts Associated with Alternative 3: FF Technology at Location 2 and ETT at Location 1**

#### **3.14.4.1 Construction and Operation**

The discussion of construction and operation under Alternative 3 would be the same as discussed in section 3.14.3.1, except for demolition debris. Implementing the proposed action at location 2 may require the demolition of a 4,000 ft<sup>2</sup> Quonset hut which would result in less debris being sent to the HSAAP landfill.

#### **3.14.4.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.14.3.2 applies equally to Alternative 3.

### **3.14.5 Impacts Associated with Alternative 4: FF Technology at Location 3 and ETT at Location 1**

#### **3.14.5.1 Construction and Operation**

The discussion of construction and operation under Alternative 4 would be the same as discussed in section 3.14.3.1, except for the generation of building renovation debris. Implementing the proposed action at location 3 would require renovation of about 8,000 ft<sup>2</sup>.

#### **3.14.5.2 Mitigation Measures and BMPs**

The discussion of mitigation measures and BMPs in section 3.14.3.2 applies equally to Alternative 4.

## **3.15 CUMULATIVE EFFECTS**

CEQ regulations implementing NEPA define a “cumulative impact” as follows:

Cumulative impact is the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Projects that would potentially be occurring at HSAAP simultaneously with the thermal treatment project are listed in Table 3-18. HSAAP is also planning to demolish several old structures no longer needed to support mission requirements. Environmental impacts associated with those demolitions were assessed in the AMC building demolition program programmatic EA, which concluded that the demolition would have short-term, minor adverse effects and long-term, beneficial effects; however, HSAAP will need to prepare supplemental NEPA documentation to assess potential installation-specific impacts, if any, for individual facility demolitions.

For the purposes of this EA, a significant cumulative impact on a resource area would occur if the incremental impacts of implementing an alternative added to the environmental impacts of past, present, and reasonably foreseeable future actions would exceed the significance threshold for the resource area. It is expected that the projects discussed in this section, including the proposed action, primarily would have a localized effect on most resources and would not result in significant adverse cumulative effects. The construction projects would not occur simultaneously and would be executed over several years. Although some cumulative effects, however minimal, could be identified for virtually any resource or condition, the effects described below are believed to be the most pertinent and representative of those associated with the proposed action.

**Table 3-18. HSAAP Projects with Potential Cumulative Effects**

<b>Project Title</b>	<b>Projected Fiscal Year (FY)</b>	<b>Approximate Duration (months)</b>
FEM Facility Construct	FY18	NA
Natural Gas Fired Steam Construct	FY18	NA
Recrystallization Facility Construct	FY19	34
Wash/Filter (Design/Construct)	FY20	41
Modernize Melt Cast Construct	FY20	33
SNA Improvements Design/Construct	FY20	30
WAARP with Tank Farm Construct	FY20	35
Landfill Expansion Construct	FY20	27
RDX Wastewater Treatment Phase 1 Construct	FY20	25
AnSol Filtration Project (Construct)	FY21	24
Upgrade / Replace Explosive Contaminated Clothing Sanitation Facility	FY21	24
AAA with Tank Farm Construct	FY21	32
ANSol Tank Farm Construct	FY21	27
Nitration Construct	FY21	30
New Kettle Drying Facility	FY21	30
RDX Wastewater Treatment Phase 2 Construct	FY22	24
River Water Infrastructure Upgrades Construct	FY22	33
Coal Pile Deactivation	FY22	24
Main Substation Transformers	FY22	24
Railroad Track Improvements	FY23	24
Analytical Lab Construct	FY23	27

**Land Use.** The adverse effect on land use of converting forested area to developed land and reducing the amount of land on HSAAP on which hunting is allowed would be insignificant in local and regional contexts. Forested land and areas for deer hunting are abundant in the area and are not being lost to development at a significant rate. No significant adverse cumulative effects on land use, therefore, would be expected.

**Air Quality.** The State of Tennessee takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of the State Implementation Plan, including all significant stationary, area, and mobile emission sources. Estimated emissions generated by the proposed action would be *de minimis*, and it is understood that activities of this limited size and nature would not contribute significantly to adverse cumulative effects to air quality.

**Noise.** The proposed action would introduce short- and long-term, minor increases in the noise environment from construction and changes in operations at HSAAP. The future noise

environment in the immediate area surrounding HSAAP would be similar to existing conditions. No other projects have been identified that, when combined with the action, would have greater than significant effects. These effects would be negligible.

**Soils.** The adverse effects that the proposed action would have on soils would be confined to the construction phase of the proposed project, which would occur within the production area of HSAAP. NPDES Stormwater Construction permits for soil disturbance over 1 acre and SWPPPs, which would include measures to limit soil erosion and stormwater runoff from disturbed areas, would be required. No significant adverse cumulative effects on soils, therefore, would be expected.

**Surface Waters.** All projects with the potential to contribute pollutants to surface waters are regulated under the NPDES. Point-source discharges have individually set effluent limitations to protect water quality. Non-point sources, such as stormwater runoff from construction sites that disturb an area of 1 acre or more, must be covered under the NPDES Stormwater Construction permit, issued by TDEC. The Army or its contractor for any project would obtain coverage under the permit and as part of the permit requirements would develop and implement a site-specific SWPPP that would specify how the Army or its contractor would limit stormwater runoff from the construction site. Compliance with NPDES permits for point or non-point sources constitutes compliance with water quality protection laws and regulations. Because all projects affecting or potentially affecting surface water quality would be permitted and the Army would comply with the terms of the permit, no significant adverse cumulative effects on surface waters would result.

**Biological Resources.** The adverse effects that the proposed action would have on biological resources (loss of forest, impacts on animal populations) would be insignificant in the context of biological resources on HSAAP, and would have even less significance in a regional context. The region has abundant forest that is not being lost rapidly to regional development. Cumulative effects on biological resources would be less than significant.

**Socioeconomics.** Development projects in the region can have beneficial effects on the local economy by increasing employment, income, and business sales volume. In addition to the thermal treatment facility project analyzed in this EA, examples of other recent or planned projects as shown in Table 3-18 above would economically benefit the region. Therefore, cumulative effects on socioeconomics would be beneficial.

**Transportation.** No other projects have been identified that, when combined with the proposed action, would substantially affect traffic levels or the transportation system near HSAAP. As with noise, each project would produce localized effects, but the projects and their effects on the transportation system would be geographically isolated. Cumulative effects on the transportation system would be considered negligible.

**Utilities.** The utility infrastructure would be able to accommodate the increased demands created by individual and any combination of projects occurring simultaneously. No significant adverse cumulative effects on utility systems would be expected.

**Hazardous and Toxic Materials.** Adverse effects from the increased use of hazardous and toxic materials would be negligible. Use of those materials would be confined to project-specific locations for each project occurring on HSAAP and would be managed in accordance with local, state, and federal regulations and in accordance with established installation SOPs. No significant adverse cumulative effects on hazardous and toxic materials would be expected.

**Solid and Hazardous Wastes.** The solid wastes produced by each project would be recycled or disposed of at an appropriate landfill or other location and the hazardous wastes produced by each project would be handled, transported, and disposed of in accordance with legal

requirements. No significant adverse cumulative effects on solid and hazardous wastes would be expected.

## SECTION 4.0 FINDINGS AND CONCLUSIONS

### 4.1 FINDINGS

The Army has prepared this EA to evaluate the potential effects on the natural and human environments from activities associated with the No Action Alternative and implementing the proposed action under either the Preferred Alternative, Alternative 3 or Alternative 4.

Based on the analysis, the physical and socioeconomic environments would not be significantly affected by the proposed action singularly or through any combination of direct, indirect, or cumulative effects. Table 4-1 presents the potential consequences that could result from implementing the proposed action under the Preferred Alternative, Alternative 3 or Alternative 4—construction and operation of FF and ETT facilities—and the No Action Alternative. Section 3.0 of this EA provides detailed analysis for each resource area.

**Table 4-1. Summary of Potential Environmental and Socioeconomic Consequences**

Environmental and Socioeconomic Effects				
Resource	Alternative 1— No Action	Proposed Action		
		Preferred Alternative— Construction and Operation	Alternative 3— Construction and Operation	Alternative 4— Construction and Operation
<b>Land Use</b>	No effects	Long-term minor adverse	Long-term minor adverse	Long-term minor adverse and No effects
<b>Aesthetics and Visual Resources</b>	No effects	No effects and short-term minor adverse	No effects and short-term minor adverse	No effects and short-term minor adverse
<b>Air Quality</b>	No effects	Short- and long-term minor adverse	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Noise</b>	No effects	Short-term minor adverse and long-term negligible adverse	Short-term minor adverse and long-term negligible adverse	Short-term minor adverse and long-term negligible adverse
<b>Geology and Soils</b>				
Geology	No effects	No effects	No effects	No effects
Topography	No effects	No effects	No effects	No effects
Soils	No effects	Short-term minor adverse	Short-term minor adverse	Short-term minor adverse



**Table 4-1. Summary of Potential Environmental and Socioeconomic Consequences**

Environmental and Socioeconomic Effects				
Resource	Alternative 1– No Action	Proposed Action		
		Preferred Alternative– Construction and Operation	Alternative 3– Construction and Operation	Alternative 4– Construction and Operation
Water Resources				
Surface Water	No effects	Short- and long-term minor adverse	Short- and long-term minor adverse	Short- and long-term minor adverse
Floodplains	No effects	No effects	No effects	No effects
Wetlands	No effects	No effects	No effects	No effects
Biological Resources				
Vegetation	No effects	No effects and long-term minor adverse	No effects and long-term minor adverse	No effects and long-term minor adverse
Wildlife	No effects	No effects and long-term minor adverse	No effects and long-term minor adverse	No effects and long-term minor adverse
Threatened and Endangered Species	No effects	No effects	No effects	No effects
Cultural Resources	No effects	No effects	No effects	No effects
Socioeconomics				
Construction and Operation Impacts on Employment, Industry, and Income	No effects	Short-term minor beneficial	Short-term minor beneficial	Short-term minor beneficial
Population	No effects	No effects	No effects	No effects
Housing	No effects	No effects	No effects	No effects
Law Enforcement, Fire Protection, and Medical Services	No effects	No effects	No effects	No effects
Recreation	No effects	Long-term minor adverse	Long-term minor adverse	Long-term minor adverse

**Table 4-1. Summary of Potential Environmental and Socioeconomic Consequences**

<b>Environmental and Socioeconomic Effects</b>				
<b>Resource</b>	<b>Alternative 1– No Action</b>	<b>Proposed Action</b>		
		<b>Preferred Alternative– Construction and Operation</b>	<b>Alternative 3– Construction and Operation</b>	<b>Alternative 4– Construction and Operation</b>
Schools	No effects	No effects	No effects	No effects
Environmental Justice	No effects	No effects	No effects	No effects
Protection of Children	No effects	No effects	No effects	No effects
<b>Traffic and Transportation</b>	No effects	Short- and long-term minor adverse	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Utilities</b>	No effects	Short- and long-term minor adverse	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Hazardous and Toxic Materials</b>	No effects	Short- and long-term minor adverse	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Solid and Hazardous Waste</b>	No effects	Short- and long-term minor adverse	Short- and long-term minor adverse	Short- and long-term minor adverse

## 4.2 MITIGATION MEASURES

The Army would implement mitigation measures and BMPs as identified in the EA and as specified in federal, state, and local regulations and policies as required. Table 4-2 summarizes the mitigation measures and BMPs identified for each resource area in section 3.0 of the EA.

## 4.3 CONCLUSION

Based on the findings of this assessment, the Army does not expect that implementing the proposed action under the Preferred Alternative, Alternative 3, or Alternative 4 would result in significant adverse environmental impacts on the natural or human environment. Preparation of an EIS, therefore, is not anticipated, and a draft FNSI will be available for review in accordance with 32 CFR part 651, *Environmental Effects of Army Actions*, and NEPA (42 U.S.C. §§ 4321–4347).

**Table 4-2. Summary of Mitigation Measures and BMPs**

<b>Resource Area</b>	<b>Mitigation Measures</b>
<b>Biological Resources</b>	<ul style="list-style-type: none"> <li>• HSAAP will restrict cutting of any potential bat roosting tree to the period between October 15 and March 31 of any year, when bats are not present in the area.</li> <li>• HSAAP will restrict disturbance of any vegetation where migratory birds could be nesting to the period between September 1 and March 15 of any year, when migratory birds are not nesting in the area.</li> </ul>
<b>Resource Area</b>	<b>BMPs</b>
Aesthetics	<ul style="list-style-type: none"> <li>• Organize and clean up construction sites during and upon completion of individual projects.</li> <li>• Establish specific areas for construction staging.</li> <li>• Remove materials and equipment when no longer needed.</li> <li>• Stabilize and replant disturbed ground upon individual project completion.</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>• Handle, transport, and store any material in a manner that will prevent contaminants from becoming airborne.</li> <li>• Employ reasonable measures to minimize fugitive dust.</li> <li>• Employ BMPs for permitting and operating the proposed facilities.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Employ BMPs to further reduce any realized noise effects: <ul style="list-style-type: none"> <li>– Use heavy equipment primarily during normal weekday business hours.</li> <li>– Properly maintain heavy equipment mufflers.</li> <li>– Ensure personnel use adequate personal hearing protection.</li> </ul> </li> <li>• Design and construct all facilities and operational equipment not to generate intrusive noise beyond the property boundary.</li> </ul>
Soils	<ul style="list-style-type: none"> <li>• Obtain coverage under the TN NPDES Stormwater Construction General permit and prepare a site-specific SWPPP with details on the BMPs to be used to limit soil erosion.</li> </ul>
Water Resources	<ul style="list-style-type: none"> <li>• Obtain coverage under the TN NPDES Stormwater Construction General permit and prepare a site-specific SWPPP with details on the BMPs to be used to limit stormwater runoff.</li> </ul>
Cultural Resources	<ul style="list-style-type: none"> <li>• Adhere to the protocols in the HSAAP ICRMP for inadvertent discoveries of cultural resources during ground-disturbing activities.</li> <li>• Ensure proper communication with the SHPO and potentially affected Native American tribes before and during project implementation.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Route and schedule heavy equipment and other vehicles to minimize conflicts with traffic.</li> <li>• Equip all construction vehicles with backing alarms, two-way radios, and “Slow-Moving Vehicle” signs.</li> <li>• Install proper signage for all temporary detours and road closures.</li> </ul>
Hazardous and Toxic Materials	<ul style="list-style-type: none"> <li>• Employ BMPs in place at HSAAP to manage hazardous and toxic materials.</li> </ul>
Solid and Hazardous Waste	<ul style="list-style-type: none"> <li>• Employ BMPs in place at HSAAP to manage the solid and hazardous waste produced or encountered.</li> </ul>

## SECTION 5.0 REFERENCES

- AirNav. 2019. Airport Information page on AirNav.com website. Accessed December 2019. <http://www.airnav.com/airports/>.
- ANSI (American National Standard Institute). 2013. American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-term measurements with an observer present. ANSI S12.9-1993 (R2003)/Part 3.
- BAE (BAE Systems, Inc.). 2017a. Personal Communication from James Ogle Environmental Affairs Specialist- Air BAE Systems Ordnance Systems Inc. Holston Army Ammunition Plant - RE: HSAAP Air. October 12, 2017, 12:31 PM. One Attachment: Air Section Table.
- BAE (BAE Systems, Inc.). 2017b. Personal Communication from James Ogle Environmental Affairs Specialist- Air BAE Systems Ordnance Systems Inc. Holston Army Ammunition Plant - RE: HSAAP Air. October 17, 2017, 5:38 PM. Three Attachments: Area B Title V Permit 558406; Area B Title V Permit 558407; Title V Renewal Application Combined 12/202013.
- BAE OSI (BAE Systems Ordnance Systems, Inc.). 2017. *HSAAP Solid and Hazardous Waste Management Plan*. Revised February 15, 2017.
- BAE (BAE Systems Ordnance Systems, Inc.). 2013. Title V Major Source Operating Permit Numbers 558406 and 558407 Renewal Application for Holston Army Ammunition Plant, Kingsport, Tennessee.
- BEA (Bureau of Economic Analysis). 2019. *CA25N Total Full-time and Part-time Employment by NAICS Industry*. Accessed November 2019. <https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1>.
- BIO-WEST (BIO-WEST, Inc.). 2019. *Planning Level Survey of Freshwater Fish and Mussels, Holston Army Ammunition Plant, TN*. Draft. Prepared by BIO-WEST, Inc., Rosenberg, TX. Prepared for Holston Army Ammunition Plant, Kingsport, TN.
- BLS (Bureau of Labor Statistics). 2019. *Local Area Unemployment Statistics*. Accessed November 2019. <https://www.bls.gov/data/#unemployment>.
- Brockington (Brockington and Associates, Inc.). 1998. Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee. Prepared for U.S. Army Corps of Engineers, Mobile District. Prepared by Brockington and Associates, Inc., Atlanta, GA.
- CEQ (Council on Environmental Quality). 1997. *Environmental Justice Guidance under the National Environmental Policy Act*. Council on Environmental Quality, Executive Office of the President, Washington, DC.
- City of Kingsport. 2019a. City of Kingsport Water Services website. Accessed December 2019. <https://www.kingsporttn.gov/city-services/public-works/water-services/>.
- City of Kingsport. 2019b. *Kingsport Water Department Water Quality Report 2018*. Accessed December 2019. <https://www.kingsporttn.gov/wp-content/uploads/ccr2016.pdf>.
- Cole, Bruce. 2015. *Integrated Natural Resources Management Plan for Holston Army Ammunition Plant, Kingsport, Tennessee*. Holston Army Ammunition Plant, Kingsport, TN.
- CSX Corporation. 2019. Map of CSX Freight Tracks Throughout the U.S. Accessed December 2019. <https://www.csx.com/index.cfm/library/files/customers/maps/printable-system-map/>.

