Notice of Availability

Draft Finding of No Significant Impact
Supplemental Environmental Assessment
for RDX Expansion Projects
at Holston Army Ammunition Plant, Tennessee

The United States Army is publishing this notice to announce the availability of the Draft Finding of No Significant Impact (FNSI) and Supplemental Environmental Assessment (SEA) for constructing and operating RDX expansion projects at Holston Army Ammunition Plant (HSAAP).

The Draft FNSI and SEA are available for review for 30 days with all comments being due on or before November 23, 2021. The documents are available for review by contacting Kathy Cole, HSAAP Staff Action Specialist at 423-578-6285 or Kathy.o.cole.civ@mail.mil or via letter at Attn: Kathy Cole, 4509 West Stone Drive, Kingsport, TN 37660. The documents are also available by accessing the Defense Visual Information Distribution Service page of the Holston Army Ammunition Plant at https://www.dvidshub.net/search?q=holston+army+ammunition+plant&view=grid. Additionally, a copy is available for review at the Kingsport Public Library, 400 Broad Street, Kingsport, Tennessee, and at the Mt. Carmel Public Library, 100 Main Street E, Mt. Carmel, Tennessee. Comments should be submitted by standard mail or electronically via the mailing or email addresses provided above. All parties must submit their comments on or before November 23, 2021.

DRAFT
FINDING OF NO SIGNIFICANT IMPACT

RDX EXPANSION PROJECTS
AT HOLSTON ARMY AMMUNITION PLANT

1. PROPOSED ACTION: The proposed action and subject of the supplemental environmental assessment (SEA) is the construction and operation of additional facilities to support the Holston Army Ammunition Plant (HSAAP) research development explosive- (RDX-) expansion program and modify how some facilities and processes would be constructed and operated. Those proposed facilities are separate nitration and filtration/wash facilities, a new kettle-drying facility, and a new filtered water storage tank.

The proposed nitration facility would fully incorporate the same chemical processes and functionality as an existing nitration facility. It would have a laboratory to support production; a control room; a restroom; chemical storage tanks; and parking for operations, transient vehicles, and emergency medical vehicles. The new facility would be located with the nitration line on a previously disturbed, but undeveloped, site.

The proposed filtration/wash facility would be located on the site of a former filtration/wash facility and would have a tank farm; a control room; support areas; and a parking lot.

The proposed kettle-drying facility would be constructed on the site of a former facility and would be a 1.5-story structure with a partial basement. It would incorporate a loading dock, parking, and covered ramps.

The proposed filtered water tank would provide additional capacity for manufacturing processes. The new tank would be constructed near an existing tank, have a capacity of 2 million gallons, and connect to existing distribution lines to support the entire plant. About 6 acres of an approximately 30-acre parcel would be cleared to facilitate construction of the tank. The existing tank would be retained.

An SEA was prepared because the proposed action pertains to the expansion of explosives manufacturing capabilities at HSAAP, which was analyzed in the *Environmental Assessment for RDX and IMX Capacity Expansion at Holston Army Ammunition Plant, Kingsport, TN*, in 2018. Since preparation of the 2018 RDX EA, the expansion program has evolved and changes and additional capabilities have been identified as necessary if the Army is to achieve its objectives in implementing the program. Those changes are the construction and operation of the projects identified above and are analyzed in the SEA.

2. ALTERNATIVES CONSIDERED: The Army evaluated the preferred alternative (the proposed action) and the no action alternative. The preferred alternative (the proposed action) would be construction and operation of separate nitration and filtration/wash facilities, a new kettle-drying facility, and a new filtered water storage tank. All the facilities would be sited within the production area of HSAAP. The filtered water storage tank would be constructed outside the production area, but within the HSAAP installation. The SEA characterizes the environmental impacts that would likely result from implementing the preferred alternative and the no action alternative.

3. ENVIRONMENTAL CONSEQUENCES: The Army conducted a detailed analysis of the impacts of implementing the alternatives on the following resource areas: land use, air quality, water resources, biological resources, cultural resources, and solid and hazardous waste. Resource areas adequately addressed in the 2018 RDX EA are aesthetics and visual resources, noise, geology and soils, socioeconomics, transportation, utilities, and hazardous and toxic materials.

Based on the results of its analysis, the Army has determined that implementing the preferred alternative would have no greater than minor adverse impacts on the evaluated resource areas and would have no significant adverse cumulative impacts. To minimize potential adverse effects on federally protected species, the Army would limit harvesting of trees suitable for bat roosting or maternity colonies to the period between October 15 and March 31 of any year associated with the proposed action Additionally, the Army would remove vegetation suitable for migratory bird nesting between September 1 and March 15. Because impacts on evaluated resource areas are expected to be below the level of significance, no additional mitigation measures would be required to implement the proposed action. Best management practices, however, would be implemented during construction and operation. No adverse impacts on resource areas would be expected under the no action alternative.

4. FACTORS CONSIDERED IN THE FINDING OF NO SIGNIFICANT IMPACT: The SEA considers each alternative, the environmental factors within the project area for implementing each alternative, and the likely environmental impacts, including cumulative impacts, on relevant resource areas associated with implementing the proposed action.

5. PUBLIC REVIEW AND COMMENT: The SEA and draft Finding of No Significant Impact (FNSI) are available for public review and comment from October 24 to November 23, 2021. A Notice of Availability of the documents was published in the *Kingsport Times-News* and the *Rogersville Review* on October 24, 2021, and on the HSAAP Facebook page. The documents are available for review by contacting Ms. Kathy Cole, Staff Action Specialist, at 423-578-6285 or kathy.o.cole.civ@mail.mil, or by accessing the Defense Visual Information Distribution Service page of the Holston Army Ammunition Plant at https://www.dvidshub.net/search?q=holston+army+ammunition+plant&view=grid. Additionally, a copy is available for review at the Kingsport Public Library, 400 Broad Street, Kingsport, TN, and the Mt. Carmel Public Library, 100 Main Street E, Mt. Carmel, TN. Interested parties are encouraged and invited to mail comments on the SEA and draft FNSI to HSAAP, c/o Holston Army Environmental Department, Attn: Kathy Cole, 4509 West Stone Drive, Kingsport, TN 37660. Comments can also be submitted electronically via the email address provided above. All comments must be submitted on or before November 23, 2021.

At the conclusion of the public review and comment period, the Army will review all submitted public comments prior to the final decision on whether to issue a final FNSI or a Notice of Intent to prepare an environmental impact statement (EIS).

6. CONCLUSIONS: Based upon my review of the facts and the analysis presented in the SEA, I have preliminarily concluded that implementing the proposed action would have no significant direct, indirect, or cumulative impacts on the quality of the natural or human environment; and that, consequently, the analysis in the SEA supports a Finding of No Significant Impact. Therefore, preparation of an EIS under the National Environmental Protection Act of 1969 (Title 42 of the *United States Code* § 4321 *et seq.*) is not required.

_____ _____

R. SCOTT CARPENTER
LTC, LG
Commanding

Date

Final

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT FOR RDX EXPANSION PROJECTS AT HOLSTON ARMY AMMUNITION PLANT

Prepared for

Commander, Holston Army Ammunition Plant
Kingsport, TN

Prepared by

U.S. Army Corps of Engineers, Mobile District

With technical assistance from

Tetra Tech, Inc.

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SECTION 1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This supplemental environmental assessment (SEA) pertains to the expansion of explosives manufacturing capabilities at Holston Army Ammunition Plant (HSAAP), which was analyzed by the U.S. Army Corps of Engineers (USACE) in the *Environmental Assessment for RDX and IMX Capacity Expansion at Holston Army Ammunition Plant, Kingsport, TN* (RDX EA) (USACE 2018). The RDX EA is incorporated herein by reference.

HSAAP is an approximately 6,000-acre facility located west of downtown Kingsport, TN (Figure 1-1). A U.S. Army government-owned, contractor-operated facility, HSAAP is a member of the Organic Industrial Base of the U.S. Army Materiel Command (AMC) and a subordinate command of the U.S. Army Joint Munitions Command (JMC). The plant is a major supplier of research development explosive- (RDX-), high-melting explosive- (HMX-), and insensitive munitions explosive- (IMX-) based products for the United States. BAE Systems Ordnance Systems, Inc. (BAE OSI) has operated the installation since 1999.

In 2018, the Army proposed expanding RDX and IMX manufacturing capability at HSAAP. That proposal, as assessed in the RDX EA, included constructing an explosives production facility that would combine nitration, filtration/wash, and crystallization; blast barricades; a laboratory; a change house (an employee shower facility); additional recrystallization facilities; and other ancillary facilities to support expansion of explosives manufacturing (USACE 2018). Since then, the expansion program has evolved and changes and additional capabilities have been identified as necessary if the Army is to achieve its objectives in implementing the program. The necessary modifications include the following:

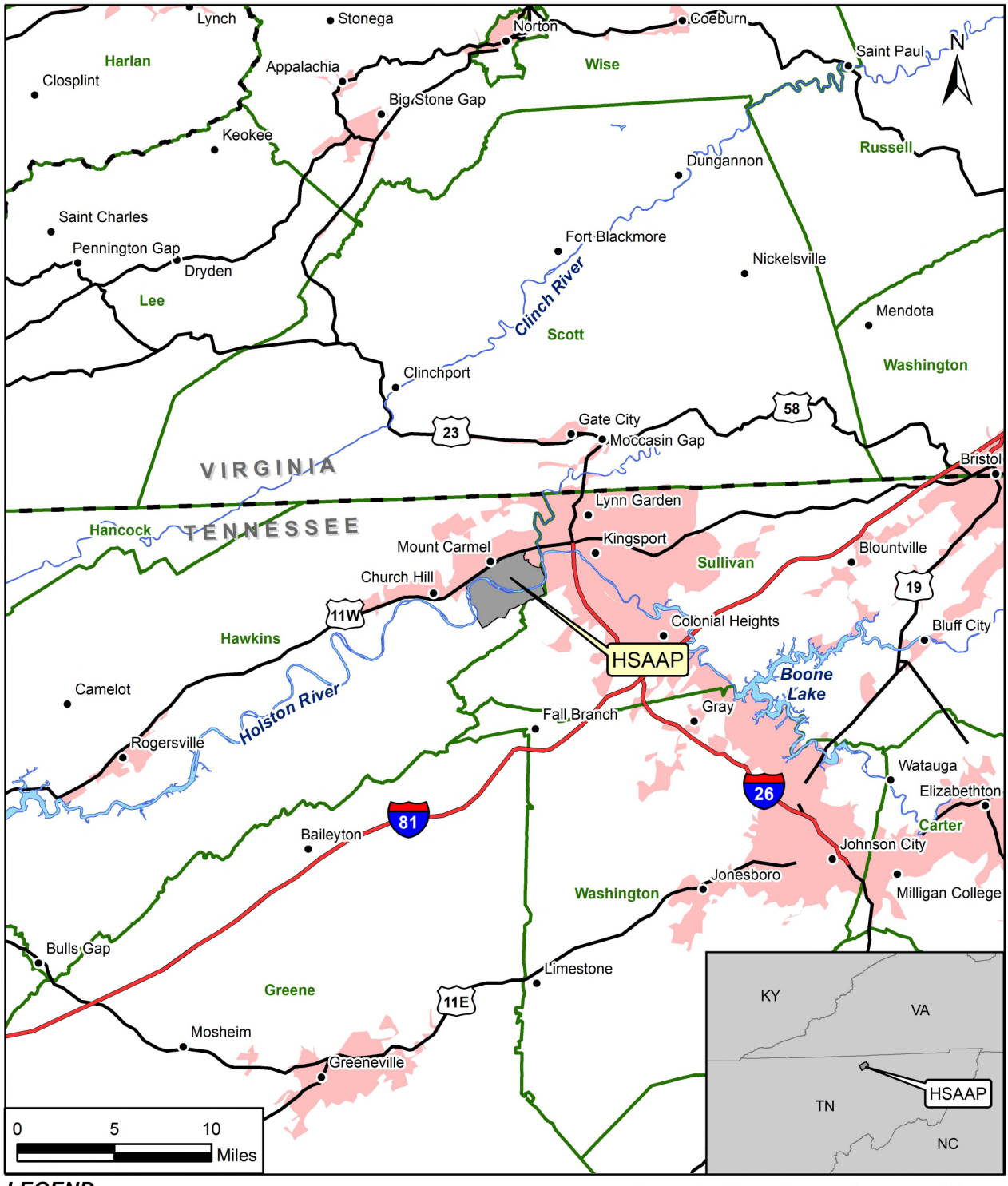
- Separate nitration and filtration/wash facilities
- A new kettle-drying facility
- A new filtered water storage tank

This SEA addresses these modifications and has been prepared by USACE in accordance with the National Environmental Policy Act of 1969 (NEPA) (Title 42 of the *United States Code* [U.S.C.] § 4321 *et seq*.); Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (Title 40 of the *Code of Federal Regulations* [CFR] parts 1500–1508); *Environmental Analysis of Army Actions* (32 CFR part 651); and AMC policy for implementing NEPA.

The CEQ published its *Final Rule: Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA)* in the *Federal Register* on July 16, 2020. The new CEQ NEPA regulations went into effect September 14, 2020. Although USACE began preparation of this SEA for RDX expansion projects after enactment of the new NEPA regulations, the EA upon which it is based, the 2018 RDX EA, was completed before the new NEPA regulations took effect. Because this SEA is considered an addendum to the RDX EA, USACE has prepared it in accordance with the NEPA and the 1978 CEQ regulations.

1.2 PURPOSE AND NEED

The purpose of the Army's proposed action is to construct and operate separate nitration and filtration/wash facilities that were previously proposed to be combined into one facility, increase kettle-drying capability by constructing and operating an additional kettle-drying facility, increase filtered water storage capacity by constructing an additional storage tank, and construct or modify other ancillary facilities or infrastructure to support expanded explosives manufacturing goals to



LEGEND

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

Installation Location

Figure 1-1

meet increased production demands. The proposed action is needed to ensure that the target production capabilities and operational flexibility for HSAAP manufacturing goals can be achieved.

1.3 REGULATORY COMPLIANCE

NEPA requires federal agencies to consider the environmental consequences of their 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 CEQ to implement and oversee federal policy in that process. Accordingly, the CEQ issued regulations to implement the procedural provisions of NEPA in 1978. CEQ issued revised regulations that went into effect September 14, 2020. The Army supplemented the original CEQ NEPA regulations by promulgating its own NEPA regulations. This SEA has been developed in accordance with the revised CEQ regulations and the Army's NEPA regulations.

The Army considered applicable federal, state, and local statutes and regulations during analysis of the impact of the proposed action on individual environmental and socioeconomic resources as part of the SEA, including the following:

- Archaeological Resources Protection Act of 1979 (16 U.S.C. § 470aa *et seq*.)
- Clean Air Act of 1970 (CAA) (42 U.S.C. § 7401 *et seq.*)
- Clean Water Act of 1972 (33 U.S.C. § 1251 *et seq*.)
- Endangered Species Act of 1973 (16 U.S.C. §§ 1531–1543)
- National Historic Preservation Act of 1966, as amended (NHPA) (16 U.S.C. § 470 *et seq*.)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. §§ 3001–3013)
- Resource Conservation and Recovery Act of 1976 (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 alternative that best meets the purpose and need for the proposed action 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 alternative 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 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 SEA and decision-making on the proposed action. The Army will make this SEA, along with a draft FNSI, available to the public for 30 days by publishing a notice of availability of the SEA and the draft FNSI in the *Kingsport Times* and *Rogersville Review* and on the HSAAP Facebook page. Interested parties will be able to review the documents at the Mt. Carmel and Kingsport public libraries or by accessing the documents on the Defense Visual Information Distribution Service page of the Holston Army Ammunition Plant at https://www.dvidshub.net/search?q=holston+army+ammunition+plant&view=grid. At the end of

the 30-day public review period, the Army will consider comments on the SEA or the draft FNSI submitted by individuals, agencies, and organizations. Then, as appropriate, the Army will execute a final FNSI and proceed with implementing the proposed action, publish an NOI to prepare an EIS, or take other actions consistent with NEPA and its implementing regulations.

SECTION 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Army proposes to construct additional facilities to support the RDX expansion program and modify how some facilities and processes would be constructed and operated. This section provides details of these changes, and Figure 2-1 shows the location of each project.

2.1.1 Separate Nitration and Filtration/Wash Facilities

The Army proposes to construct and operate two separate facilities to handle the nitration and filtration/wash steps of the explosives manufacturing process. Each facility would be built within the production area near where those functions previously were performed.

The proposed action analyzed in the 2018 RDX EA provided for a single facility that would have housed both operations. That facility was conceived of as a three-story structure of approximately 5,000 square feet (SF) for each of the first two levels and 3,000 SF on the third level. The construction footprint of the facility would have been approximately 3 acres on previously disturbed land for the facility, laydown area, and parking. The original design involved maintaining operational capability with multiple processes occurring in one building. The Army determined that the risk involved in attempting to maintain production capability using that approach was unacceptable. As a result, the Army is pursuing constructing two buildings to duplicate the nitration and filtration/wash steps of the manufacturing process.

The nitration building would fully incorporate the same chemical processes and functionality as an existing nitration facility. It would have a laboratory to support production; a control room; a restroom; chemical storage tanks; and parking for operations, transient vehicles, and emergency medical vehicles. The new facility would be located with the nitration line on a previously disturbed, but undeveloped, site. A construction staging area would be located on-site. Finally, water from the Holston River would be supplied for process use, as is done for the existing nitration facility and as discussed in the 2018 RDX EA. The site has all the utility connections necessary to support the new building.

The filtration/wash building would be a three-story structure constructed with a footprint of about 11,000 SF. This would result in a net increase of less than 5,000 SF of impervious area over the previous filtration/wash building. The new facility would be located on the site of a former filtration/wash facility. It would have a tank farm; control room; support areas (e.g., a wet laboratory, electrical room, restroom, and pump room); and a parking lot for a minimum of five work vehicles. Secondary containment structures would be provided around the tanks as required. Collected runoff and washdown inside the containment walls would discharge to the HSAAP industrial sewer system. A construction staging area would be located on-site. The site has all the utility connections necessary to support the new building.

2.1.2 New Kettle-Drying Facility

A new kettle-drying facility is needed to increase HSAAP's kettle-drying capacity, improve processing and efficiency, and decrease use of the existing kettle-drying facilities so they can be periodically taken offline for maintenance or modernization. The new facility would be constructed on the site of a former facility and would be a 1.5-story structure with a partial basement. It would incorporate a loading dock, parking for about five vehicles, and covered ramps. Utility services are available at the site. An east-west primary road would be constructed to provide access to the building and a north-south road would be constructed to provide an alternate egress route. A construction staging area would be located on-site. A cooling water stream would be located along

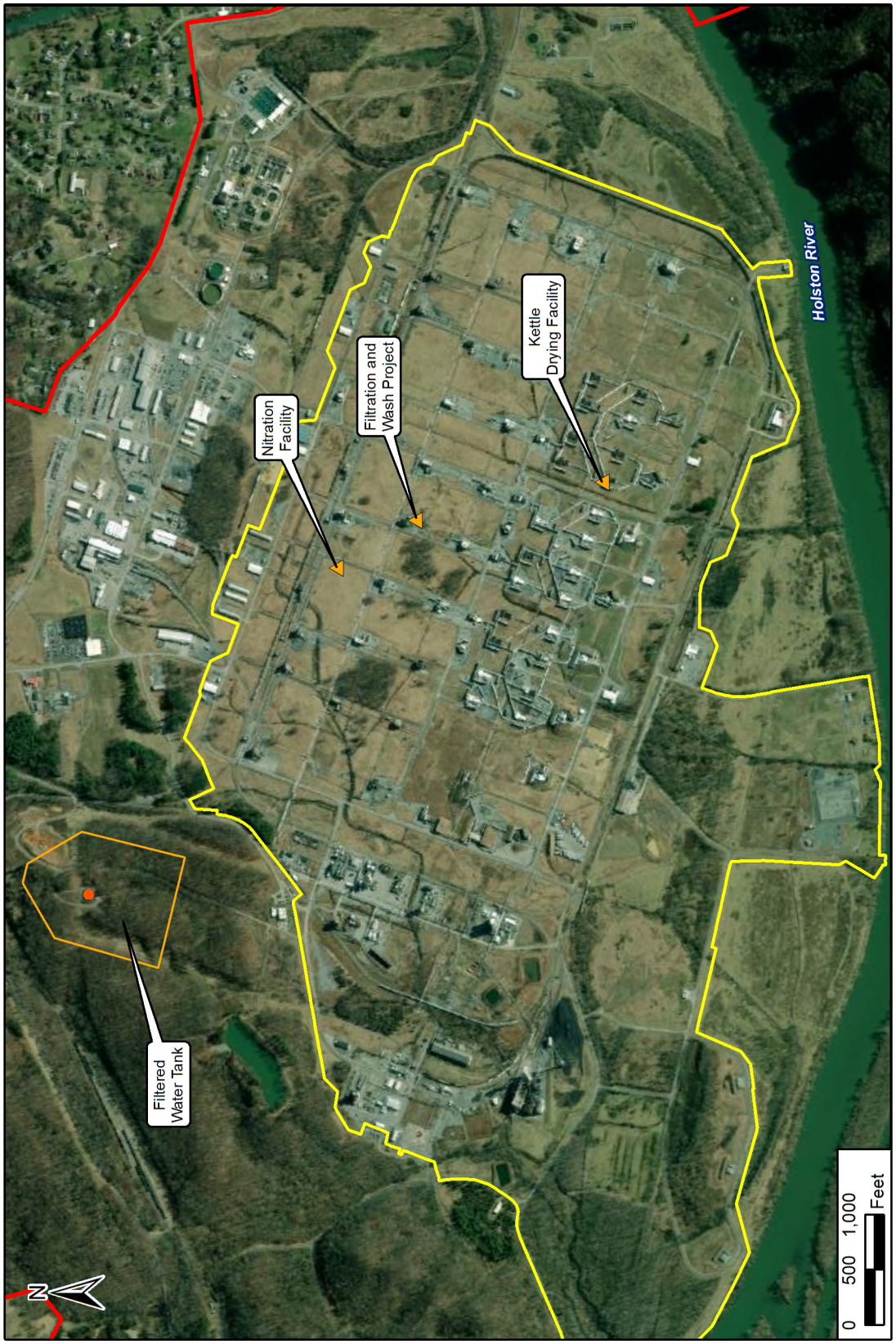


Figure 2-1

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

the western boundary. The facility would discharge industrial sewage to the HSAAP industrial sewage system. The site has all the utility connections necessary to support the new building.

2.1.3 New Filtered Water Tank

A new filtered water tank is needed to provide additional capacity for the acids area expansion where new acid facilities are being constructed. During design stages for the facility that followed those conducted for the original explosives expansion program, HSAAP identified the need for additional filtered water to support the required demand for new acid facilities. The new tank would be constructed near an existing tank, have a capacity of 2 million gallons, and measure about 80 feet in diameter and 55 feet in height. About 6 acres of an approximately 30-acre parcel would be cleared to facilitate construction of the tank. The cleared area would be sized to accommodate the proposed tank, and, if required in the future, a second similarly sized tank. The Holston River would provide the source water via an existing pump house and filter water plant. The new tank would be connected to the nearby distribution lines, so it could support the entire post. HSAAP uses filtered water for safety showers, some manufacturing processes, and fire suppression. The additional capacity of the new tank would ensure that the required system volume of flow is maintained for fire suppression and deluge systems and would aid in maintaining fire hydrant pressure across HSAAP. The existing approximately 1-million-gallon filtered water tank would be retained; it would be required to be in service to support the required demand for the acids area expansion. The new filtered water tank and the existing tank would both support the acids facility expansion and other HSAAP filtered water needs as described above.

2.2 SCREENING CRITERIA

The Army conducted a rigorous screening process for selecting the preferred alternative. 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 detailed in Table 2-1.

Table 2-1. Screening Criteria for RDX Expansion Program Modifications

Tie into existing infrastructure (e.g., pipelines)	Locate the new facilities close enough to existing infrastructure to tie into it to the maximum feasible extent.
Maintain existing production capacity	Enable HSAAP to maintain current production rates with limited interruption.
Meet surge requirements	Be able to produce up to two times the amount of explosives currently being produced.
Locate within the production area	Locate production-related and ancillary facilities within or abutting the production area.
Locate the new filtered water tank near the existing tank	Site the new filtered water tank near the existing tank to make maximum use of elevation and existing distribution piping and to enable concurrent use of the two tanks to meet installation needs.

2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

For the production area projects, the Army considered the screening criteria presented in the 2018 RDX EA. The Army considered all available locations within the production area and excluded any locations in conflict with those original screening criteria. Site selection for each project was primarily based on available space after consideration of safety arcs and proximity to similar explosives production processes or lines. For the filtered water storage tank, which is sited outside the production area, only sites in direct proximity to the existing filtered water storage tank were selected for further analysis. While other sites were considered in the immediate area of the

existing tank, they were eliminated because of their distance to the existing filter water storage tank distribution system and obstacles such as utilities and the existing storage tank.

2.4 ALTERNATIVES CONSIDERED

2.4.1 Alternative A: 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 the potential environmental effects caused by the proposed action and other alternative actions. The regulations do not require the no action alternative to be reasonable or to meet the proposed action's purpose and need.

The no action alternative would result in constructing the explosives production expansion facilities as described in the 2018 RDX EA. Under the no action alternative, the Army wouldn't gain production efficiencies and improved safety measures because the separate nitration, filtration/wash, and kettle-drying facilities wouldn't be constructed. No additional filtered water storage would reduce emergency response and fire suppression capabilities because of the increased demand.

2.4.2 Alternative B: Construction and Operation of Separate Nitration and Filtration/Wash Facilities, a New Kettle-Drying Facility, and Filtered Water Storage (Preferred Alternative)

Under alternative B, the Army would construct and operate separate nitration and filtration/wash facilities, a new kettle-drying facility and, new filtered water storage tank, as described in section 2.1. Alternative B is the Army's preferred alternative.

SECTION 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This SEA discusses the affected environment and environmental consequences of all resource areas that could be affected by constructing and operating the proposed projects but which are not adequately addressed for this action in the RDX EA. For many resource areas, the RDX EA adequately addresses the affected environment and environmental consequences of the proposed action, and those discussions are incorporated by reference into this SEA and not repeated. Section 3.1 lists the resource areas the SEA discusses no further. Section 3.2 discusses the remaining resource areas.

3.1 RESOURCE AREAS NOT DISCUSSED IN THIS SEA

Resource areas adequately addressed in the RDX EA are aesthetics and visual resources, noise, geology and soils, socioeconomics, transportation, utilities, and hazardous and toxic materials. Refer to the RDX EA for discussions of those resource areas.

3.2 RESOURCE AREAS FULLY CONSIDERED IN THIS SEA

This section discusses the resource areas on which the proposed action of this SEA could have impacts beyond those discussed in the RDX EA: land use, air quality, water resources, biological resources, cultural resources, and solid and hazardous waste.

The Army considered context and intensity 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 SEA identifies whether a particular potential impact would be adverse or beneficial, and to what extent.

CEQ regulations require that a proposed action's cumulative impact 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 3.9 discusses cumulative effects.

3.3 LAND USE

3.3.1 Affected Environment

HSAAP land use generally is divided into the Area B production area, which encompasses approximately 700 acres (approximately 12 percent of the total installation), 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 total installation) and includes areas outside 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.

The filtered water storage tank is proposed to be sited near the existing filter water tank in an undeveloped portion of Area B that is surrounded by trees and grassed areas and near electrical line corridors. The proposed nitration, filter/wash, and kettle-drying facilities are sited in previously disturbed areas of the production area. There are some residences at the northeast corner of the production area, although the closest residence to a proposed project area is about seven-tenths of a mile away. Figure 2-1 shows the locations of each proposed facility, which are all situated north of the Holston River.

3.3.2 Impacts Associated with Alternative A: 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.

3.3.3 Impacts Associated with Alternative B: Construction and Operation of Separate Nitration and Filtration/Wash Facilities, a New Kettle-Drying Facility, and Filtered Water Storage (Preferred Alternative)

Long-term minor adverse effects on land use would be expected from filtered water tank construction and operation because some forested area would be converted to industrial use. No adverse effects would be expected from construction and operation of the new nitration, filter/wash, or kettle-drying facilities because they are sited in the production area in previously developed areas intended for such uses. Area B zoning would not change under the proposed action and, because of current or prior uses, no new land-use conflicts with surrounding properties would be created.

3.3.3.1 Mitigation Measures and BMPs

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

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 discusses 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).

3.4.1.1 NAAQS and Attainment Status

U.S. Environmental Protection Agency (EPA) Region 4 and the Tennessee Department of Environment and Conservation (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 in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]), 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. Table 3-1 outlines the NAAQS for each criteria pollutant. Each state has the authority to adopt standards stricter than those established under the federal program; however, the state of Tennessee has adopted the federal standards.

Table 3-1. National Ambient Air Quality Standards

Pollutant		Primary/ Secondary	Averaging time	Level	Form
Carbon Monoxide (CO)		Primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		Primary and Secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	Annual	53 ppb	Annual mean
Ozone (O_3)		Primary and Secondary	8 hours	0.070 ppm	Annual fourth highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter	($PM_{2.5}$)	Primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	(PM_{10})	Primary and Secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Sources: 40 CFR 50.1-50.12; USEPA 2021a.
Notes: µg/m^3 = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion.

Federal regulations designate air quality control regions (AQCRs) in violation of the NAAQS as "nonattainment areas" and AQCRs with 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 of all criteria pollutants (USEPA 2021b). Because all areas associated with the proposed action are in attainment, the General Conformity Rule does not apply.

3.4.1.2 HSAAP Operating Permit 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 considered 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 projects are 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 to TDEC. 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

Pollutant	Facility-wide emissions (tpy)	Open burning emissions (tpy)
CO	255.2	28.2
NO_x	342.9	2.0
VOC	58.9	14.3
SO_2	1,621.0	0.3
$PM_{10}/PM_{2.5}$	72.3	5.3

Source: HSAAP 2018.
Notes: tpy = tons per year; NO_x = oxides of nitrogen; VOC = volatile organic compound.

3.4.1.3 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 type 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 from implementation of the proposed action.

The air quality permitting process would begin with applying for one or more construction permits. Three types of construction permits are available through TDEC for construction and temporary operation of new emissions sources: a Prevention of Significant Deterioration (PSD) permit in attainment areas; a Major Source Construction permit in nonattainment areas (Nonattainment New Source Review [NNSR]); and a Minor New Source Construction permit. 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 located in an attainment area, that permit would not apply.

PSD Permit. The PSD regulations specify that major new sources and major modifications to existing sources in attainment areas (such as is being proposed at 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 PSD review requirements and require the installation to obtain a major modification to their existing permit (40 CFR § 52.21; TDEC Rule 1200-03-09-.01).

Table 3-3. Major Modification Threshold for Existing PSD Sources

Pollutant	Major modification threshold for existing PSD sources (tpy)
CO	100
NO_x	40
SO_2	40
PM	25
PM_{10}	15
$PM_{2.5}$	10
VOCs	40
Pb	0.6

Sources: 40 CFR part 52.21; TDEC Rule 1200-03-09-01.
Notes: NO_x = 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
- Establish procedures for measuring and recording emissions and/or process rates
- Meet the New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements
- Implement a public involvement process

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(s) are 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
- Establish procedures for measuring and recording emissions and/or process rates

NSPS and NESHAP. In addition to the permitting requirements to construct and operate 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 process 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 NSPS 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).

3.4.1.4 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_2). CO_2 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_2e) is the amount of CO_2 emitted into the atmosphere that would produce the same greenhouse effects as a given amount of another GHG. CO_2e 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).

Executive Order (EO) 14008,*Tackling the Climate Crisis at Home and Abroad* (2021), outlines policies to reduce GHG emissions and to bolster resilience to the impacts of climate change. The EO directs CEQ to review, revise, and update its 2016 final guidance titled, *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*. When considering GHG emissions and their significance, agencies should use appropriate tools and methodologies for quantifying GHG emissions and comparing GHG quantities across alternative scenarios. The CEQ guidance specifically requires agencies within the Department of Defense (DoD) to quantify GHG emissions in NEPA assessments and review federal actions in the context of future climate scenarios and resiliency.

In addition, EO 14008 requires federal agencies to capture the full costs of GHG emissions as accurately as possible, including taking global damages into account. Doing so facilitates sound decision-making, recognizes the breadth of climate impacts, and supports the international leadership of the United States on climate issues. The "social cost of carbon" (SCC) is an estimate of the monetized damages associated with incremental increases in GHG emissions, such as

reduced agricultural productivity, human health effects, property damage from increased flood risk, and the value of ecosystem services. The current SCC is estimated at 51 cents per ton (IWG-SCGHG 2021).

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 2018).

3.4.2 Impacts Associated with Alternative A: No Action Alternative

The no action alternative would have no effects on air quality. The proposed facilities would not be constructed or operated, and air quality would be unchanged when compared to existing conditions.

3.4.3 Impacts Associated with Alternative B: Construction and Operation of Separate Nitration and Filtration/Wash Facilities, a New Kettle-Drying Facility, and Filtered Water Storage (Preferred Alternative)

Short- and long-term minor adverse effects on air quality would be expected under alternative B. Short-term effects would be caused by the use of heavy equipment and fugitive dust being generated during construction. Long-term effects would be the result of the increase in operational air emissions from the proposed facilities. 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 facilities would be within a region EPA has designated as an attainment area for the NAAQS, so 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 Army used the Air Conformity Applicability Model to estimate the total direct and indirect emissions from the construction and operation of the facilities, which have been compared to the *de minimis* thresholds to determine the level of effects under NEPA (Table 3-4) (Air Force 2020). Construction emissions were estimated for fugitive dust, on- and off-road diesel equipment and vehicles, and worker trips. Total combined emissions would be below the *de minimis* threshold of 100 tons per year of each pollutant; therefore, the level of effects would be minor. Moderate changes in the design of the facilities would not substantially change these emissions estimates or change the level of effects under NEPA. A record of non-applicability to the General Conformity Rule is provided in appendix A.

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

Pollutant	Construction emissions (tpy)	Operational emissions (tpy)	*De minimis* threshold (tpy)	Exceeds thresholds? (Yes/No)
VOC	1.5	6.5	100	No
NO_x	3.5	10.4		
CO	4.0	1.3		
SO_2	<0.1	<0.1		
PM_{10}	3.3	1.8		
$PM_{2.5}$	0.2	1.8		

Sources: Air Force 2020; Ogle 2021, personal communication.

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 described in this SEA. 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 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 in 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 filtration/wash facility and the kettle-drying facility were included as part of the Phase II PSD permit application, which was issued on May 15, 2020. The PSD permit application for the proposed nitration facility was prepared and submitted to TDEC on May 26, 2021. The proposed facilities probably would not fit the definition of a major modification as outlined in the PSD regulations because they would not produce PTE-regulated pollutants in amounts equal to or greater than those outlined in Table 3-3. Even though the estimates for pollutants are lower than the applicable thresholds, the estimates are based on the best information available at the time this SEA was being prepared. The Army made conservative assumptions about the throughput rates, types of controls to be used, and control efficiencies of the proposed equipment. Although that approach might change with the final design; as outlined above and for similar reasons, regardless of the ultimate permitting scenario, effects from air quality permitting would be less than significant.

The PSD permitting process includes all new sources of air emissions associated with the proposed facilities. 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 proposed facilities 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 described in this SEA 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 would require HSAAP to submit an application for the modification of the permit within 1 year of the first operation of a new source.

Any additional new stationary sources of air emissions, such as the kettle-drying facility, would fully comply with TDEC permitting requirements. 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.*) implementing 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 proposed 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 proposed facilities would proceed in full compliance with current TDEC requirements with compliant practices and/or products. These requirements include the following:

- 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 proposed facilities would emit approximately 61,190 metric tons per year of CO_2 (USEPA 2005). The estimated GHG emissions from the facilities would be minor compared to global, countrywide, and statewide GHG emissions (Table 3-5). The SCC for implementing Alternative B would be $34,328 per year.

Table 3-5. GHG Emissions from the Proposed Action

Scale	$C0_2e$ emissions (MMT)	Change from Proposed Action
Global	43,125	0.000142%
United States	5,249	0.001166%
Tennessee	99.8	0.061314%
Proposed Action	0.061	-

Sources: Ogle 2021, personal communication; USEIA 2017; USEPA 2017a, 2017b.
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 is implementing several initiatives to reduce its GHG emissions, including (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) managing existing energy, water, and solid waste programs to provide greater energy and water security and increase operating flexibility. These initiatives have reduced Army-wide GHG emissions by 0.8 million metric tons 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 facilities. 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.

BMPs and other regulatory requirements would continue to be followed during the construction and operation of proposed facilities. The proposed facilities would proceed in full compliance with current TDEC requirements with compliant practices and/or products. These requirements include the following:

- 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 limit fugitive dust, including the following:

- Using water to control dust from grading roads and 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
- Promptly removing spilled or tracked dirt or other materials from paved streets

3.5 WATER RESOURCES

3.5.1 Affected Environment

The 2018 RDX EA adequately discusses the surface water resources of the HSAAP production area. Because the filtered water tank is proposed to be located outside the production area, this section discusses only the water resources in and near the proposed location for the tank.

***Surface Waters*.** Natural surface water features within or near the footprint of the proposed location for the filtered water tank are limited to natural stormwater drainage on downslope areas. The existing filtered water tank is on a small hill that slopes downward in all directions. A stream about 800 feet east of the proposed location that parallels a railroad track is the closest surface water feature to the site. A riprap overflow channel from the existing tank drains to the south.

***Groundwater*.** HSAAP does not use groundwater as a source of potable water; potable water is provided by the Kingsport Public Works Department (HSAAP 2015; USACE 2018). The installation has more than 100 groundwater monitoring wells, approximately 25 of which are monitored on a routine basis as required by TDEC. A geotechnical investigation for the new filtration/wash facility indicated that groundwater is encountered at depths of 6.2–7.5 feet below the ground surface in the central portion of the production area (GEOServices 2021). Groundwater depth and quality near the filtered water tank are unknown, but given the limited use of the area, its distance from the production area, and its elevation (about 1,350 feet above mean sea level [the production area is about 1,200 feet above mean sea level]), quality is expected to be good.

Floodplains and Wetlands. No floodplain areas or wetlands are within or near the proposed location for the filtered water tank.

3.5.2 Impacts Associated with Alternative A: No Action Alternative

The no action alternative would have no effects on water resources because no construction activities would occur and current operations would be unaffected.

3.5.3 Impacts Associated with Alternative B: Construction and Operation of Separate Nitration and Filtration/Wash Facilities, a New Kettle-Drying Facility, and Filtered Water Storage (Preferred Alternative)

3.5.3.1 Construction

Short-term minor adverse effects on surface waters and groundwater and no adverse effects on floodplains or wetlands would be expected from construction activities associated with the proposed action. Ground disturbance associated with construction activities would be expected to result in some soil erosion and sediment-laden stormwater runoff. The hilly topography of the site proposed for the new filtered water tank could lead to severe erosion from disturbed areas. The *Tennessee Erosion and Sediment Control Handbook* (TDEC 2012) recommends techniques to reduce stormwater flow length and velocities to be incorporated into the stormwater pollution prevention plan (SWPPP) when a construction site has steep topography. Stormwater runoff controls to be used in such locations include ditch turnouts with outlet protection, frequent diversions, check dams, and slope drains. TDEC also recommends that roadways should be longer and have flat grades and many ditch turnouts. Fill slopes should be 3:1 or flatter and incorporate slope breaks, and stabilization of diversions and channels should be a priority.

Stormwater runoff would also be expected to contain minor amounts of pollutants leaked from construction vehicles (e.g., lubricants), and some of these minor quantities could reach groundwater. The Army or its contractor would minimize these impacts by implementing BMPs outlined in the SWPPP developed for the project and stabilize all disturbed areas upon completion of construction activities. Some construction activities on the production area could also require

new or rerouted drainage ditches. HSAAP would consult with TDEC on any disturbances to ditches that might require a permit.

No floodplain areas or wetlands are in the vicinity of the proposed projects, so no adverse effects on these resources would be expected from construction activities.

3.5.3.2 Operations

No adverse effects on water resources would be expected from operational activities associated with the proposed action. The nitration facility would use river water for its processes, and the filtration/wash facility would also be supplied with filtered river water. Increased withdrawals of water from the Holston River are considered in the 2018 RDX EA. The operations associated with the new facilities would be integrated with ongoing production area processes, including treatment and cooling of river water before it is reintroduced into the river. No additional activities or functions that would affect water resources would be introduced.

3.5.3.3 Mitigation Measures and BMPs

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

BMPs to protect water resources would mostly be the same as those implemented for geology and soils section of the RDX EA. Under the terms of the National Pollutant Discharge Elimination System Stormwater Construction permit, the Army or its contractor would prepare a site-specific SWPPP to provide details on BMPs to limit soil erosion and pollution in stormwater runoff resulting from construction activities, including those normally used for such projects (e.g., straw bale barriers, silt fences, diversion dikes or berms, and temporary sediment traps) and those discussed in section 3.5.3.1 for areas with steep slopes.

3.6 BIOLOGICAL RESOURCES

3.6.1 Affected Environment

The biological resources of the production area are discussed in the RDX EA. This section discusses only biological resources found near the proposed location for the filtered water tank.

Forested areas near the existing filtered water storage tank are dominated by red oak (*Quercus rubra*), white oak (*Q*. *alba*), and hickory (*Carya* sp.) trees (HSAAP 2015). Other areas near the tank are grassed. A powerline right-of-way passes east-west north of the tank in a grassed area. An access road leads to and surrounds the tank. South of the existing filtered water storage tank is regrowth vegetation in an area that was cleared for a communication line. The hardwoods in the area provide an important source of mast to species such as the southern fox squirrel (*Scirus niger*), white-tailed deer (*Odocoileus virginianus*), and wild turkey (*Meleagris gallopavo*).

***Protected Species*.** The RDX EA discusses federally protected species that could be or have been identified on HSAAP. The forested portions of the area proposed for the filtered water storage tank could provide roosting habitat for these federally listed bats: gray bat (*Myotis grisescens*), Indiana bat (*M*. *sodalis*), and northern long-eared bat (NLEB) (*M*. *septentrionalis*). Only the gray bat and NLEB have been identified on HSAAP. The installation lacks the types of caves that gray bats typically use for roosting, so it is doubtful that the gray bat roosts there. The Indiana bat has the potential to occur on HSAAP because the forested areas on the installation provide suitable summer roosting habitat for the species, but it has never been identified on the installation.

Aquatic species listed by the U.S. Fish and Wildlife Service (USFWS) known to occur in Hawkins County and with the potential to occur in the Holston River on HSAAP are the spotfin chub

(*Erimonax monachus*), Cumberland monkeyface (*Quadrula intermedia*), and Cumberland bean (*Villosa trabalis*).

Two pairs of bald eagles (*Haliaeetus leucocephalus*) have nested on the installation since 2005. Nests have always been located along the Holston River, although their location has occasionally changed. The closest bald eagle nest is about 1.4 miles from the proposed project area and is shown in Figure 3-1.

Migratory birds are protected under the Migratory Bird Treaty Act. About 160 species of migratory birds have been identified on HSAAP, some of which nest on HSAAP, although most pass through HSAAP during migration but generally do not nest on the installation. Many species of migratory birds, however, nest in early successional habitat like that along the former communication line corridor on the proposed site of the filtered water storage tank.

HSAAP sent a coordination letter to USFWS on June 29, 2021 requesting a "not likely to adversely affect" concurrence regarding threatened or endangered (T/E) species with respect to the proposed projects. ***[Preparers note: Insert USFWS response once received.]*** Appendix C provides copies of the letters sent and responses received.

3.6.2 Impacts Associated with Alternative A: No Action Alternative

The no action alternative would have no direct or indirect impacts on biological resources because no new construction would occur at HSAAP.

3.6.3 Impacts Associated with Alternative B: Construction and Operation of Separate Nitration and Filtration/Wash Facilities, a New Kettle-Drying Facility, and Filtered Water Storage (Preferred Alternative)

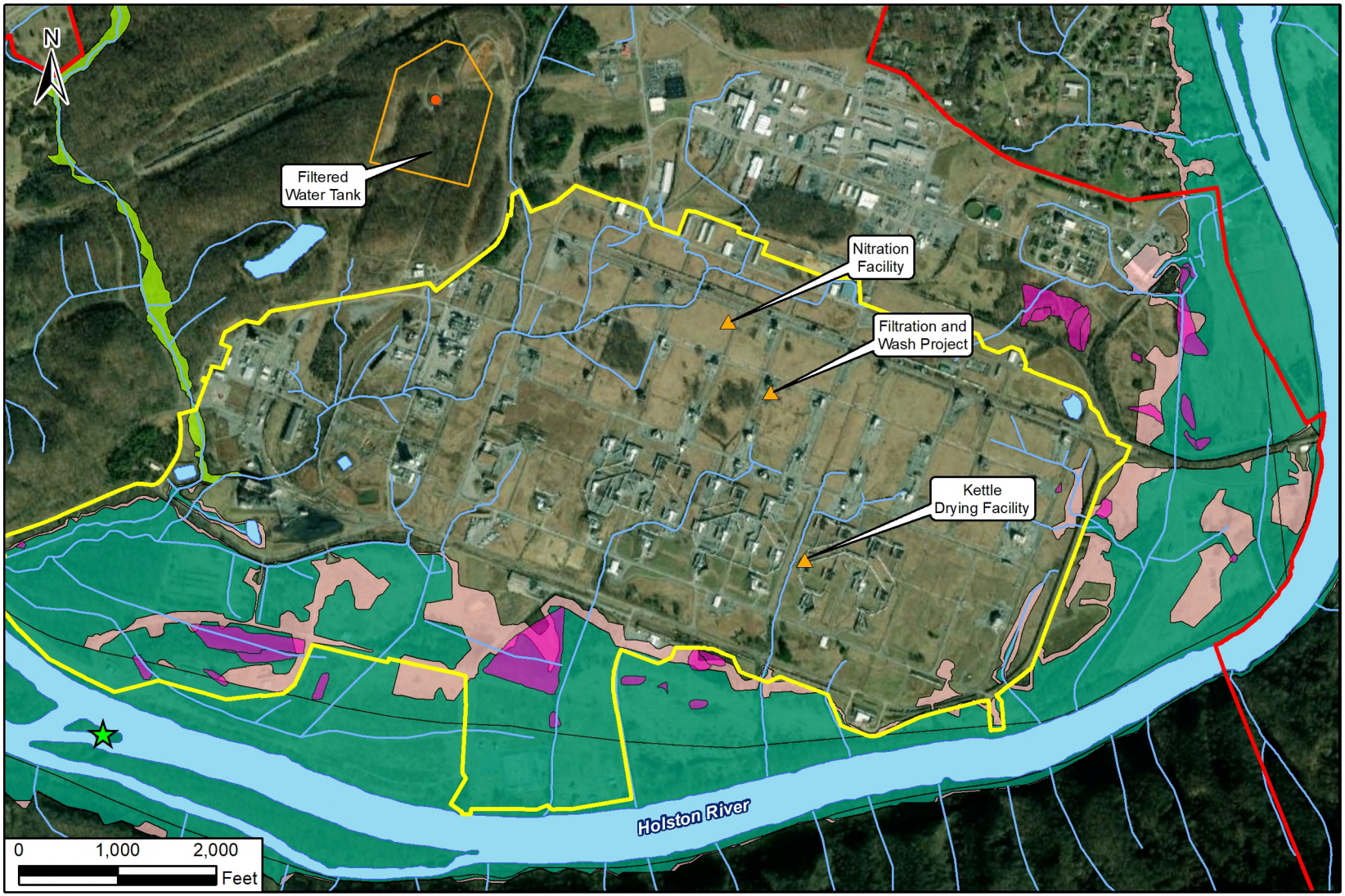
3.6.3.1 Construction

Long-term minor adverse effects on vegetation communities and wildlife would be expected from construction associated with the proposed action. The Army would remove up to 6 acres of vegetation, including some hardwood forest areas, from the proposed site of the new filtered water storage tank. Construction of the tank would reduce local habitat for deer, turkey, squirrel, and other animals. Abundant similar habitat is available on HSAAP, but the conversion from forest to development would likely result in small reductions in the populations of some local animals. Construction activities would disturb a small amount of the wooded portions of the installation, and no animal or plant populations would be significantly affected.

***Protected Species*.** Implementing the proposed action may affect but would not be likely to adversely affect federally protected species. Several mature trees from the 6-acre construction site for the filtered water storage tank would be removed to construct the tank. Some of those trees could be suitable as summer roosting sites for the Indiana bat and NLEB or for a maternity colony. There is no roosting habitat for the gray bat on the proposed construction sites. Construction of proposed projects in the production area would not require the removal of any trees.

No adverse effects on nesting migratory birds would be expected from implementing the proposed action. No migratory bird nesting habitat would be disturbed by proposed action activities in the production area. If the filtered water storage tank was to be constructed during the summer nesting season (March 15–September 1), then vegetation suitable for nesting in the area proposed for the tank would be removed before migratory birds would arrive in the area (i.e., before March 15).

No adverse effects on aquatic species would be expected because impacts on the Holston River from project implementation are not expected. No effect on bald eagles would be expected from



Biological Resources

Figure 3-1

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

the proposed projects because of the distance between the proposed construction sites and the closest bald eagle nest.

3.6.3.2 Operations

No adverse effects on vegetation communities, wildlife, or protected species would be expected from operations associated with the proposed action. After the proposed action was implemented, facilities in the production area would function the same as they do now.

***Protected Species*.** No adverse effects on any T/E species would be expected from operational activities related to the proposed action. Operational activities would not affect forested areas, trees in the production area, or karst features on HSAAP.

3.6.3.3 Mitigation Measures and BMPs

The Army would minimize potential adverse effects of the proposed action on federally protected species. The Army would limit harvesting of trees suitable for bat roosting or maternity colonies to the period between October 15 and March 31 of any year associated with the proposed action. The Army would remove vegetation suitable for migratory bird nesting between September 1 and March 15.

3.7 CULTURAL RESOURCES

3.7.1 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 Officer (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 the 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 Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470mm) 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 because adverse impacts to historic buildings have been mitigated under the Program Comment. Appendix B provides copies of this Program Comment and HSAAP's October 2010 letter to the SHPO regarding the Program Comment.

Under the proposed action, HSAAP would construct new facilities on previously developed industrial sites in the production area. No demolition of buildings is being proposed under this action.

The proposed filter water storage tank site was surveyed as part of a 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 June 2021. The Tennessee SHPO responded and indicated that the project, as currently proposed, may adversely affect properties that are eligible for listing in the National Register of Historic Places. However, they concurred that any adverse effects to architectural resources have been mitigated by the Program Comment for World War II and Cold War Era (1939-1974) Army Ammunition Production Facilities and Plants as described above. They also agreed that no archaeological resources would be affected by the undertaking. Appendix C provides copies of the letters sent and responses received.

3.7.2 Impacts Associated with Alternative A: No Action Alternative

No effects on cultural resources would be expected under the no action alternative. Existing conditions would remain unchanged.

3.7.3 Impacts Associated with Alternative B: Construction and Operation of Separate Nitration and Filtration/Wash Facilities, a New Kettle-Drying Facility, and Filtered Water Storage (Preferred Alternative)

3.7.3.1 Construction

No adverse effects on cultural resources would be expected from construction related to the proposed action because any adverse effects on historic properties (buildings) within the production area have been mitigated per the Program Comment. In addition, no known archaeological sites are located within the project areas, including the proposed location for the new filtered water tank.

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 the site was disturbed any further. In the event that human remains were discovered, all work would stop and the Native American Tribes mentioned above 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.

3.7.3.2 Operations

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

3.7.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for cultural resources. Activities related to construction and operation would not be expected to have any adverse impacts 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.

3.8 SOLID AND HAZARDOUS WASTE

3.8.1 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 guided by established standard operating procedures and management plans or off-site at approved facilities.

Solid wastes from the production area are evaluated to determine their safe disposition: on-site Class II landfill, off-site recycling, or thermal decontamination. Thermal decontamination of explosives-contaminated waste occurs at HSAAP's burning ground in accordance with the facility's Title V permit. Separately, waste explosives that do not meet product specifications, become contaminated through contact with the production facility floors and catch basins, or are generated through ammonium nitrate solution filtration processes are treated by open burning in HSAAP's Subpart X and Title V permitted burn pan unit. Open burning is used to safely eliminate the potential for unintentional detonation or deflagration of these materials. Other hazardous wastes (e.g., spent acids, spent solvents) are sent off-site to a permitted commercial treatment, storage, and disposal facility.

HSAAP operates an on-site class II industrial landfill permitted by the state of Tennessee to accept solid waste in the forms of general trash, construction debris, asbestos, flyash generated by the coal-fired steam plant, and biosludge generated from the industrial wastewater treatment plant (IWWTP). The landfill has a permitted capacity of about 322,000 cubic yards and is being expanded by approximately 400,000 cubic yards. If necessary, HSAAP can use area landfills for disposal of some types of solid wastes.

HSAAP’s IWWTP treats production wastes generated on-site such as industrial wastewater (IWW) containing acetic acid, anhydrous ammonia, nitrates, nitric acid, residual explosives, residual solvents, and leachate from the on-site landfill.

While HSAAP is not an EPA National Priorities List, or Superfund, site, 32 sites under DoD’s Installation Restoration Program (IRP) are located on the installation and are overseen by TDEC. Twenty-three of the sites have been closed, and 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. Contaminants of concern in soil, sediment, and/or groundwater include explosives, metals, pesticides, polycyclic aromatic hydrocarbons, semi-volatiles, and volatiles. There are active groundwater monitoring wells in the production area that are used to assess groundwater quality.

3.8.2 Impacts Associated with Alternative A: No Action Alternative

The no action alternative would have no effects on solid or hazardous waste because no new construction would occur and conditions would remain unchanged.

3.8.3 Impacts Associated with Alternative B: Construction and Operation of Separate Nitration and Filtration/Wash Facilities, a New Kettle-Drying Facility, and Filtered Water Storage (Preferred Alternative)

3.8.3.1 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 facility construction and infrastructure improvements. 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-related waste that is not recycled. The HSAAP landfill capacity would be expected to accommodate construction waste that is not diverted for recycling or other uses.

3.8.3.2 Operations

Long-term minor adverse effects would be expected from the proposed action because of the additional hazardous waste that would be generated and managed from operating separate nitration and filtration/wash facilities, and from a new kettle-drying facility. Generated waste streams would be the same, but the volume generated would increase. Generation volumes and waste management would continue to be in compliance with HSAAP's RCRA permits.

3.8.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for solid and hazardous waste. Implementation of the proposed action would require spill containment measures that would be designed to capture and prevent any spills from leaving the site. Also, BMPs such as the HSAPP spill prevention, control, and countermeasure plan are in place to manage the materials produced at HSAAP. BAE OSI operates the installation's solid and hazardous waste management program in accordance with RCRA, Toxic Substances Control Act, Occupational Safety and Health Act, and Army regulations.

3.9 CUMULATIVE EFFECTS

Cumulative adverse effects can occur when a proposed project and unrelated projects have adverse effects on the same resource area both temporally and spatially. The proposed projects in this SEA could have adverse effects on land use, air quality, surface waters and groundwater, and vegetation communities and wildlife. This section addresses cumulative effects on those resource areas.

3.9.1 Land Use

No adverse cumulative effects on land use would be expected. The land use change from unimproved forested land to semi-improved industrial use where the filtered water storage tank would be installed would have no effect on adjacent or surrounding land uses on or off HSAAP and no other land use changes on HSAAP are planned to occur in the foreseeable future.

3.9.2 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. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. 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 on air quality. No other projects have been identified, including the proposed facility expansion, that when combined with the proposed action would have greater than significant cumulative effects.

3.9.3 Surface Waters and Groundwater

No adverse cumulative effects on water resources would be expected. The minor adverse effect of the proposed action on surface waters and groundwater would be the result of soil disturbance and construction equipment use during the construction phase of the proposed projects. Upon completion of all construction projects, the Army would stabilize soils and activity in the production area would return to normal, eliminating any long-term impact and potential for adverse cumulative effects.

3.9.4 Biological Resources

No adverse cumulative effects on biological resources would be expected. Clearing the site for the filtered water storage tank is the only proposed activity that would have an adverse effect on biological resources (vegetation and common wildlife species only) and no other projects that would adversely affect biological resources at HSAAP or in the surrounding region that cumulatively could affect the population viability of a species or vegetative community type in the foreseeable future are known to be planned.

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SECTION 4.0 FINDINGS AND CONCLUSIONS

4.1 FINDINGS

The Army has prepared this SEA to evaluate the potential effects on the natural and human environments from activities associated with the no action alternative and implementing the proposed action and modifications incorporated into it since publication of the RDX EA. Based on the analysis, the Army has determined that physical environments for the resources analyzed under this SEA 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. Under the no action alternative, no effect on any resource area would occur, as described in this SEA. Section 3.0 provides additional detailed analysis only of the resource areas that would be affected by the modifications incorporated into the proposed action.

For resource areas adequately considered in the 2018 RDX EA that required no further analysis in this SEA, Table 4-1 lists (shaded rows) the effects of the activities considered in that EA to provide a complete picture of the environmental and socioeconomic effects of implementing the entire RDX expansion effort.

Table 4-1. Summary of Potential Environmental Consequences

Resource area	Proposed action	
	Construction	**Operations**
Land use	Long-term minor adverse	No effect
Aesthetics/visual resources	Short-term minor adverse	No effect
Air quality	Short-term minor adverse	Long-term minor adverse
Noise	Short-term minor adverse	Long-term minor adverse
Geology/soils	Short-term minor adverse	No effect
Water resources		
Surface waters/groundwater	Short-term minor adverse	No effect
Floodplains	No effect	No effect
Wetlands	No effect	No effect
Biological resources		
Vegetation	Long-term minor adverse	No effect
Wildlife	Long-term minor adverse	No effect
Threatened and endangered species	May affect but not likely to adversely affect	No effect
Cultural resources	No effect	No effect
Socioeconomics		
Employment, industry, income	Short-term minor beneficial	No effect
Other socioeconomic resources	No effect	Long-term minor beneficial
Transportation	Short-term minor adverse	Long-term minor adverse
Utilities	Short-term minor adverse	Long-term minor adverse
Hazardous/toxic materials	Short-term minor adverse	Long-term minor adverse
Solid/hazardous waste	Short- and long-term minor adverse	Long-term minor adverse

4.2 MITIGATION MEASURES AND BMPS

The Army would implement mitigation measures as identified in this SEA and BMPs 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.

Table 4-2. Summary of Mitigation Measures and BMPs

Resource area	Mitigation measures
Biological resources	Limit harvesting of trees suitable for bat roosting or maternity colonies to the period between October 15 and March 31. Remove vegetation suitable for migratory bird nesting between September 1 and March 15.
Resource area	**BMPs**
Air quality	Comply with all applicable air pollution control regulations. Handle, transport, and store materials to limit contaminants becoming airborne. Use reasonable measures to limit fugitive dust.
Water resources	BMPs to limit soil erosion and pollution in stormwater runoff, including those normally used for such projects and TDEC-recommended BMPs for steep slopes.
Solid/ hazardous waste	Employ the BMPs that are in place at HSAAP to manage the solid and hazardous waste produced

4.3 CONCLUSION

Based on the findings of this assessment, the Army does not expect that implementing the proposed action with the modifications addressed in this SEA incorporated into it 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 prepared and made available for review in accordance with 32 CFR part 651 and NEPA.