- Harris, C.M. 1998. Handbook of Acoustical Measurement and Noise Control. Acoustical Society of America. Sewickley, PA.
- HSAAP (Holston Army Ammunition Plant). 2019. Holston Army Ammunition Plant website. Accessed November 2019. <https://www.jmc.army.mil/Installations.aspx?id=Holston>.
- HSAAP (Holston Army Ammunition Plant). 2018. Actual Emissions Database Layout for Holston Army Ammunitions Plant, Kingsport, Tennessee.
- HSAAP (Holston Army Ammunition Plant) GIS. 2017. GIS data.
- HSAAP (Holston Army Ammunition Plant). 2015. *Integrated Cultural Resources Management Plan for Holston Army Ammunition Plant. FY 2016-2017*.
- Idcide. 2018. Weather and Climate for Cannon AFB. Available online: <<https://www.idcide.com/weather/tn/kingsport.htm>>. Accessed May 2019.
- IMPLAN (IMPLAN Group, LLC). 2019. IMPLAN website. Accessed November 2019. <http://www.implan.com>.
- NCA (The Third National Climate Assessment). 2014. *Climate Change Impacts in the U.S., Southeast Region*. Accessed December 2019. <http://nca2014.globalchange.gov/report/regions/southeast#intro-section-2>.
- NCES (National Center for Education Statistics). 2019. *U.S. Department of Education National Center for Education Statistics Common Core of Data Search for Public and Private School Districts*. Accessed November 2019. <https://nces.ed.gov/datatools/>.
- Rodgers 1953. Geologic Map of east Tennessee with explanatory text: Tennessee Division of Geology Bulletin no. 58. Accessed December 2019. [https://ngmdb.usgs.gov/ngm-bin/pdp/zui\\_viewer.pl?id=41733](https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=41733).
- Sperling's. 2019. BestPlaces Cost of Living. Accessed November 2019. [https://www.bestplaces.net/cost\\_of\\_living/state/tennessee](https://www.bestplaces.net/cost_of_living/state/tennessee).
- TDEC (Tennessee Department of Environment and Conservation). 2019. *Water Quality Rules, Reports and Publications*. Accessed November 2019. <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html>.
- TDEC (Tennessee Department of Environment and Conservation). 2018a. Title V Major Source Operating Permit Number 568188 for Holston Army Ammunition Plant Area B. Division of Air Pollution Control, Nashville, Tennessee. June 26, 2018.
- TDEC (Tennessee Department of Environment and Conservation). 2018b. Title V Major Source Operating Permit Number 568191 for Holston Army Ammunition Plant Area A. Division of Air Pollution Control, Nashville, Tennessee. June 26, 2018.
- USAF 2013. U.S. Air Force Conformity Applicability Model (ACAM) Version 5.0.13.
- U.S. Army. 2018. *Environmental Assessment for RDX and IMX Capacity Expansion at Holston Army Ammunition Plant, Kingsport, Tennessee. April 2018*.
- U.S. Army. 2016a. Sustainability Report Trifold. URL: [http://www.asaie.army.mil/Public/ES/doc/ASR16\\_Trifold\\_120216.pdf](http://www.asaie.army.mil/Public/ES/doc/ASR16_Trifold_120216.pdf). Accessed October 2017.

- U.S. Army. 2016b. *Holston Army Ammunition Plant Construction and Operation of a NAC/SAC Facility Environmental Assessment*. February 2016. Accessed December 2019.  
<http://www.jmc.army.mil/News/Holston/NACSAC%20EA%20Signed%2002252016b.pdf>.
- U.S. Census Bureau. 1995. *Bureau of the Census Statistical Brief: Poverty Areas*. Accessed April 2019. [https://www.census.gov/prod/1/statbrief/sb95\\_13.pdf](https://www.census.gov/prod/1/statbrief/sb95_13.pdf).
- U.S. Census Bureau. 2000. *Census 2000 Summary File 1 (SF 1) 100 Percent Data* web page. Accessed November 2019.  
<https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>.
- U.S. Census Bureau. 2019a. *Annual Estimates of the Resident Population, April 1, 2010 to July 1, 2018, 2018 Population Estimates: Tennessee Counties*. Accessed November 2019.  
[https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP\\_2018\\_PEPANNRES&prodType=table](https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2018_PEPANNRES&prodType=table).
- U.S. Census Bureau. 2019b. *QuickFacts* web page. Accessed November 2019.  
<https://www.census.gov/quickfacts/fact/table/US/PST045218>.
- U.S. Census Bureau. 2019c. *2013-2017 American Community Survey 5-Year Estimates* web page. Accessed November 2019.  
<https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>.
- U.S. Census Bureau. 2019d. *Poverty Thresholds for 2018 by Size of Family and Number of Related Children Under 18 Years* web page. Accessed November 2019.  
<https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>.
- USACE (U.S. Army Corps of Engineers). 2007. *Final Environmental Assessment for the Realignment of Kingsport Armed Forces Reserve Center, Kingsport, Tennessee, to the Holston Army Ammunition Plant, Kingsport, Hawkins County, Tennessee, BRAC 2005*. U.S. Army Corps of Engineers, Mobile District, Mobile, AL.
- USDA-NRCS (U.S. Department of Agriculture, Natural Resources Conservation Service). 2019. *Web Soil Survey* web page. Accessed December 2019a.  
<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.
- USDA-NRCS (U.S. Department of Agriculture, Natural Resources Conservation Service). 2019b. *Prime Farmland*. Accessed December 2019b.  
[https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/nri/?&cid=nrcs143\\_014052](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/nri/?&cid=nrcs143_014052).
- USEIA (U.S. Energy Information Administration). 2017. *State Carbon Dioxide Emissions Data System and EIA Calculations*. Accessed December 2019.  
<https://www.eia.gov/environment/emissions/state/>.
- U.S. Environmental Protection Agency (USEPA). 2019a. Tennessee Attainment Status. URL: [http://www.epa.gov/airquality/greenbook/anay\\_tn.html](http://www.epa.gov/airquality/greenbook/anay_tn.html). Accessed May 2019.
- USEPA (U.S. Environmental Protection Agency). 2010b. AirData Web Site. URL: <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>. Accessed May 2019.
- USEPA (U.S. Environmental Protection Agency). 2017d. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. URL: <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>. Accessed October 2017.

- USEPA (U.S. Environmental Protection Agency). 2017e. Global Greenhouse Gas Emissions Data. URL: <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data#Country>. Accessed October 2017.
- USEPA (U.S. Environmental Protection Agency). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. Washington, DC: s.n., Publication NTID300.1. URL: <http://tinyurl.com/y8p27w9s>. Accessed October 2017.
- USFWS (U.S. Fish and Wildlife Service). 2017. *Rusty Patched Bumble Bee* (*Bombus affinis*). Accessed September 2017.  
<https://www.fws.gov/midwest/endangered/insects/rpbb/index.html>.
- USFWS (U.S. Fish and Wildlife Service). 2019. *IPaC Information for Planning and Conservation*. Accessed December 2019. <https://ecos.fws.gov/ipac/>.
- USGS (U.S. Geological Survey). 2016. *Water Questions and Answers: How much water does the average person use at home per day?* Accessed December 2019.  
<https://water.usgs.gov/edu/qa-home-percapita.html>.
- USGS (U.S. Geological Survey). 2019. *Church Hill Quadrangle*. Tennessee-Virginia. 7.5-Minute Series. TN\_Church\_Hill\_20160413\_TM\_geo.pdf. Accessed December 2019.  
<https://store.usgs.gov/map-locator>.
- UTK Boyd Center (University of Tennessee Knoxville Boyd Center for Business and Economic Research). 2019. *Annual Tennessee County Population Projection Totals: 2016 to 2070*. Accessed November 2019. <http://tndata.utk.edu/sdcpopulationprojections.htm>.



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Tennessee Department of Environment and Conservation, Nashville, TN

Tennessee Wildlife Resources Agency, Region 4 Office, Morristown, TN

### **Native American Tribes**

Eastern Band of Cherokee Indians

United Keetoowah Band of Cherokee Indians in Oklahoma

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**SECTION 9.0      ACRONYMS AND ABBREVIATIONS**

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m <sup>3</sup>	micrograms per cubic meter
a.m.	ante meridian
AADT	annual average daily traffic
amsl	above mean sea level
ANSI	American National Standard Institute
AQCR	air quality control region
ARPA	Archaeological Resources Protection Act of 1979
BACT	Best Available Control Technology
BAE OSI	BAE Systems Ordnance Systems Inc.
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
dB	decibel
dBA	A-weighted decibel
<i>de minimis</i>	of minimal importance
DNL	day-night sound level
DoD	Department of Defense
EO	executive order
EPA	U.S. Environmental Protection Agency
FF	flashing furnace
ft <sup>2</sup>	square feet
GHG	greenhouse gas
gpm	gallons per minute
HAP	Hazardous Air Pollutant
HSAAP	Holston Army Ammunition Plant
I-	interstate
ICRMP	Integrated Cultural Resources Management Plan
IRP	Installation Restoration Program
IWWTP	industrial wastewater treatment plant
L <sub>eq</sub>	equivalent sound level
LOS	level of service
MACT	Maximum Achievable Control Technology
MBR	moving bed reactor
MBTA	Migratory Bird Treaty Act
MGD	million gallons per day
MMcf/yr	million cubic feet per year
MW/yr	megawatts per year
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act of 1966



NLEB	northern long-eared bat
NNSR	Nonattainment New Source Review
NO <sub>2</sub>	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
O <sub>3</sub>	ozone
p.m.	post meridian
PCPI	per capita personal income
PM <sub>10</sub>	particulate matter less than 10 microns
PM <sub>2.5</sub>	particulate matter less than 2.5 microns
ppb	parts per billion
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTE	potential to emit
ROI	region of influence
RONA	record of nonapplicability
SHPO	State Historic Preservation Office
SHWMP	Solid and Hazardous Waste Management Plan
SO <sub>2</sub>	sulfur dioxide
SOP	standard operating procedure
STP	sewage treatment plant
SWPPP	Stormwater Pollution Prevention Plan
T/E	threatened or endangered
TCP	traditional cultural property
TDEC	Tennessee Department of Environment and Conservation
tpy	tons per year
TSCA	Toxic Substances Control Act
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
yd <sup>3</sup>	cubic yards

**APPENDIX A**  
**Air Quality Supporting Documentation**

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**RECORD OF NON-APPLICABILITY (RONA)**  
**Holston Army Ammunition Plant - Thermal Treatment Facility**  
**Kingsport, Tennessee**

The U.S. Army is planning to pursue the installation of a thermal treatment facility at the Holston Army Ammunition Plant (HSAAP) Area B. Thermal treatment of explosives-contaminated wastes and waste explosives currently occurs through open burning at the HSAAP open burning grounds (OBG). The OBG consists of three areas, pans where waste explosives are burned, cages where lightweight explosives contaminated combustibles are burned, and piles where heavier explosives-contaminated items are burned. The proposed action is to install and operate a thermal treatment facility at HSAAP. The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V permit. Installing the facility would also require installation of air pollution controls, installation and/or maintenance of security fencing, and installation of associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filtered water, potable water, and compressed air.

The proposed action would generate new direct and indirect emissions from the construction and operations of the proposed facility. General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of Title 40 of the Code of Federal Regulations (CFR) Part 93, Subpart B. The requirements of this rule are not applicable to the action because:

The proposed action is completely within an area that has been designated in full attainment for the NAAQS.

Supported documentation and emission estimates:

- ☐ Are attached
- ☐ Appear in the National Environmental Policy Act documentation
- ☒ Other (not necessary)

**KENNEDY.JOSEPH.R**  
**OBERT.JR.10350702**  
**45**

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KENNEDY.JOSEPH.ROBERT.JR.10  
35070245  
Date: 2020.04.06 16:42:14 -04'00'

\_\_\_\_\_  
JOSHEPH R. KENNEDY  
Commander's Representative, Holston Army Ammunition Plant

\_\_\_\_\_  
6 April 2020  
Date

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**APPENDIX B**

**Tennessee SHPO and ACHP: Program Comment for World War II and Cold War Era  
(1939-1974) Army Ammunition Production Facilities and Plants and 2006 SHPO  
Correspondence**

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REPLY TO  
ATTENTION OF

Natural Resources Office

## DEPARTMENT OF THE ARMY

Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

October 14, 2010

Mr. E. Patrick McIntyre, Jr.  
Tennessee Historical Commission  
2941 Lebanon Road  
Nashville, TN 37243-0442

Dear Mr. McIntyre:

At this time we are providing notification that Holston Army Ammunition Plant (HSAAP) wishes to utilize the guidance contained in Enclosure 1, "Program Comment for World War II and Cold War Era (1939-1974) Army Ammunition Production Facilities and Plants" in order to meet our Section 106 requirements for actions affecting real property on the installation. Per Paragraph V of the enclosure, "The Army has met its responsibilities for compliance under section 106." As a result we are no longer required to coordinate with your office and follow the case by case Section 106 review process in order to perform the following activities to real property on the plant: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance activities, new construction, demolition, deconstruction and salvage, remedial activities, and transfer, sale, lease and/or closure of such facilities.

We do understand that the Program Comment does not address potential impacts to other historic properties such as archaeological sites on the installation. Therefore, in the event that a proposed action has the potential to affect archaeological sites on the installation, we will continue to follow the case-by-case Section 106 review process and coordinate with your office in order to insure that we do not adversely impact these resources.

In the event that you feel we have not interpreted the enclosure correctly, please do not hesitate to provide us with the appropriate guidance on how we should proceed under this Program Comment. The point of contact on my staff is Mr. Bruce Cole at (423) 578-6276 or [bruce.cole@us.army.mil](mailto:bruce.cole@us.army.mil).

Sincerely,

  
JOSEPH R. KENNEDY  
Commander's Representative

Enclosure  
Program Comment



*Preserving America's Heritage*

**PROGRAM COMMENT FOR  
WORLD WAR II AND COLD WAR ERA (1939 – 1974)  
ARMY AMMUNITION PRODUCTION FACILITIES AND PLANTS**

**I. Introduction**

This Program Comment provides the Department of the Army (Army) with an alternative way to comply with its responsibilities under Section 106 of the National Historic Preservation Act with regard to the effect of the following management actions on World War II (WWII) and Cold War Era Army Ammunition Production Facilities and Plants that may be eligible for listing on the National Register of Historic Places (Facilities and Plants): ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities.

In order to take into account the effects on Facilities and Plants, the Army will conduct documentation in accordance with The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

**II. Treatment of Properties**

**A. Army Mitigation**

1. The Army has an existing context study, Historic Context for the World War II Ordnance Department's Government-Owned Contractor-Operated (GOCO) Industrial Facilities 1939-1945 as well as documentation of nine World War II GOCO Plants.

2. The Army will prepare a supplemental volume that revises and expands the existing context to include the Cold War Era (1946-1974). The updated context study will:

focus on the changes that the plants underwent to address changing weapons technology and defense needs; and

identify prominent architect-engineer firms that may have designed architecturally significant buildings for Army Ammunition Plants.

3. The Army will prepare documentation that generally comports with the appropriate HABS/HAER standards for documentation for selected architecturally significant Facilities and Plants at two installations. This documentation will be similar to and follow the format of the existing documentation described in section II.A.1, above.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 809 • Washington, DC 20004  
Phone: 202-606-8503 • Fax: 202-606-8647 • [achp@achp.gov](mailto:achp@achp.gov) • [www.achp.gov](http://www.achp.gov)

4. Upon completion of the documentation, the Army will then make the existing documentation of the nine WWII GOCO Army Ammunition Plants and the WWII GOCO context and the new documentation, to the extent possible under security concerns, available in electronic format to Federal and State agencies that request it.

5. In addition, as a result of on-going consultations with stakeholders, the Army will provide a list of properties covered by the Program Comment, by state, to the National Conference of State Historic Preservation Officers and the Advisory Council on Historic Preservation.

6. The Army will also develop additional public information on the Army ammunition process, from production through storage, to include:

a display that can be loaned to one of the Army's museums, such as the Ordnance Museum at Aberdeen Proving Ground, or used at conferences; and

a popular publication on the ammunition process to accompany the display.

Copies of this information will be available electronically, to the extent possible under security concerns, and hard copies will be placed in a permanent repository, such as the Center for Military History.