SECTION 5.0 REFERENCES

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SECTION 6.0 PERSONS CONSULTED

Laura Peters, JMC–Holston ACO, Environmental Engineer

Laura Macpherson, JMC–Holston ACO, NEPA Manager

Bruce Cole, JMC–Holston ACO, Natural Resources Specialist/Cultural Resources Manager

James Ogle, BAE OSI, Environmental Affairs Specialist–Air

Natasha Owens, Project Director Joint Services, Project Officer–Kettle Drying, Filtration/Wash

Crane Robinson, Project Director Joint Services, Project Officer–Filtered Water Storage Tank

Susana Cruz, Project Director Joint Services, Project Officer–Nitration Facility

Jeremy Heiskanen, Project Director Joint Services, Project Officer–Filtered Water Storage Tank

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SECTION 7.0 LIST OF PREPARERS

Greg Hippert, Tetra Tech, Inc.
BS, Earth Science, University of North Carolina at Charlotte
Years of Experience: 24

Jennifer Jarvis, Tetra Tech, Inc.
BS, Environmental Resource Management, Virginia Tech
Years of Experience: 22

Penelope Garver, Tetra Tech, Inc.
BS, Journalism, University of Maryland
Years of Experience: 29

Sam Pett, Tetra Tech, Inc.
MS, Environmental Science and Policy, University of Massachusetts/Boston
BS, Wildlife Biology and Zoology, Michigan State University
Years of Experience: 27

Timothy Lavallee, PE, LPES, Inc.
MS, Civil and Environmental Engineering, Tufts University
BS, Mechanical Engineering, Northeastern University
Years of Experience: 30

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SECTION 8.0 DISTRIBUTION LIST

Agencies

U.S. Fish and Wildlife Service Tennessee Ecological Services Field Office, Cookeville, TN

Tennessee Department of Environment and Conservation, Nashville, TN

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

Libraries

Kingsport Public Library, Kingsport, TN

Mt. Carmel Public Library, Mt. Carmel, TN

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
ACO	Administrative Contracting Officer
AMC	U.S. Army Materiel Command
AQCR	air quality control region
BACT	best available control technology
BAE OSI	BAE Ordnance Systems Inc.
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
de minimis	of minimal importance
DoD	Department of Defense
EA	environmental assessment
EIS	environmental impact statement
EO	executive order
EPA	U.S. Environmental Protection Agency
FNSI	finding of no significant impact
GHG	greenhouse gas
HMX	high-melting explosive
HSAAP	Holston Army Ammunition Plant
ICRMP	Integrated Cultural Resources Management Plan
IMX	insensitive munitions explosive
IRP	Installation Restoration Program
IWW	industrial wastewater
IWWTP	industrial wastewater treatment plant
JMC	U.S. Army Joint Munitions Command
$\mu g/m^3$	micrograms per cubic meter
MACT	maximum achievable control technology
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, as amended
NLEB	northern long-eared bat
NO_2	nitrogen dioxide
NOI	notice of intent
O_3	ozone
PM_{10}	particulate matter less than 10 microns
$PM_{2.5}$	particulate matter less than 2.5 microns
PSD	prevention of significant deterioration
PTE	potential to emit
RCRA	Resource Conservation and Recovery Act
RDX	research development explosive
RES	recovered energetic solids
SEA	supplemental environmental assessment
SF	square foot, square feet
SWPPP	stormwater pollution prevention plan

T/E	threatened or endangered
TDEC	Tennessee Department of Environment and Conservation
tpy	tons per year
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

APPENDIX A

Record of Non-Applicability and
Air Quality Supporting Documentation

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RECORD OF NON-APPLICABILITY
RDX Expansion Projects at Holston Army Ammunition Plant
Kingsport, Tennessee

The U.S. Army proposes to construct additional facilities to support the research development explosive--based expansion program and modify how some facilities and processes would be constructed and operated. The Army would construct and operate separate nitration and filtration/wash facilities, a kettle-drying facility, and a filtered water storage tank. The purpose of the Army's proposed action is to construct and operate separate nitration and filtration/wash facilities the functions of which were previously proposed to be combined in one facility, increase kettle-drying capability by constructing and operating an additional kettle-drying facility, and increase filtered water storage capacity to meet increased production demands by installing a new filtered water storage tank. The proposed action is needed to ensure that the target production capabilities and operational flexibility for Holston Army Ammunition Plant manufacturing goals can be achieved.

The proposed action would generate new direct and indirect emissions from the construction and operations of the proposed facilities. The Army has evaluated the action against general conformity under Section 176 of the Clean Air Act according to the requirements of Title 40 of the *Code of Federal Regulations* Part 93, Subpart B and determined that the requirements of the rule do not apply to the action because:

All activities related to the proposed action are completely within an area that has been designated in full attainment of the National Ambient Air Quality Standards.

Supported documentation and emission estimates:

( ) Are attached

( ) Appear in the National Environmental Policy Act documentation

(X) Other (not necessary)

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1. General Information

- Action Location
Installation: HSAAP
State: Tennessee
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: HSAAP construction and operation of nitration, filtration/wash and kettle drying facilities and a filtered water storage tank

- Project Number/s (if applicable):

- Projected Action Start Date: 1/2022

- Action Purpose and Need:
The purpose of the Army's proposed action is to construct and operate separate nitration and filtration/wash facilities that were previously proposed to be combined into one facility, increase kettle drying capability by constructing and operating an additional kettle drying facility, and increase filtered water storage capacity to meet increased production demands. The proposed action is needed to ensure that the target production capabilities and operational flexibility for HSAAP manufacturing goals can be achieved.

- Action Description:
Construction 78,400 sqft
Grading 117,600
Trenching 14,000
Architectural Coatings 78,400 sqft
Paving 78,400 sqft
Heating 51,000

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	HSAAP RDX Expansion
3.	Heating	Heating of Buildings

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Hawkins
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: HSAAP RDX Expansion

- Activity Description:
Construction 78,400 sqft
Grading 117,600
Trenching 14,000
Architectural Coatings 78,400 sqft

Paving 78,400 sqft
Heating 51,000

- Activity Start Date
Start Month: 1
Start Month: 2022

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.501141
SO_x	0.009252
NO_x	3.517086
CO	4.045716
PM 10	3.254587

Pollutant	Total Emissions (TONs)
PM 2.5	0.150483
Pb	0.000000
NH_3	0.002736
CO_2e	899.6

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 6
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 45000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.283	000.002	000.217	003.292	000.007	000.006		000.023	00324.051
LDGT	000.361	000.003	000.383	004.629	000.009	000.008		000.024	00417.982
HDGV	000.727	000.005	001.011	015.230	000.021	000.019		000.045	00771.997
LDDV	000.109	000.003	000.133	002.561	000.004	000.004		000.008	00314.635
LDDT	000.249	000.004	000.379	004.384	000.007	000.006		000.008	00446.751
HDDV	000.510	000.013	004.987	001.786	000.170	000.156		000.029	01506.976
MC	002.595	000.003	000.737	013.274	000.028	000.024		000.054	00396.864

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM_{10FD} = (20 * ACRE * WD) / 2000$

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 14000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.283	000.002	000.217	003.292	000.007	000.006		000.023	00324.051
LDGT	000.361	000.003	000.383	004.629	000.009	000.008		000.024	00417.982
HDGV	000.727	000.005	001.011	015.230	000.021	000.019		000.045	00771.997
LDDV	000.109	000.003	000.133	002.561	000.004	000.004		000.008	00314.635
LDDT	000.249	000.004	000.379	004.384	000.007	000.006		000.008	00446.751
HDDV	000.510	000.013	004.987	001.786	000.170	000.156		000.029	01506.976
MC	002.595	000.003	000.737	013.274	000.028	000.024		000.054	00396.864

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM_{10FD} = (20 * ACRE * WD) / 2000$

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 12
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 78400
Height of Building (ft): 12
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0797	0.0013	0.5505	0.3821	0.0203	0.0203	0.0071	128.81
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0274	0.0006	0.1265	0.2146	0.0043	0.0043	0.0024	54.457
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0340	0.0006	0.2783	0.2694	0.0116	0.0116	0.0030	61.069
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0260	0.0003	0.1557	0.1772	0.0077	0.0077	0.0023	25.661

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.283	000.002	000.217	003.292	000.007	000.006		000.023	00324.051
LDGT	000.361	000.003	000.383	004.629	000.009	000.008		000.024	00417.982
HDGV	000.727	000.005	001.011	015.230	000.021	000.019		000.045	00771.997
LDDV	000.109	000.003	000.133	002.561	000.004	000.004		000.008	00314.635
LDDT	000.249	000.004	000.379	004.384	000.007	000.006		000.008	00446.751
HDDV	000.510	000.013	004.987	001.786	000.170	000.156		000.029	01506.976
MC	002.595	000.003	000.737	013.274	000.028	000.024		000.054	00396.864

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Architectural Coatings Phase

2.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 0

2.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 78400
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.283	000.002	000.217	003.292	000.007	000.006		000.023	00324.051
LDGT	000.361	000.003	000.383	004.629	000.009	000.008		000.024	00417.982
HDGV	000.727	000.005	001.011	015.230	000.021	000.019		000.045	00771.997
LDDV	000.109	000.003	000.133	002.561	000.004	000.004		000.008	00314.635
LDDT	000.249	000.004	000.379	004.384	000.007	000.006		000.008	00446.751
HDDV	000.510	000.013	004.987	001.786	000.170	000.156		000.029	01506.976
MC	002.595	000.003	000.737	013.274	000.028	000.024		000.054	00396.864

2.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.5 Paving Phase

2.5.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 0

2.5.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 78400

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.283	000.002	000.217	003.292	000.007	000.006		000.023	00324.051
LDGT	000.361	000.003	000.383	004.629	000.009	000.008		000.024	00417.982
HDGV	000.727	000.005	001.011	015.230	000.021	000.019		000.045	00771.997
LDDV	000.109	000.003	000.133	002.561	000.004	000.004		000.008	00314.635
LDDT	000.249	000.004	000.379	004.384	000.007	000.006		000.008	00446.751
HDDV	000.510	000.013	004.987	001.786	000.170	000.156		000.029	01506.976
MC	002.595	000.003	000.737	013.274	000.028	000.024		000.054	00396.864

2.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

3. Heating

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Hawkins
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating of Buildings

- Activity Description:
Heating of Buildings - Net Chang in Area

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.009924
SO_x	0.001083
NO_x	0.180443
CO	0.151572
PM 10	0.013714

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.013714
Pb	0.000000
NH_3	0.000000
CO_2e	217.2

3.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 51000
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.0743

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

3.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

3.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement ($MMBtu/ft^2$)
HV: Heat Value ($MMBTU/ft^3$)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

Estimated Operational Emissions

Process	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	GHGs as CO_2e	Current Permitting
Filtration/Wash Facility	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	Submitted as part of the Phase II PSD permit application. Permit was issued on May 15, 2020.
Kettle Drying Facility	3.8	1.7	1.7	0.0	0.0	0.0	0.0	0.0	Submitted as part of the Phase III PSD Permit application. Application submitted on 3/15/2021. Completion letter received on 3/29/2021.
New Nitration Facility	0.1	0.1	0.1	0.01	10.2	1.1	6.0	67,310.7	Planned for submission in a PSD Permit application by 5/7/2021.

Source: Ogle 2021, personal communication.

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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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DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

October 14, 2010

REPLY TO
ATTENTION OF

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.

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.

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, 2008
Date

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

February 3, 2006

REPLY TO
ATTENTION OF

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.

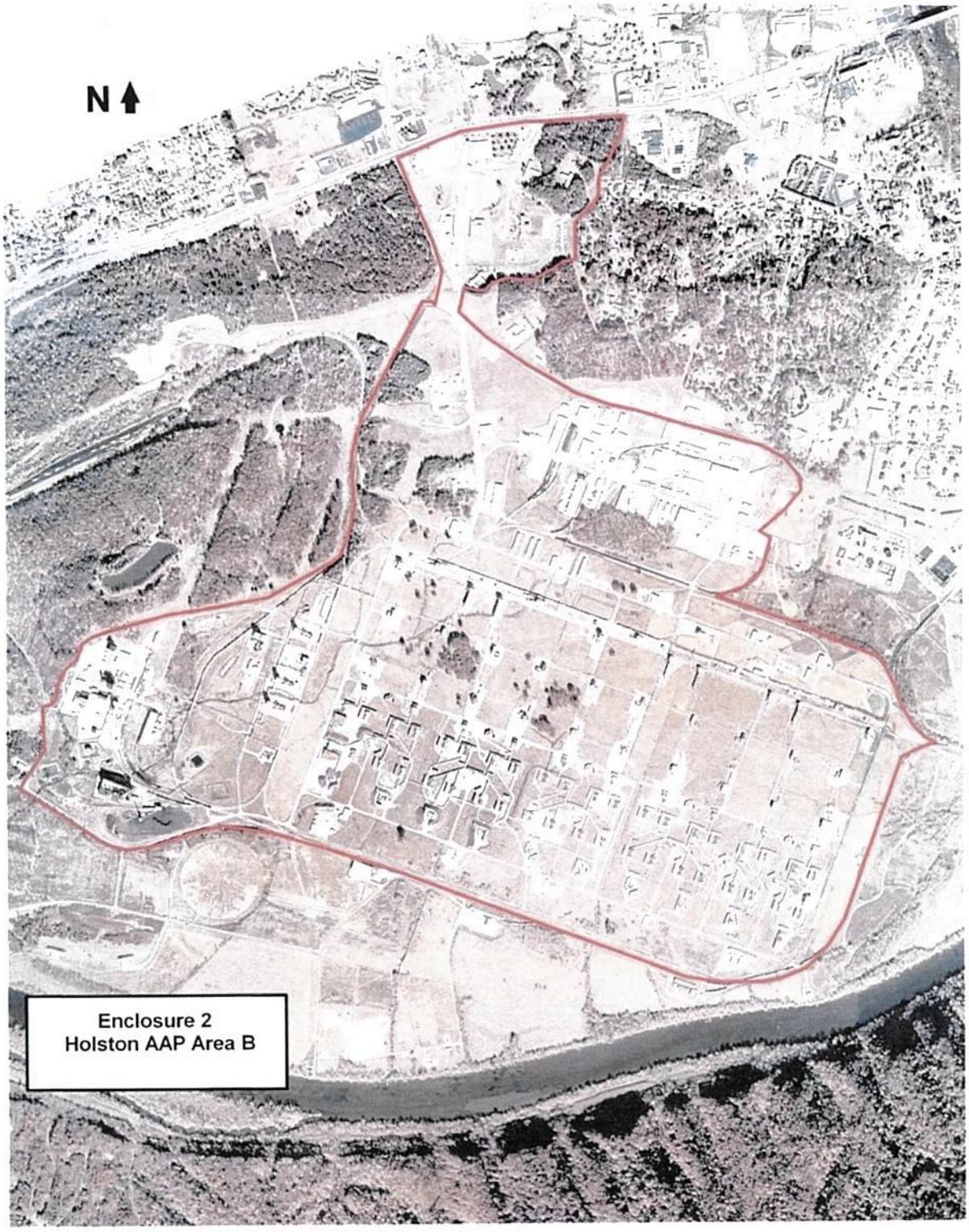
F. Use of land for training exercises, when such training involves no off-road vehicle use or ground disturbance, and when camping occurs in areas previously surveyed for historic properties.

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, KINGSPORT, 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

June 28, 2021

REPLY TO
ATTENTION OF

Natural Resources Office

Virgil Lee Andrews, Jr.
Field Supervisor
U.S. Fish and Wildlife Service Field Office
446 Neal Street
Cookeville, Tennessee 38501

Dear Mr. Andrews:

Holston Army Ammunition Plant (HSAAP) requests that your office review the proposed action to construct additional facilities to support the RDX expansion program and modify how some facilities and processes would be constructed and operated, for potential impacts to federally-listed threatened and endangered species (T/Es). This action is being analyzed under the National Environmental Policy Act in a Supplemental Environmental Assessment—supplemental to the 2018 *Environmental Assessment for RDX and IMX Capacity Expansion at Holston Army Ammunition Plant, Kingsport, TN* (RDX EA), which your office reviewed. We would like to obtain your written concurrence on this project, if possible, as well as any mitigation requirements you might have for inclusion in the SEA.

The location of construction (including renovation) activities associated with this action are depicted on Enclosure 1 which is attached. Details of the proposed construction activities are provided below.

a) Construction and operation of a new nitration facility

The Army proposes to construct and operate two separate facilities to handle the nitration and filtration/wash steps of the explosives manufacturing process. These two facilities would each be built within the production area where these operations have previously taken place. This is a change from the concept analyzed in the 2018 RDX EA, which provided for a single facility that would have combined the nitration and filtration processes into one building. That facility was conceived of as a three-story structure of approximately 5,000 square feet (SF) for each of the first two levels and 3,000 SF on the third level. The construction footprint for the facility would have been approximately 3 acres on previously disturbed land for the facility, laydown area, and parking. The original design involved maintaining

operational capability for a building with multiple processes occurring in one building. The Army determined that the risk involved in maintaining production capability with this approach is not reasonable. Therefore, the Army is pursuing constructing two individual buildings to duplicate the nitration and filtration/wash steps of the manufacturing process.

b) Construction and operation of a new filtration/wash facility

A new three-story filtration/wash building would be constructed with a footprint area of about 11,000 SF. This would result in a net increase of less than 5,000 SF of impervious area over the previous filtration/wash building. The new facility would be located on the site of a former filtration/wash facility. It would have a tank farm; control room; support areas, such as a wet laboratory, electrical room, restroom, and pump room; and a parking lot for a minimum of five work vehicles. Secondary containment structures would be provided around the tanks where required. Collected runoff and washdown inside the containment walls would discharge to the HSAAP industrial sewer system. An emergency diesel generator of an estimated 800 kilowatts would be supplied. A construction staging area would be located onsite. The site has all needed utility connections.

c) Construction and operation of a new kettle drying facility

A new kettle drying facility is needed to increase HSAAP's kettle drying capacity, improve processing and efficiency, and decrease use of the existing kettle drying facilities so they can be periodically taken offline for maintenance or modernizing. The new facility would be constructed on the site of a former facility. The new facility would be a 1.5-story structure with a partial basement. It would incorporate a loading dock, parking for about five vehicles, and covered ramps. Utility services are available at the site. Road improvements would be gravel. A construction staging area would be located onsite. A cooling water stream would be located along the western boundary. The facility would discharge industrial sewage to the HSAAP industrial sewage system. The site has all needed utility connections.

d) Construction of a new filtered water tank

During design stages that followed those conducted for the original explosives expansion program, HSAAP determined a need for additional filtered water to support the filtered water capacity needs for the acids area where additional acid lines are being constructed. HSAAP uses filtered water for safety showers, some manufacturing processes, and fire suppression. The new tank would be constructed near, and south, of an existing tank, have a capacity of 2 million gallons, and measure about 80 feet in diameter and 55 feet in height. Source water would be the Holston River via an existing pump house and filter water plant. The new tank would be connected to the nearby

existing distribution lines, so it would support the entire post. An existing 1.2 million-gallon reservoir immediately north of the proposed site would remain in service to support the required demand for the acids area expansion.

Because of the nature of the proposed action and the distance of the four sites from the Holston River and its tributaries, we do not anticipate that construction of these facilities will affect aquatic species of any kind. In addition, no changes to HSAAP's permitted discharges to the river are anticipated once the new facilities are operational. Although records indicate the historic presence of several federally listed T/E mussel species in the Holston River, those species are believed to be extirpated. A fish and mussel survey conducted on the installation in 2019 failed to verify the presence of any T/E mussel species currently listed for Hawkins and Sullivan counties. In fact, only four live mussels of two species were recorded which were two Wavyrayed Lampmussel (*Lampsilis fasciola*) and two Rainbow (*Villosa iris*). Although specifically targeted in this same survey, the federally-listed Spotfin Chub (*Cyprinella monacha*) was not found. Neither was the Sickle Darter (*Percina williamsi*) which we believe is proposed for listing as a federally-threatened species. With regard to the Spotfin Chub the results of this latest survey were similar to two prior survey efforts conducted in 2015 and 2001 which failed to identify the Spotfin as occurring on the installation. A copy of the 2019 survey report is attached as Enclosure 2.

We do not anticipate that this project will impact terrestrial T/Es that occur in either Hawkins or Sullivan counties such as the gray bat (*Myotis grisescens*), which is known to forage on the installation; the Indiana bat (*M. sodalis*), which has never been identified as occurring on the installation but for which suitable summer roosting and foraging habitat is present; or the northern long-eared bat (*M. septentrionalis*), which was identified approximately 20 years ago as occurring on the installation and for which suitable summer roosting and foraging habitat is present. The latest installation-wide survey for T/E bat species conducted in July 2015 using USFWS survey protocols failed to identify either the northern long-eared or Indiana bats on the plant although 8 gray bats were captured while foraging. Although various attempts have been made to determine if a gray bat roost site occurs on the installation, no such sites have been identified.

The three construction projects that are located in the production area will occur on previously disturbed sites, which are surrounded by semi-annually mowed fescue fields. No suitable habitat for any of the federally-listed species that occur in Hawkins or Sullivan Counties occur on these sites. No trees will be removed for any of the projects located in the production area. As shown on Enclosure 3, the construction of the filtered water tank and access road is the only component of the proposed action that will require tree removal. Construction of the water tank and access road will result in the removal of approximately 6 acres of hardwood forest which is suitable as summer roosting and foraging habitat for Indiana and northern long-eared

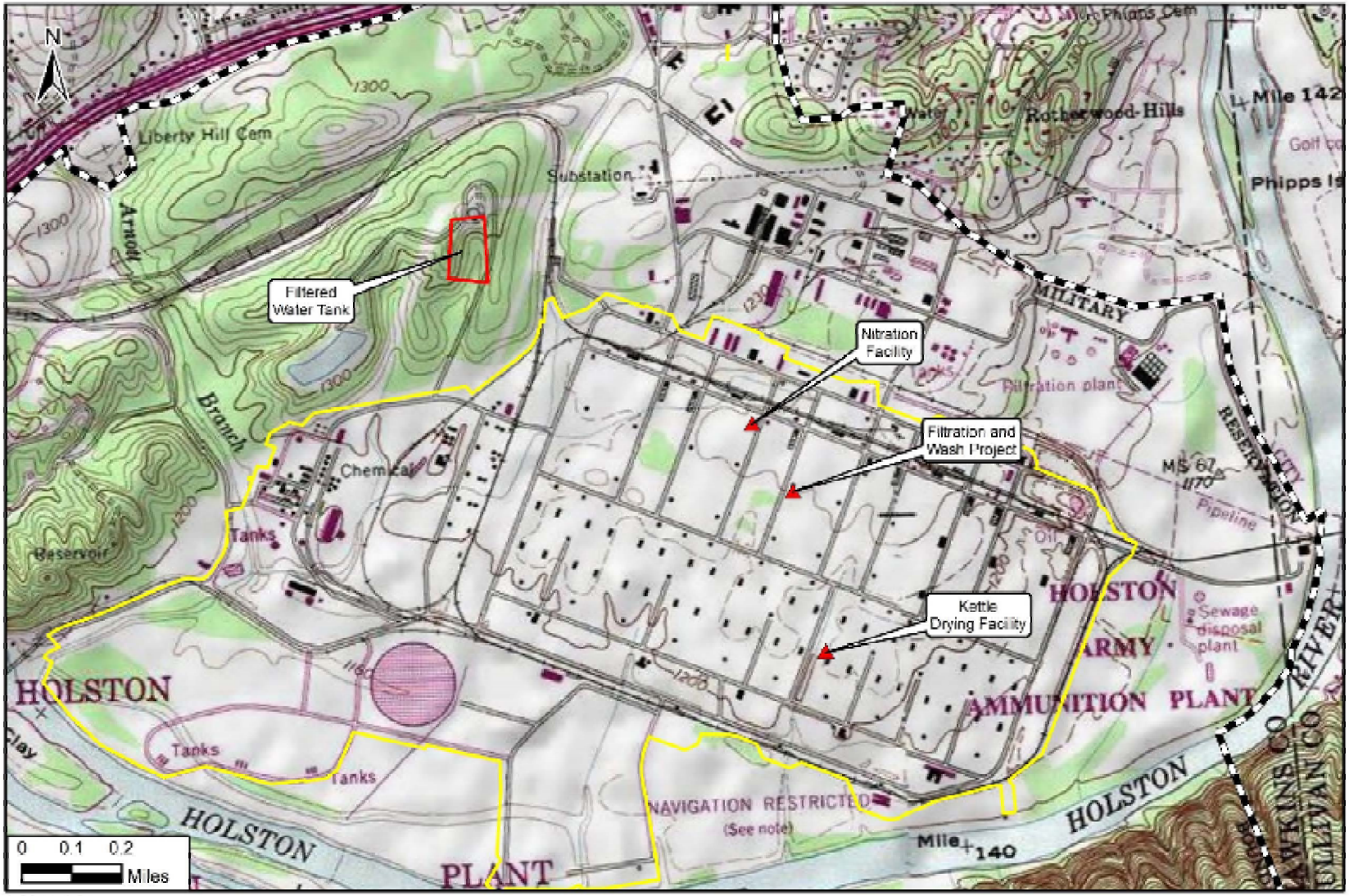
bats. However, there are approximately 400 acres of suitable roosting habitat, surrounding, and adjacent to, the proposed site for tree removal. HSAAP would conduct all tree removal at this site between October 15 And March 31 to avoid any direct impacts to any bats. The site does not contain any karst features such as caves, sinkholes etc. that might potentially serve as a roost site for gray bats.

With these considerations in mind, we request your written concurrence, if possible, that the proposed action as currently conceived will not adversely affect federally listed T/Es. If the proposed project is changed in any substantial way so that HSAAP feels an effect on a federally listed T/E might occur, your office will be immediately informed of the change. If you do not feel that our determination of "not likely to adversely affect" is appropriate, or if we need to provide additional information to enable you to make a determination, feel free to contact Mr. Bruce Cole of my staff by phone at 423-578-6276 or by email at bruce.g.cole.civ@mail.mil.

Sincerely,

Joseph R. Kennedy
Commander's Representative

Enclosures



LEGEND

- HSAAP Boundary
- Production Area
- Project Area
- Project Site

Project Locations

Enclosure 1

Note: Project boundaries and locations are approximate.

FINAL

PLANNING LEVEL SURVEY OF FRESHWATER FISH AND MUSSELS

HOLSTON ARMY AMMUNITION PLANT, TN

October 2019

Prepared for:	**Holston Army Ammunition Plant** **Kingsport, TN**
***Prepared by*:**	**USACE, Mobile District** **Mobile, AL**
With Technical Assistance from:	**Tetra Tech, Inc.** **Fairfax, VA** ***and*** **BIO-WEST, Inc.** **Rosenberg, TX**
Contract No:	**W91278-16-D-0085**
Task Order No:	**W9127818F0509**

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CONTENTS

TABLES

FIGURES

ATTACHMENT

ACRONYMS AND ABBREVIATIONS

AR	Army Regulation
ft	foot, feet
CPUE	catch-per-unit effort
HSAAP	Holston Army Ammunition Plant
m^2	square meter(s)
PLS	Planning Level Survey
RTE	rare, threatened, or endangered species
USACE	U.S. Army Corps of Engineers

EXECUTIVE SUMMARY

This report presents the results of the 2019 freshwater fish and mussel Planning Level Survey (PLS) conducted at Holston Army Ammunition Plant (HSAAP) in Kingsport, TN.

Army Regulation 200-1, *Environmental Protection and Enhancement*, requires that U.S. Army installations conduct PLSs as necessary to support natural resources planning and decision-making. PLSs provide information needed to effectively manage natural resources on Department of Defense lands, in accordance with the requirements of the Sikes Act, as amended (Title 16 of the *United States Code* § 670).

The freshwater fish and mussel PLS was conducted in accordance with the methodologies presented in the *Methodology for Planning Level Survey of Freshwater Fish, Holston Army Ammunition Plant, TN* and *Methodology for Planning Level Survey of Freshwater Mussels, Holston Army Ammunition Plant, TN* (Tetra Tech 2019a, 2019b). The results of the survey are included in this PLS report. Survey areas included all accessible portions of the installation; however, the PLS does not represent a comprehensive (100 percent) survey of all area and habitat types on the installation.

The survey of freshwater fishes included a variety of sampling methods and gear, including backpack electrofishing, boat electrofishing, and seining. The methods used at a particular site were dependent upon habitat conditions encountered. The survey of freshwater mussels included a modified semiquantitative approach to work more efficiently. Sites with suitable mussel habitat were selected and surveyed for two person-hours each, using a combination of visual searches via snorkeling, moving large substrates (e.g., cobble), and digging in or fanning smaller substrate particles (e.g., sand and gravel). In total, 38 species of fishes, two species of live freshwater mussels, and five species of relict shells were observed at HSAAP. No federally protected fishes or freshwater mussels were observed.

The Tetra Tech team recommends that HSAAP's freshwater fish and mussel PLS be updated approximately every 10 years—with the next survey scheduled for 2029—or as needed to support natural resources management.

1.0 INTRODUCTION

This report presents the results of a Planning Level Surveys (PLS) conducted at Holston Army Ammunition Plant (HSAAP) in summer 2019. HSAAP is an approximately 6,000-acre U.S. Army installation in Hawkins and Sullivan counties in Tennessee. HSAAP is required by Department of Defense and Department of the Army regulations to manage its natural resources using ecosystem management principles with an emphasis on the protection of rare, threatened, or endangered (RTE) species. As part of managing the ecosystem, the installation is required to inventory and manage RTE species and other species that occur within its boundaries. PLSs are needed periodically to inventory the species present for planning and management purposes. This document presents the results of a PLS for freshwater fish and mussels conducted on HSAAP in the summer of 2019. It is the first large-scale PLS for mussels to be conducted at HSAAP; previous fish surveys have been conducted at the installation.

1.1 Purpose

The PLS was conducted to accomplish the following objectives:

- To provide information needed by the installation to consider in all activities related to the conduct of the its military mission, while protecting identified natural resources.
- To provide the baseline data required to update the Integrated Natural Resources Management Plan and prepare an Endangered Species Management Plan, if warranted.
- To assist the installation in:
  - Meeting military mission requirements.
  - Complying with the requirements of the Sikes Act, as amended (Title 16 of the *United States Code* [U.S.C.] § 670); Endangered Species Act, as amended (16 U.S.C. § 1531 *et seq.*); and Army Regulation 200-1, *Environmental Protection and Enhancement*.
  - Meeting natural resource management goals.
  - Meeting legal and policy requirements consistent with current national natural resources management philosophies.

1.2 Setting

HSAAP is in the Valley and Ridge physiographic province, between the Cumberland Plateau and the Blue Ridge Mountains. The climate is temperate, with precipitation averaging about 50 inches annually (U.S. Climate Data 2019). The installation is bounded on the south by Bays Mountain of the Holston River Mountain Range and is bisected by 4.5 river miles of the Holston River. The Holston River is a major tributary of the Tennessee River, which is part of the greater Mississippi River drainage. Stream channels are generally dominated by limestone strata with substrates consisting of a mixture of cobble, gravel, and exposed bedrock (Knight et al. 2008). In addition, extensive sand and gravel shoal areas provide habitat for various aquatic biota (Etnier & Starnes 1993).

The major contributors to Holston River surface flows at HSAAP include the North Fork Holston River and the South Fork Holston River, which converge to create the Holston River approximately 2.5 miles upstream from HSAAP. The North Fork Holston River is unimpounded, while flow on the South Fork Holston River is regulated by multiple dams. Releases from Fort Patrick Henry Dam on the South Fork Holston River approximately 9 miles above the HSAAP boundary have a significant influence on the Holston River flow regime at HSAAP.