7. The Army will encourage adaptive reuse of the properties as well as the use of historic tax credits by private developers under lease arrangements. The Army should also incorporate adaptive reuse and preservation principles into master planning documents and activities.

The above actions satisfy the Army's requirement to take into account the effects of the following management actions on Facilities and Plants: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance activities, new construction, demolition, deconstruction and salvage, remedial activities, and transfer, sale, lease and/or closure of such facilities.

### **III. Applicability**

**A.** This Program Comment applies solely to Facilities and Plants. The Program Comment does not apply to the following properties that are listed, or eligible for listing, on the National Register of Historic Places: (1) archeological properties, (2) properties of traditional religious and cultural significance to federally recognized Indian tribes or Native Hawaiian organizations, and/or (3) Facilities and Plants listed or eligible National Register of Historic Places districts where the ammunition production facility is a contributing element of the district and the proposed undertaking has a potential to adversely affect such historic district. This third exclusion does not apply to ammunition production related historic districts that are entirely within the boundaries of an ammunition production plant. In those cases the Program Comment would be applicable to such districts.

**B.** An installation with an existing Section 106 agreement document that addresses Facilities and Plants can choose to:

1. continue to follow the stipulations in the existing agreement document for the remaining period of the agreement; or

2. seek to amend the existing agreement document to incorporate, in whole or in part, the terms of this Program Comment; or

3. terminate the existing agreement document and re-initiate consultation informed by this Program Comment, if necessary.

C. All future Section 106 agreement documents developed by Army installations related to undertakings and properties addressed in this Program Comment shall include appropriate provisions detailing whether and how the terms of the Program Comment apply to such undertakings.

#### **IV. Completion Schedule**

On or before 60 days following issuance of the Program Comment, the Army and ACHP will establish a schedule for completion of the treatments outlined above.

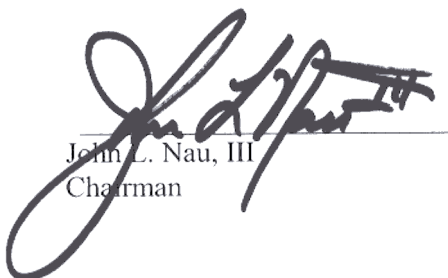
#### **V. Effect of the Program Comment**

By following this Program Comment, the Army has met its responsibilities for compliance under Section 106 regarding the effect of the following management actions on WWII and Cold War Era Army Ammunition Production Facilities and Plants that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities. Accordingly, the Army will no longer be required to follow the case-by-case Section 106 review process for such effects.

#### **VI. Duration and Review of the Program Comment**

This Program Comment will remain in effect until such time as Headquarters, Department of the Army determines that such comments are no longer needed and notifies ACHP in writing, or ACHP withdraws the comments in accordance with 36 CFR § 800.14(e)(6). Following such withdrawal, the Army would be required to comply with the requirements of 36 CFR §§ 800.3 through 800.7 regarding the effects under this Program Comments' scope.

Headquarters, Department of the Army and ACHP will review the implementation of the Program Comment seven years after its issuance and determine whether to take action to terminate the Program Comment as detailed in the preceding paragraph.



John L. Nau, III  
Chairman



August 18, 2006



REPLY TO  
ATTENTION OF

## DEPARTMENT OF THE ARMY

Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

February 3, 2006

Production Engineering Division

Mr. Joe Garrison  
Tennessee Historical Commission  
2941 Lebanon Pike  
Nashville, TN 37243-0442

Dear Mr. Garrison:

Holston would like to have the State agree that the attached list of items do not need to be coordinated with your office in the future. Justification for this request is that Holston has established precedents for these types of items in the past as not having historical impacts to the installation and that we've identified the Comp B Production Line 2 as a representative line for historical preservation.

Your concurrence is requested.

If additional information is needed, please contact Mike Mills at (423) 578-6244.

Sincerely,

Original Signed By

Eddie C. Brickey  
Commander's Representative

Enclosure

CF:  
OSI/Todd Hayes, Bob Winstead



## ACTIVITIES THAT NEED NOT BE REVIEWED BY THE SHPO

- A. Ground disturbing activities in Area A in the previously disturbed area shown in Enclosure 1; or within the boundary of the production area, maintenance, and administration areas of Area B in the previously disturbed area shown in Enclosure 2.
- B. Maintenance work on existing features such as roads, fire lanes, disposal areas, ditch lines, fence line right-of-ways, and buried utility lines such as gas or water lines.
- C. Energetics disposal (open burning of waste explosives).
- D. Leasing of agriculture and grazing areas that will either:
  - 1. Take place within areas previously surveyed and determined not to contain any archaeological sites, or
  - 2. Involve no tilling or other activities that will disturb the ground below the current level of disturbance and/or plow zone
- E. Hunting and fishing actions.
- F. Use of land for training exercises, when such training involves no off-road vehicle use or ground disturbance, and when camping occurs in areas previously surveyed for historic properties.
- G. Activity on any ground locations where prior archeological studies have been previously completed indicating no historical findings. New construction activities will need to be coordinated at these locations.
- H. Outgrants and contracting actions when the proposed use involves no disturbance of the ground surface.
- I. Reviews, reports, studies, undertakings for planning purposes and decision making including reports of excess provided that no lands are physically laid away or disposed of by sale, or transfer, without appropriate documentation or coordination.

Note: The above list of activities is a partial list of those activities that, in February 2006, the SHPO indicated would not impact listed or eligible properties when described conditions exist. Exemptions and guidance related to buildings on the installation have been removed from the original list that the SHPO approved because guidance of this nature is no longer applicable to HSAAP. The *"Program Comment for World War II and Cold War ERA (1939-1974) Army Ammunition Production Facilities and Plants"* (PC) eliminates any requirement to coordinate with the SHPO with regard to buildings, bridges, and other real property on the installation that are covered by the PC. HSAAP notified the SHPO in October 2012 that it would utilize the PC for all actions impacting any real property (buildings, etc.) on the installation.





N ↑

Enclosure 2  
Holston AAP Area B



**TENNESSEE HISTORICAL COMMISSION**  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
2941 LEBANON ROAD  
NASHVILLE, TN 37243-0442  
(615) 532-1550

February 7, 2006

Mr. Eddie Brickey  
Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, Tennessee 37660

RE: DOD, HAAP/MINOR PROJECTS & MAINTENANCE, KINGSFORT, SULLIVAN COUNTY

Dear Mr. Brickey:

The Tennessee State Historic Preservation Office has reviewed the above-referenced undertaking received on Monday, February 6, 2006 for compliance by the participating federal agency or applicant for federal assistance with Section 106 of the National Historic Preservation Act. The Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, it is our opinion that there are no National Register of Historic Places listed or eligible properties affected by the types of undertakings listed in your correspondence, with one qualification. Activity D, "Leasing of agricultural and grazing areas" should be limited to only those agricultural activities that will either; a) take place within areas previous surveyed and determined not to contain any archaeological sites, or b) involve no tilling or other activities that will disturb the ground below the current level of disturbance and/or plow zone.

You may direct questions or comments to Jennifer M. Barnett (615) 741-1588, ext. 17. This office appreciates your cooperation.

Sincerely,

Herbert L. Harper  
Executive Director and  
Deputy State Historic  
Preservation Officer

HLH/jmb



**APPENDIX C**  
**Agency and Tribal Coordination**

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## DEPARTMENT OF THE ARMY

Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

February 13, 2020

REPLY TO  
ATTENTION OF

Natural Resources Office

Mr. E. Patrick McIntyre, Jr.  
Executive Director and State Historic Preservation Officer  
Tennessee Historical Commission  
2941 Lebanon Pike  
Nashville, TN 37214

Dear Mr. McIntyre:

In compliance with Section 106 of the National Historic Preservation Act, Holston Army Ammunition Plant (HSAAP) requests your concurrence with HSAAP's opinion that activities associated with constructing and operating a thermal treatment facility at any of three proposed locations on the installation will not adversely affect historic properties. HSAAP occupies approximately 6,000 acres in Hawkins and Sullivan counties west of downtown Kingsport, Tennessee. Components of the proposed action will include construction of Flashing Furnaces (FFs), Explosive Treatment Technology (ETT) facilities, and associated handling facilities. Additionally, HSAAP will install air pollution controls; security fencing; a new road segment; and associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filter water, and compressed air. HSAAP also would improve the local existing road network and demolish a railroad spur and some small buildings. We are developing an Environmental Assessment (EA) for this project and have identified three separate areas as potential locations for this undertaking. To assist you with your review, we are providing the following enclosures:

1. Enclosure 1 describes those activities associated with the proposed action in more detail and provides an aerial overview of the Area of Potential Effect (APE) at each alternative location. As a note, location 1 is relatively undisturbed with the exception of an existing paved road and 11 small storage magazines. However, locations 2 and 3 are both heavily disturbed from previous activities that occurred during the construction and development of the installation.

2. Enclosure 2 is a section of a U.S. Geological Survey 7.5-minute topographic map for the Church Hill quadrangle which indicates the boundary of the APE for each of the three alternative locations. Approximate coordinates for the center of each location is as follows: location 1: 36.53596, -82.65718; Location 2: 36.53317, -82.65006; and location 3: 36.52878, -82.63743. As a note, the APE for location 1 was "exaggerated" to be inclusive of several different relatively small site locations that will be developed within the boundary of this area. Because the exact location at which some of these

facilities will be constructed is not currently known this "exaggeration" will allow HSAAP the flexibility to change locations of individual building sites if required, within the indicated APE of location 1 without the need to conduct additional Section 106 coordination. We anticipate that approximately 90 percent of the area shown as the APE for location 1 will remain undisturbed following completion of this project if this location is use.

3. Enclosure 3 indicates the approximate APE for each of the 3 alternative locations on an aerial photograph of the installation indicating the relative proximity of each location with regard to other facilities.

4. Enclosure 4 contains previous notification to your office of our intention to apply the *Program Comment for World War II and Cold War Era (1939-1974) Army Ammunition Production Facilities and Plants* to all activities on the installation that would affect any real property in addition to a copy of the Program Comment.

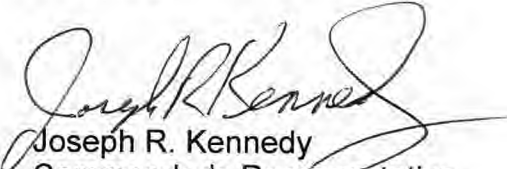
If either alternative locations 1 or 2 are utilized, there will be a need to demolish buildings which are present on these sites. At location 1, a number of storage magazines that were constructed in 1943, will be demolished. At location 2, a Quonset hut constructed in 1966 will require demolition. Activities covered by the Program Comment contained in Enclosure 4 include maintenance and repair, rehabilitation, renovation, new construction, and demolition. Since buildings that will be impacted by the proposed undertaking were constructed during the time frame covered by the Program Comment, and since the proposed undertaking will entail building demolition and new construction, both of which are covered by the Program Comment, it is our understanding per the Program Comment that the Army has met its section 106 responsibilities as long as the proposed action impacts no other historic resources (e.g., archaeological sites) which are addressed below.

In 1998, HSAAP completed a final Phase I historic resources survey of Area B on the installation. The report detailing the results of this survey is titled *Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee*. As a result of the survey, investigators found 12 archaeological sites, 9 of which were recommended for consideration as potentially eligible for listing on the National Register of Historic Places (NRHP). The 1998 survey included the total APE for alternative locations 1 and 3, and approximately 95 percent of the APE for location 2. No archaeological sites recommended as potentially eligible for the NRHP were found within the APE for any of the three proposed project locations. On the northern side of the Holston River, the closest known potentially eligible archaeological site to any of the 3 alternative locations is Site # 40HW78 which occurs approximately 1,000 feet south of location 3, as shown on Enclosure 2. Although Site # 40HW81,

which was identified during the 1998 survey, occurs near the northern boundary of location 1, disturbance at this site was estimated at 75-99 percent during the survey and it was recommended as not eligible for the NRHP given the loss of integrity. The small portion on the southeastern corner of location 2, which is the only area of the three proposed locations not included in the 1998 survey, has a building on it which is surrounded by a graveled road and parking area. We assume that because of the presence of this structure and obvious disturbance in this area, it was not included as part of the 1998 survey area.

Considering the above factors, we request your concurrence with our opinion, if possible, that the proposed action for constructing and operating a thermal treatment facility at any of the three described locations on HSAAP will have no adverse effect on historic properties. If you require additional information, contact Mr. Bruce Cole of my staff at [bruce.g.cole.civ@mail.mil](mailto:bruce.g.cole.civ@mail.mil) or (423) 578-6276.

Sincerely,



Joseph R. Kennedy  
Commander's Representative

Enclosures



## DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

### PROPOSED ACTION

The proposed action is to install and operate a thermal treatment facility at Holston Army Ammunition Plant (HSAAP). The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V and RCRA subpart X permits. Installing the facility would also require installation of air pollution controls, installation and/or maintenance of security fencing, a new road segment, existing road network improvements, demolition of a railroad spur, building demolition, and installation of associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filter water, and compressed air. The Army established screening criteria to develop reasonable alternatives capable of meeting the purpose and need for the proposed action. The alternatives are described briefly below.

### PREFERRED ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AND ETT CO-LOCATED AT LOCATION 1

The Preferred Alternative co-locates up to two flashing furnaces (FFs), explosive treatment technology (ETT) facilities, and associated handling facilities in a remote, hilly area of HSAAP (Figure 2-1). Two FF sites would be selected for the FF facilities and a third site is available as an alternate. Similarly, two ETT sites are being considered as primary sites. Each FF facility would require about 1 acre of land and the FF handling facility would require about 2 acres. The ETT and associated handling facility would require about 4 acres total land area.

Location 1 is remote from traditional HSAAP operations. Some development has historically occurred in this area, providing flat locations targeted for portions of the thermal treatment facility. Existing roads would be used, though some small connecting roads would need to be constructed. Existing roads could require improvement before or after facility construction to be able to handle the construction and/or operation of the facilities. Up to five buildings that have not been used in several years would be demolished. Approximately 1,200 feet of a railroad spur at location 1 would be removed. HSAAP will perform a building survey to meet environmental and cultural resources requirements prior to building demolition. HSAAP would also conduct a geologic investigation on Location 1 because of the presence of karst topography. Reuse of previously constructed areas would minimize vegetation and soil removal; however, the existing flat or open areas at each of the proposed FF and ETT sites at location 1 are not large enough for the proposed facilities, or flat or open areas do not currently exist at the proposed sites.

Existing structures would be demolished at ETT site 1; construction at ETT site 2 would occur in a mostly undisturbed area. The FF would be constructed in previously disturbed areas where there is some existing infrastructure. New gates installed at the FF sites, as well as about 4,850 feet of new security fencing. Laydown areas would be created in cleared areas along access roads.

### SECOND ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AT LOCATION 2 AND ETT AT LOCATION 1

The second alternative is similar to the Preferred Alternative but sites the FF technology at location 2 approximately one-half mile to the south (Figure 2-2). Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 2.

Location 2 would be used for up to two FFs and their associated processes. Location 2 has been previously disturbed and is currently flat with evergreen trees and one Quonset hut, which might



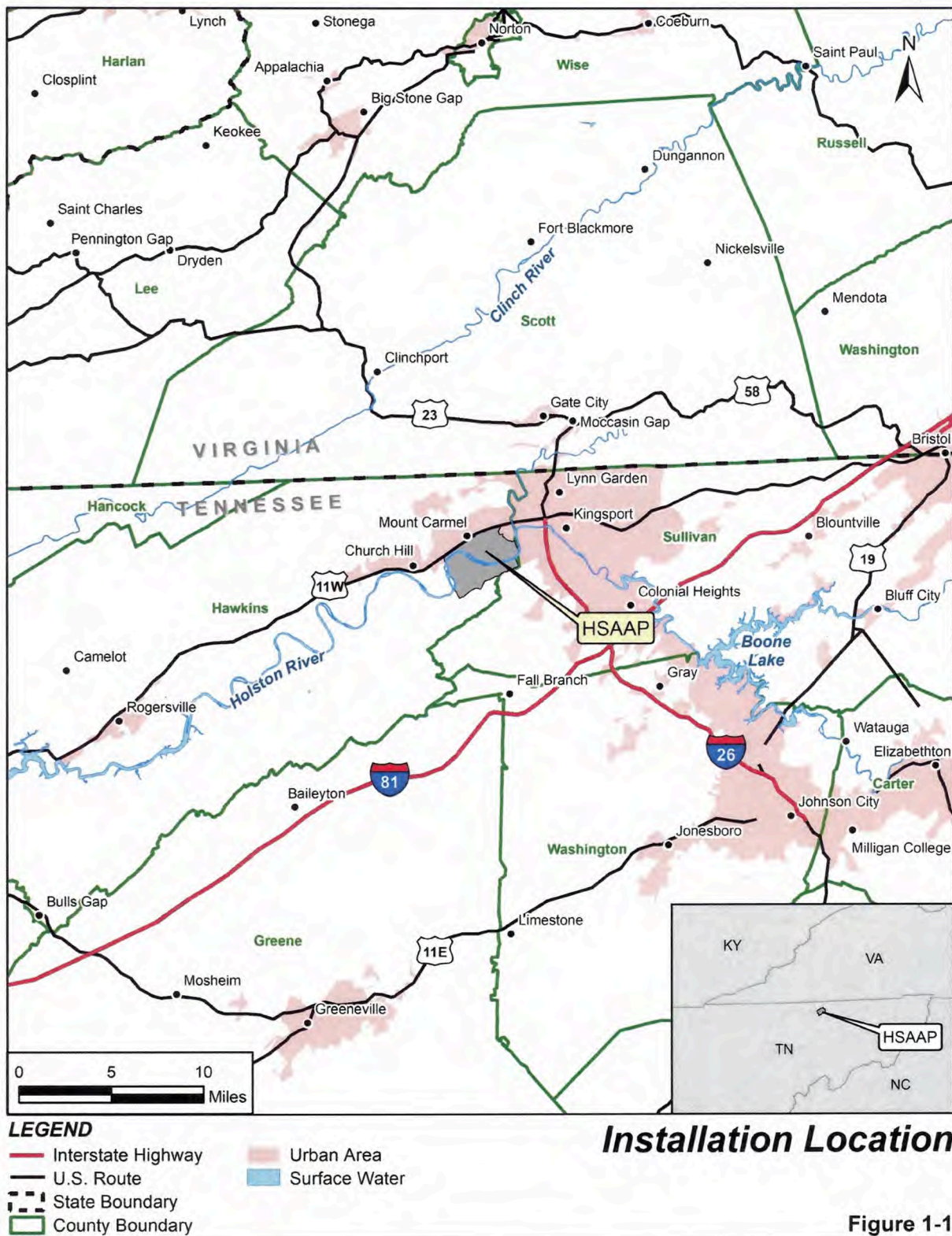
require demolition. The Quonset hut was constructed in 1966 and has a footprint of about 4,000 square feet. A building survey to meet environmental and cultural resources requirements would be performed prior to building demolition. If this alternative is selected, this area would also be subject to a favorable geologic investigation. While location 2 has been previously disturbed, power is the only utility present. Therefore, the remaining utilities would have to be installed to this location. Location 2 is closer to existing operations at HSAAP, but still outside the immediate production area. Location 2 is not close to the community. Existing roads would be used, with the need for addition of some small connecting roads to be constructed.

### **THIRD ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AT LOCATION 3 AND ETT AT LOCATION 1**

Alternative 4 is similar to the Preferred Alternative but sites the FF technology at location 3 (Figure 2-3) approximately 1½ miles to the southeast. Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 3.

Location 3 would be used for up to two FFs and their associated processes. Location 3 has been previously disturbed and is currently flat with an existing warehouse. Part of the warehouse is used to store clean pallets for use throughout the plant while the other portion of the warehouse would be renovated for use with the FF materials handling and/or control room. A building survey to meet environmental requirements would be performed prior to building renovation. The remaining portion of location 3 is primarily covered with noncompacted clean fill underlain by a former sodium nitrate pond that achieved no further action under the corrective action program. The fill was generated from other facility modernization programs and was not placed to serve any structural functions. A coal tar solid waste management unit bounds location 3 to the west and the floodplain demarcation bounds the area to the south. Because of the proximity of the floodplain and shallow water table along with the proximity of the coal tar unit, this area would also be subject to an acceptable geologic investigation prior to selection. Other infrastructure further to the east has had stability issues because of poor soil structure.

Location 3 is in the production area. Although the safety arcs between this facility and existing operations do not conflict and therefore do not screen location 3 out of consideration, they are close to safety arcs associated with other facilities on the production area. Additional engineering might be required to minimize risk of damage to the FF or adjacent production buildings in the event of an incident.





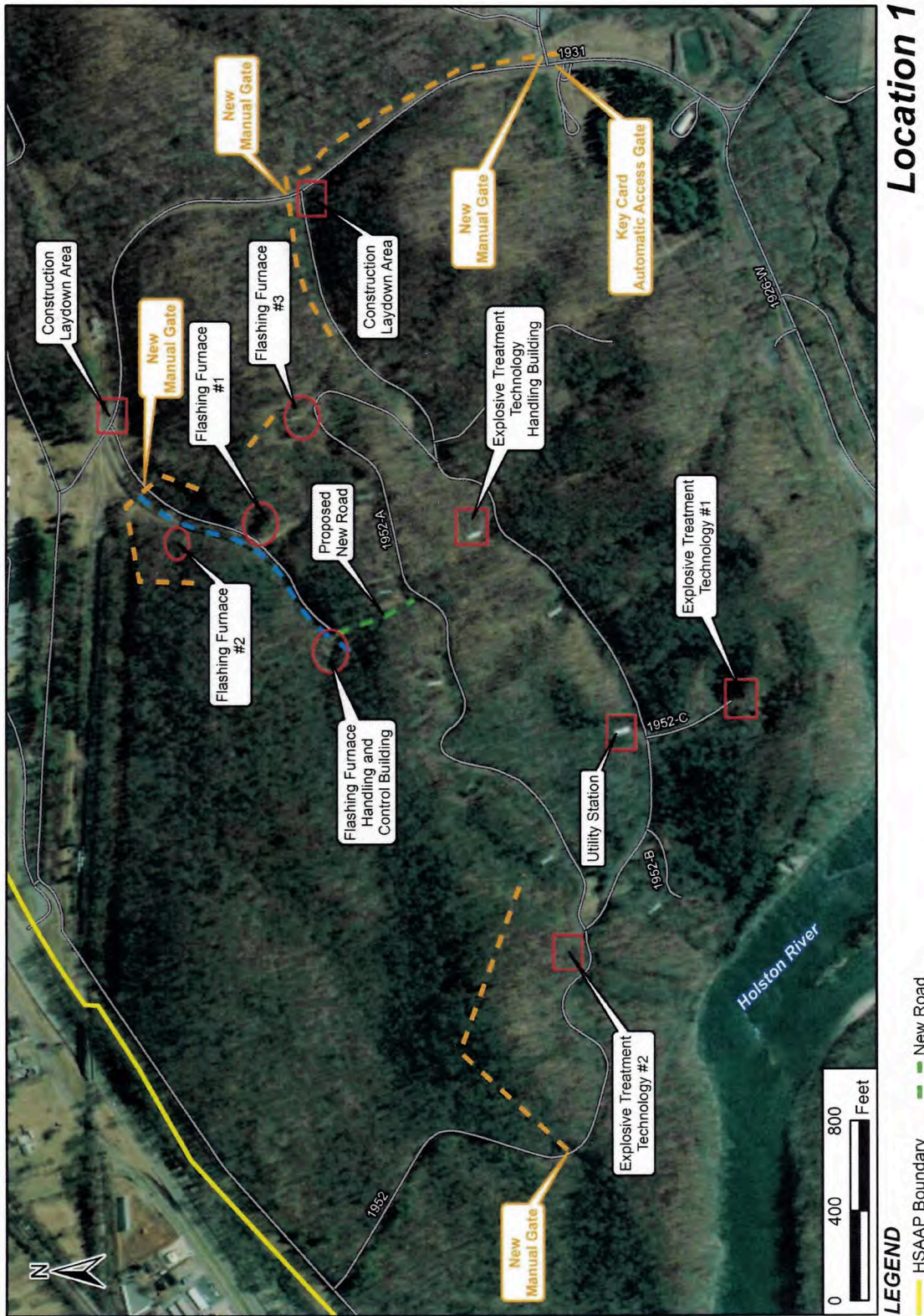


Figure 2-1

Note: Project boundaries and locations are approximate.





## Location 2

Figure 2-2

Note: Project boundaries and locations are approximate.



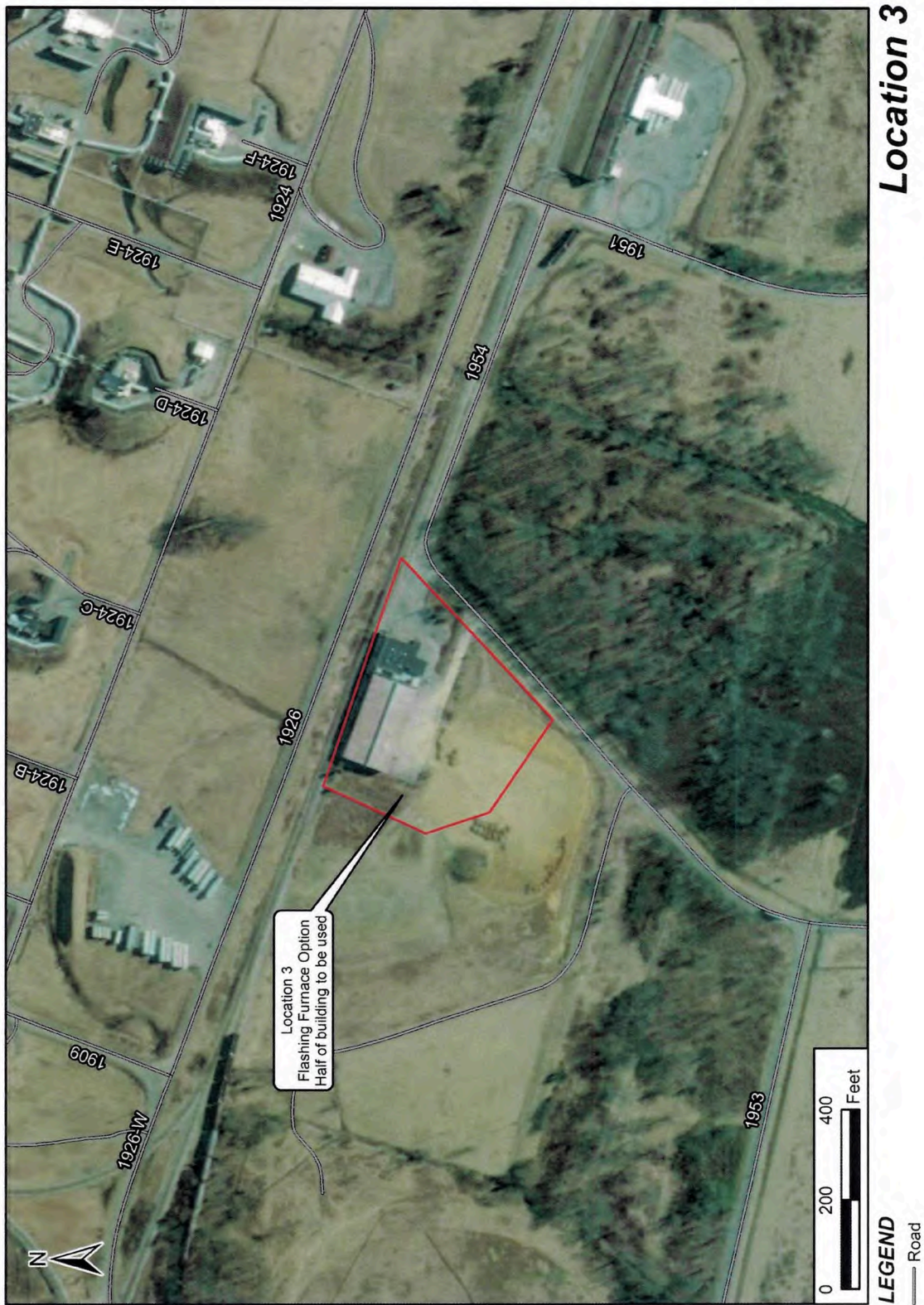
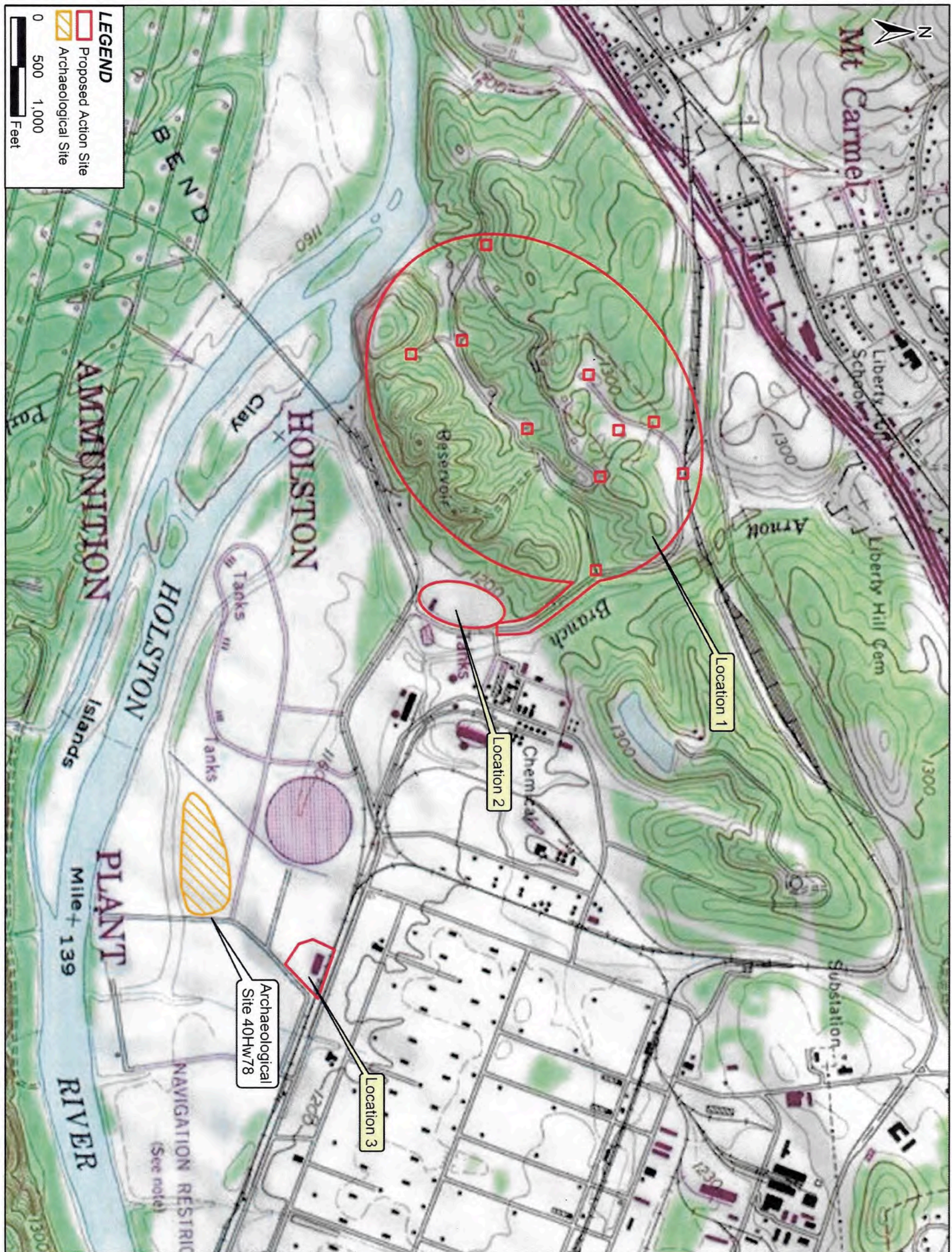


Figure 2-3

Note: Project boundaries and locations are approximate.









ENCLOSURE (3)



REPLY TO  
ATTENTION OF

## DEPARTMENT OF THE ARMY

Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37680

October 14, 2010

Natural Resources Office

Mr. E. Patrick McIntyre, Jr.  
Tennessee Historical Commission  
2941 Lebanon Road  
Nashville, TN 37243-0442

Dear Mr. McIntyre:


At this time we are providing notification that Holston Army Ammunition Plant (HSAAP) wishes to utilize the guidance contained in Enclosure 1, "Program Comment for World War II and Cold War Era (1939-1974) Army Ammunition Production Facilities and Plants" in order to meet our Section 106 requirements for actions affecting real property on the installation. Per Paragraph V of the enclosure, "The Army has met its responsibilities for compliance under section 106." As a result we are no longer required to coordinate with your office and follow the case by case Section 106 review process in order to perform the following activities to real property on the plant: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance activities, new construction, demolition, deconstruction and salvage, remedial activities, and transfer, sale, lease and/or closure of such facilities.

We do understand that the Program Comment does not address potential impacts to other historic properties such as archaeological sites on the installation. Therefore, in the event that a proposed action has the potential to affect archaeological sites on the installation, we will continue to follow the case-by-case Section 106 review process and coordinate with your office in order to insure that we do not adversely impact these resources.

In the event that you feel we have not interpreted the enclosure correctly, please do not hesitate to provide us with the appropriate guidance on how we should proceed under this Program Comment. The point of contact on my staff is Mr. Bruce Cole at (423) 578-6276 or [bruce.cole@us.army.mil](mailto:bruce.cole@us.army.mil).