Other streams on the installation include several small tributaries to the Holston River, including Arnott Branch, Sand Branch, and Parker Creek. Additionally, four small cooling water discharge channels distribute cooling water effluent from manufacturing facilities back to the Holston River. Fish and mussel surveys were conducted in the mainstem Holston River riffle area and its tributaries on HSAAP (Figures 1 and 2). Fish surveys were also conducted in Holston River pool areas, upstream and downstream of the riffle area, and in cooling outfalls (Figure 1).

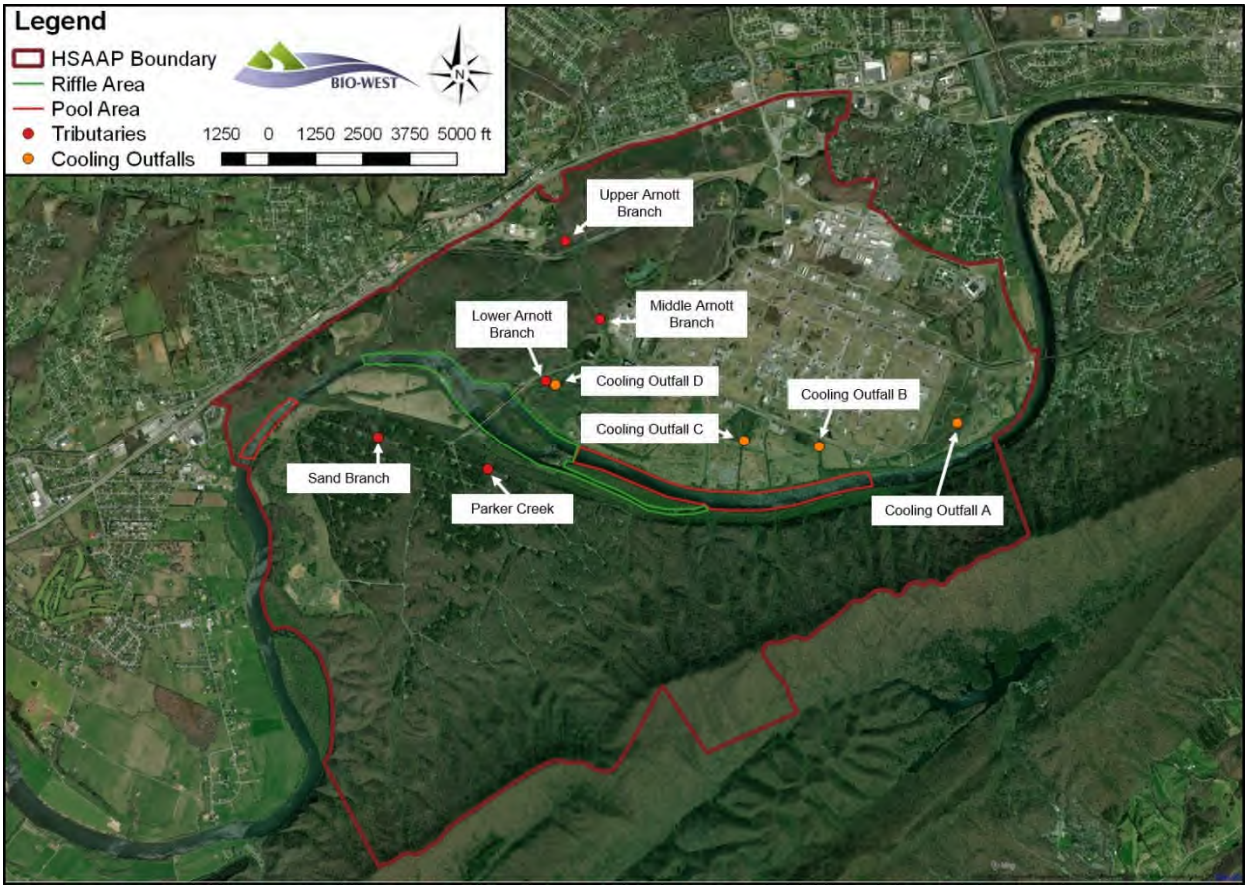

Figure 1: Freshwater fish and mussel survey areas in the mainstem Holston River and sites in tributaries and cooling outfalls.

1.3 Preliminary Reconnaissance Survey

BIO-WEST staff conducted a preliminary reconnaissance site visit and survey at HSAAP in December 2018 to gather preliminary information about the installation and prioritize areas for sampling during the PLS. HSAAP and BIO-WEST determined that the PLS would focus on areas with available access that also contained a high potential for freshwater fish and mussel diversity. Based on information collected during the reconnaissance survey, HSAAP was divided into the study areas described in this section and identified in Figures 1 and 2.

1.3.1 Holston River

Riffle Area

At the Clay Island area, near the bridge crossing (visible in Figure 2), a large riffle complex is present and the river splits into multiple channels. At that point the river becomes generally shallower and swifter as it flows over bedrock and cobble. The area also includes a small "sluice"-type riffle between the south bank of Clay Island and the south bank of the main Holston River.

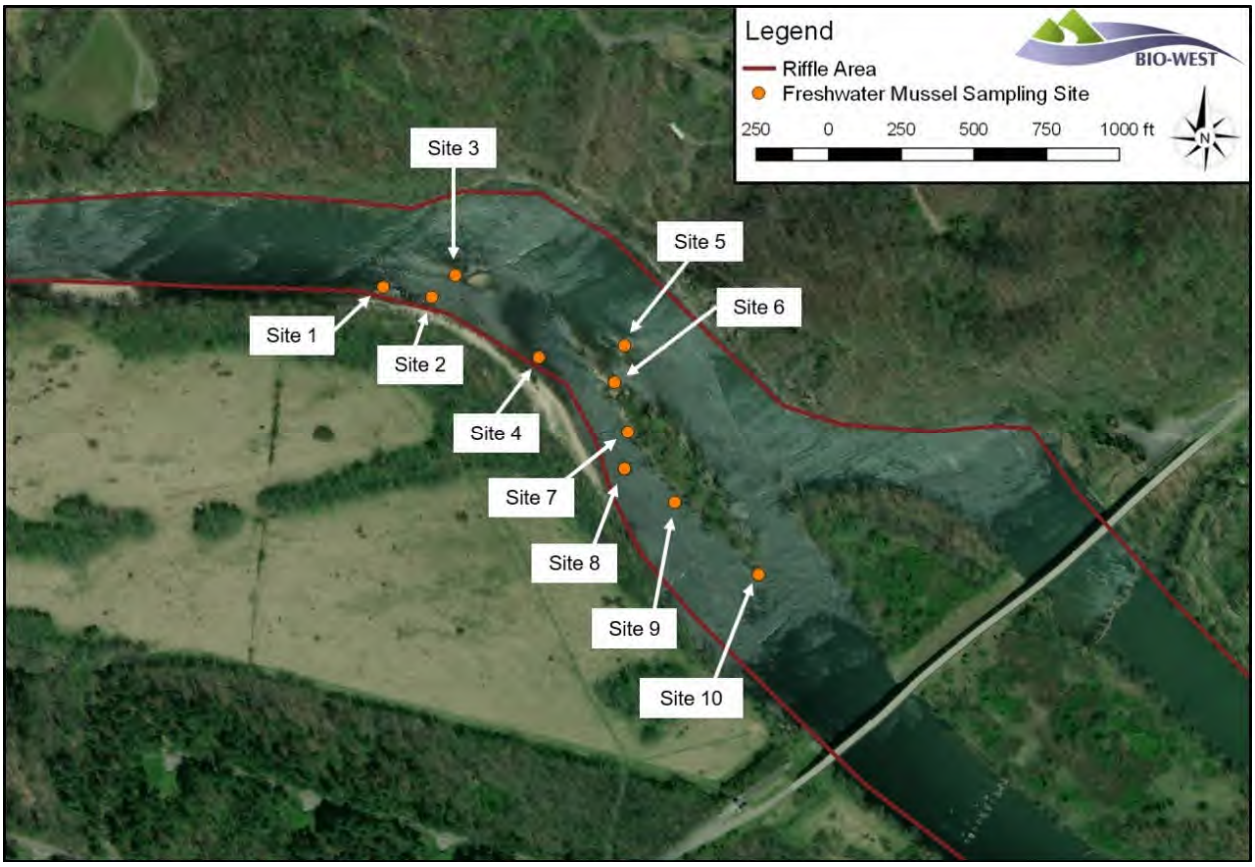

Figure 2: Freshwater mussel sampling sites in the Holston River riffle area.

Sites for freshwater mussel sampling were located from the lower end of Clay Island (Site 10) to three-tenths of a mile downstream (Site 1) (Figure 2). The riffle complex south of Clay Island contains swift-velocity habitats dominated by large cobbles with sand/gravel mixture, although sections overlaid with bedrock also were present. Low-flow habitats are located behind shoals, in small backwater areas, and adjacent to large spans of aquatic macrophytes. Depths in this area are generally shallow, ranging from 0.5 foot (ft) to 2.5 ft, although deeper water up to 4 ft was present in several areas. Embeddedness was variable, with the degree of siltation dependent on flow velocity. Deeper, swift-riffle habitat is present north of Clay Island, which is dominated by large expanses of bedrock. Large boulders are the predominant instream cover in this section.

Upstream Pool Area

From the upstream boundary of HSAAP downstream to the Clay Island area, the river is mostly deep-pool habitat characterized by slower moving water up to 8 ft deep and dominated by silt and sand substrates. Relatively shallow, swifter flowing areas up to 4 ft deep and overlaid by bedrock were present but sparse. Instream cover included several large boulders in the middle of the channel and large aggregates of large woody debris along the banks that, in some cases, created small backwater areas.

Downstream Pool Area

Downstream from the riffle complex is mostly deep-pool habitat up to 8 ft deep with slower flows, dominated by a sand and silt mixture. A small section of faster flowing run habitat consisting of bedrock was present at the riffle-run transition area where depths decreased to 4 ft. Instream cover along the shoreline included aggregates of boulders and large woody debris.

1.3.2 Arnott Branch

Upper Arnott Branch

This site was near the north-central boundary of HSAAP, just downstream of where Arnott Branch crosses the boundary. A densely forested riparian zone covered the site. Stream banks were generally steep and scoured in several sections. Wetted width ranged from about 3 ft to 25 ft and consisted of riffle-run-pool sequences. Stream embeddedness was minimal, and riffles were dominated by bedrock and large cobbles, while runs and pools consisting of sand/gravel mix with some cobbles were present. Depths ranged from 0 ft to 3 ft. Instream cover mostly included undercut banks and tree root wads.

Middle Arnott Branch

This site was near the north-central portion of HSAAP in the Reservoir Area. The riparian area on the right bank was densely forested and was less extensive on the left bank, which parallels a road. Banks were moderately steep on both sides of the stream channel. Wetted width ranged from 3 ft to12 ft and consisted of riffle-run sequences. Embeddedness was moderate, and dominant substrates included large cobbles and sand/gravel mix. Instream cover was limited and consisted of mostly tree root wads and several undercut banks. Several warmwater inflows were present, which the nearby reservoir contributed.

Lower Arnott Branch

This site was near the center of HSAAP in the Production Area (the large open area located between the Middle Arnott Branch site and the Cooling Outfall A site in Figure 1). The riparian area was less extensive, with about 50 ft of vegetated area separating Arnott Branch and Cooling Outfall D on the right bank and 50 ft of mostly mown grass on the left bank. Stream banks were slightly elevated, and the wetted width ranged from 5 ft to 30 ft. This reach of Arnott Branch was low gradient, with the majority of the site consisting of a long pool dominated by sand and silt substrates and depths up to 3.5 ft. In the upper portions of the site, several moderately embedded riffle-run pool sequences were present with mostly sand/gravel substrates and several large cobbles. Instream cover included large woody debris, undercut banks, and aquatic macrophytes.

1.3.3 Parker Creek

This site was in the southwestern portion of HSAAP south of the Holston River. Banks were steep and the riparian buffer was extensive on both sides of the stream. Wetted width ranged from 2 ft to 12 ft and consisted of pool-riffle sequences with minimal embeddedness dominated

by cobble and sand/gravel substrates, although some bedrock was present within riffles. Depths were generally shallow, ranging from 0 ft to 1 ft, although deeper water up to 3.5 ft was present in a pool directly below the bridge crossing. Instream cover was limited and consisted of some woody debris and tree root wads.

1.3.4 Sand Branch

This site was in the southwestern portion of HSAAP in the X-Area (see Figure 6). Banks were steep and the riparian buffer was extensive on both sides of the stream. Wetted width ranged from 5 ft to 20 ft and consisted of cascade-riffle-pool sequences. Large bedrock shelves created steep changes in elevation, although minimal flow occurred over the cascades. Embeddedness ranged from limited to moderate, with riffles and pools dominated by gravel and cobble substrates with some sand mixed in. Depths were shallow, ranging from 0 ft to 1 ft. Sparse instream cover was present and included tree root wads and woody debris.

1.3.5 Cooling Outfalls

Cooling Outfall A

This site was on the southeastern portion of HSAAP in the Production Area. Banks were steep and the riparian buffer was extensive on both sides of the stream. Wetted width ranged from 4 ft to 10 ft and consisted of riffle-pool sequences. This site was embedded throughout, dominated by gravel and sand substrates. Depths were shallow, ranging from 0 ft to 3 ft. Instream cover included undercut banks and tree root wads.

Cooling Outfall B

This site was on the southeastern portion of HSAAP in the Production Area. Banks were steep and the riparian buffer was limited, consisting of mostly tall grasses and a narrow line of trees running parallel to the stream. Wetted width ranged from 5 ft to 10 ft and consisted of mostly riffle habitat with minimal embeddedness, although several small pools were present. Substrates were mostly cobble and gravel. Depths ranged from 0 ft to 1.5 ft, and instream cover was limited to small sections of large woody debris.

Cooling Outfall C

This site was in the south-central portion of HSAAP north of the Holston River. Banks were slightly elevated, and the riparian buffer was limited, consisting of tall grass and shrubs. Wetted width ranged from 20 ft to 30 ft. The upper portion of the site consisted of mostly pool habitats, with faster flows channelized within the thalweg, and contained sand and silt substrates. Faster flowing riffle habitats were present in the lower portion of the site, dominated by cobble and gravel, although noticeably embedded. Depths ranged from 0 ft to 3.5 ft, and instream cover consisted of undercut banks, large woody debris, submerged vegetation, and tree root wads.

Cooling Outfall D

This site was near the center of HSAAP near the lower Arnott Branch site. The riparian area was less extensive, with about 50 ft of vegetated area separating Arnott Branch and Cooling Outfall D on the right bank and 50 ft of mostly mown grass on the left bank. Stream banks were slightly elevated. Wetted width was about 40 ft, consisting of deep-pool habitat with sand and silt substrates, and depths ranging from 3 ft to 5 ft. Instream cover was limited to small aggregates of large woody debris.

1.4 Survey Team Qualifications

To conduct fish and mussel surveys at HSAAP, BIO-WEST used an experienced team of fish and mussel taxonomists including Mr. Brad Littrell, Mr. Kyle Sullivan, and Mr. Gerry Dinkins. Mr. Littrell holds an MS in aquatic biology from Texas State University and has approximately 15 years of experience as an Aquatic Ecologist at BIO-WEST. During his career he has surveyed for fish, mussels, and aquatic macroinvertebrates throughout the southeastern and southwestern United States. Mr. Littrell is a recognized fish taxonomist that teaches an annual fish identification short course.

Mr. Kyle Sullivan is an experienced malacologist with over five years of experience in freshwater mussel sampling, identification, propagation and culture techniques. Mr. Sullivan has successfully completed multiple freshwater mussel identification courses, including those required by some states for surveyor certification. As a result, he is a certified mussel surveyor in both West Virginia and Ohio, among other states. During his career, he has conducted freshwater mussel survey and research projects in 8 U.S. states (AR, MD, MI, OH, PA, TX, VA, WV) and one Canadian Province (Ontario). Mr. Sullivan is an MS candidate in biology from Central Michigan University and has a BS in environmental science from Lynchburg College.

Mr. Gerald Dinkins is a native of eastern Tennessee, and a recognized expert on the areas fish and freshwater mussel fauna. He holds an MS in Ecology from University of Tennessee and has 29 years of experience initiating, designing, and conducting studies on aquatic systems in both the public and private sectors, as well as academia. He is currently the curator of the malacological collection at the McClung Museum, University of Tennessee.

2.0 SURVEY METHODS

2.1 Fish Sampling

To efficiently capture fish in diverse habitats, the sampling team used a variety of gear types, including backpack electrofishing, boat electrofishing, and seining. The methods used at a particular site were dependent upon waterbody size and habitat conditions encountered. Individuals too small to identify and voucher specimens were fixed in 10 percent formalin and brought back to the BIO-WEST laboratory for verification. Following BIO-WEST verification, fish specimens will be submitted to the University of Tennessee's Etnier Ichthyological Collection. Scientific and common names for fishes follow *Common and Scientific Names of Fishes from the United States, Canada, and Mexico*, Seventh Edition (Paige et al. 2013).

2.1.1 Holston River Riffle and Pool Areas

The team used a Smith-Root 5.0 generator-powered pulsator electrofisher mounted on a 15-ft aluminum john boat with a retractable boom to collect fishes at the Holston River pool areas and deeper, swift flowing habitats within the riffle area. At each site, all available habitat types, including structure (e.g., large woody debris) within shoreline habitats and/or open water habitats (e.g., boulder) and open water habitat overlaid with bedrock, were sampled for at least 15 minutes (900 seconds) of electrofishing pedal time. Seining was also used to target small-bodied fishes in swift-flowing riffle areas. All fishes captured were held in an onboard holding tank until sampling at a given station was complete. At that point, fishes were identified to species, enumerated, and released near the site of capture.

2.1.2 Tributaries and Cooling Outfalls

At wadeable stream sites in the tributaries and cooling outfalls, the survey team used a combination of backpack electrofishing (Smith-Root Model LR-24) and seining (6-ft tall by 15-ft long, 3/16-inch mesh). Backpack electrofishing is most effective around dense cover (e.g., large woody debris) and undercut banks, whereas seining is useful in sampling open water areas (Figure 3). A combination of the two techniques provided effective coverage of all available habitats. At least 15 minutes (900 seconds) of backpack electrofishing time and a minimum of six seine hauls were conducted at each site, except for Cooling Outfall D, which was too deep for backpack electrofishing. All fishes captured were held in buckets with fresh stream water until sampling at a given site was complete. Fishes were identified to species, enumerated, and released near the site of capture.

Figure 3: Backpack electrofishing (*left*) in Cooling Outfall C and seining (*right*) in Lower Arnott Branch.

2.2 Freshwater Mussel Sampling

2.2.1 Holston River

Riffle Area

During the planning process for this study, using transect surveys within the riffle area was proposed. However, swift mid-channel flows during the sampling period made transect sampling for freshwater mussels inefficient and hazardous. A semiquantitative approach was still implemented but modified to more efficiently survey the target areas. Sites with suitable mussel habitat were selected and surveyed for two person-hours each. The total area surveyed was at least 1,000 square meters (m^2) of suitable habitat. Mussel sampling comprised visual searches via snorkeling, moving larger substrates (e.g., cobble), and digging in or fanning smaller substrate particles (e.g., sand and gravel). Upon completion of sampling at each site, all mussels were identified to species, enumerated, and measured to the nearest millimeter. Scientific and common names were based on the most up-to-date nomenclature (Williams et al. 2017) and recently accepted taxonomic revisions (Harris 2019) accepted by the Freshwater Mollusk Conservation Society. An age range estimation was given for each species by counting annuli on the shell exterior. In addition, relict shell material was collected and identified to species to get a complete list of the potential taxa present.

Pool Areas

Because scuba gear or surface-supplied air could not be used for this survey, the team did not conduct mussel sampling in deeper pool areas.

2.2.2 Tributaries

Qualitative sampling methods were used at each site within the Holston River tributaries. Visual and tactile search methods were implemented for a minimum of two person-hours at each site. Surveys covered both bank and in-channel habitats. Any segments with unsuitable habitat or with depths that required scuba gear or surface-supplied air were skipped over and noted.

3.0 SURVEY RESULTS

3.1 Freshwater Fish

Sampling 12 sites resulted in the capture of 2,523 individuals represented by nine families and 38 species at HSAAP. Cyprinid fishes were the most abundant and diverse, comprising 66.2 percent of the total catch and 42.1 percent of the total species. The remaining families characterized substantially less of the total catch and species richness. Percids and Catostomids represented 11.5 percent and 9.1 percent of total fishes, respectively. Centrarchids were the second most diverse family, comprising 18.4 percent of species, and Percids were the third most at 15.8 percent. Atherinopsidae and Clupeidae were the least represented families, each comprising less than 1 percent of the total catch and 2.6 percent of total species (Table 1).

Table 1: Abundance of fish families at HSAAP in July and August 2019

Family	Abundance		Species Richness	
	#	%	#	%
Atherinopsidae	1	< 0.1	1	2.6
Catastomidae	229	9.1	4	10.5
Centrarchidae	189	7.5	7	18.4
Clupeidae	1	< 0.1	1	2.6
Cottidae	41	1.6	1	2.6
Cyprinidae	1670	66.2	16	42.1
Ictaluridae	17	0.7	1	2.6
Percidae	291	11.5	6	15.8
Poecilidae	84	3.3	1	2.6
Total	**2523**		**38**	

Species richness was variable among sites, ranging from 4 to 26 species, and averaging 13.3. Species diversity was the richest in the Holston River, with maximum richness observed in the riffle area. The number of species observed in the tributaries and cooling outfalls was generally fewer than in the Holston River, which included the least rich site, Upper Arnott Branch. Despite frequently less diversity, 14 or more species were observed at several sites in the tributaries and cooling outfalls (Tables 2, 3, and 4).

Species occurrence varied among sites, although several species were widely distributed throughout HSAAP. Snubnose Darter (*Etheostoma simoterum*) was ubiquitous, occurring at 100 percent of the sites. Largescale stoneroller (*Campostoma oligolepis*), Redbreast Sunfish (*Lepomis auritus*), and Telescope Shiner (*Notropis telescopus*) were also frequently observed, at 83.3 percent, 75.0 percent, and 58.3 percent of the sites, respectively. The broad distribution of these species is likely attributed to their affinity for both small streams and larger rivers (Etnier & Starnes 1993).

3.1.1 Holston River

A total of 0.76 of an hour of boat electrofishing time and 12 seine hauls resulted in the capture of 1,347 individuals represented by six families and 31 species in the Holston River. Species richness at Holston River sites ranged from 20 to 26 species, averaging 23. Cyprinid fishes were the most abundant, characterizing 69.7 percent of the assemblage (Table 2). Large river species such as Emerald Shiner (*Notropis atherinoides*) and Mimic Shiner (*Notropis volucellus*) (Etnier & Starnes 1993) were more prevalent in the Holston River than at tributary sites, and

Emerald Shiner occurred only in the river. Similarly, the undescribed Sawfin Shiner (*Notropis* sp.) was only observed in the Holston River. Catostomids and Centrarchids were more abundant in the Holston River than in the tributaries and cooling outfalls and were especially prevalent in the pool areas. Cottid, Ictalurid, and Poecilid fishes were absent from mainstem sites (Tables 2, 3, and 4).

Table 2: Total catch (#) and relative abundance (%) of fishes in the Holston River pool and riffle areas

Scientific Name	Common Name	Riffle		Upper Pool		Lower Pool	
		#	%	#	%	#	%
Labidesthes sicculus	Brook Silverside	0	0.0	0	0.0	1	0.5
Hypentelium nigricans	Northern Hogsucker	110	14.2	9	3.4	0	0.0
Moxostoma duquesnei	Black Redhorse	4	0.5	0	0.0	2	1.1
Moxostoma erythrurum	Golden Redhorse	31	4.0	30	11.5	1	0.5
Ambloplites rupestris	Rockbass	1	0.1	27	10.3	3	1.6
Lepomis auritus	Redbreast Sunfish	3	0.4	29	11.1	28	15.0
Lepomis cyanellus	Green Sunfish	0	0.0	0	0.0	1	0.5
Lepomis macrochirus	Bluegill	1	0.1	10	3.8	4	2.1
Lepomis megalotis	Longear Sunfish	0	0.0	1	0.4	0	0.0
Micropterus dolomieu	Smallmouth Bass	13	1.7	15	5.7	13	7.0
Micropterus salmoides	Largemouth Bass	0	0.0	3	1.1	4	2.1
Dorosoma cepedianum	American Gizzard Shad	0	0.0	0	0.0	1	0.5
Campostoma oligolepis	Largescale Stoneroller	168	21.8	1	0.4	0	0.0
Cyprinella galactura	Whitetail Shiner	25	3.2	0	0.0	1	0.5
Cyprinella spiloptera	Spotfin Shiner	1	0.1	3	1.1	13	7.0
Cyprinus carpio	Common Carp	0	0.0	1	0.4	0	0.0
Hybobsis amblops	Bigeye Chub	10	1.3	3	1.1	2	1.1
Luxilus chrysocephalus	Striped Shiner	26	3.4	24	9.2	0	0.0
Luxilus coccogenis	Warpaint Shiner	10	1.3	1	0.4	1	0.5
Nacomis micropogon	River Chub	15	1.9	0	0.0	0	0.0
Notropis atherinoides	Emerald Shiner	9	1.2	0	0.0	115	61.5
Notropis leuciodus	Tennessee Shiner	12	1.6	3	1.1	0	0.0
Notropis sp.	Sawfin Shiner	83	10.8	6	2.3	14	7.5
Notropis telescopus	Telescope Shiner	215	27.8	39	14.9	100	53.5
Notropis volucellus	Mimic Shiner	5	0.6	25	9.5	6	3.2
Semotilus atromaculatus	Creek Chub	1	0.1	1	0.4	0	0.0
Etheostoma blennioides	Greenside Darter	11	1.4	7	2.7	0	0.0
Etheostoma rufilineatum	Redline Darter	1	0.1	0	0.0	0	0.0
Etheostoma simoterum	Snubnose Darter	4	0.5	16	6.1	2	1.1
Etheostoma zonale	Banded Darter	11	1.4	4	1.5	1	0.5
Percina burtoni	Blotchside Logperch	1	0.1	0	0.0	0	0.0
Percina caprodes	Logperch	1	0.1	4	1.5	0	0.0
	Number of Species	**26**		**23**		**20**	
	Total Number of Indivudals	**772**		**262**		**313**	

Riffle Area

A total of 772 individuals and 26 species were observed within the riffle area, which exhibited greater species richness than the pool areas, tributaries, and cooling outfalls (Table 2). Cyprinids were the most abundant fishes observed, characterizing 75.1 percent of the total catch. Telescope Shiner and Largescale Stoneroller were the most abundant species, representing 27.8 percent and 21.8 percent of fishes captured, respectively. Northern

Hogsucker (*Hypentelium nigricans*) was the third most abundant and comprised 14.2 percent of the total fishes. Percid fishes were less represented but were more diverse in the riffle area than in the pool areas. This included the state-threatened Blotchside Logperch (*Percina burtoni*) (Figure 4) (TNHP 2016), which occurred only in the riffle area (Table 2). Golden Redhorse (*Moxostoma erythrurum*) characterized a small percentage of the total catch at 4.0 percent, but was the most common species observed within deep, fast-flowing habitat over bedrock. In addition to Blotchside Logperch, River Chub (*Nocomis micropogon*), and Redline Darter (*Etheostoma rufilineatum*) were also observed only in the riffle area (Table 2).

Figure 4: State-threatened Blotchside Logperch (*Percina burtoni*).

Pool Areas

A total of 262 individuals and 23 species were observed in the Upper Pool. Species composition was relatively even across all species, although Cyprinid fishes were the most abundant and represented 40.8 percent of all individuals. Only four species accounted for more than 10 percent of the total catch—Telescope Shiner, Golden Redhorse, Redbreast Sunfish, and Rock Bass (*Ambloplites rupestris*)—encompassing 14.9 percent, 11.5 percent, 11.1 percent, and 10.3 percent, respectively. Among all sites, Longear Sunfish (*Lepomis megalotis*) was captured only at the Upper Pool (Table 2).

Sampling the Lower Pool resulted in the capture of 313 individuals and 20 species. As in the Upper Pool, Cyprinids were the most represented family, accounting for 80.5 percent of the total catch. Emerald Shiner was the most abundant species, comprising 36.7 percent of fishes captured, although Telescope Shiner was close at 31.9 percent. Species observed in the Lower Pool that were not found at any other sites included American Gizzard Shad (*Dorosoma cepedianum*), Brook Silverside (*Labidesthes sicculus*), and Green Sunfish (*Lepomis cyanellus*) (Table 2).

3.1.2 Tributaries

A total of 1.39 hours of backpack electrofishing time and 30 seine hauls resulted in the capture of 829 individuals represented by seven families and 19 species (Table 3). Species diversity was variable, and generally lower than in the Holston River and cooling outfalls, ranging from 4 to 16 species, averaging 8.8 (Tables 2, 3, and 4). As in the Holston River, Cyprinid fishes were the most abundant, representing 66.7 percent of the total catch. Small stream specialist Blacknose Dace (*Rhinichthys atratulus*) and Creek Chub (*Semotilus atromaculatus*) (Etnier & Starnes 1993) were more prevalent at tributary sites. Snubnose Darter was more abundant in the tributaries than in the Holston River and cooling outfalls, comprising 20.0 percent of all

fishes in the tributaries. Similarly, Banded Sculpin (*Cottus carolinae*) was most abundant within the tributaries, representing 4.8 percent of the total catch (Table 3).

Sampling in Sand Branch resulted in the capture of 129 individuals and six species. Cyprinids characterized almost the entire assemblage observed and were dominated by Blacknose Dace and Creek Chub, which represented 48.4 percent and 46.5 percent of the total catch, respectively. Both species were more abundant at this site than at all other tributary sites (Table 3).

A total of 156 individuals and 12 species were observed at Parker Creek. As at Sand Branch, Blacknose Dace and Creek Chub were the most abundant species, representing 39.1 percent and 31.4 percent of the community, respectively. Of the tributary sites, Smallmouth Bass (*Micropterus dolomieu*) was observed only at this site (Table 3).

Upper Arnott Branch was the least abundant and speciose tributary site, represented by 58 individuals and four species. Blacknose Dace was the dominant species and comprised 84.5 percent of fishes observed. Banded Sculpin was the second most abundant species at 12.1 percent, while a single Creek Chub and a single Snubnose Darter were observed (Table 3).