Sincerely,

---



JOSEPH R. KENNEDY  
Commander's Representative

Enclosure  
Program Comment

ENCLOSURE (4)





*Preserving America's Heritage*

**PROGRAM COMMENT FOR  
WORLD WAR II AND COLD WAR ERA (1939 – 1974)  
ARMY AMMUNITION PRODUCTION FACILITIES AND PLANTS**

**I. Introduction**

This Program Comment provides the Department of the Army (Army) with an alternative way to comply with its responsibilities under Section 106 of the National Historic Preservation Act with regard to the effect of the following management actions on World War II (WWII) and Cold War Era Army Ammunition Production Facilities and Plants that may be eligible for listing on the National Register of Historic Places (Facilities and Plants): ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities. In order to take into account the effects on Facilities and Plants, the Army will conduct documentation in accordance with The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

**II. Treatment of Properties**

**A. Army Mitigation**

1. The Army has an existing context study, Historic Context for the World War II Ordnance Department's Government-Owned Contractor-Operated (GOCO) Industrial Facilities 1939-1945 as well as documentation of nine World War II GOCO Plants.

2. The Army will prepare a supplemental volume that revises and expands the existing context to include the Cold War Era (1946-1974). The updated context study will:

focus on the changes that the plants underwent to address changing weapons technology and defense needs; and

identify prominent architect-engineer firms that may have designed architecturally significant buildings for Army Ammunition Plants.

3. The Army will prepare documentation that generally comports with the appropriate HABS/HAER standards for documentation for selected architecturally significant Facilities and Plants at two installations. This documentation will be similar to and follow the format of the existing documentation described in section II.A.1, above.

4. Upon completion of the documentation, the Army will then make the existing documentation of the nine WWII GOCO Army Ammunition Plants and the WWII GOCO context and the new documentation, to the extent possible under security concerns, available in electronic format to Federal and State agencies that request it.

5. In addition, as a result of on-going consultations with stakeholders, the Army will provide a list of properties covered by the Program Comment, by state, to the National Conference of State Historic Preservation Officers and the Advisory Council on Historic Preservation.

6. The Army will also develop additional public information on the Army ammunition process, from production through storage, to include:

a display that can be loaned to one of the Army's museums, such as the Ordnance Museum at Aberdeen Proving Ground, or used at conferences; and

a popular publication on the ammunition process to accompany the display.

Copies of this information will be available electronically, to the extent possible under security concerns, and hard copies will be placed in a permanent repository, such as the Center for Military History.

7. The Army will encourage adaptive reuse of the properties as well as the use of historic tax credits by private developers under lease arrangements. The Army should also incorporate adaptive reuse and preservation principles into master planning documents and activities.

The above actions satisfy the Army's requirement to take into account the effects of the following management actions on Facilities and Plants: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance activities, new construction, demolition, deconstruction and salvage, remedial activities, and transfer, sale, lease and/or closure of such facilities.

### **III. Applicability**

**A.** This Program Comment applies solely to Facilities and Plants. The Program Comment does not apply to the following properties that are listed, or eligible for listing, on the National Register of Historic Places: (1) archeological properties, (2) properties of traditional religious and cultural significance to federally recognized Indian tribes or Native Hawaiian organizations, and/or (3) Facilities and Plants listed or eligible National Register of Historic Places districts where the ammunition production facility is a contributing element of the district and the proposed undertaking has a potential to adversely affect such historic district. This third exclusion does not apply to ammunition production related historic districts that are entirely within the boundaries of an ammunition production plant. In those cases the Program Comment would be applicable to such districts.

**B.** An installation with an existing Section 106 agreement document that addresses Facilities and Plants can choose to:

1. continue to follow the stipulations in the existing agreement document for the remaining period of the agreement; or

2. seek to amend the existing agreement document to incorporate, in whole or in part, the terms of this Program Comment; or



3. terminate the existing agreement document and re-initiate consultation informed by this Program Comment, if necessary.

C. All future Section 106 agreement documents developed by Army installations related to undertakings and properties addressed in this Program Comment shall include appropriate provisions detailing whether and how the terms of the Program Comment apply to such undertakings.

#### **IV. Completion Schedule**

On or before 60 days following issuance of the Program Comment, the Army and ACHP will establish a schedule for completion of the treatments outlined above.

#### **V. Effect of the Program Comment**

By following this Program Comment, the Army has met its responsibilities for compliance under Section 106 regarding the effect of the following management actions on WWII and Cold War Era Army Ammunition Production Facilities and Plants that may be eligible for listing on the National Register of Historic Places: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities. Accordingly, the Army will no longer be required to follow the case-by-case Section 106 review process for such effects.

#### **VI. Duration and Review of the Program Comment**

This Program Comment will remain in effect until such time as Headquarters, Department of the Army determines that such comments are no longer needed and notifies ACHP in writing, or ACHP withdraws the comments in accordance with 36 CFR § 800.14(e)(6). Following such withdrawal, the Army would be required to comply with the requirements of 36 CFR §§ 800.3 through 800.7 regarding the effects under this Program Comments' scope.

Headquarters, Department of the Army and ACHP will review the implementation of the Program Comment seven years after its issuance and determine whether to take action to terminate the Program Comment as detailed in the preceding paragraph.

  
John L. Nau, III  
Chairman

  
Date



REPLY TO  
ATTENTION OF

## DEPARTMENT OF THE ARMY

Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

February 18, 2020

Natural Resources Office

Eastern Band of Cherokee Indians  
Russell Townsend, THPO  
Qualla Boundary Reservation  
P.O. Box 455  
Cherokee, NC 28719-0455

Dear Mr. Townsend:

Holston Army Ammunition Plant (HSAAP) proposes to install and operate a thermal treatment facility on the installation. The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V and RCRA subpart X permits. HSAAP occupies approximately 6,000 acres west of downtown Kingsport, Tennessee and the Holston River passes through the installation. Constructing the facility would involve installing air pollution controls, security fencing, a new road segment, and associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filter water, and compressed air. HSAAP would also improve the local existing road network and demolish a railroad spur and some small buildings. HSAAP is developing an Environmental Assessment (EA) for this project and has identified three separate areas as potential locations for this undertaking. The enclosure describes the proposed action in more detail.

In accordance with Title 36 of the Code of Federal Regulations (CFR) Part 800, the National Historic Preservation Act, and the National Environmental Policy Act (NEPA), this letter is an invitation to initiate government-to-government consultation between the U.S. Army and the Eastern Band of Cherokee Indians to discuss any effects the proposed action might have on your tribe and/or its resources. The Army is inviting the Eastern Band of Cherokee Indians and other federally recognized tribes who historically used this region and/or continue to use the area around HSAAP to consult with the Army.


HSAAP conducted a Phase I archaeological survey of the installation in 1997, which resulted in the identification of nine prehistoric archaeological sites on the property that were recommended for consideration as potentially eligible for listing on the National Register of Historic Places (NRHP). The report detailing the results of this survey is titled *Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee*. The proposed action is not anticipated to impact any of the potentially eligible archaeological sites as the closest site to any of the proposed locations for the project is approximately 1,000 feet away.

Consultation with the Tennessee State Historical Commission (SHPO) is also being initiated for this action. This and all actions that potentially affect cultural resources are covered under HSAAP's integrated cultural resources management plan, which outlines U.S. Army policies, procedures, and responsibilities for meeting cultural resources compliance and management requirements on the facility.

If you wish to initiate consultation with the Army, we request that you respond to this letter within 30 days of receipt to enable us to identify available dates for consultation between you and your tribal council and/or cultural resources personnel, and the Army. If we do not receive a response from you within 30 days, we will assume that you have no interest in consultation and will consider our requirements to consult to have been met. If you need more than 30 days to respond, please notify the contact identified below.

The point of contact for this matter is Mr. Bruce Cole, HSAAP's Native American Affairs Coordinator, who you can reach by phone at 423-578-6276 or by email at [bruce.g.cole.civ@mail.mil](mailto:bruce.g.cole.civ@mail.mil).

Sincerely,

  
Joseph R. Kennedy  
Commander's Representative

Enclosures



## **DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**

### **PROPOSED ACTION**

The proposed action is to install and operate a thermal treatment facility at Holston Army Ammunition Plant (HSAAP). The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V and RCRA subpart X permits. Installing the facility would also require installation of air pollution controls, installation and/or maintenance of security fencing, a new road segment, existing road network improvements, demolition of a railroad spur, building demolition, and installation of associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filter water, and compressed air. The Army established screening criteria to develop reasonable alternatives capable of meeting the purpose and need for the proposed action. The alternatives are described briefly below.

### **PREFERRED ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AND ETT CO-LOCATED AT LOCATION 1**

The Preferred Alternative co-locates up to two flashing furnaces (FFs), explosive treatment technology (ETT) facilities, and associated handling facilities in a remote, hilly area of HSAAP (Figure 2-1). Two FF sites would be selected for the FF facilities and a third site is available as an alternate. Similarly, two ETT sites are being considered as primary sites. Each FF facility would require about 1 acre of land and the FF handling facility would require about 2 acres. The ETT and associated handling facility would require about 4 acres total land area.

Location 1 is remote from traditional HSAAP operations. Some development has historically occurred in this area, providing flat locations targeted for portions of the thermal treatment facility. Existing roads would be used, though some small connecting roads would need to be constructed. Existing roads could require improvement before or after facility construction to be able to handle the construction and/or operation of the facilities. Up to five buildings that have not been used in several years would be demolished. Approximately 1,200 feet of a railroad spur at location 1 would be removed. HSAAP will perform a building survey to meet environmental and cultural resources requirements prior to building demolition. HSAAP would also conduct a geologic investigation on Location 1 because of the presence of karst topography. Reuse of previously constructed areas would minimize vegetation and soil removal; however, the existing flat or open areas at each of the proposed FF and ETT sites at location 1 are not large enough for the proposed facilities, or flat or open areas do not currently exist at the proposed sites.

Existing structures would be demolished at ETT site 1; construction at ETT site 2 would occur in a mostly undisturbed area. The FF would be constructed in previously disturbed areas where there is some existing infrastructure. New gates installed at the FF sites, as well as about 4,850 feet of new security fencing. Laydown areas would be created in cleared areas along access roads.

### **SECOND ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AT LOCATION 2 AND ETT AT LOCATION 1**

The second alternative is similar to the Preferred Alternative but sites the FF technology at location 2 approximately one-half mile to the south (Figure 2-2). Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 2.

Location 2 would be used for up to two FFs and their associated processes. Location 2 has been previously disturbed and is currently flat with evergreen trees and one Quonset hut, which might

ENCLOSURE (1)



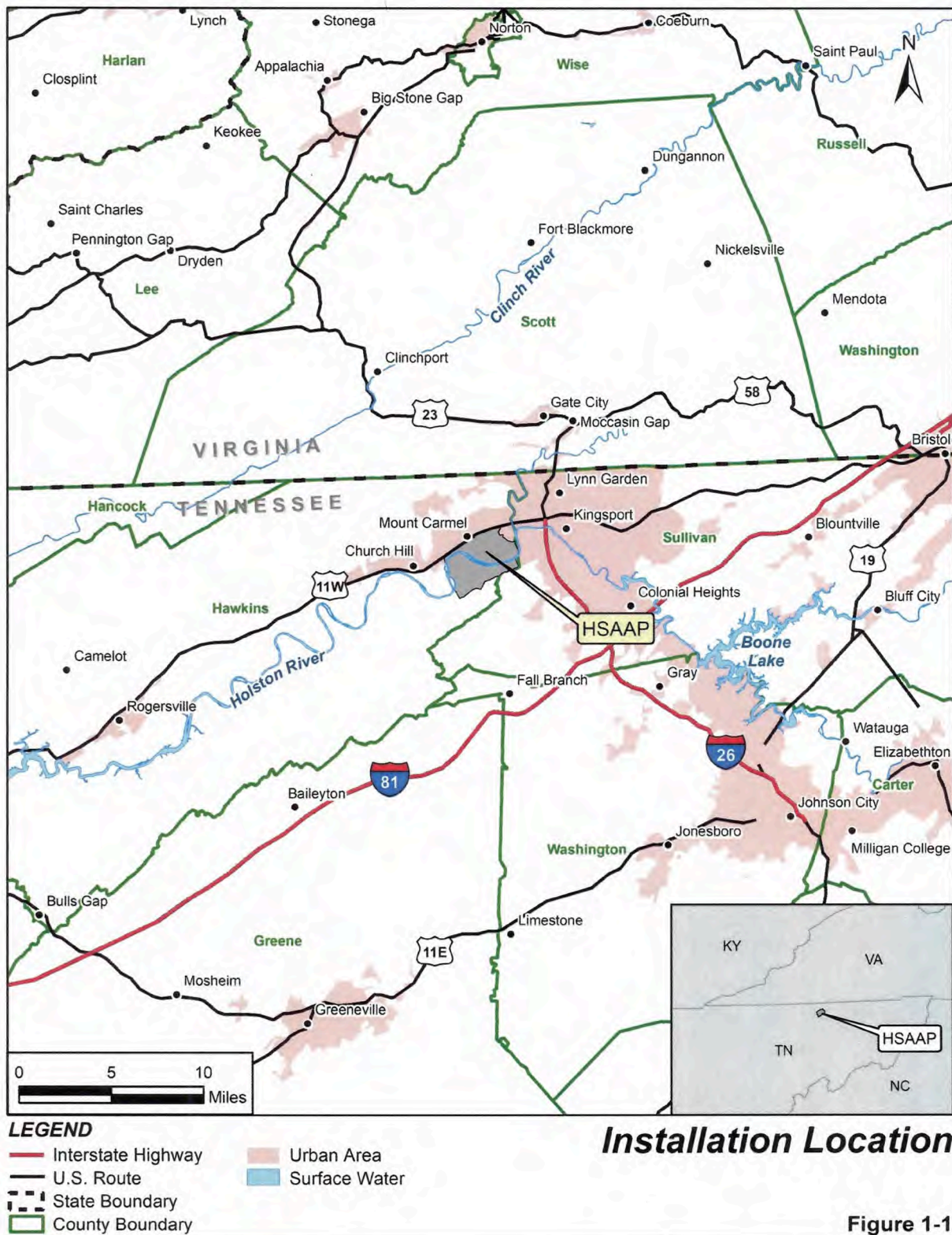
require demolition. The Quonset hut was constructed in 1966 and has a footprint of about 4,000 square feet. A building survey to meet environmental and cultural resources requirements would be performed prior to building demolition. If this alternative is selected, this area would also be subject to a favorable geologic investigation. While location 2 has been previously disturbed, power is the only utility present. Therefore, the remaining utilities would have to be installed to this location. Location 2 is closer to existing operations at HSAAP, but still outside the immediate production area. Location 2 is not close to the community. Existing roads would be used, with the need for addition of some small connecting roads to be constructed.

### **THIRD ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AT LOCATION 3 AND ETT AT LOCATION 1**

Alternative 4 is similar to the Preferred Alternative but sites the FF technology at location 3 (Figure 2-3) approximately 1½ miles to the southeast. Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 3.

Location 3 would be used for up to two FFs and their associated processes. Location 3 has been previously disturbed and is currently flat with an existing warehouse. Part of the warehouse is used to store clean pallets for use throughout the plant while the other portion of the warehouse would be renovated for use with the FF materials handling and/or control room. A building survey to meet environmental requirements would be performed prior to building renovation. The remaining portion of location 3 is primarily covered with noncompacted clean fill underlain by a former sodium nitrate pond that achieved no further action under the corrective action program. The fill was generated from other facility modernization programs and was not placed to serve any structural functions. A coal tar solid waste management unit bounds location 3 to the west and the floodplain demarcation bounds the area to the south. Because of the proximity of the floodplain and shallow water table along with the proximity of the coal tar unit, this area would also be subject to an acceptable geologic investigation prior to selection. Other infrastructure further to the east has had stability issues because of poor soil structure.

Location 3 is in the production area. Although the safety arcs between this facility and existing operations do not conflict and therefore do not screen location 3 out of consideration, they are close to safety arcs associated with other facilities on the production area. Additional engineering might be required to minimize risk of damage to the FF or adjacent production buildings in the event of an incident.





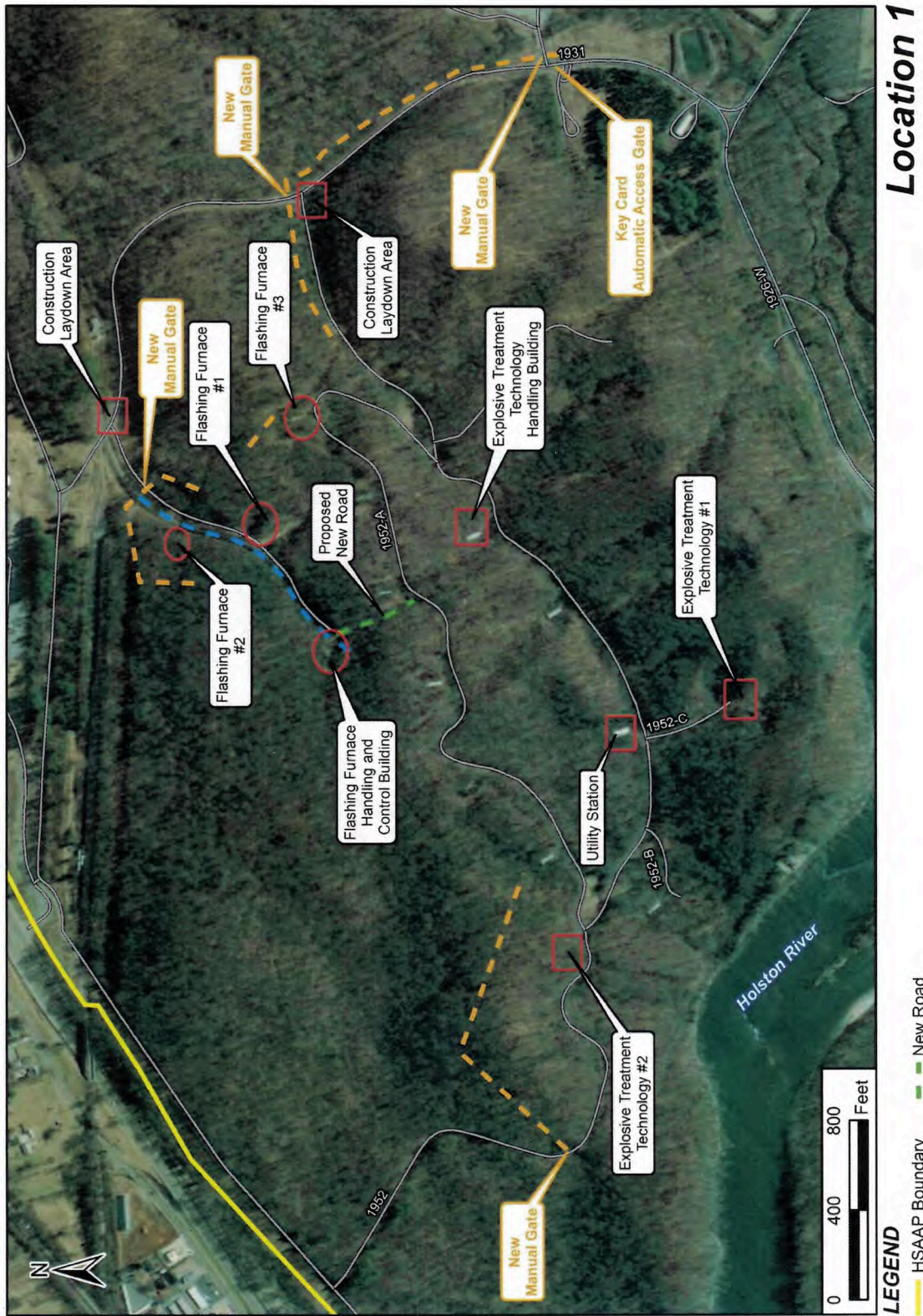


Figure 2-1





## Location 2

Figure 2-2

Note: Project boundaries and locations are approximate.



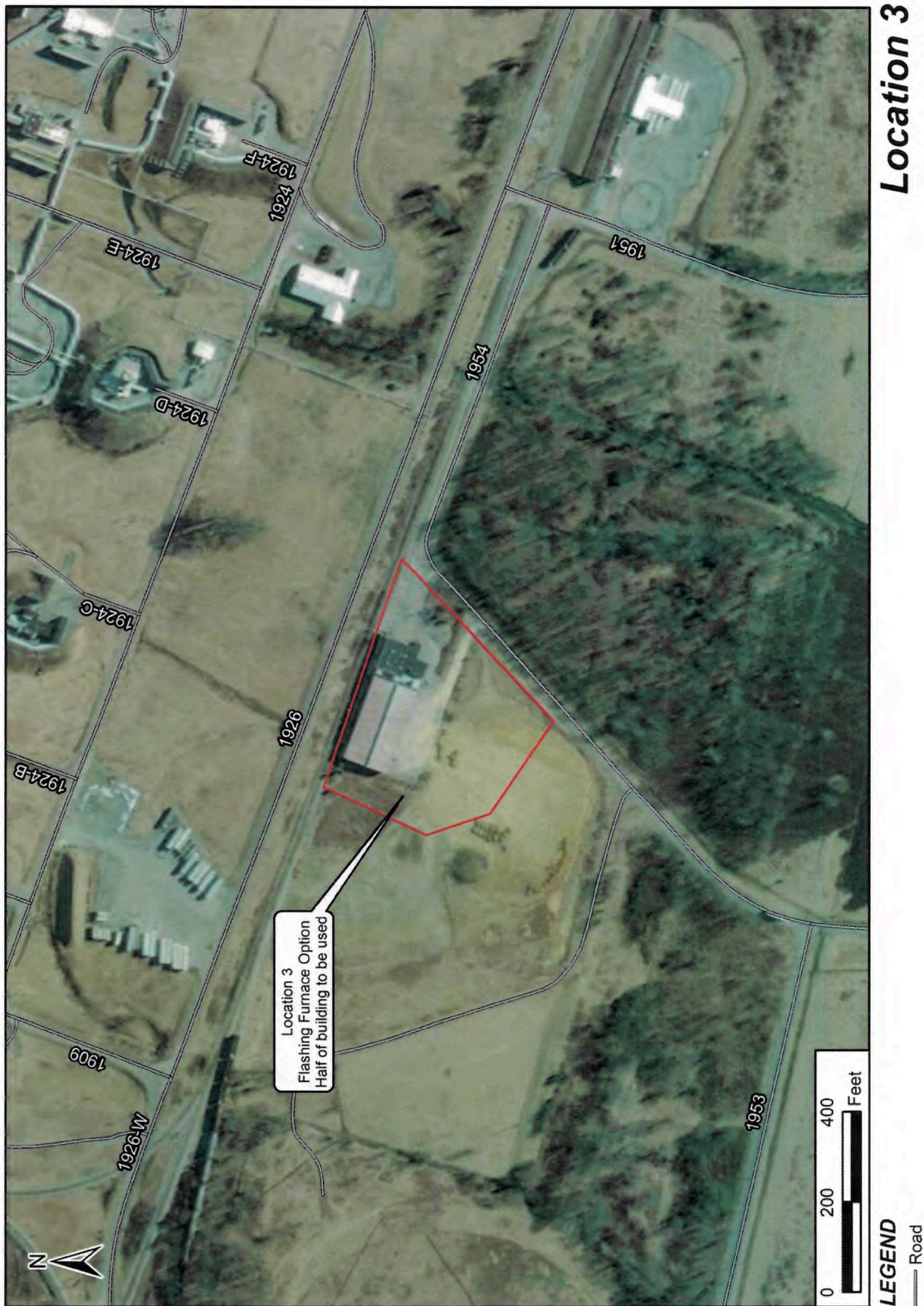
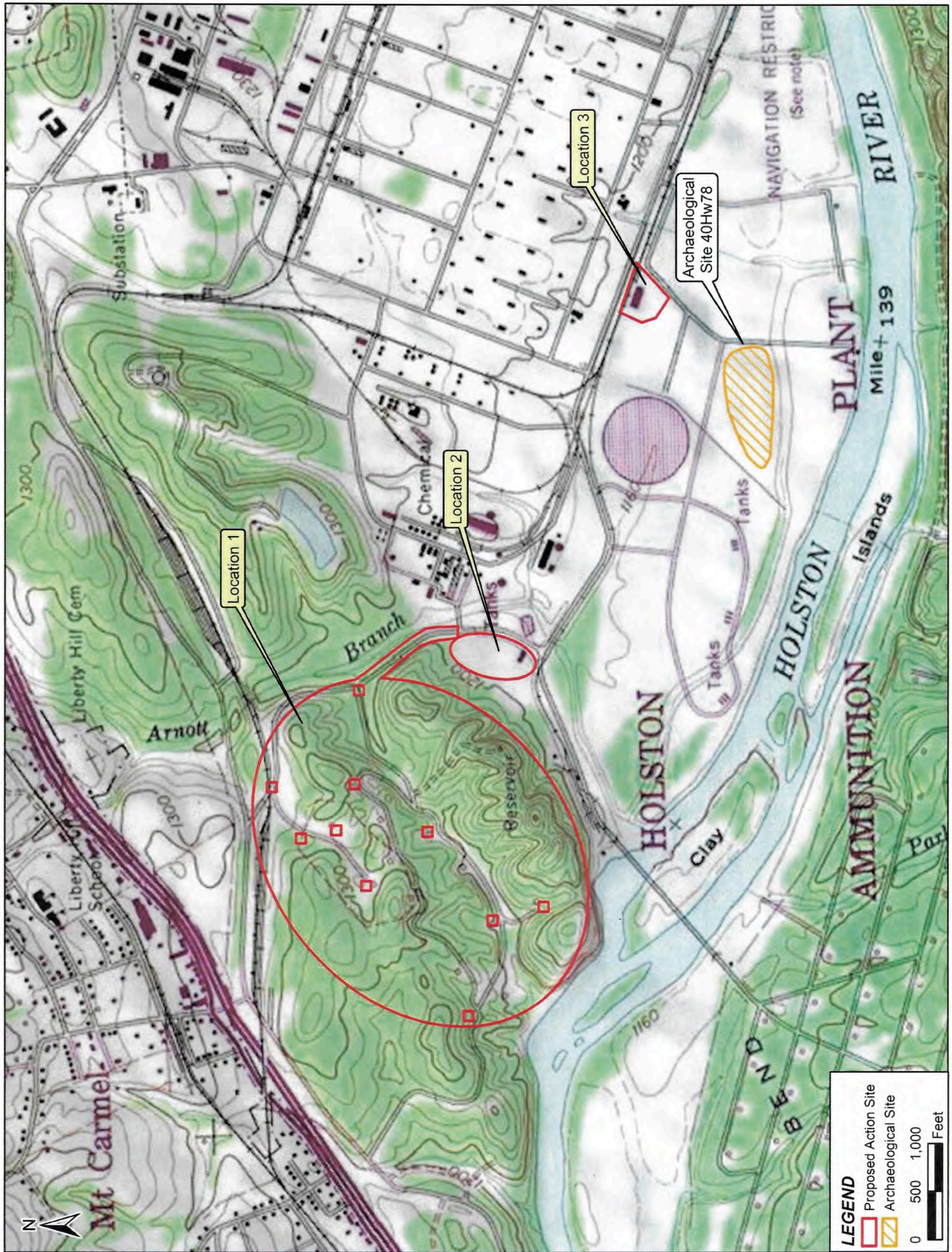


Figure 2-3

Note: Project boundaries and locations are approximate.









## DEPARTMENT OF THE ARMY

Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

February 18, 2020

REPLY TO  
ATTENTION OF

Natural Resources Office

United Keetoowah Band of Cherokee Indians  
Eric Oosahwee-Voss, THPO  
P.O. Box 746  
Tahlequah, OK 74465-0746

Dear Mr. Oosahwee-Voss:

Holston Army Ammunition Plant (HSAAP) proposes to install and operate a thermal treatment facility on the installation. The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V and RCRA subpart X permits. HSAAP occupies approximately 6,000 acres west of downtown Kingsport, Tennessee and the Holston River passes through the installation. Constructing the facility would involve installing air pollution controls, security fencing, a new road segment, and associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filter water, and compressed air. HSAAP would also improve the local existing road network and demolish a railroad spur and some small buildings. HSAAP is developing an Environmental Assessment (EA) for this project and has identified three separate areas as potential locations for this undertaking. The enclosure describes the proposed action in more detail.

In accordance with Title 36 of the Code of Federal Regulations (CFR) Part 800, the National Historic Preservation Act, and the National Environmental Policy Act (NEPA), this letter is an invitation to initiate government-to-government consultation between the U.S. Army and the United Keetoowah Bank of Cherokee Indians to discuss any effects the proposed action might have on your tribe and/or its resources. The Army is inviting the United Keetoowah Bank of Cherokee Indians and other federally recognized tribes who historically used this region and/or continue to use the area around HSAAP to consult with the Army.


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Consultation with the Tennessee State Historical Commission (SHPO) is also being initiated for this action. This and all actions that potentially affect cultural resources are covered under HSAAP's integrated cultural resources management plan, which outlines U.S. Army policies, procedures, and responsibilities for meeting cultural resources compliance and management requirements on the facility.

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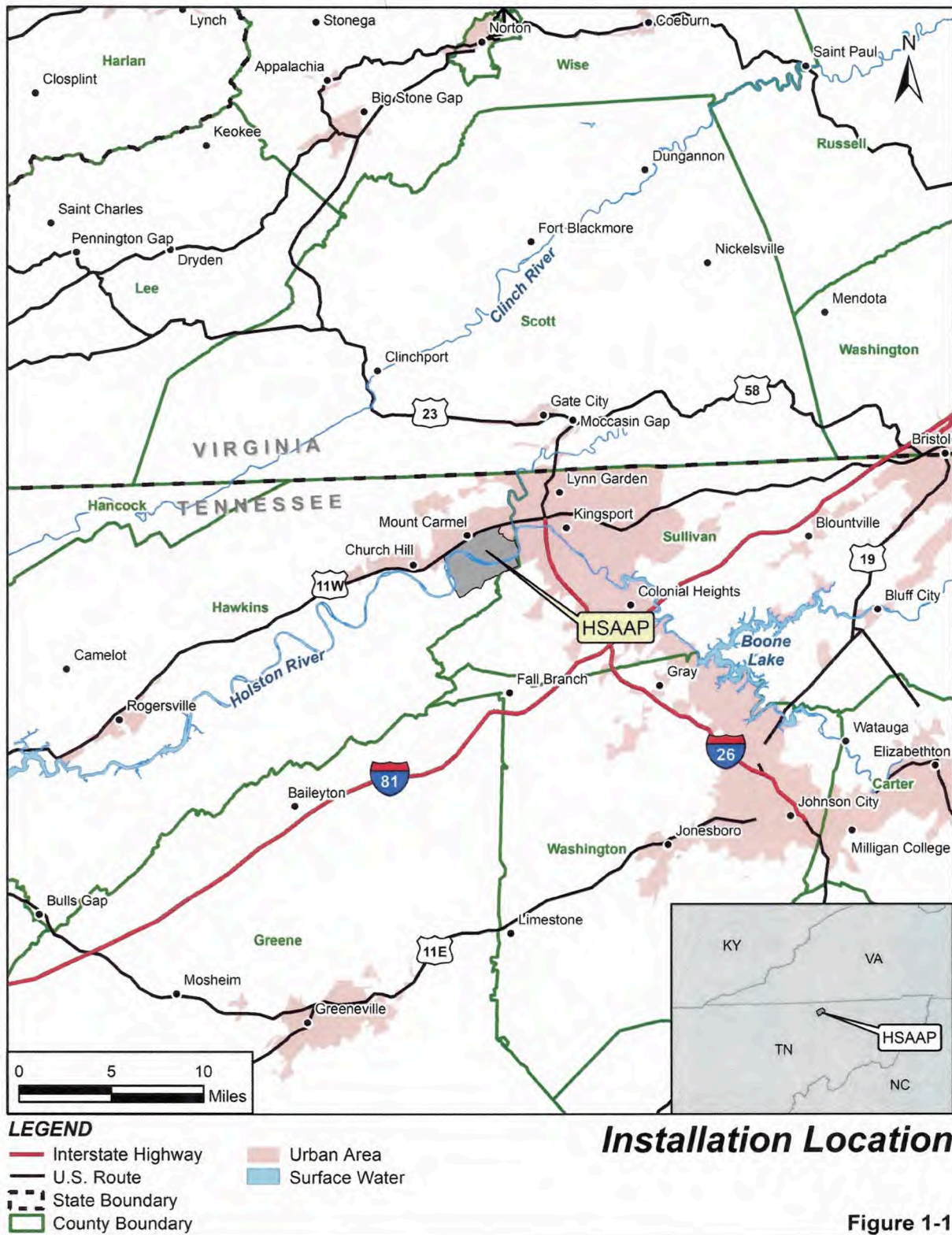
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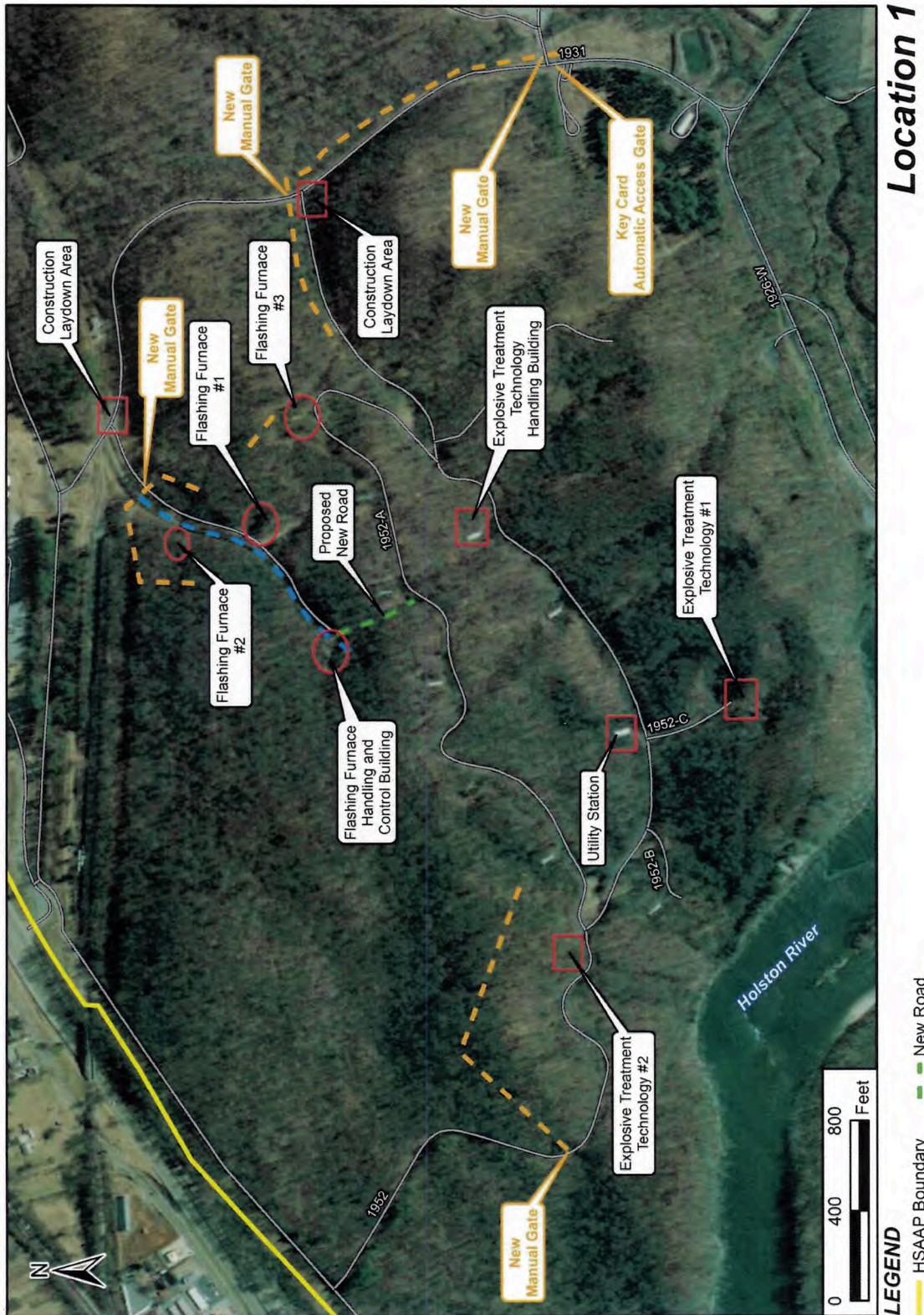