Middle Arnott Branch yielded similar total catch and diversity to the upper site, represented by 70 individuals and 6 species, although assemblage structure varied. Blacknose Dace was also the most abundant species at 48.6 percent. Banded Sculpin was the second most dominant species in Middle Arnott Branch, comprising 31.4 percent of the total catch. Spotfin Shiner (*Cyprinella spiloptera*) was observed only at Middle Arnott Branch among all tributary sites (Table 3).

A total of 416 individuals and 16 species were observed at Lower Arnott Branch. As at the other tributary sites, Cyprinid fishes characterized most of the assemblage, although Bigeye Chub (*Hybopsis amblops*) was the most abundant species, comprising 33.9 percent of the total catch. Snubnose Darter and Largescale Stoneroller were also abundant at Lower Arnott Branch. Among all tributary sites, Bluegill (*Lepomis macrochirus*), Mimic Shiner, Bluntnose Minnow (*Pimephales notatus*), and Western Mosquitofish (*Gambusia affinis*) were observed only at Lower Arnott Branch. Greater numbers and richer diversity of fishes being observed in Lower Arnott Branch than in other tributary sites was likely because of a greater habitat diversity. Large expanses of pool habitat with large woody debris and undercut banks as well as riffle habitat were present. Habitat at the other sites was mostly swift riffles, and pools were much less prevalent.

Table 3: Total catch (#) and relative abundance (%) of fishes in the Holston River tributaries

Family	Scientific Name	Common Name	Sand Branch		Parker Creek		Upper Arnott Branch		Middle Arnott Branch		Lower Arnott Branch	
			#	%	#	%	#	%	#	%	#	%
Catastomidae	*Catostomus commersoni*	White Sucker	0	0.0	3	1.9	0	0.0	0	0.0	5	1.2
	Moxostoma duquesnei	Black Redhorse	0	0.0	3	1.9	0	0.0	0	0.0	1	0.2
	Moxostoma erythrurum	Golden Redhorse	0	0.0	1	0.6	0	0.0	0	0.0	11	2.6
Centrarchidae	*Lepomis auritus*	Redbreast Sunfish	1	0.8	1	0.6	0	0.0	0	0.0	11	2.6
	Lepomis macrochirus	Bluegill	0	0.0	0	0.0	0	0.0	0	0.0	2	0.5
	Micropterus dolomieu	Smallmouth Bass	0	0.0	2	1.3	0	0.0	0	0.0	0	0.0
Cottidae	*Cottus carolinae*	Banded Sculpin	1	0.8	0	0.0	7	12.1	22	31.4	10	2.4
Cyprinidae	*Campostoma oligolepis*	Largescale Stoneroller	1	0.8	14	9.0	0	0.0	3	4.3	38	9.1
	Cyprinella spiloptera	Spotfin Shiner	0	0.0	0	0.0	0	0.0	2	2.9	0	0.0
	Hybopsis amblops	Bigeye Chub	0	0.0	0	0.0	0	0.0	0	0.0	141	33.9
	Luxilus chrysocephalus	Striped Shiner	0	0.0	1	0.6	0	0.0	0	0.0	13	3.1
	Notropis telescopus	Telescope Shiner	0	0.0	5	3.2	0	0.0	1	1.4	2	0.5
	Notropis volucellus	Mimic Shiner	0	0.0	0	0.0	0	0.0	0	0.0	2	0.5
	Pimephales notatus	Bluntnose Minnow	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2
	Rhinichthys atratulus	Blacknose Dace	62	48.1	61	39.1	49	84.5	34	48.6	13	3.1
	Semotilus atromaculatus	Creek Chub	60	46.5	49	31.4	1	1.7	0	0.0	0	0.0
Ictaluridae	*Ameiurus natalis*	Yellow Bullhead	0	0.0	4	2.6	0	0.0	0	0.0	5	1.2
Percidae	*Etheostoma simoterum*	Snubnose Darter	4	3.1	12	7.7	1	1.7	8	11.4	141	33.9
Poecilidae	*Gambusia affinis*	Western Mosquitofish	0	0.0	0	0.0	0	0.0	0	0.0	20	4.8
		Number of Species	**6**		**12**		**4**		**6**		**16**	
		Total Number of Individuals	**129**		**156**		**58**		**70**		**416**	

3.1.3 Cooling Outfalls

A total of 0.76 of an hour of backpack electrofishing time and 26 seine hauls resulted in the capture of 347 individuals represented by seven families and 26 species. Species richness was variable across sites, ranging from 6 to 19 species, averaging 11.8 (Table 4). Cyprinids characterized 51.3 percent of the total catch, which was lower than in the Holston River and tributary sites (Tables 2, 3, and 4). This was because of a greater abundance of the Poecilid, Western Mosquitofish, which represented 18.4 percent of fishes observed. Percids yielded similar abundance, comprising 17.9 percent of the total catch, and included an additional two species compared to the tributaries (Tables 3 and 4).

At Cooling Outfall A, 83 individuals and 19 species were observed. Species composition was relatively even, although several species characterized most of the assemblage. Cyprinids were the most abundant fishes, and Striped Shiner (*Luxilus chrysocephalus*) was the most abundant species, representing 25.3 percent of the total catch. Largescale Stoneroller was the second most abundant species at 14.5 percent. Black Redhorse (*Moxostoma duquesnei*) and Snubnose Darter were the third most abundant species, each representing 13.3 percent of fishes observed. Of the cooling outfalls, Black Redhorse, Bluegill, Smallmouth Bass, Warpaint Shiner (*Luxilus coccogenis*), Telescope Shiner, and Mimic Shiner were observed only at Cooling Outfall A (Table 4). Despite having a low overall abundance, Cooling Outfall A had one of the most diverse assemblages of species at HSAAP and exhibited a list of species similar to several Holston River sites (Tables 2, 3, and 4).

A total of 75 individuals and 14 species were observed at Cooling Outfall B (Table 4). Cyprinid fishes were the most abundant, although species composition was relatively even, and it was one of the only sites sampled at HSAAP where the dominant species was not a Cyprinid (Tables 2, 3, and 4). Banded Darter (*Etheostoma zonale*) was the most abundant species, representing 22.7 percent of the total catch. Tennessee Shiner (*Notropis leuciodus*) ranked second in abundance at 16.0 percent. Among cooling outfall sites, Rock Bass (*Ambloplites rupestris*) and Banded Sculpin were observed only at Cooling Outfall B. Percids in aggregate were more abundant at this site than at the other cooling outfalls because of the extensive riffle habitat (Table 4).

Cooling Outfall C had the most individuals of the cooling outfall sites, but the lowest diversity richness, totaling 109 individuals of six species. It was the only site where Cyprinids were not the most abundant fishes. The site was dominated by Western Mosquitofish, which characterized 50.5 percent of the total catch. Largescale Stoneroller was also abundant at 32.1 percent. The remaining fishes represented Centrarchids, Ictalurids, and Percids, which in aggregate comprised 17.4 percent of the fish assemblage (Table 4).

A total of 80 individuals and eight species were observed at Cooling Outfall D. Bluntnose Minnow was the most abundant species, representing 53.8 percent of the total catch. The other species were much less prevalent, with Redbreast Sunfish and Western Mosquitofish tying for being the second most abundant species, each comprising 11.3 percent of fishes observed. Of the cooling outfall sites, Golden Redhorse and Bigeye Chub were observed only at Cooling Outfall D (Table 4).

Table 4: Total catch (#) and relative abundance (%) of fishes in the cooling outfalls

Family	Scientific Name	Common Name	Outfall A		Outfall B		Outfall C		Outfall D	
			#	%	#	%	#	%	#	%
Catastomidae	*Catostomus commersoni*	White Sucker	3	3.6	0	0.0	0	0.0	0	0.0
	Hypentelium nigricans	Northern Hogsucker	1	1.2	2	2.7	0	0.0	0	0.0
	Moxostoma duquesnei	Black Redhorse	11	13.3	0	0.0	0	0.0	0	0.0
	Moxostoma erythrurum	Golden Redhorse	0	0.0	0	0.0	0	0.0	1	1.3
Centrarchidae	*Ambloplites rupestris*	Rock Bass	0	0.0	2	2.7	0	0.0	0	0.0
	Lepomis auritus	Redbreast Sunfish	2	2.4	0	0.0	1	0.9	9	11.3
	Lepomis macrochirus	Bluegill	1	1.2	0	0.0	0	0.0	0	0.0
	Micropterus dolomieu	Smallmouth Bass	1	1.2	0	0.0	0	0.0	0	0.0
Cottidae	*Cottus carolinae*	Banded Sculpin	0	0.0	1	1.3	0	0.0	0	0.0
Cyprinidae	*Campostoma oligolepis*	Largscale Stoneroller	12	14.5	9	12.0	35	32.1	3	3.8
	Cyprinella galactura	Whitetail Shiner	2	2.4	8	10.7	0	0.0	1	1.3
	Cyprinella spiloptera	Spotfin Shiner	2	2.4	6	8.0	0	0.0	0	0.0
	Hybopsis amblops	Bigeye Chub	0	0.0	0	0.0	0	0.0	7	8.8
	Luxilus chrysocephalus	Striped Shiner	21	25.3	2	2.7	0	0.0	0	0.0
	Luxilus coccogenis	Warpaint Shiner	1	1.2	0	0.0	0	0.0	0	0.0
	Notropis leuciodus	Tennessee Shiner	1	1.2	12	16.0	0	0.0	0	0.0
	Notropis telescopus	Telescope Shiner	3	3.6	0	0.0	0	0.0	0	0.0
	Notropis volucellus	Mimic Shiner	5	6.0	0	0.0	0	0.0	0	0.0
	Pimephales notatus	Bluntnose Minnow	0	0.0	0	0.0	0	0.0	43	53.8
	Rhinichthys atratulus	Blacknose Dace	0	0.0	1	1.3	0	0.0	0	0.0
	Semotilus atromaculatus	Creek Chub	1	1.2	3	4.0	0	0.0	0	0.0
Ictaluridae	*Ameiurus natalis*	Yellow Bullhead	1	1.2	1	1.3	6	5.5	0	0.0
Percidae	*Etheostoma blennioides*	Greenside Darter	1	1.2	3	4.0	1	0.9	0	0.0
	Etheostoma simoterum	Snubnose Darter	11	13.3	8	10.7	11	10.1	7	8.8
	Etheostoma zonale	Banded Darter	3	3.6	17	22.7	0	0.0	0	0.0
Poecilidae	*Gambusia affinis*	Western Mosquitofish	0	0.0	0	0.0	55	50.5	9	11.3
		Number of Species	**19**		**14**		**6**		**8**	
		Total Number of Indivudals	**83**		**75**		**109**		**80**	

3.2 Freshwater Mussels

3.2.1 Holston River

A total of 20 person-hours of survey effort within approximately 1,000 m^2 of suitable habitat in the riffle area resulted in the collection of two Wavyrayed Lampmussel (*Lampsilis fasciola*) and two Rainbow (*Villosa iris*). One Wavyrayed Lampmussel was located at Site 1, which was a lower flow area near the bank at the boundary line of the riffle area with sand and gravel substrates. One Rainbow was found in slack water habitat between two islands composed of sand and silt (Site 5). The remaining two individuals were found at sites 7 and 8, which were swifter riffle habitat with large cobble substrates with sand/gravel mixture (Table 5).

Table 5: Total catch (#) and catch-per-unit effort (CPUE) of freshwater mussel survey sites in the Holston River riffle area

Site	Wavyrayed Lampmussel		Rainbow	
	#	CPUE	#	CPUE
1	1	0.5	0	0.0
2	0	0.0	0	0.0
3	0	0.0	0	0.0
4	0	0.0	0	0.0
5	0	0.0	1	0.5
6	0	0.0	0	0.0
7	0	0.0	1	0.5
8	1	0.5	0	0.0
9	0	0.0	0	0.0
10	0	0.0	0	0.0
Totals	**2**		**2**	

One Wavyrayed Lampmussel was gravid, indicating that spawning successfully occurs in this reach of the Holston River. The second Wavyrayed Lampmussel collected (Figure 5) was 28 millimeters and likely a year-one mussel, supporting the assumption that recent recruitment has occurred. However, based on only two Wavyrayed Lampmussel being observed, successful spawning and recruitment is likely infrequent.

Relict shells of five species of mussels were documented, in addition to the two species found live (Table 6). Most of the shell material collected of species not observed live were extremely weathered, without glossy nacre, and faded or absent periostracum. Several shell specimens of Mountain Creekshell (*Villosa vanuxemensis*) had hinge ligaments still attached and lustrous nacre, suggesting this species might persist in that section of the Holston River. However, surface waters of the river are characterized by greater hardness than deeper waters (Hampton et al. 2000), which can preserve shell material for longer periods of time. Based on that information, if Mountain Creekshell persists in this section of the Holston River, it is likely at low densities.

In addition to freshwater mussels, Pleurocerid snails were observed during survey efforts. Large numbers of Smooth Mudalia (*Leptoxis virgata*) and Pagoda Hornsnail (*Pleurocera uncialis*) were observed at most sites. Relict Pointed Campeloma (*Campeloma decisum*) shells were abundant along the shorelines of shoals. Spiny Riversnail (*Io fluvialis*) (Figure 5) was uncommon throughout the riffle area but was locally abundant at sites with faster flows with large cobbles present. After having been extirpated from most of its range because of the impoundment of the Tennessee River and most of its major tributaries and localized but severe pollution (Dillon and

Kohl 2013), Spiny Riversnail was rediscovered in the Holston River by Ahlstedt (2010) and is believed to be a result of downstream dispersal from the lower North Fork Holston River (Ahlstedt 1991).

Table 6: Freshwater mussel species observed in the Holston River riffle area

Common Name	Scientific Name	Live	Relic Shells
Threeridge	*Amblema plicata*		X
Purple Wartyback	*Cyclonaias tuberculata*		X
Wavyrayed Lampmussel	*Lampsilis fasciola*	X	X
Pocketbook	*Lampsilis ovata*		X
Fluted Shell	*Lasmigona costata*		X
Rainbow	*Villosa iris*	X	X
Mountain Creekshell	*Villosa vanuxemensis*		X

Figure 5: Freshwater mollusks observed in the Holston River riffle area at HSAAP included Wavyrayed Lampmussel (*left*), Rainbow *(center*), and Spiny Riversnail (*right*).

The primary objective of mussel sampling was to detect the presence of federally endangered or threatened species, which were not observed during this study. Smith (2006) provides a mussel sampling equation that incorporates search area, search efficiency, and mussel density to calculate the probability of detecting at least one individual of a rare species:

$$\text{Prob(detecting at least one individual)} = 1 - e^{-\beta a \mu}$$

a = Search Area (m^2)
β = Search Efficiency (proportion; 0.0 – 1.0)
μ = Population Density (m^2)

When using a conservative search efficiency value of 0.2 and population density value of 0.01 m^2, the probability of detecting at least one individual of a rare species within 1,000 m^2 of search area was estimated at 0.87. This result supports the assumption that survey methods used were sufficient and the probability of federally protected species persisting in this section of the Holston River is unlikely.

3.2.2 Tributaries

A total of 10 person-hours of survey effort resulted in no observations of live mussels or shell material in any tributary sites. While conducting mussel sampling, the survey team observed Pleurocerid snails at several sites. At Sand Branch, Smooth Elimia (*Elimia simplex*) were abundant and observed on most large cobbles within the site. Smooth Elimia was also abundant at the Upper and Middle Arnott Branch sites and present within swifter habitats of the Lower Arnott Branch. Lastly, Pagoda Hornsnail was present at Middle Arnott Branch.

4.0 DISCUSSION AND RECOMMENDATIONS

In conclusion, 38 species of fishes were observed at HSAAP with communities similar to those observed from previous surveys at HSAAP and adjacent reaches of the Holston River (LMU 1998; AEC 2010; USACE 2010; ANSDU 2012). During this study, fish assemblage structure appeared to be closely related to habitat type within a given site. Additionally, the distribution of multiple species was associated with stream order, with small creek species occurring within the tributaries (e.g., Blacknose Dace), and large river species present in the mainstem Holston River (e.g., Emerald Shiner), although overlap did occur.

No federally protected fishes were observed at HSAAP. Based on the results of this and other recent surveys (CFI 2015), a resident Spotfin Chub (*Erimonax monachus*) population likely does not persist in the Holston River riffle area at HSAAP. Although no federally listed fish species were observed, a single state-threatened Blotchside Logperch was collected in the Holston River riffle area. The first record of this species within the study area occurred in 2015 (CFI 2015). Current data suggest that Blotchside Logperch still persists in the Holston River at HSAAP, although at low densities.

Two species of live freshwater mussels and five species of relict shells were observed at HSAAP. Results were similar to a previous mussel survey conducted in a small area to support a bridge demolition project (Ahlstedt 2010), suggesting that a limited freshwater mussel community continues to persist in the Holston River at HSAAP. No federally protected mussels were observed. The Holston River once had one of the most diverse freshwater mussel faunas in Tennessee (Ortmann 1918; Parmalee and Bogan 1998), with six federally protected species historically occurring in the Holston River near HSAAP. None of them have been observed, however, since the early 20th century (Ortmann 1918). Based on our results, it is likely that those species no longer occupy this section of the Holston River.

Due to changes to fish and mussel distributions that can occur over long time frames, as well as the potential for changes to the status of threatened and endangered species, the Tetra Tech team recommends HSAAP's freshwater fish and mussel PLS be updated approximately every 10 years—with the next survey scheduled for 2029—or as needed to support natural resources management.

5.0 REFERENCES

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ATTACHMENT A. FIGURES 6–8

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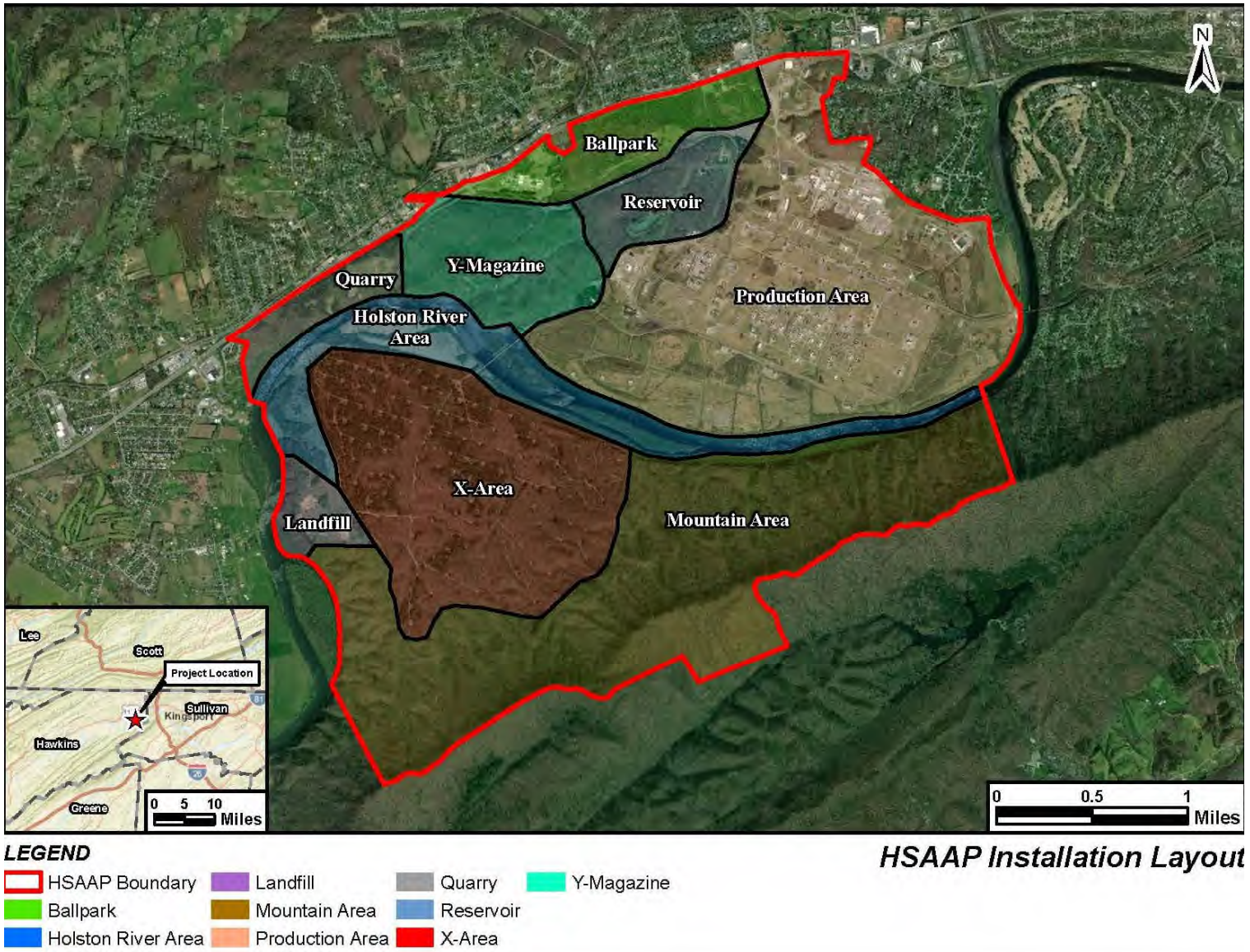
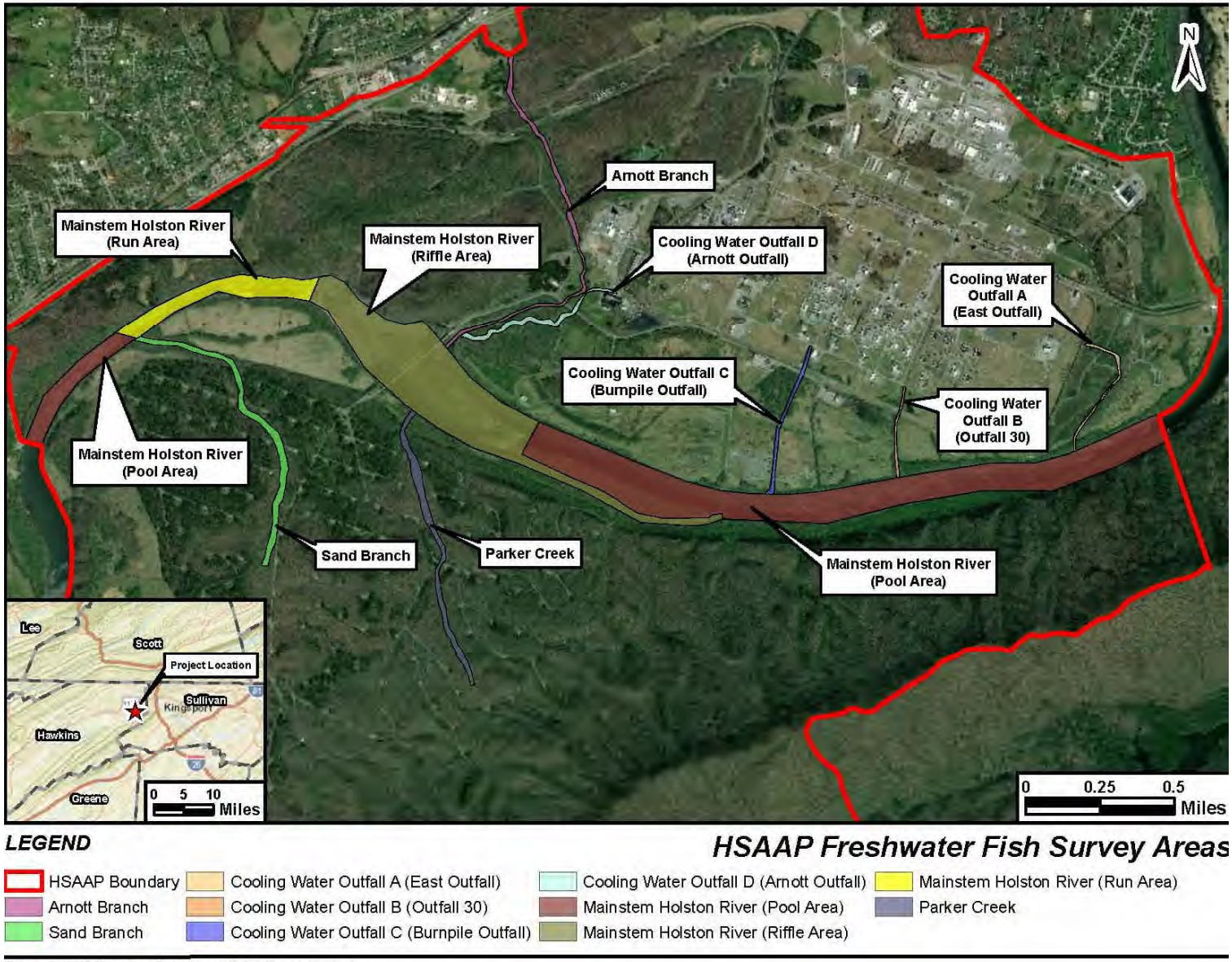


Source: HSAAP GIS, US Census Bureau, ESRI World Imagery

Figure 6. HSAAP installation layout.



Source: US Census Bureau, ESRI World Imagery

Figure 7. HSAAP freshwater fish survey areas.

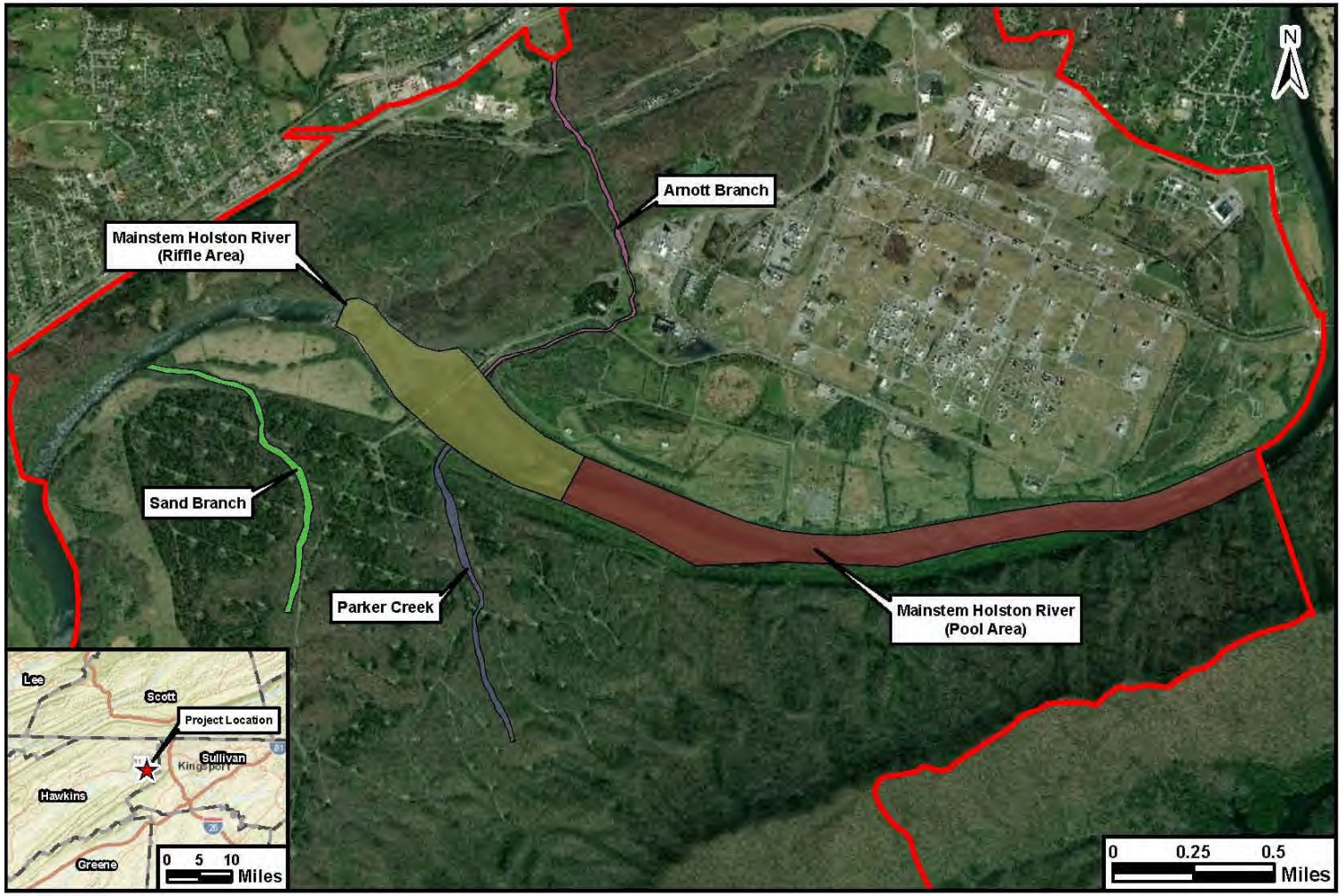
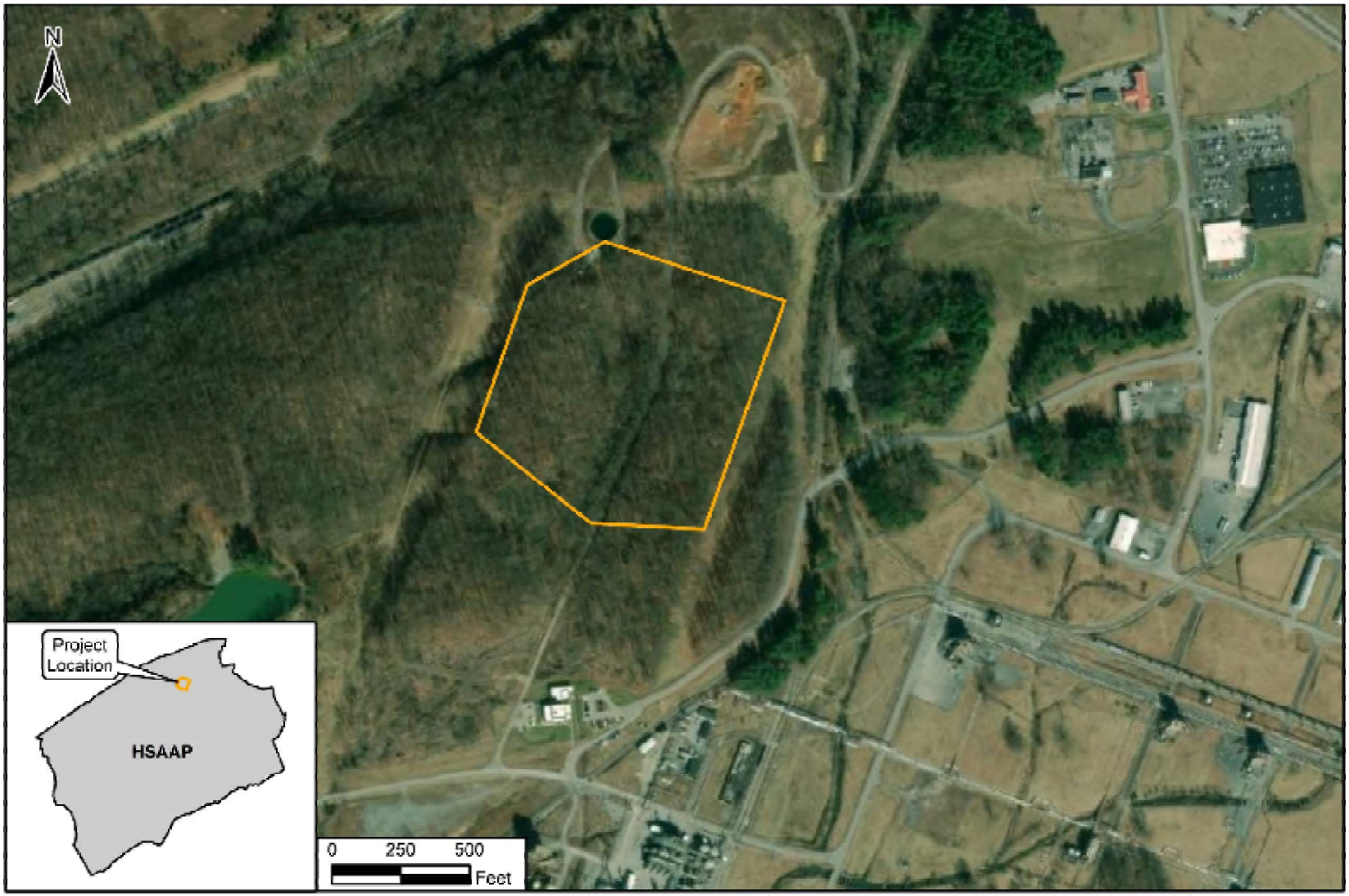


Figure 8. HSAAP freshwater mussel survey areas.