Figure 2-1

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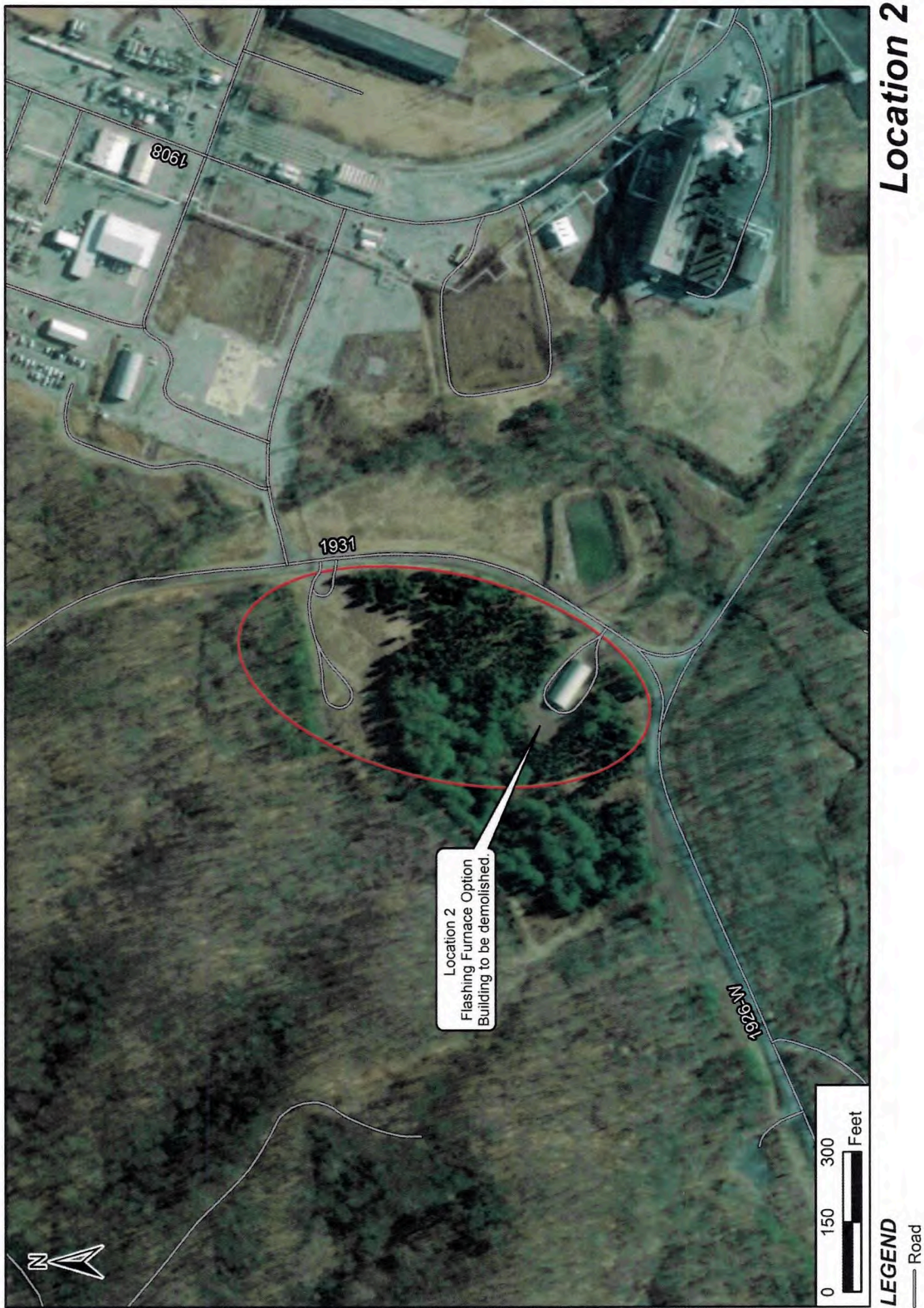


Figure 2-2

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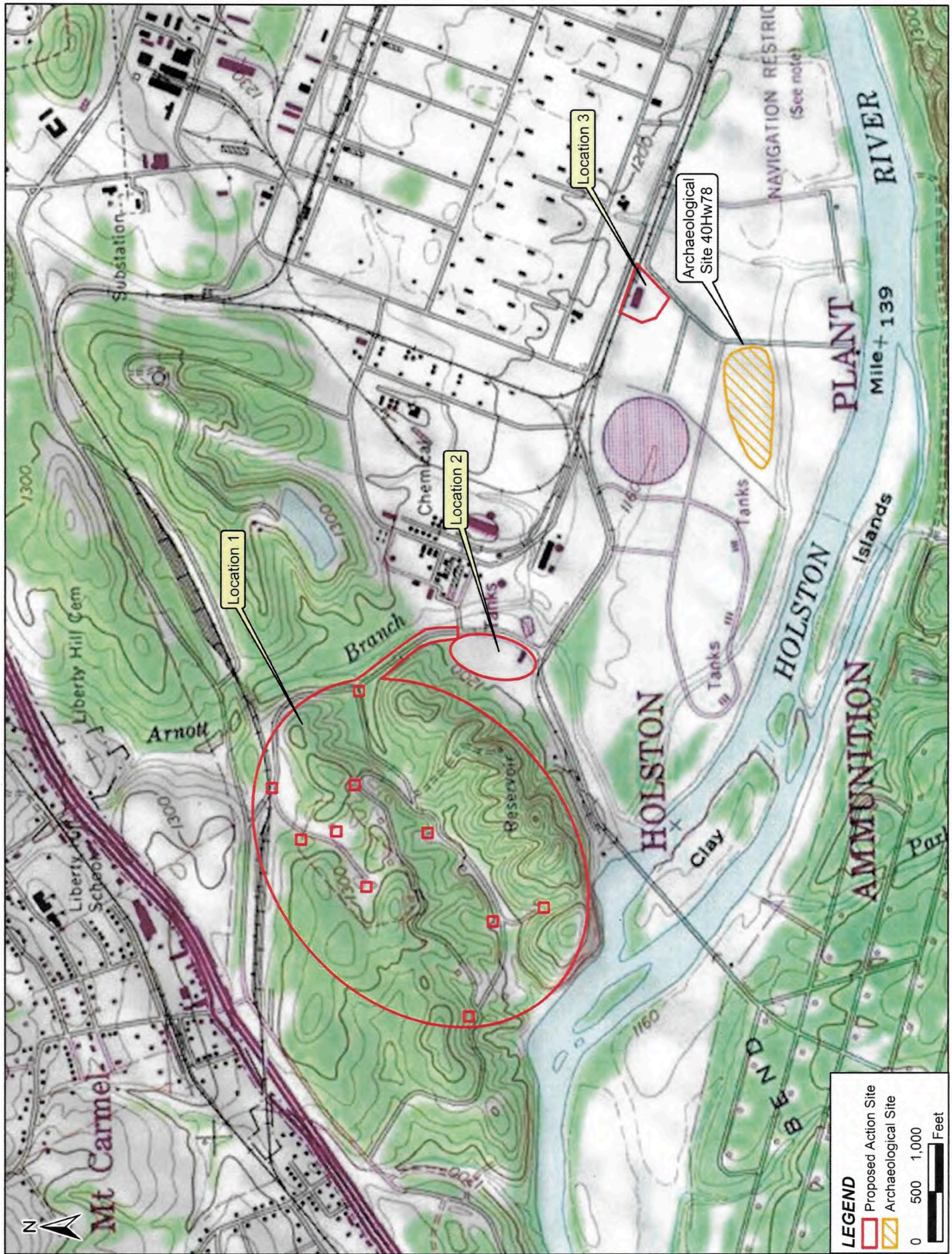




Figure 2-3

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REPLY TO  
ATTENTION OF

## DEPARTMENT OF THE ARMY

Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

February 18, 2020

Natural Resources Office

Cherokee Nation  
Chuck Hoskin, Jr.  
Principal Chief and THPO  
P.O. Box 948  
Tahlequah, OK 74465-0948

Dear Mr. Hoskin:

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Sincerely,

  
Joseph R. Kennedy  
Commander's Representative

Enclosures

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The proposed action is to install and operate a thermal treatment facility at Holston Army Ammunition Plant (HSAAP). The proposed action is needed to reduce open burning of waste explosives and explosives-contaminated waste at HSAAP in accordance with the plant's Title V and RCRA subpart X permits. Installing the facility would also require installation of air pollution controls, installation and/or maintenance of security fencing, a new road segment, existing road network improvements, demolition of a railroad spur, building demolition, and installation of associated utilities such as electric, natural gas, steam, wastewater (industrial and sanitary), filter water, and compressed air. The Army established screening criteria to develop reasonable alternatives capable of meeting the purpose and need for the proposed action. The alternatives are described briefly below.

### PREFERRED ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AND ETT CO-LOCATED AT LOCATION 1

The Preferred Alternative co-locates up to two flashing furnaces (FFs), explosive treatment technology (ETT) facilities, and associated handling facilities in a remote, hilly area of HSAAP (Figure 2-1). Two FF sites would be selected for the FF facilities and a third site is available as an alternate. Similarly, two ETT sites are being considered as primary sites. Each FF facility would require about 1 acre of land and the FF handling facility would require about 2 acres. The ETT and associated handling facility would require about 4 acres total land area.

Location 1 is remote from traditional HSAAP operations. Some development has historically occurred in this area, providing flat locations targeted for portions of the thermal treatment facility. Existing roads would be used, though some small connecting roads would need to be constructed. Existing roads could require improvement before or after facility construction to be able to handle the construction and/or operation of the facilities. Up to five buildings that have not been used in several years would be demolished. Approximately 1,200 feet of a railroad spur at location 1 would be removed. HSAAP will perform a building survey to meet environmental and cultural resources requirements prior to building demolition. HSAAP would also conduct a geologic investigation on Location 1 because of the presence of karst topography. Reuse of previously constructed areas would minimize vegetation and soil removal; however, the existing flat or open areas at each of the proposed FF and ETT sites at location 1 are not large enough for the proposed facilities, or flat or open areas do not currently exist at the proposed sites.

Existing structures would be demolished at ETT site 1; construction at ETT site 2 would occur in a mostly undisturbed area. The FF would be constructed in previously disturbed areas where there is some existing infrastructure. New gates installed at the FF sites, as well as about 4,850 feet of new security fencing. Laydown areas would be created in cleared areas along access roads.

### SECOND ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AT LOCATION 2 AND ETT AT LOCATION 1

The second alternative is similar to the Preferred Alternative but sites the FF technology at location 2 approximately one-half mile to the south (Figure 2-2). Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 2.

Location 2 would be used for up to two FFs and their associated processes. Location 2 has been previously disturbed and is currently flat with evergreen trees and one Quonset hut, which might

ENCLOSURE (1)



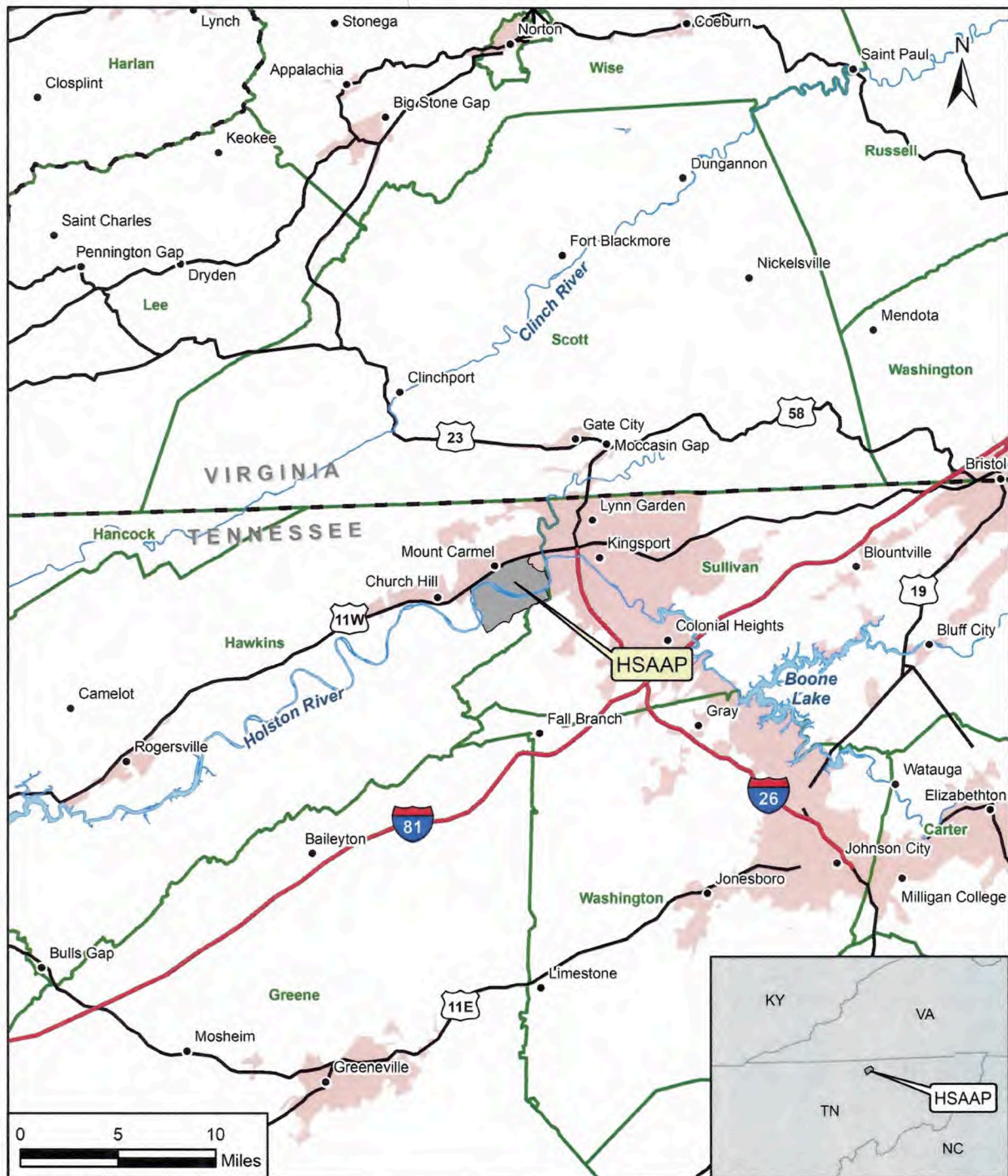
require demolition. The Quonset hut was constructed in 1966 and has a footprint of about 4,000 square feet. A building survey to meet environmental and cultural resources requirements would be performed prior to building demolition. If this alternative is selected, this area would also be subject to a favorable geologic investigation. While location 2 has been previously disturbed, power is the only utility present. Therefore, the remaining utilities would have to be installed to this location. Location 2 is closer to existing operations at HSAAP, but still outside the immediate production area. Location 2 is not close to the community. Existing roads would be used, with the need for addition of some small connecting roads to be constructed.