Estimated Potential Project Area for New Filtered Water Tank

Enclosure 3

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

June 29, 2021

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), located in Hawkins and Sullivan counties, Tennessee, requests your concurrence with HSAAP's opinion, provided in the last paragraph of this letter, regarding the impact of proposed activities described below to historic properties. Proposed activities include those actions associated with constructing additional facilities to support the RDX expansion program and modifying how some facilities and processes would be constructed and operated. We are developing a supplemental environmental assessment (SEA) for this project. Components of the proposed action will include construction of four new facilities—three within the HSAAP production area and one outside of it. The general location of all activities/projects associated with the proposed action will occur within the areas indicated on Enclosure 1, which is a section of a U.S. Geological Survey 7.5-minute topographic map for the Church Hill quadrangle.

It is anticipated that new construction within the production area may adversely affect historic properties (buildings) that are eligible for listing in the National Register of Historic Places (NRHP). With that in mind, please find attached as Enclosure 2 previous correspondence notifying 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 (e.g., buildings, barricades, or bridges). Activities covered by the Program Comment include maintenance and repair, rehabilitation, renovation, demolition, and more importantly in this case, new construction.

The nitration facility, filter and wash facility, and kettle drying facility will all occur in HSAAP's existing production area. No impacts are anticipated to any archaeological resources because of the prior disturbance and highly developed nature of the area. HSAAP's known archaeological sites that are potentially eligible for the NRHP all occur in the floodplain of the Holston River, well outside of any area that would be affected by the proposed action. However, as indicated on Enclosure 1, one component of the proposed action will occur outside of the production area on previously undisturbed land. This project entails construction of a filtered water tank and access road. The new tank would be constructed near, and south of, an existing water tank, have a capacity of 2 million gallons, and measure about 80

feet in diameter and 55 feet in height. HSAAP uses filtered water for safety showers, some manufacturing processes, and fire suppression. Approximate coordinates for the general location of the Area of Potential Effect (APE) for the water tank are: Lat 36.54170; Lon -82.63982. An "expanded" APE for the proposed construction of the water tank is shown on Enclosure 3. Although the exact location of the water tank siting is uncertain at this time, it will occur somewhere within the area identified on the enclosure and the actual area of disturbance will be approximately six acres in size. Enclosure 4 is a photograph of the project site taken at ground level from the northern edge of the site facing south as indicated by the black X on Enclosure 3.

HSAAP completed a final survey of the installation for archaeological sites in 1998 *(Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee),* during which nine sites were identified that are potentially eligible for listing on the NRHP. The proposed construction of the water tank will not impact any of those sites and there were no sites identified on, or near, its proposed location. As always, should unknown historic properties be discovered during any of the proposed activities, then all work will be stopped until HSAAP coordinates with your office for guidance on how to proceed.

Upon review of the information contained in this letter we request your concurrence with our determination, if possible, that although the proposed action will adversely affect historic properties (i.e. buildings) that are eligible for the NRHP, the enclosed Program Comment mitigates any adverse effects to these properties. Secondly, that the proposed action will not adversely affect other listed or eligible historic properties (i.e. archaeological resources).

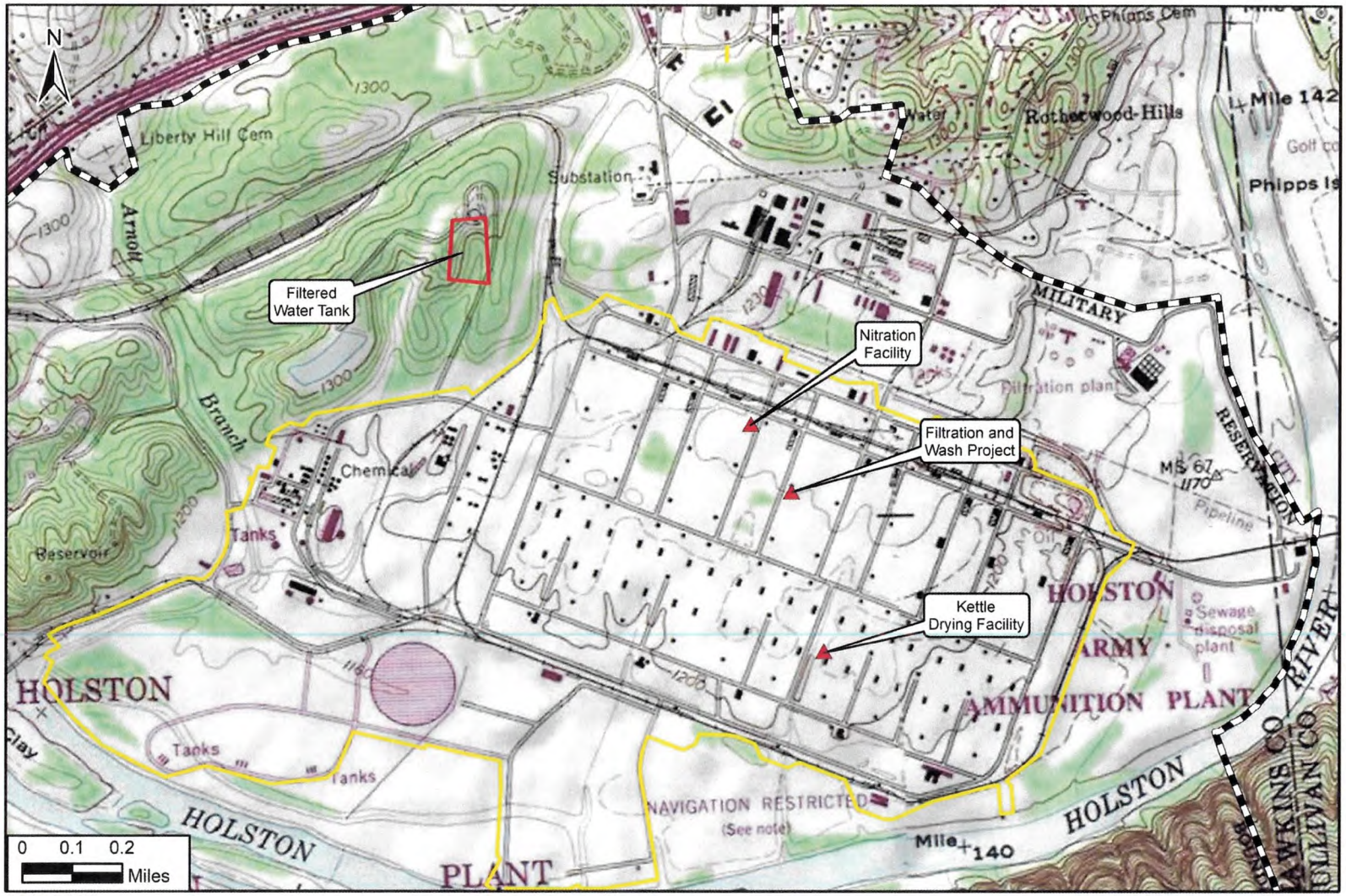
The Point of Contact for additional information is Mr. Bruce Cole at: bruce.g.cole.civ@mail.mil or (423) 578-6276.

Sincerely,

KENNEDY.JOSEPH.ROBERT.JR.1035070245 Digitally signed by KENNEDY.JOSEPH.ROBERT.JR.1035070245 Date: 2021.06.29 16:31:45 -04'00'

Joseph R. Kennedy
Commander's Representative

Enclosures



LEGEND

- HSAAP Boundary
- Production Area
- Project Area
- Project Site

Project Locations

Enclosure 1

Note: Project boundaries and locations are approximate.

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

October 14, 2010

REPLY TO
ATTENTION OF

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.

Sincerely,

JOSEPH R. KENNEDY
Commander's Representative

Enclosure
Program Comment

Enclosure 2

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.

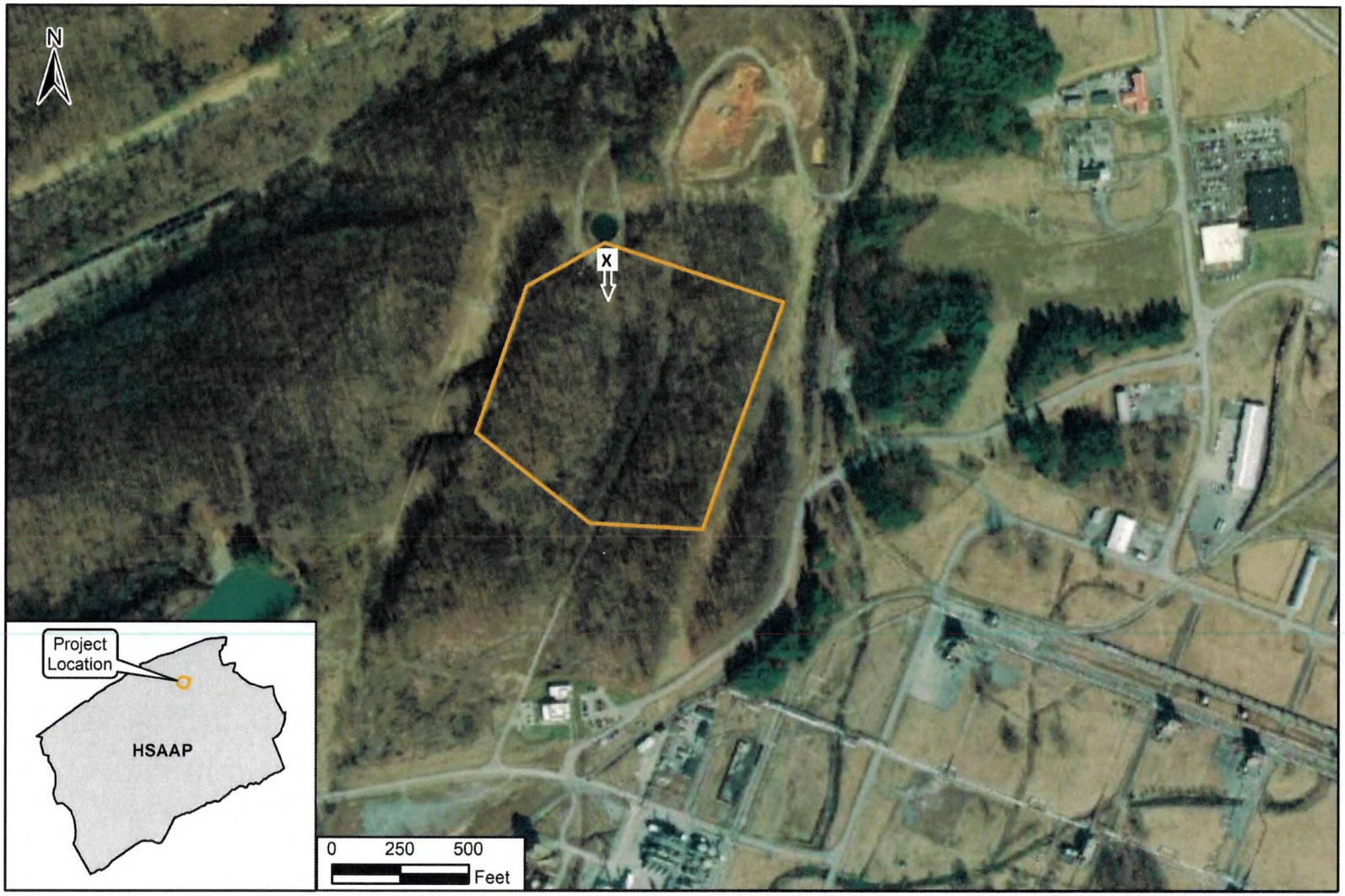
VI. Duration and Review of the Program Comment

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

August 18, 2008
Date



Estimated Potential Project Area for New Filtered Water Tank

Enclosure 3


Enclosure 4

TENNESSEE HISTORICAL COMMISSION
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

July 1, 2021

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

RE: DOD / Department of Defense, Holston Army Ammunition Plant, New construction related to proposed expansion of RDX production, Hawkins County, TN

Dear Mr. Kennedy:

In response to your request, we have reviewed the documents 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 applicants 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).

Considering available information, we find that the project as currently proposed may adversely affect properties that are eligible for listing in the National Register of Historic Places. However, we concur that any adverse effects to architectural resources have been mitigated by the *Program Comment for World War II and Cold War Era (1939-1974) Army Ammunition Production Facilities and Plants.* We further agree that no archaeological resources will be affected by this undertaking. Please direct questions and comments to Kelley Reid (615) 770-1099. We appreciate your cooperation.

Sincerely,

Kelley J Reid

for: E. Patrick McIntyre, Jr.
State Historic Preservation Officer

Kelley Reid
Historic Preservation Specialist/Coordinator
Section 106 Review and Compliance Program
Tennessee State Historic Preservation Office

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

June 22, 2021

REPLY TO
ATTENTION OF

Natural Resources Office

Cherokee Nation
Chief Chuck Hoskin, Jr.
Attn: Tribal Historic Preservation Officer
22361 Bald Hill Road
Tahlequah, OK 74465

Dear Chief Hoskin:

The U.S. Army proposes to construct additional facilities to support the RDX expansion program and modify how some facilities and processes would be constructed and operated at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. HSAAP is located in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing four new facilities on the installation, the locations of which are shown on the enclosure. Three of the buildings will be constructed within the Area B production area, an area that was heavily disturbed during construction of the installation in 1942. The fourth activity, construction of a large water tank and access road, will occur outside of the production area in a previously undisturbed wooded area that has been surveyed for historic resources (archaeological sites). No archaeological sites were identified at, or near, the site on which the water tank will be constructed during the survey. A supplemental environmental assessment (SEA) of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA). The SEA is supplemental to the 2018 *Environmental Assessment for RDX and IMX Capacity Expansion at Holston Army Ammunition Plant, Kingsport, TN*, which your office reviewed.

This letter is an invitation to initiate government-to-government consultation between the U.S. Army and the Cherokee Nation to discuss any effects the proposed action might have on your tribe and/or its resources. The Army is inviting the Cherokee Nation 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 survey of the installation in 1997 for historic resources that resulted in the identification of nine prehistoric archaeological sites on the property that are potentially eligible for listing on the National Register. The proposed action will not impact any of these known sites as the site closest to any area

of new construction is approximately 2,000 feet away. Consultation with the Tennessee State Historical Commission also is 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. In the event of inadvertent discovery of cultural resources, including potential NAGPRA items, during the proposed construction activities, all work will be halted until the appropriate parties are consulted for guidance.

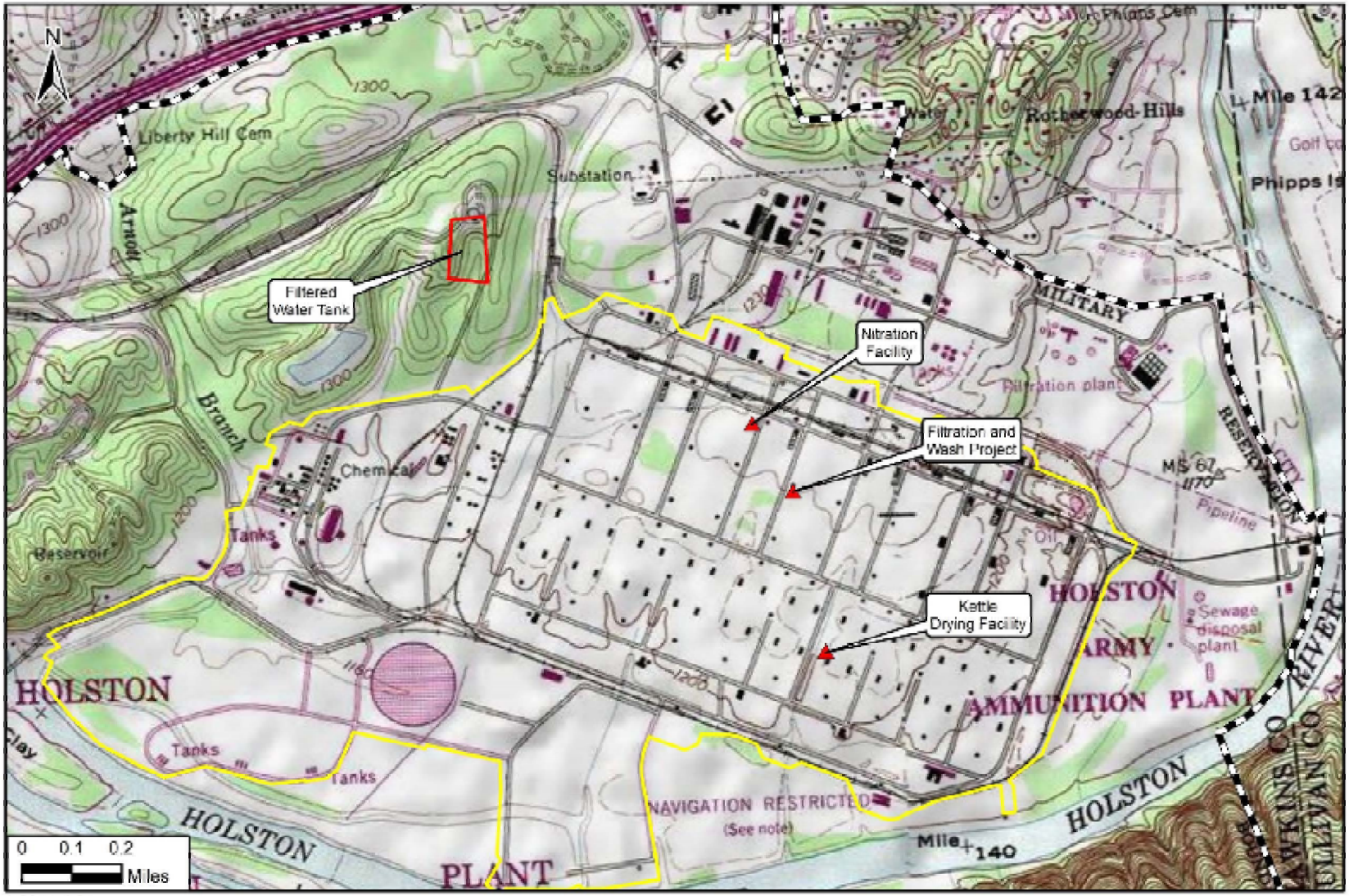
If you wish to initiate consultation with the Army, we request that you respond to this letter within 30 days of receipt to enable us to identify available dates for a meeting between you and your tribal council and/or point of contact for NHPA coordination and the Army. If we do not receive a response 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. Please reach out to the contact identified below if you need more than 30 days to respond.

The point of contact for this matter is Mr. Bruce Cole, HSAAP's Native American Affairs Coordinator, who can be reached by phone at 423-578-6276 or by email at bruce.g.cole.civ@mail.mil.

Sincerely,

R. SCOTT CARPENTER
LTC, LG
Commanding

Enclosure



LEGEND

- HSAAP Boundary
- Production Area
- Project Area
- Project Site

Project Locations

Enclosure 1

Note: Project boundaries and locations are approximate.

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

June 22, 2021

REPLY TO
ATTENTION OF

Natural Resources Office

Chief Richard Sneed
Eastern Band of Cherokee Indians
88 Council House Loop
Cherokee, NC 28719

Dear Chief Sneed:

The U.S. Army proposes to construct additional facilities to support the RDX expansion program and modify how some facilities and processes would be constructed and operated at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. HSAAP is located in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing four new facilities on the installation, the locations of which are shown on the enclosure. Three of the buildings will be constructed within the Area B production area, an area that was heavily disturbed during construction of the installation in 1942. The fourth activity, construction of a large water tank and access road, will occur outside of the production area in a previously undisturbed wooded area that has been surveyed for historic resources (archaeological sites). No archaeological sites were identified at, or near, the site on which the water tank will be constructed during the survey. A supplemental environmental assessment (SEA) of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA). The SEA is supplemental to the 2018 *Environmental Assessment for RDX and IMX Capacity Expansion at Holston Army Ammunition Plant, Kingsport, TN*, which your office had the opportunity to review.

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 your tribe 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 survey of the installation in 1997 for historic resources that resulted in the identification of nine prehistoric archaeological sites on the property that are potentially eligible for listing on the National Register. The proposed action will not impact any of these known sites as the site closest to any area

of new construction is approximately 2,000 feet away. Consultation with the Tennessee State Historical Commission also is 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. In the event of inadvertent discovery of cultural resources, including potential NAGPRA items, during the proposed construction activities, all work will be halted until the appropriate parties are consulted for guidance.

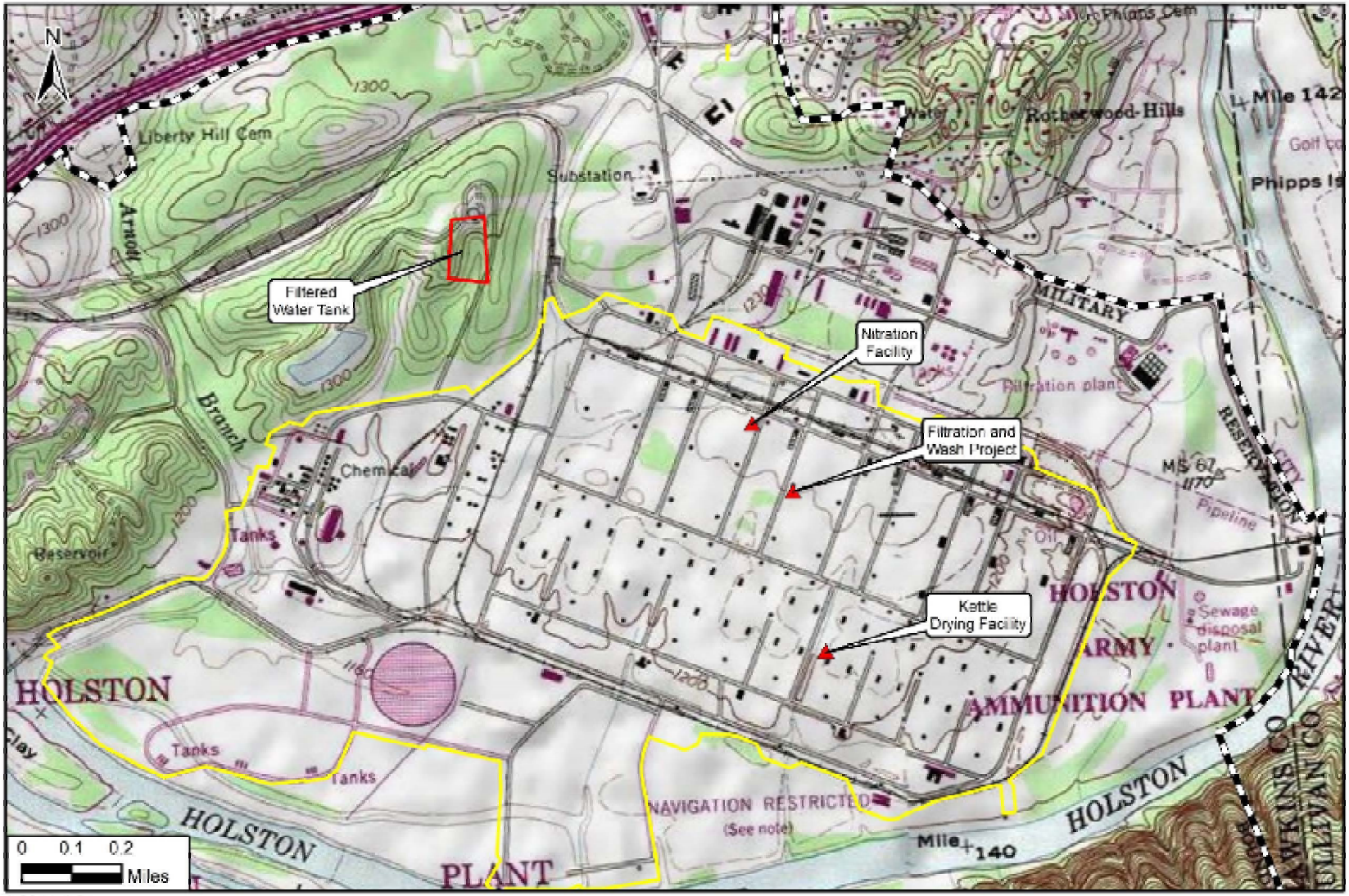
If you wish to initiate consultation with the Army, we request that you respond to this letter within 30 days of receipt to enable us to identify available dates for a meeting between you and your tribal council and/or point of contact for NHPA coordination and the Army. If we do not receive a response 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. Please contact the below identified POC if you need more than 30 days to respond.

The point of contact for this matter is Mr. Bruce Cole, HSAAP's Native American Affairs Coordinator, who can be reached by phone at 423-578-6276 or by email at bruce.g.cole.civ@mail.mil.

Sincerely,

R. SCOTT CARPENTER
LTC, LG
Commanding

Enclosure



LEGEND

- HSAAP Boundary
- Production Area
- Project Area
- Project Site

Project Locations

Enclosure 1

Note: Project boundaries and locations are approximate.

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

June 22, 2021

REPLY TO
ATTENTION OF

Natural Resources Office

Whitney Warrior, Director
Tribal Historic Preservation Office
United Keetoowah Band of Cherokee Indians in Oklahoma
18627 W Keetoowah Circle
Tahlequah, OK 74464

Dear Director Warrior:

The U.S. Army proposes to construct additional facilities to support the RDX expansion program and modify how some facilities and processes would be constructed and operated at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. HSAAP is located in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing four new facilities on the installation, the locations of which are shown on the enclosure. Three of the buildings will be constructed within the Area B production area, an area that was heavily disturbed during construction of the installation in 1942. The fourth activity, construction of a large water tank and access road, will occur outside of the production area in a previously undisturbed wooded area that has been surveyed for historic resources (archaeological sites). No archaeological sites were identified at, or near, the site on which the water tank will be constructed during the survey. A supplemental environmental assessment (SEA) of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA). The SEA is supplemental to the 2018 *Environmental Assessment for RDX and IMX Capacity Expansion at Holston Army Ammunition Plant, Kingsport, TN*, which your office was provided for review.

This letter is an invitation to initiate government-to-government consultation between the U.S. Army and the United Keetoowah Band of Cherokee Indians in Oklahoma to discuss any effects the proposed action might have on your tribe and/or its resources. The Army is inviting your tribe 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 survey of the installation in 1997 for historic resources that resulted in the identification of nine prehistoric archaeological sites on

the property that are potentially eligible for listing on the National Register. The proposed action will not impact any of these known sites as the site closest to any area of new construction is approximately 2,000 feet away. Consultation with the Tennessee State Historical Commission also is 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. In the event of inadvertent discovery of cultural resources, including potential NAGPRA items, during the proposed construction activities, all work will be halted until the appropriate parties are consulted for guidance.

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 a meeting between you and your tribal council and/or point of contact for NHPA coordination 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. Please contact the below identified POC if you need more than 30 days to respond.

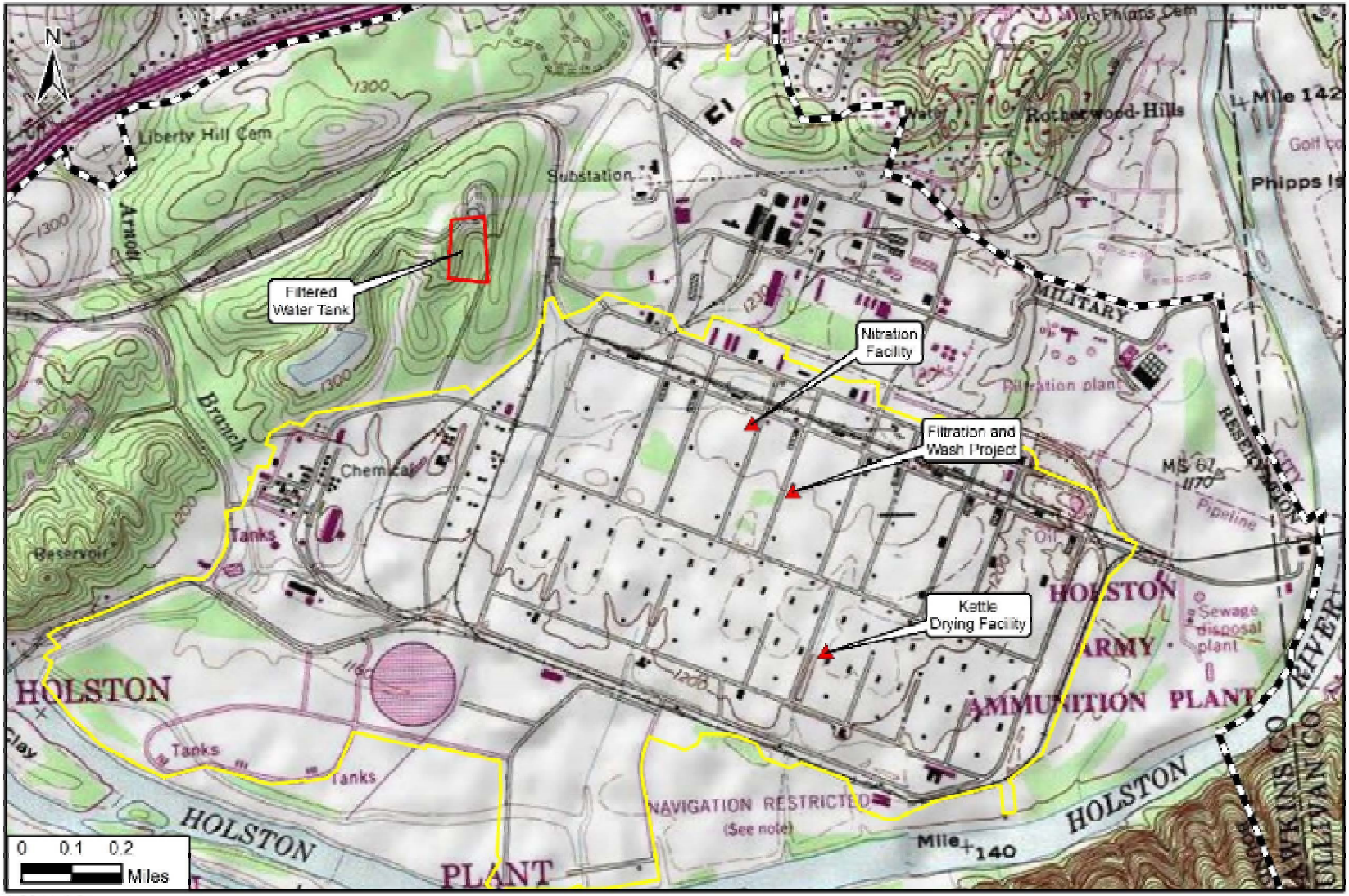
The point of contact for this matter is Mr. Bruce Cole, HSAAP's Native American Affairs Coordinator, who can be reached by phone at 423-578-6276 or by email at bruce.g.cole.civ@mail.mil.

Sincerely,

R. Scott Carpenter

R. SCOTT CARPENTER
LTC, LG
Commanding

Enclosure



LEGEND

- HSAAP Boundary
- Production Area
- Project Area
- Project Site

Project Locations

Enclosure 1

Note: Project boundaries and locations are approximate.

2018 EA For RDX and IMX Capacity Expansion at Holston Army Ammunition Plant

FINDING OF NO SIGNIFICANT IMPACT

RDX AND IMX CAPACITY EXPANSION AT HOLSTON ARMY AMMUNITION PLANT

1. PROPOSED ACTION: The proposed action and subject of the Environmental Assessment (EA), which is hereby incorporated by reference, is the construction and operation of new explosives manufacturing and ancillary support facilities at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. By implementing the proposed action, the Army would double the plant's capacity to produce research development explosives (RDX) and insensitive munitions explosives (IMX), enabling HSAAP to meet anticipated future and surge requirements. The proposed action consists of constructing new facilities and renovating existing facilities that would duplicate the explosives production processes that HSAAP currently is executing within the installation's production area. Increased production would use the same materials currently used in the processes at HSAAP. The Army also would demolish an old facility.

The Army would construct most new facilities—the explosives production facilities and ancillary facilities to support the new main production facility (nitration, filtration, and recrystallization facilities; a laboratory; a change house [an employee shower facility]; and two expanded loading area buildings)—within the production area of the installation's Area B. A new steam generation plant to support the production process would replace HSAAP's existing coal-fired steam plant and would be constructed on land abutting the production area. HSAAP also would construct precast concrete blast barricades around three sides of two ancillary buildings and demolish the old change house.

By implementing the proposed action and increasing the amount of explosives HSAAP produces above current production capacity, the Army would address the urgent need to meet current DoD demands and likely surge requirements.

2. ALTERNATIVES CONSIDERED: The Army evaluated the preferred alternative (the proposed action) and the no action alternative. The preferred alternative (the proposed action) would include constructing and operating new explosives production facilities and ancillary facilities in Area B to double the Army's RDX and IMX manufacturing capacity. The EA characterizes the socioeconomic and environmental impacts that would likely result from implementing the preferred alternative and the no action alternative.

3. ENVIRONMENTAL CONSEQUENCES: The EA contains the results of a detailed analysis of the impacts of implementing the alternatives on the following resource areas: land use, aesthetics and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics, traffic and transportation, utilities, hazardous and toxic materials, and solid and hazardous waste. Based on the results of the analysis, the Army has determined that implementing the proposed action will have no significant adverse impacts on the resource areas and will have no significant adverse cumulative impacts. HSAAP has proposed to conduct all timber harvesting associated with the proposed action between October 15 and March 31, as recommended by the U.S. Fish and Wildlife Service (USFWS) to avoid impacts on threatened and endangered bat species that could be present in the project area. Because impacts on all resource areas are expected to be below the level of significance, no mitigation measures, other than the proposed timber harvesting restrictions mentioned above, will be required to implement the proposed action. Best management practices, however, will be implemented in the construction and operation of the proposed facilities.

4. FACTORS CONSIDERED IN THE FINDING OF NO SIGNIFICANT IMPACT: The EA considers the nature of the proposed action, the environmental factors within the production area

of Area B for implementing the proposed action, and the likely environmental impacts, including cumulative impacts, on relevant resource areas associated with implementing the proposed action.

5. PUBLIC REVIEW AND COMMENT: The EA and draft Finding of No Significant Impact (FNSI) were available for public review and comment from April 7, 2018, to May 7, 2018. A Notice of Availability of the documents was published in the *Kingsport Times-News* and the *Rogersville Review* on April 7, 2018, and on the HSAAP Facebook page. The documents were available for review by contacting Ms. Kathy Cole, HSAAP Staff Action Specialist, at 423-578-6285 or kathy.o.cole.civ@mail.mil, or by accessing the official home page of the Joint Munitions Command (Holston Army Ammunition Plant) at http://www.jmc.army.mil/Installations.aspx?id=HolstonProgress. Additionally, copies were available for review at the Kingsport Public Library, 400 Broad Street, Kingsport, Tennessee, and Mt. Carmel Public Library, 100 Main Street E, Mt. Carmel, Tennessee. The Army encouraged and invited interested parties to mail comments on the EA and draft FNSI to HSAAP, c/o Holston Staff Action Specialist, Attn: Kathy Cole, 4509 West Stone Drive, Kingsport, TN 37660, or by electronic mail using the email address provided above. Comments were due on or before May 7, 2018.

After initiating the public comment period, correspondence specific to a letter sent to federally recognized tribes on February 15, 2018, concerning steam plant relocation was received from the Cherokee Nation. The correspondence indicated that the Nation did not foresee the project imparting impacts to Cherokee cultural resources, and requested that the Army immediately halt all project activities and re-contact their office if items of cultural significance are discovered during the course of the project and to coordinate the project with other tribes. The Army acknowledges receipt of the correspondence from the Cherokee Nation and will notify their office should any items of cultural significance be discovered during the course of the project. Additionally, the Army coordinated the project with other tribes as presented in the EA. The correspondence will be included in the project administrative record.

Before the conclusion of the public comment period, correspondence specific to the review of the EA and draft FNSI was received from the USFWS. The correspondence is included in the project administrative record.

Comments by the USFWS:

The USFWS acknowledged that federally listed mussel species that occurred at one time in the Holston River are now believed to be extirpated and negative rare mussel surveys conducted along this stretch of the Holston River seem to support extirpation of rare mussels. The USFWS also acknowledged that recent surveys for the spotfin chub (*Erimonax monachus*) resulted in no encounters, and it was concluded that there are no resident spotfin chubs at HSAAP. Because of these findings, the EA indicated "no adverse effects" or "no effects" to threatened or endangered species. However, the Service was unsure if the "no adverse effects" or "no effects" determination is a Not Likely to Adversely Affect determination or a No Effect Determination. The Service suggested, based on past coordination and recent negative surveys, that a Not Likely to Adversely Affect determination is likely appropriate for all federally listed aquatic species. The Service added that they do not consider the rusty patched bumble bee (*Bombus affinis*) to exist in Hawkins County, so a No Effect determination is appropriate.

The Service also acknowledged that the proposed action would require the removal of hardwood trees. Since a 2015 bat survey at HSAAP failed to identify the Indiana bat (Myotis sodalis) or northern long-eared bat (*Myotis septentrionalis*) and because the 2018 Range-wide Indiana Bat Survey Guidelines indicate that surveys are valid for five full survey seasons, the Service

recognized that a Not Likely to Adversely Affect determination would be appropriate for those bat species provided tree removal can be accomplished by April 1, 2021. The Service added that since no known gray bat (*Myotis grisescens*) caves are located at HSAAP, they would support a Not Likely to Adversely Affect determination for this species.

Army responses to USFWS comments:

The Army acknowledges the assessment by USFWS and to alleviate confusion agrees herein that the "no adverse effects" to threatened or endangered species as presented in the Biological Resources section and the "no effect" determination in the conclusion section of the EA be revised to a Not Likely to Adversely Affect determination for all federally listed aquatic species. Further, the Army believes that these changes do not alter the ultimate determination that the proposed action will not have a significant impact on any of the threatened or endangered species within the region of influence of the proposed action. Consequently, while the comments from the USFWS will be included in the administrative record for the project, no further revisions to the EA itself are deemed necessary.

The Army also acknowledges that the 2015 bat survey at HSAAP failed to identify the Indiana bat or northern long-eared bat and that those findings are valid for five full survey seasons. The Army has implemented timber mitigation measures as described above and will remove timber within the project prior to April 1, 2021. The Army agrees that a Not Likely to Adversely Affect determination is appropriate for the mentioned bat species.

After the conclusion of the public comment period, correspondence specific to the review of the EA and draft FNSI was received from two reviewers from the Tennessee Department of Environment and Conservation (TDEC), Division of Water Resources. While their responses were submitted after closure of the public review and comment period, the Army has elected to respond to the comments. The correspondence are included in the project administrative record.

Comments by the TDEC:

One TDEC reviewer indicated that TDEC is encouraged that that HSAAP will not be requesting an increase in the loading to stream; however, a variation of effluent flow by +/- 10% will need to be taken into consideration during the reissuance of the National Pollutant Discharge Elimination System permit (NPDES). The reviewer indicated that it is possible that the variation in flow may change the calculation for Whole Effluent Toxicity limitations and serial dilutions. The reviewer added that the production based standards will need to be modified to take into account the increased production.

Additionally, the reviewer recommended evaluation of the applicability of Section 316(b) of the Clean Water Act to intake requirements. The TDEC reviewer also reminded the Army that the construction phase of the project may necessitate coverage under either a construction general permit or individual construction permit.

Comments from the other TDEC reviewer questioned whether HSAAP has information on the potential impacts RDX may have on the reproduction capabilities of upland birds, especially quail, eagles, or migrating birds at HSAAP; and noted that osprey would be eating fish from the river. The commenter noted an article had documented such effects on their reproduction and nervous systems.

Army responses to TDEC comments:

The Army appreciates TDEC's comments concerning effluent flow. Currently, tiered serial dilutions for Whole Toxicity (WET) Testing is based on a maximum daily flow of 10.641 MGD and average flow of 5.596 MGD. Any increase in average or maximum flows from NPDES outfall 020

associated with HSAAP's industrial wastewater treatment facility will be addressed as part of the renewal application process by updating the Form 2-C information. Additionally, this update would also capture any production-based modifications needed to account for increased production. HSAAP anticipates submitting an updated NPDES renewal application early in 2019. In the interim, HSAAP will continue to monitor toxicity as defined in the facility's current NPDES permit which stipulates that 48-hour static acute (LC50) toxicity tests on two separate species be conducted semi-annually. This data will continue to be reported to TDEC on the discharge monitoring report.

In response to the applicability of Section 316(b) of the Clean Water Act to intake requirements, the Army has initiated and is conducting an applicability assessment. HSAAP is currently in the process of working with Army Materiel Command headquarters on an impingement study to determine what modifications may be necessary to the pump house traveling screens and fish return system to meet the requirements of Section 316(b) of the Clean Water Act. It is not expected that HSAAP will need to increase existing intake or pumping capacity of 126 MGD as stated in the EA.

The Army acknowledges receipt of a request for information concerning potential RDX impacts on upland and migrating birds at HSAAP. The increase of RDX/IMX production is not anticipated to subject upland birds to any direct exposure increases to RDX, and effluent containing RDX/IMX is treated to the regulatory limit specified in HSAAP's NPDES permit before the treated water is discharged to the Holston River. The NPDES permit ensures that water quality criteria are met, and water quality criteria that take food chain effects into account. For the same reasons described above, no adverse impacts on fish-eating fauna is anticipated.

6. CONCLUSIONS: Based upon my review of the facts and the analysis presented in the EA, I have concluded that implementing the proposed action would have no significant direct, indirect, or cumulative impacts on the quality of the natural or human environment; and that, consequently, the analysis in the EA supports a Finding of No Significant Impact. Therefore, preparation of an Environmental Impact Statement under NEPA is not required.

MAY 2 1 2018

Kelso C. Horne III
COL, CM
Commander

Date

Final

ENVIRONMENTAL ASSESSMENT
FOR
RDX AND IMX CAPACITY EXPANSION
AT
HOLSTON ARMY AMMUNITION PLANT
KINGSPORT, TENNESSEE

Prepared for

Commander, Holston Army Ammunition Plant

Prepared by

U.S. Army Corps of Engineers, Mobile District

With technical assistance from

Tetra Tech, Inc.

April 2018

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ENVIRONMENTAL ASSESSMENT
FOR
RDX and IMX Capacity Expansion at
Holston Army Ammunition Plant

Reviewed by:

John M German — 29 MARCH 2018

John M German — Date

Associate Counsel, Environmental Law
Headquarters, U.S. Army Materiel Command

Approved by:

Kelso C. Horne III — 29 MAR 18

Kelso C. Horne III — Date

COL, CM

Commander

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CONTENTS

TABLES

FIGURES

APPENDICES

SECTION 1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This environmental assessment (EA) evaluates the socioeconomic and environmental impacts associated with doubling the explosives production capacity (research development explosives [RDX] and insensitive munitions explosives [IMX]) at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. The Department of Defense (DoD) must increase the plant's production capacity to meet anticipated future demand. HSAAP has been producing explosives since it was constructed in the 1940s. The total amount after the increase in explosives production would be less than the amounts produced in the 1990s.

HSAAP, a U.S. Army government-owned, contractor-operated facility, is part of the U.S. Army Materiel Command (AMC) and the U.S. Army Joint Munitions Command (JMC). Operated by BAE Ordnance Systems Inc. (OSI) since 1999, HSAAP is an asset to the DoD Industrial Base as the production-scale manufacturer of explosives for almost all conventional military ordnance such as bombs, mortars, artillery shells, and missiles.

HSAAP consists of approximately 6,000 acres in Hawkins and Sullivan counties (Figure 1-1) and has approximately 495 buildings and 129 magazines with explosives storage capacity of approximately 200,000 square feet (ft^2). HSAAP produces explosives in the Area B limited-access production area (production area), which consists of industrial facilities for nitration chemistry, acid handling and recovery, and other chemical processing operations.

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

1.2 PURPOSE AND NEED

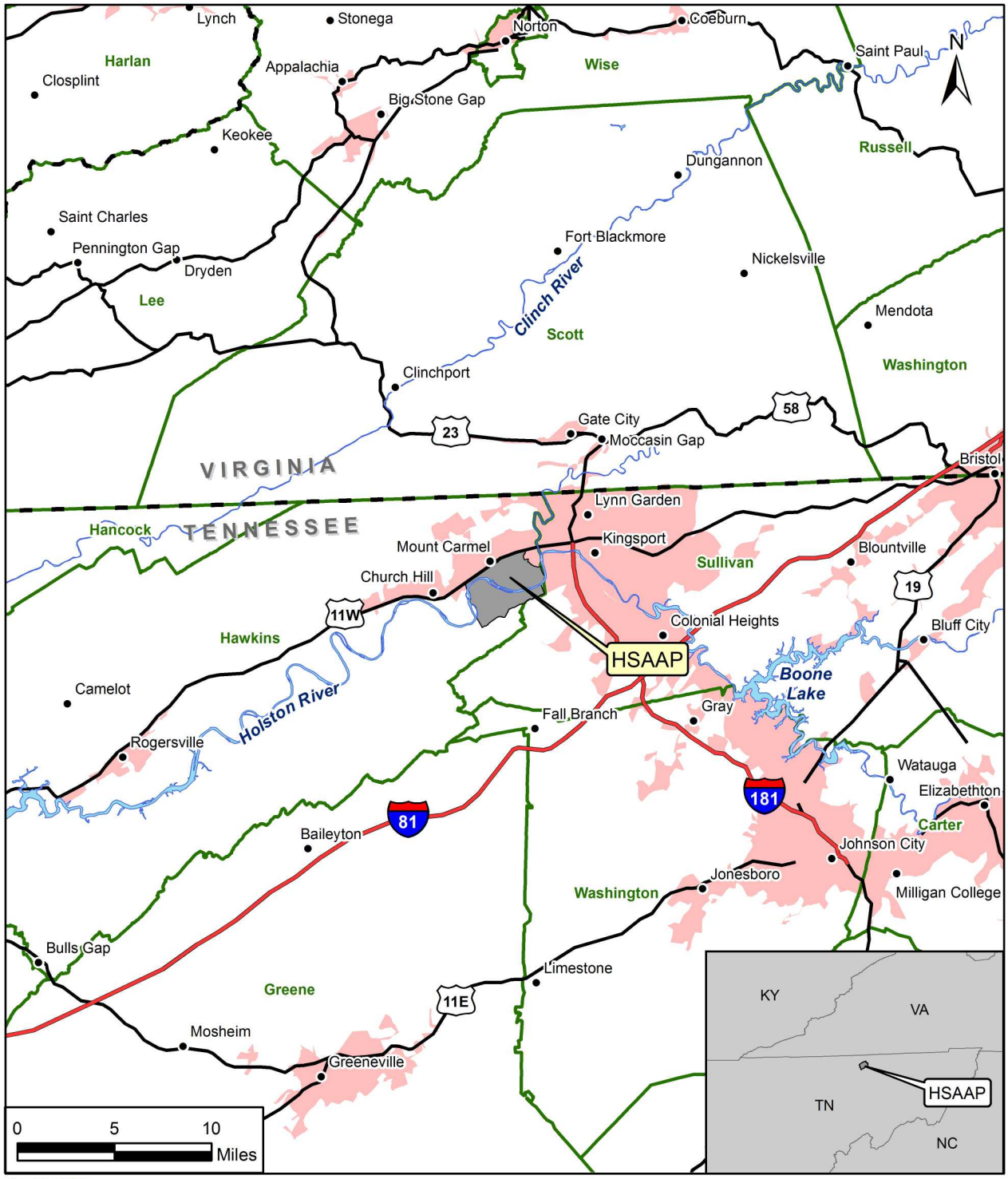
The purpose of the proposed action is to increase the explosives production capacity at HSAAP. The proposed action is needed because there is an urgent necessity to increase the amount of explosives HSAAP produces above the current production capacity in order to meet current DoD demands and likely surge requirements.

1.3 REGULATORY COMPLIANCE

NEPA requires federal agencies to 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. To this end, CEQ issued regulations to implement the procedural provisions of NEPA (40 CFR parts 1500–1508). The Army has supplemented the CEQ NEPA regulations by promulgating its own NEPA regulations (32 CFR part 651).

The Army considered applicable federal, state, and local regulations during analysis of the impact of the proposed action on individual environmental and socioeconomic resources as part of the EA. The Army gave particular consideration to the following legislation:

- Clean Air Act (CAA) (42 U.S.C. 7401 *et seq.)*
- Clean Water Act (CWA) (33 U.S.C. 1251 *et seq.)*



LEGEND

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

Installation Location

Figure 1-1

- Endangered Species Act (ESA) (16 U.S.C. 1531–1543)
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa *et seq.*)
- National Historic Preservation Act of 1966, as amended (NHPA) (16 U.S.C. 470 *et seq*.)
- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. 6901)
- Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001–3013)

1.4 DECISION TO BE MADE

The Army must decide whether the socioeconomic and environmental impacts of the selected alternative that best meets the purpose and need for the proposed action 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 alternative 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 and information of 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 and the draft FNSI in newspapers local to HSAAP and on the HSAAP Facebook page. Interested parties also will be able to access the documents on the official home page of the JMC (Holston Army Ammunition Plant) at http://www.jmc.army.mil/Installations.aspx?id=HolstonProgress. At the end of the 30-day public review period, the Army will consider any comments on the EA or the draft FNSI that individuals, agencies, and organizations have submitted. Then, as appropriate, the Army will execute a final FNSI and proceed with implementing the proposed action, publish a NOI to prepare an EIS, or take other actions consistent with NEPA and its implementing regulations.

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SECTION 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Army proposes to construct and operate new explosives manufacturing and ancillary support facilities at HSAAP that, together with existing explosives manufacturing facilities, will meet anticipated future and surge requirements. To meet those requirements, the Army would implement the proposed action to double current production capacities of RDX and IMX. The proposed action consists of constructing new facilities that would duplicate the production processes of existing facilities within the limited-access production area of the installation using the same materials for explosives production that are currently used at HSAAP (see Figure 2-1). The proposed action also includes the construction and operation of a new natural gas fired steam generation plant that would replace an existing coal-fired steam plant. The new steam plant would abut the production area.

The proposed action would involve constructing explosives production facilities; blast barricades, a laboratory; a change house (an employee shower facility); new nitration, filtration, recrystallization, and other ancillary facilities to support the new main production facility. These along with the new steam plant are collectively referred to as “facilities” throughout the rest of the EA. Section 2.4.2 provides further details on the proposed action.

2.2 SCREENING CRITERIA

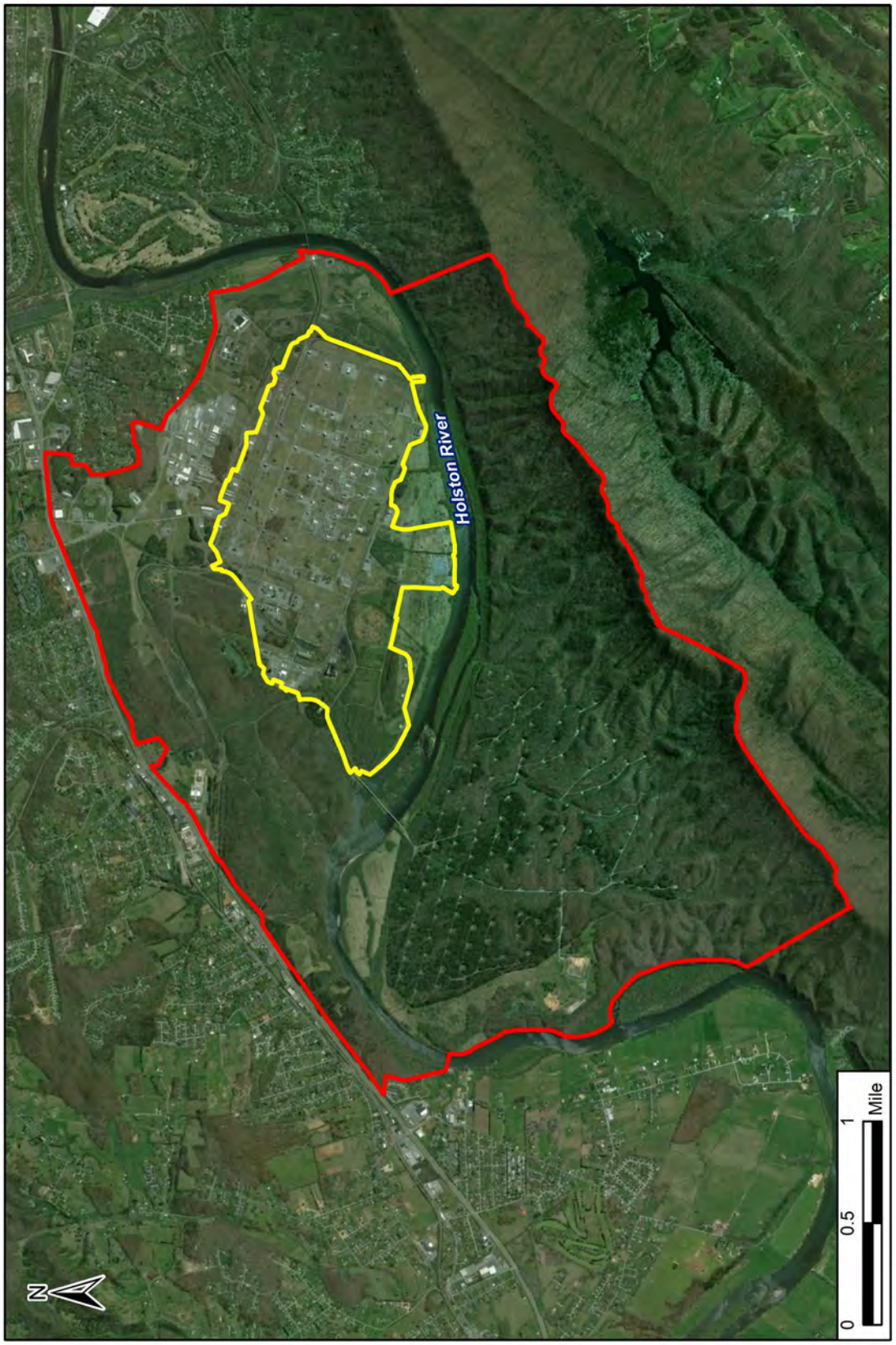
The Army conducted a rigorous screening process for selecting the proposed action. For an alternative to be considered viable, it must meet the purpose of, and need for, the proposed action as well as satisfy the screening criteria detailed in Table 2-1.

Table 2-1. Screening Criteria for RDX and IMX Capacity Expansion

Minimize linear square footage	Minimize the size of the new facilities and their distance from existing facilities while still meeting production needs and safety requirements.
Tie into existing infrastructure (e.g., pipelines)	Locate new facilities close enough to existing infrastructure to tie them into it to the maximum feasible extent.
Maintain existing production capacity	Allow HSAAP to maintain current production rates with limited interruption.
Have the capacity to meet surge requirements	Be able to produce up to two times the amount of RDX and IMX currently being produced.
Locate within Area B	Locate the new production facility and new ancillary facilities within or abutting the existing production area.

2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The Army considered other locations for a new explosives production facility at HSAAP as well as modernizing the existing production lines to meet DoD mission and surge requirements. After applying the screening criteria detailed in section 2.2, the Army eliminated from further consideration other potential locations for the new production facility because they were remotely located and would not be able to be tied into existing infrastructure. The Army also considered modernizing and upgrading the existing production lines as an alternative, but eliminated that alternative from further consideration because the potential for additional facility expansion would be limited by the age of the existing lines; it would not incorporate advantages associated with



Installation Production Area

Figure 2-1

modern building design and construction. In addition, refurbished lines alone would not meet surge production requirements and the work on the existing lines would cause an unacceptable interruption to current production capacity, which would not meet the screening criteria.

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 the potential environmental effects caused by the proposed action and other alternative actions. The regulations do not require the no action alternative to be reasonable nor to meet the purpose and need. The no action alternative would maintain the present explosives production capabilities at HSAAP. As a result, the Army would lack the capability to meet current and anticipated demand for explosives.

2.4.2 Alternative 2: Construction of a New Explosives Production Facility and Ancillary Facilities (Preferred Alternative)

As described in section 2.1, the proposed action is the construction and operation of new explosives production facilities at HSAAP to double the Army's current RDX and IMX manufacturing capacity. Proposed construction and operation would take place in or abutting the limited production area of the installation.

The Army makes the following assumptions for this alternative:

1. For many of the existing facilities or functions in the explosives manufacturing process, the Army would construct a new facility of similar size and function in proximity to the existing facility that serves that process or function. Two exceptions would be combining three existing facilities that currently serve the explosives manufacturing process into one new facility and replacing the exiting coal-fired steam plant with a new natural gas stream plant. Use of the coal-fired steam plant will be discontinued. The disposition of the coal-fired plant after closure has not been determined by HSAAP/BAE.
2. Each new or renovated ancillary facility would operate more efficiently than the existing facility.
3. The Army would use the same raw materials currently used for explosives production in the existing facilities for the production processes in the new facilities.
4. HSAAP would produce twice as much RDX and IMX as is currently being produced, and would do so on a continuous basis. In reality, HSAAP would produce these explosives at the rates required by the Army at any given time, and the plant would not run at full capacity at all times. Assessing full-capacity production, however, allows the decision-maker and the public to understand the upper bounds of potential effects—or the *worst-case scenario*—that could result from implementing the proposed action.
5. Implementing the proposed action would increase the current utility and material consumption rates for production. It is likely that the new facilities will require less energy, be more efficient, and incorporate a myriad of modern advances in materials and construction practices and, therefore, have less of a utility footprint than the current facilities and process. To capture the upper bounds of potential effects, however, the EA assumes that current usage rates, emissions, and waste would be doubled for RDX and IMX.
6. The operating contractor (BAE OSI) would secure any required modifications for environmental permits (e.g., for air emission or wastewater) prior to increasing explosives production.

Following are details of the proposed action.