### **THIRD ALTERNATIVE: CONSTRUCTION AND OPERATION OF A THERMAL TREATMENT FACILITY WITH FF TECHNOLOGY AT LOCATION 3 AND ETT AT LOCATION 1**

Alternative 4 is similar to the Preferred Alternative but sites the FF technology at location 3 (Figure 2-3) approximately 1½ miles to the southeast. Implementation of this alternative would include disturbance as described at location 1 for the ETT. Installation of all security fencing and utilities would be required at location 1 as presented in the Preferred Alternative, in addition to location 3.

Location 3 would be used for up to two FFs and their associated processes. Location 3 has been previously disturbed and is currently flat with an existing warehouse. Part of the warehouse is used to store clean pallets for use throughout the plant while the other portion of the warehouse would be renovated for use with the FF materials handling and/or control room. A building survey to meet environmental requirements would be performed prior to building renovation. The remaining portion of location 3 is primarily covered with noncompacted clean fill underlain by a former sodium nitrate pond that achieved no further action under the corrective action program. The fill was generated from other facility modernization programs and was not placed to serve any structural functions. A coal tar solid waste management unit bounds location 3 to the west and the floodplain demarcation bounds the area to the south. Because of the proximity of the floodplain and shallow water table along with the proximity of the coal tar unit, this area would also be subject to an acceptable geologic investigation prior to selection. Other infrastructure further to the east has had stability issues because of poor soil structure.

Location 3 is in the production area. Although the safety arcs between this facility and existing operations do not conflict and therefore do not screen location 3 out of consideration, they are close to safety arcs associated with other facilities on the production area. Additional engineering might be required to minimize risk of damage to the FF or adjacent production buildings in the event of an incident.



**LEGEND**

- Interstate Highway
- U.S. Route
- State Boundary
- County Boundary
- Urban Area
- Surface Water

**Installation Location**

**Figure 1-1**



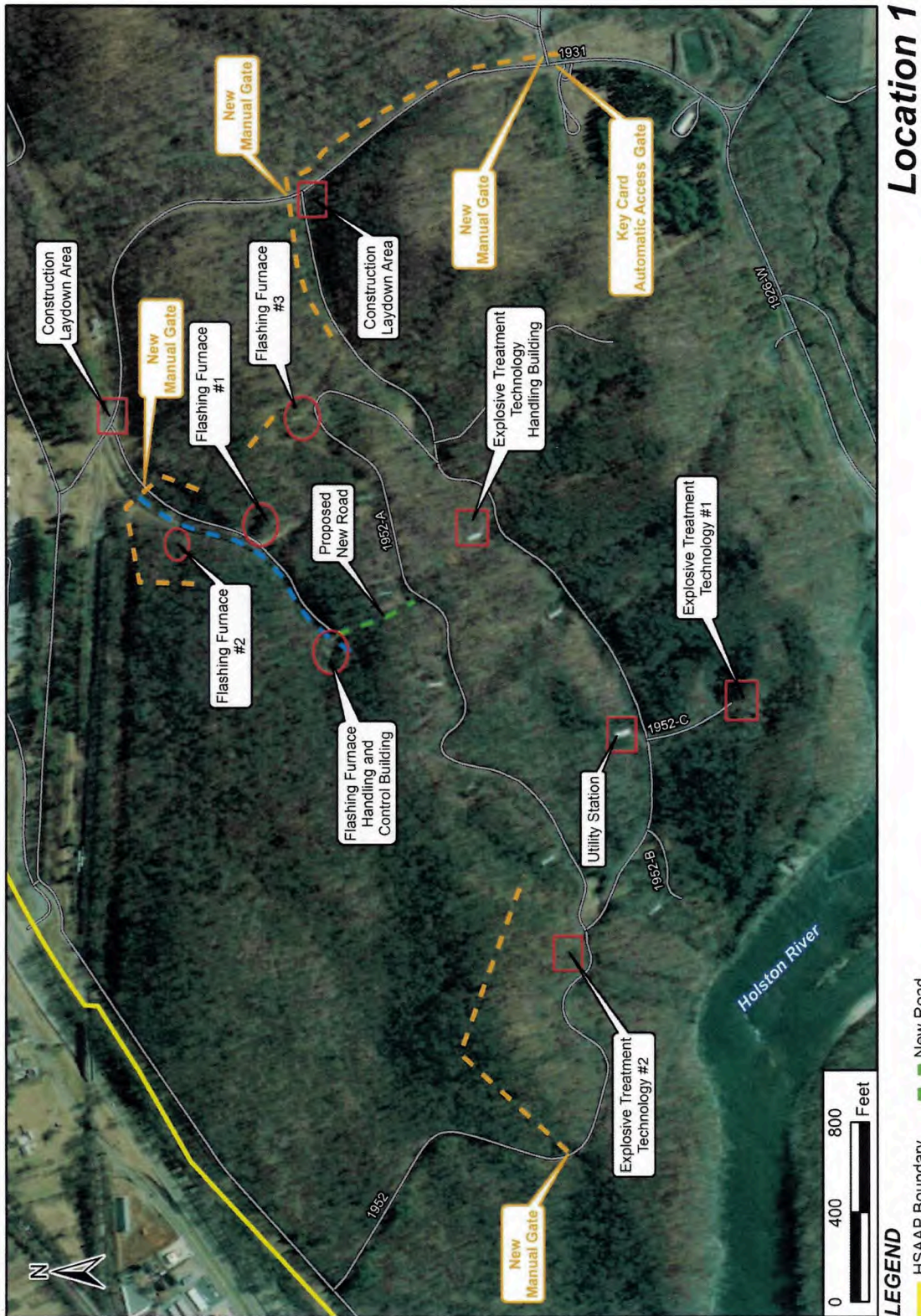
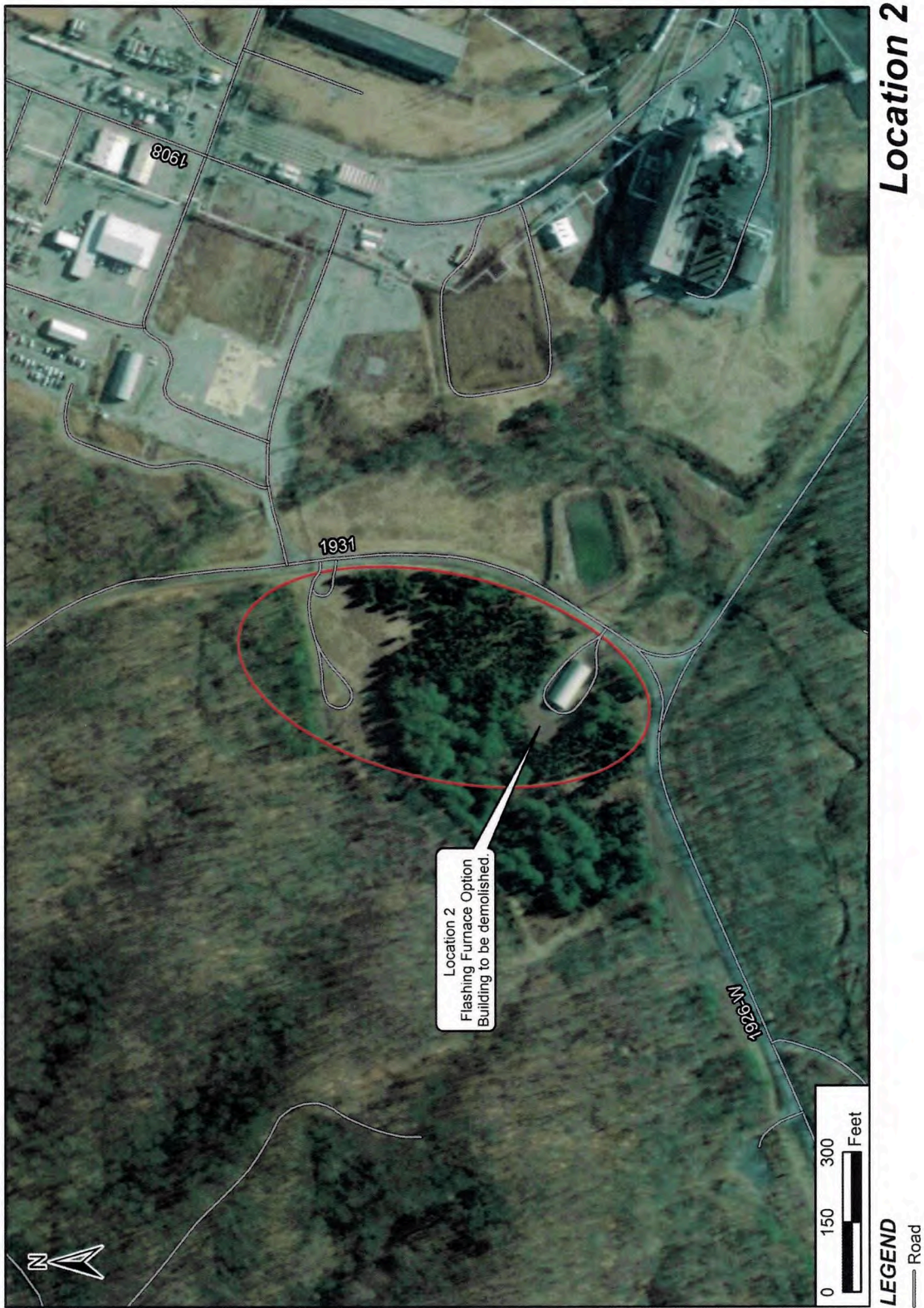


Figure 2-1

Note: Project boundaries and locations are approximate.





**Location 2**

**Figure 2-2**

Note: Project boundaries and locations are approximate.

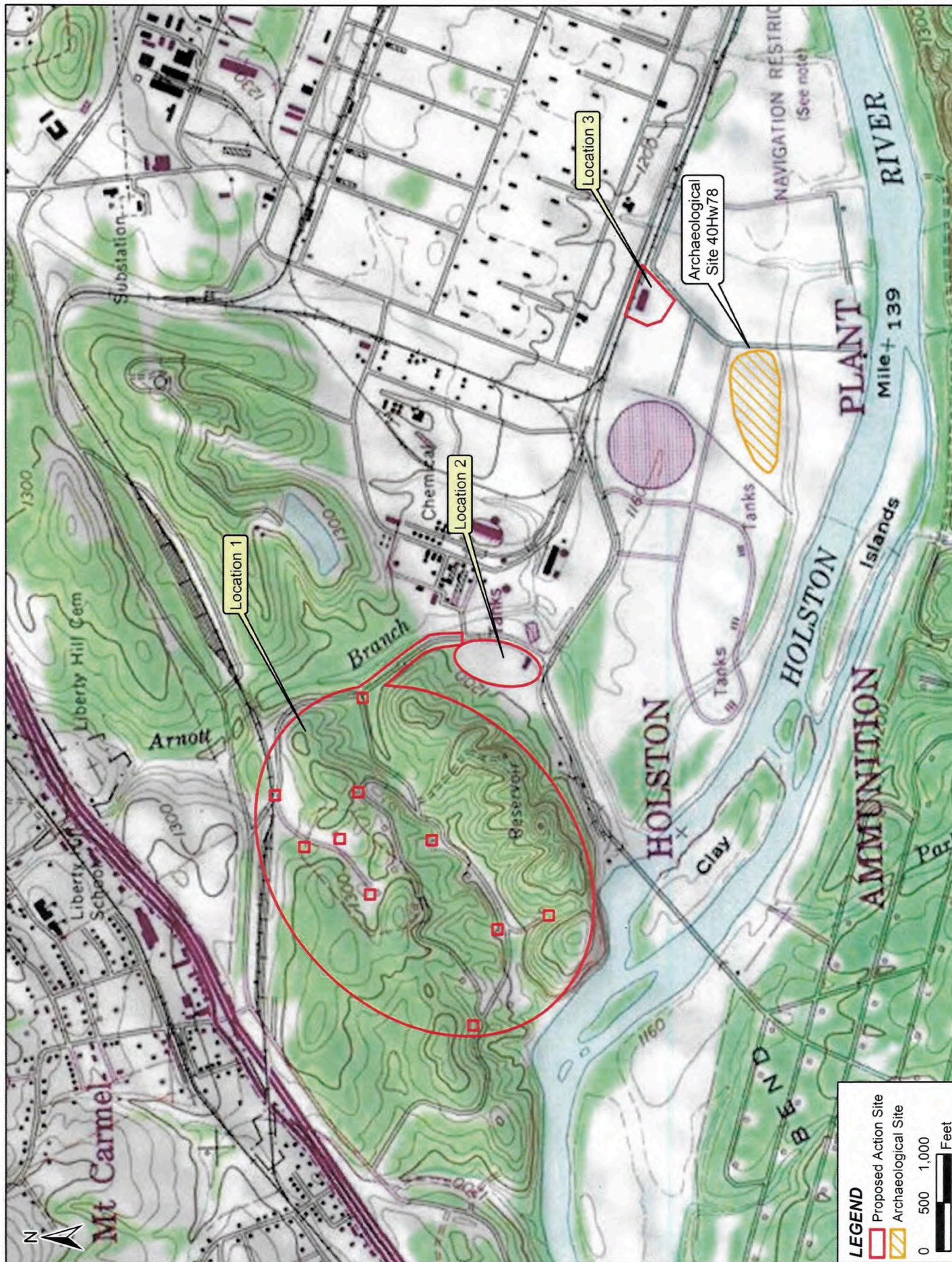




### Figure 2-3

**Note:** Project boundaries and locations are approximate.









**TENNESSEE HISTORICAL COMMISSION**  
STATE HISTORIC PRESERVATION OFFICE  
2941 LEBANON PIKE  
NASHVILLE, TENNESSEE 37243-0442  
OFFICE: (615) 532-1550  
[www.tnhistoricalcommission.org](http://www.tnhistoricalcommission.org)

February 24, 2020

Mr. Joseph R. Kennedy  
Department of the Army  
Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

RE: DOD / Department of Defense, HSAAP, Thermal Treatment Facility, 3 Alternative Locations,  
Kingsport, Hawkins County, TN

Dear Mr. Kennedy:

In response to your request, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, it is our opinion that there are no National Register of Historic Places listed or eligible properties affected by this undertaking. We have made this determination because either: no National Register listed or eligible Historic Properties exist within the undertaking's area of potential effects, the specific location, size, scope and/or nature of the undertaking and its area of potential effects precluded affects to Historic Properties, the undertaking will not alter any characteristics of an identified eligible or listed Historic Property that qualify the property for listing in the National Register, or it will not alter an eligible Historic Property's location, setting or use. We have no objections to your proceeding with your undertaking.

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. If you are applying for federal funds, license or permit, you should submit this letter as evidence of consultation under Section 106 to the appropriate federal agency, which, in turn, should contact us as required by 36 CFR 800. If you represent a federal agency, you should submit a formal determination of eligibility and effect to us for comment. You may direct questions or comments to Jennifer M. Barnett (615) 687-4780. This office appreciates your cooperation.

Sincerely,

E. Patrick McIntyre, Jr.  
Executive Director and  
State Historic Preservation Officer

EPM/jmb



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Office of the Chief

**Chuck Hoskin Jr.**  
*Principal Chief*

**Bryan Warner**  
*Deputy Principal Chief*

March 18, 2020

Bruce Cole  
Department of the Army  
Holston Army Ammunition Plant  
4509 West Stone Drive  
Kingsport, TN 37660

Re: Natural Resources Office, Thermal Treatment Facility Installation

Mr. Bruce Cole:

The Cherokee Nation (Nation) is in receipt of your correspondence about **Thermal Treatment Facility Installation**, and appreciates the opportunity to provide comment upon this project. Please allow this letter to serve as the Nation's interest in acting as a consulting party to this proposed project.

The Nation maintains databases and records of cultural, historic, and pre-historic resources in this area. Our Historic Preservation Office reviewed this project, cross referenced the project's legal description against our information, and found instances where this project is within close proximity to such resources. These resources, however, are located outside the Area of Potential Effects (APE) according to the related report. Thus, this Office does not object to the project proceeding as long as the following stipulations are observed:

- 1) The Nation requests additional consultation if there are any changes to the scope of or activities within the APE;
- 2) The Nation requests that the Department of the Army halt all project activities immediately and re-contact our Offices for further consultation if items of cultural significance are discovered during the course of this project; and
- 3) The Nation requests that the Department of the Army conduct appropriate inquiries with other pertinent Tribal and Historic Preservation Offices regarding historic and prehistoric resources not included in the Nation's databases or records.

Thermal Treatment Facility Installation

March 18, 2020

Page 2 of 2

If you require additional information or have any questions, please contact me at your convenience.  
Thank you for your time and attention to this matter.

Wado,

A handwritten signature in blue ink that reads "Elizabeth Toombs". The signature is fluid and cursive, with the first name "Elizabeth" and last name "Toombs" clearly distinguishable.

Elizabeth Toombs, Tribal Historic Preservation Officer

Cherokee Nation Tribal Historic Preservation Office

[elizabeth-toombs@cherokee.org](mailto:elizabeth-toombs@cherokee.org)

918.453.5389

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