- *RDX Production Facility*. The new RDX production facility would duplicate functions that currently occur in existing buildings by combining those processes into one building. The facility would be a 3-story structure of approximately 5,000 ft^2 for each of the first two levels and 3,000 ft^2 on the third level. The construction footprint for the facility would be approximately 3 acres on previously disturbed land for the facility, laydown area, and parking.
- *RDX Recrystallization Facility*. An existing, inactive multistory building would be renovated to support additional recrystallization functions. All three stories of the approximately 12,000-ft^2 building would be renovated, and the construction footprint would be approximately 3 acres, including construction of blast barricades.
- *IMX Recrystallization Building.* The new IMX recrystallization facility would duplicate an existing IMX recrystallization facility at HSAAP. The facility would be a 3-story structure of approximately 12,000 ft^2, and the construction footprint would be approximately 3 acres, including construction of blast barricades.
- *IMX Melt Cast Facility.* An existing, inactive single-story building would be renovated to support IMX melt cast processes. The renovated building would be very similar to a previously modernized melt cast building at HSAAP. The single-story facility would be approximately 3,800 ft^2. The construction footprint would remain as currently developed.
- *Fluid Energy Mill (FEM).* A new FEM facility would also be constructed to support the production process. The FEM is used to grind RDX particles into a smaller size. The 3-story facility would consist of approximately 5,200 ft^2 for each floor, and the construction footprint would be approximately 4 acres, including construction of blast barricades on previously disturbed land.
- *Blast Barricades*. The recrystallization facilities and the FEM would require blast barricades on three sides of each building. The barricades would be constructed of precast concrete and filled with soil. The barricades would be approximately 45 feet high and sloped away from the facilities. Soil to fill the barricades would come from the HSAAP borrow pit or from an off-site source.
- *Acid Line*. Two additional acid lines would be required within the existing acid production area. The new acid lines would include a distillation column, weak acetic acid recovery, additional acid tanks, ammonium nitrate solution (ANSol) filtration, and acetic anhydride manufacturing line. The additional acid lines would occupy approximately 12,000 ft^2 and about 15,000 ft^2 (5,000 ft^2 per level) for the weak acetic acid recovery addition. The additions would be constructed on previously disturbed land. ANSol filtration would require modification only to an existing facility with no increase to the facility footprint.
- *Change House*. The new change house would be approximately 23,000 ft^2 in size, which is nearly four times larger than the existing change house. It would have 30 showers for men and 10 showers for women, 32 line offices, a shift changeover briefing room, a break room, and other spaces. It would also have about 225 parking spaces. The construction footprint for the change house would be about 4 acres on previously disturbed land for both the facility and parking lots. The existing change house is 6,100 ft^2 and would be demolished after the new change house is operational.
- *Analytical Lab*. The new analytical lab would be approximately 24,000 ft^2 in size. It would include about 65 parking spaces. The existing analytical lab is co-located with research

and development operations near the main gate. Upon completion, analytical laboratory functions would be relocated to the new building. Approximately 1,600 feet of an existing gravel road leading to the proposed parking area would be paved.

- *Workforce Increase*. About 250 employees would be added to the workforce to support the increase in explosives production. Manufacturing operations would operate 24 hours a day, 7 days a week, 365 days a year. The only downtime would be for occasional maintenance.
- *Utility Connections*. Small utility trunk lines that run between operating buildings and the main utility lines would be replaced. They are old and their replacement would ensure that utility services to the new facilities would not be interrupted by line failures or leaks. The trunk line connections would generally be located within 200 feet of the buildings. Weirs in noncontact cooling water diversion channels will be removed to allow additional flow. Utilities serving the expansion would include steam, filtered water, river water, potable water, sanitary sewer, wastewater discharge, natural gas, and electricity.
- *Storage Tank Facility.* A new storage tank facility for storage of materials used in the explosives production process would be constructed within a sealed concrete berm sized to hold 110 percent of the largest tank volume. All new storage tanks would be designed and fabricated in compliance with the latest codes and standards for their respective service.
- *Steam Plant.* A new steam plant that would replace the existing coal-fired plant would be constructed to support the energy requirements of increased production capacity. The new steam generation plant would be approximately 72,000 ft^2 on approximately 4.5 acres of wooded land abutting the production area (see Figure 3-1 in Section 3.0). The plant, as currently planned, is to be composed of four 250,000-pound-per-hour boilers that will operate on natural gas with the capability to operate on an alternate fuel (#2 fuel oil or liquefied natural gas). The new steam facility would tie into the existing main steam line that distributes to and supplies all the facilities and production lines across the production area. To tie into the existing natural gas supply line, a new trunk line of approximately 200 feet would be installed. An access road and a spur from the existing installation railroad would also be required.
- *Loading Dock Improvements*. Two loading docks where explosives are boxed, inspected for quality assurance, and loaded onto trucks for shipping would be renovated. One loading dock would be expanded by approximately 3,500 ft^2 and an additional 12,500 ft^2 of paved operational space. The other loading dock would be expanded by approximately 4,000 ft^2.
- *Rail Use*. The explosives manufacturing process would require twice as many railcar deliveries of anhydrous ammonia and nitric acid per year.
- *Waste Disposal*. HSAAP would recycle or dispose of by-products and waste from the explosives manufacturing process in the same manner as it does under current operations:
  - The dilute acetic acid stream generated from explosives manufacturing is processed into weak acetic acid, ANSol, and explosives. The resulting ANSol solution by-product stream is sent to a RCRA-permitted off-site disposal facility while an industrial outlet is being re-established. The explosives are returned to the explosives manufacturing process.

- Weak nitric acid (WNA) generated from explosives manufacturing is sent off-site for disposal; however, HSAAP is constructing a facility that will enable the reconcentration and recycling of WNA for use in the explosives production process and will reduce or eliminate WNA from the waste stream.
- The treatment of industrial wastewater (IWW) from the expansion of the on-site industrial wastewater plant is expected to increase biosludge generation. HSAAP is permitted to dispose of the biosludge in its on-site class II landfill. Biosludge will continue to be disposed of in the HSAAP class II landfill, but it could also be disposed of at an off-site landfill.
- Explosive waste, explosives-contaminated waste, and potentially contaminated waste from the manufacturing process would be managed through open burning in accordance with the installation's CAA and RCRA permits and other applicable DOD requirements. HSAAP is actively looking into alternative technologies to reduce the amount of waste requiring open burning.

SECTION 3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 INTRODUCTION

The following sections discuss the affected environment and environmental impacts associated with the no action alternative as well as with construction and operations from implementing the proposed action.

The Army took context and intensity into consideration in determining a potential impact's significance, as defined in 40 CFR part 1508.27. The *intensity* of a potential impact is the impact's 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 particular potential impact would be adverse or beneficial, and to what extent.

CEQ regulations require that a proposed action's cumulative impact 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 is divided into two separate areas known as Area A and Area B. Area A is located within the city of Kingsport; no part of the proposed action would occur in Area A. Area B (approximately 6,000 acres) is zoned for industrial use and is located just outside the Kingsport city limits. It comprises industrial sites and a large area of undeveloped land. Area B is 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 undeveloped portion of Area B accounts for approximately 88 percent of the whole, is largely forested, and contains the ammunition storage area, a landfill, a borrow pit, and the roads leading

to these facilities. It is divided into separate areas for natural resources management purposes. The new steam plant is proposed to be located within the Reservoir Area, named for the raw water reservoir in it that holds water from the Holston River for use upon demand in the production process (HSAAP 2015b). Because of the Reservoir Area's fairly distinct boundaries, extensive hardwood stands, and lack of development, deer hunting is permitted in the area.

The production area, or explosives manufacturing area, in Area B encompasses approximately 700 acres (12 percent of the total), has nearly 300 production facilities, and is classified as semi-improved grounds. Grounds surrounding the production facilities are primarily open fields that are generally mowed one to two times per year. Other than grass, vegetation on the area is limited to scattered mature trees and three small stands (measuring approximately 1 acre, 1.5 acres, and 4 acres) of upland hardwoods composed primarily of white oak (*Quercus alba*). White-tailed deer (*Odocoileus virginianus*) use the stands as bedding areas and feeding areas when the acorn crop is sufficient. For safety reasons, no hunting is allowed in the production area.

3.2.2 Impacts Associated with No Action Alternative

The no action alternative would have no effect on land use because no changes in zoning or land use on Area B would occur.

3.2.3 Impacts Associated with Proposed Action

3.2.3.1 Construction

Long-term minor adverse effects on land use would be expected from construction. Forest would be converted to industrial use at the site of the new steam plant and the site would no longer be available for deer hunting. No effects on land use would be expected from construction in the production area. The industrial land use and zoning of Area B would not change under the proposed action, and no new land-use conflicts with surrounding properties would be created.

3.2.3.2 Operations

No effects on land use would be expected from operations after construction activities are completed. Activities on and use of the production area would remain unchanged from before implementation of the proposed action. The area would continue to be zoned and used for industrial purposes, and post-construction operations in the production area would create no new land-use conflicts with surrounding areas.

3.2.3.3 Mitigation Measures and Best Management Practices

No mitigation measures or best management practices (BMPs) would be required for land use.

3.3 AESTHETICS AND VISUAL RESOURCES

3.3.1 Affected Environment

HSAAP no longer uses many of the nearly 300 facilities in the production area, and they have been allowed to deteriorate over time. Views from the interior of the production area are primarily of maintained grounds and old buildings, industrial facilities, and aboveground steam pipes running between the facilities. Views outward from the periphery of the area are of the Holston River and residential areas to the east, the river and Bays Mountain to the south, the forested part of Area B to the west, and residential areas to the north. The views are generally aesthetically natural or otherwise pleasing. The undeveloped portion of Area B has a natural, forested aesthetic.

3.3.2 Impacts Associated with No Action Alternative

The no action alternative would have no effect on aesthetics on HSAAP since no changes in the appearance of Area B would occur.

3.3.3 Impacts Associated with Proposed Action

3.3.3.1 Construction

Construction associated with the proposed action would result in short-term minor adverse and beneficial effects on aesthetics. Construction activities are generally considered unaesthetic, but they last only for a limited amount of 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 construction (section 3.5 discusses noise effects). The completion of each construction project would be expected to have a minor beneficial effect on the aesthetics of the production area because of the new appearance of renovated and new facilities. Replacement of forest with a steam plant outside the production area would alter views in that immediate area, but the location is within view of the production area. The overall effect of the multiple construction projects under the proposed action on the aesthetics of the production area would be expected to be minor because the industrial character of the area would remain unchanged.

3.3.3.2 Operations

No effects on aesthetics would be expected from operations in the production area after the completion of construction activities. No changes to the aesthetics of the production area would occur after construction was completed. Activities on the production area and use of the area would be largely the same as before the proposed action was implemented.

3.3.3.3 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 a 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.

3.4 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 may 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

The following sections include 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 Tennessee Department of Environment and Conservation (TDEC) regulate air quality in Tennessee. The CAA, as amended, assigns EPA the responsibility to establish 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 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 2017a). Because all areas associated with the proposed action are in attainment, the general conformity rules do 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. SO_2 and PM_{10} are not considered pollutants of concern in this region; therefore, they are 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**	**2014**	**2015**	**2016**
CO					
1-hour (ppm)	35	Not to be exceeded more than once per year	1.2	1.4	1.3
8-hour (ppm)	9		0.9	1.0	0.9
NO_2					
1-hour (ppb)	100	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	37	39	42
1-year (ppb)	53	Annual mean	7	8	9
O_3					
8-hour (ppm)	0.070	3-year average of the fourth highest daily maximum	0.065	0.066	0.068
SO_2					
1-hour (ppm)	75	98th percentile, averaged over 3 years	*No Data*	*No Data*	*No Data*
3-hour (ppb)	0.5	Not to be exceeded more than once per year	*No Data*	*No Data*	*No Data*
$PM_{2.5}$					
24-hour ($\mu g/m^3$)	35	98th percentile, averaged over 3 years	15	14	17
Annual mean ($\mu g/m^3$)	12	Averaged over 3 years	8.7	7.7	7.4
PM_{10}					
24-hour ($\mu g/m^3$)	150	Not to be exceeded more than once per year over 3 years	*No Data*	*No Data*	*No Data*
Lead (Pb)					
Rolling 3-month average ($\mu g/m^3$)	0.15	Not to be exceeded	0	0.01	0

Sources: 40 CFR 50.1-50.12; USEPA 2017b.

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

HSAAP Operating Permit 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. 558407 for Area A and No. 558406 for Area B. HSAAP applied for permit renewals in 2013 and is currently operating under the existing permits while TDEC reviews the applications (BAE OSI 2013b). The proposed expansion 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 (steam) plant, internal combustion engines such as generators and pumps. Other sources include natural gas combustion for steam generation, nitration, washing, RDX recrystallization processes, explosives fluid energy milling, IMX manufacturing processes, storage tanks, 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 submits a comprehensive emissions statement annually. Table 3-2 summarizes the 2016 HSAAP Area B emissions of criteria pollutants and from open burning activities.

Table 3-2. Facility Wide 2016 Emissions at HSAAP Area B

Pollutant	Facility Wide Emissions (tpy)		Open Burning Emissions (tpy)		
	Actual	Potential to Emit	Actual	Percent Facility Wide	Potential to Emit
CO	214	1,118	17.8	8.3%	31.3
NO_x	347	1,201	1.3	0.4%	2.9
VOC	49	1,701	6.2	12.7%	10.1
SO_2	1,695	9,995	0.2	0.0%	0.3
PM_{10}	94	257	3.4	3.6%	6.6
$PM_{2.5}$	59	163	3.4	5.8%	6.6

Sources: BAE OSI 2017a, 2017b, 2013b; HSAAP 2016.
Notes: NO_x = 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 type 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 HSAAP expansion.

The air quality permitting process would begin 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 (Table 3-3). These permits, and some of their requirements, are outlined in this section. TDEC requires a NNSR permit only for major new

sources in nonattainment areas. Because HSAAP is located in an attainment area, that permit would not apply.

Prevention of Significant Deterioration Permit. The PSD 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 Threshold for Existing PSD Sources

Pollutant	Major Modification Threshold for Existing PSD Sources (tpy)
CO	100
NO_x	40
SO_2	40
PM	25
PM_{10}	15
$PM_{2.5}$	10
VOCs	40
Pb	0.6

Sources: 40 CFR part 52.21; TDEC 1200-03-09-.01.
Notes: NO_x = 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 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(s) are 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 to construct and operate 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 process 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 NSPS 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_2).** CO_2 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_2e) is the amount of CO_2 emitted into the atmosphere that would produce the same greenhouse effects as a given amount of another GHG. CO_2e 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).

EPA has promulgated two basic GHG regulations: (1) the Mandatory GHG Reporting Rule (MRR), which requires the reporting of GHG emissions annually, and (2) the GHG Tailoring Rule, which required BACT for GHGs to be addressed for major sources of GHG. The MRR final rule applies to fossil fuel suppliers and industrial gas suppliers, direct GHG emitters such as HSAAP, and manufacturers of heavy-duty and off-road vehicles and engines. The rule does not require control of GHGs, but requires that major GHG sources be monitored and the emissions reported. The GHG Tailoring Rule "tailored" the major source permitting regulations (i.e., Title V, PSD {XE "Prevention of Significant Deterioration (PSD)"}, and NNSR) to apply to GHGs. Based on a 2014 U.S. Supreme Court decision, the status of the GHG Tailoring Rule is uncertain, and PSD and Title V permitting of major sources of GHGs is not required at this time (Utility Air Regulatory Group v. EPA, 134 S. Ct. 2427 2014). The MRR is still in effect, however, and applies to HSAAP.

In addition, Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade*, outlines policies intended to ensure that federal agencies evaluate climate change risks and vulnerabilities and manage the short- and long-term effects of climate change on their operations and mission. The EO specifically requires agencies within the DoD to measure, report, and reduce their GHG emissions from both their direct and indirect activities. HSAAP currently emits approximately 168,000 tons of CO_2e each year, with a PTE of 551,117 tons per year (tpy) (BAE 2017a; HSAAP 2016). DoD has committed to reduce GHG emissions from noncombat activities by 34 percent by 2020 (U.S. Army 2016a).

Climate. Historically, Kingsport's average high temperature is 86.9 °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 2017).

3.4.2 Impacts Associated with No Action Alternative

No adverse effects on air quality would be expected under the no action alternative since no construction or changes in operations or personnel would occur at HSAAP. Ambient air quality would remain unchanged.

3.4.3 Impacts Associated with Proposed Action

Short-term minor and long-term moderate adverse effects on air quality would be expected under the proposed action. Fugitive dust and the use of heavy equipment during construction would result in short-term effects. Operating the proposed natural gas steam generation plant instead of the coal-fired plant would have long-term moderate beneficial effects to air quality from a reduction in criteria pollutants; however, additional industrial processes and increases in open burning of waste would result in long-term moderate adverse effects. 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

Short-term minor adverse effects would be expected from construction associated with the proposed action. Mobile and stationary equipment would be used to construct the proposed facilities. Construction would generate small amounts of emissions from combustion of diesel fuel and gasoline on- and off-road diesel equipment and vehicles, worker trips, architectural coatings, and paving off-gasses. In addition, site grading and construction activities would generate fugitive dust. Construction emissions would be localized and temporary. These effects would be minor.

TDEC Division of Air Pollution Control has established the Tennessee Air Pollution Control Regulations (Air Pollution Control Rule Chapter 1200-03-01 *et seq*.) implementing the Tennessee Air Quality Act (Tennessee Code Annotated section 53-3408 *et seq*.). The regulations establish emission standards for numerous sources of air pollutants. Developers must comply with these standards when constructing new facilities. All persons responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust 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 must proceed in full compliance with current TDEC requirements with compliant practices and/or products. These requirements include the following:

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

3.4.3.2 Operations

Long-term moderate adverse effects would be expected from operation of the proposed facilities. Operating the proposed natural gas steam generation plant instead of the coal-fired plant would have long-term moderate beneficial effects to air quality from a reduction in criteria pollutants; however, additional industrial processes and increases in open burning of waste would result in long-term moderate adverse effects. The assessment of effects on air quality from the proposed operations discussed in this section incorporates several components that include the applicability of the general conformity rule, the change in actual emissions, and a review for permitting of new sources of air emissions.

General Conformity. The project site is located completely within an attainment area; therefore, the general conformity requirements do not apply, and no formal conformity determination is required. In addition, the HSAAP expansion would be exempt from the general conformity requirements as it includes stationary sources that would be permitted under the PSD program (40 CFR 93-153(d)(1)). Appendix A provides a Record of Non-Applicability.

Operational Emissions. Emissions sources from the proposed expansion would be similar to existing sources on HSAAP, including combustion for steam generation; internal combustion engines such as generators and pumps, and storage tanks; additional RDX and IMX manufacturing processes; and additional open burning of contaminated materials. The proposed new natural gas boilers would have appreciably lower emissions than the existing coal-fired boilers which make up most of the existing installation-wide emissions. Table 3-4 lists the estimated overall operational emissions at the proposed facilities. The change in PTE have been added or subtracted from the existing actual emissions to estimate the future emissions under the proposed action.

General conformity was established with NEPA in mind and, although the area is in attainment and the general conformity rules do not apply, the *de minimis* threshold values were carried forward to determine the level of effects. The estimated emissions from the proposed expansion for all criteria pollutants would be below the *de minimis* thresholds. These effects would be less than significant. The emission estimates outlined in Table 3-4 are based on the best available information at this time, and since they are based on PTE, the actual increases and decreases in emissions would be less than those shown herein. As the design of the facilities and the air permitting process progresses, they are likely to change. However, moderate changes in facility siting or size would not change the level of effects under NEPA. Although Hawkins County is in full attainment for all NAAQS, Sullivan County is in partial non-attainment for SO2. The proposed action would reduce PTE of SO2 by more than 9,000 tpy, and reduce actual SO2 emissions by more than 1,700 tpy. This would potentially have beneficial effects in these nearby areas.

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 described in this EA. 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 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.

Table 3-4. Emissions from the Proposed Action Compared to *De Minimis* Thresholds

Pollutant	Change in Emission (tpy)[a]	*De Minimis* Threshold [tpy]	Exceeds *De Minimis* Thresholds? [Yes/No]
CO	-566.4	100	No
NO_x	-506.6	100	No
VOC	36.1	100	No
SO_2	-9,919.8	100	No
PM_{10}	-110.2	100	No
$PM_{2.5}$	-46.3	100	No
Pb	0.0	25	No

Sources: 40 CFR 93.153; BAE 2017a.
Notes: NO_x = oxides of nitrogen; VOC = volatile organic compound.
[a] Emissions are based on the change in the facilities' PTE. The actual emissions would be expected to be somewhat less.

Table 3-5 shows the existing PTE for HSAAP and the estimated PTE with the proposed action. Due to the overall reductions in emissions, the proposed HSAAP expansion would not likely meet the definition of a major modification as outlined in the PSD regulations, because it would not produce PTE-regulated pollutants in amounts equal to or greater than those outlined in Table 3-3. Even though the estimates for pollutants are lower than the applicable thresholds, these estimates are based on the preliminary design phase.

The current permitting approach includes the Army taking a netting approach to emissions that would include the replacement of existing sources or the installation of emission controls on existing sources to make the PSD review process unnecessary. This approach may 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.

Table 3-5. Estimated Facility Wide PTE with the Proposed Action

Pollutant	PTE (tpy)		Change in PTE (tpy)	Major Modification Threshold (tpy)	Exceeds Major Modification Threshold?
	Existing	With Proposed Expansion			
CO	1,118	552	-566	100	No
NO_x	1,201	694	-507	40	No
VOC	1,420	1,456	36	40	No
SO_2	9,995	75	-9,920	40	No
PM_{10}	257	147	-110	15	No
$PM_{2.5}$	163	117	-46	10	No

Sources: BAE OSI 2017a, 2017b, 2013b, TDEC 2009a.
Note: VOC = volatile organic compound.

If it became required, the PSD permitting process would include all new sources of air emissions associated with the proposed expansion. 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 HSAAP expansion 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 described in this EA 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 would require HSAAP to submit an application for the modification of the permit within 1 year of the first operation of a new source.

Open Burning. Table 3-6 outlines the existing open burning emissions and the open burning emissions with the proposed action. No air pollution controls are used during opening burning activities. Although open burning constitutes only a small fraction of the facility wide emissions, the proposed action would result in a 25–31-percent increase in the open burning of waste and subsequent emissions. This increase would fall within the limits of the current RCRA subpart X and Title V permits. Notably, potential to emit from open burning would not increase since HSAAP would be staying within the existing RCRA subpart X permit restrictions. These effects would be moderately adverse.

Table 3-6. Open Burning Emissions with the Proposed Action

	Actual Emissions (tpy)			
Pollutant	**Existing**	**With Proposed Expansion**	**Percent Increase**	**PTE (tpy)**
CO	17.84	22.55	26%	31.3
NO_x	1.34	1.76	31%	2.9
VOC	6.19	7.73	25%	10.1
SO_x	0.20	0.26	30%	0.3
PM_{10}	3.44	4.40	28%	6.6
$PM_{2.5}$	3.44	4.40	28%	6.6

Source: BAE 2017b.
Notes: NOx = oxides of nitrogen; SOx = oxides of sulfur; VOC = volatile organic compound.

RCRA subpart X permit conditions for on-site disposal and treatment of explosive waste limit the facility to daily burning, Monday through Friday, with a maximum of 5,000 pounds between the four burn pans located in the open burning area. The Army and its contractors have certified that open burning continues to be the only approved, safe method for disposal of these materials at the installation; however, HSAAP is actively looking into alternative technologies to reduce the amount of waste requiring open burning (BAE 2017c).

Climate Change and GHGs. Under the proposed expansion, HSAAP would emit approximately 675,343 tpy of CO_2e, about four times as much as under existing conditions. The PTE would increase by 208,471 tpy to 758,936 tpy. These increases would primarily be caused by the new natural gas steam generation plant, and heating and cooling the new facilities. Table 3-7 outlines GHG emissions resulting from the proposed action. The estimated GHG emissions from the HSAAP expansion are minor compared to global, countrywide, and statewide GHG emissions.

Table 3-7. GHG Emissions from the Proposed Action

Scale	$C0_2e$ Emissions (MMT)	Change from Proposed Action
Global	43,125.0	0.00041%
United States	6,870.0	0.0009%
Tennessee	103.5	0.6%
Proposed Action	0.6	0.0%

Sources: BAE 2017a; USEIA 2017; USEPA 2017d, 2017e.
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 has several initiatives to reduce its GHG emissions, including (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 million metric tpy, 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 3-8 lists climate stressors and their potential effects on post-construction operations at HSAAP. At this time, no future climate scenario or potential climate stressor would have appreciable effects on any element of the proposed action.

Table 3-8. Effects of Potential Climate Stressors on HSAAP 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.

Although no climate stressor would have an appreciable effect on operations at the installation, the final siting and design of facilities and infrastructure would incorporate measures to avoid the

potential effects of climate change such as siting facilities away from areas that might be affected. The Army would not build facilities within the predicted future 500-year floodplain, for example.

3.4.3.3 Mitigation Measures, BMPs and Regulatory Requirements

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.

BMPs and other regulatory requirements would be followed during the construction and operation of the HSAAP expansion. Construction of the proposed facilities would proceed in full compliance with current TDEC requirements with compliant practices and/or products. These requirements include the following:

- 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, during construction, no person 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, grading of roads, or clearing of 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.

As part of the new source review and the PSD permitting process for new stationary sources of emissions, requirements associated with permitting and operating the proposed facilities might include the following:

- BACT review for each criteria pollutant;
- MACT review for regulated HAPs;
- Predictive air dispersion modeling;
- Establishing procedures for measuring and recording emissions and/or process rates;
- Meeting the NSPS and NESHAP requirements; and
- A public involvement process.

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, intense enough to damage hearing, or 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. Activities

essential to a community's daily life such as construction and vehicular traffic often generate noise.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz units of measure are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighing," measured in A-weighted decibels (dBA), approximates a frequency response expressing the perception of sound by humans. Table 3-9 provides representative sounds encountered in daily life and their dBA levels.

Table 3-9. 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 (1) it averages ongoing yet intermittent noise, and (2) it 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, 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, lawn maintenance equipment, and construction. Other noise sources on the installation include operation of manufacturing facilities, munitions testing, and heavy equipment use. The vegetation surrounding the installation attenuates 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 burn pans approximately once per month. Occasional complaints are received about noise from these activities.

Mixed residential, other commercial, and light industrial areas surround HSAAP. Existing noise levels (L_{eq} and DNL) in the surrounding areas were estimated using the techniques specified in the American National Standards Institute's (ANSI's) *Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer*

present. Table 3-10 outlines the land-use category and the estimated background noise levels for nearby areas (ANSI 2013).

Table 3-10. 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 No Action Alternative

The no action alternative would have no effects on noise since no short- or long-term changes to the ambient noise environment would occur. The noise environment would remain unchanged.

3.5.3 Impacts Associated with Proposed Action

Short- and long-term minor adverse effects on the existing noise environments of areas surrounding HSAAP and on the installation itself would be expected from implementing the proposed action. Increases in traffic and heavy equipment noise during construction activities would result in short-term effects. An increase in traffic from approximately 250 additional personnel and shipping, receiving, and other processing-related vehicles associated with the HSAAP expansion would result in long-term effects. Railroad use would increase under the proposed action, with minor long-term adverse noise effects. These effects would not result in the violation of applicable federal noise regulations or create land-use incompatibilities.

3.5.3.1 Construction

Table 3-11 presents typical noise levels (dBA at 50 feet) that EPA has estimated for the main phases of outdoor construction. Individual pieces of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 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 levels of construction noise typically extends to distances of 400 to 800 feet from the site of major equipment operations.

Table 3-11. 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.

All construction associated with the proposed action would occur within or abutting the production area in Area B on HSAAP. No off-installation areas are located within 800 feet of the production area. The zone of relatively high levels of construction noise, therefore, would be completely within the installation boundary. Noise levels attributable to construction activities would be relatively low in the residential areas surrounding the installation. These effects would be minor

given the temporary nature of proposed construction activities and the limited amount of noise the construction equipment would generate.

Truck and worker traffic would be associated with the proposed construction. Approximately 33,470 vehicles travel along U.S. 11W north of the installation daily (see section 3.11). Construction and worker trips added to the traffic on U.S. 11W would not constitute an appreciable increase in trips along the road, and the noise effects of traffic associated with the construction phase of the proposed action would be minor.

3.5.3.2 Operations

Noise from operational activities would be similar in nature and overall levels to current operational conditions. The associated increase in rail activities and commuter traffic would result in noise level increases. Approximately 115 more vehicles per hour would arrive at HSAAP during the peak traffic period once production on the installation is expanded, which would be a negligible increase in traffic on U.S. 11W. Changes in the noise environment off and on the installation from these activities would be indistinguishable from existing conditions. No military training activities, use of weaponry, or demolitions training are associated with the proposed action. There may be a small increase in the additional explosives testing or demonstration activities at the two small sites adjacent to the burn pans.

3.5.3.3 Mitigation Measures and BMPs

No mitigation measures for noise would be required under the proposed action. Although construction-related noise effects would be minor, the following BMPs would be implemented to further reduce any realized noise effects:

- Heavy equipment use would primarily occur during normal weekday business hours;
- Heavy equipment mufflers would be properly maintained and in good working order; and
- Personnel, particularly equipment operators, would wear 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.

3.6 GEOLOGY AND SOILS

3.6.1 Affected Environment

***Geology*.** HSAAP is underlain by two major rock units, one of dolomite rock and one of shale (BAE OSI 2013a). The dolomite rock is the uppermost layer and consists generally of fine-grained dolomite and dolomitic limestone with limestone. The mineral dolomite, a major constituent of dolomite rock, dissolves in slightly acidic water, so areas of dolomite are important as aquifers and contribute to karst terrain formation. The shale layer has interspersed thin beds of limestone and is relatively resistant to weathering.

***Topography*.** The main production area on HSAAP slopes gently downward from the north toward the Holston River. The highest points on the production area are about 1,230 feet above mean sea level and the lowest points near the river are about 1,170 feet above mean sea level (USGS 2016a, 2016b).

***Soils*.** The primary soil type found at HSAAP is the Holston-Urban land complex soil type, which is found on 83 percent of the production area and nearly all areas within the production area where construction for the proposed action would occur (USDA-NRCS 2017b). Other soil types are found on the periphery of the production area. All areas proposed for construction have been

previously disturbed, have compacted soils, and have very low permeability and available water capacity. They are best suited to heavy industrial complexes and to lawn grasses, landscape shrubbery, and adapted trees. Table 3-12 provides pertinent information about the soils at the proposed construction sites. Complete details on the soils of HSAAP are available online on the Web Soil Survey page on the website of the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) (USDA-NRCS 2017b).

***Prime Farmland*.** NRCS classifies 6 percent of the soils within the HSAAP production area as "prime farmland." Of the soil types listed as prime farmland in Table 3-12, only the Altavista silt loam (AT) soil type occurs on a proposed area of construction. The Taft silt loam (Ta) soil type occurs at the periphery of the gravel road that would be paved, and the Holston loam 2–5 percent slopes (HoB) soil type occurs at the borrow pit, which is not located within the production area. 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 2017a). 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.

Table 3-12. Soils at Proposed Action Facility Locations

Facility	Soil Type(s)	Suitability for Construction	Flooding/ Ponding	Erodibility [a]	Prime Farmland
RDX Production	Hx	Not Rated	None/None	Not Rated	No
RDX Recrystallization	Hx				
IMX Recrystallization	Hx				
FEM	Hx				
Acid Line	Hx				
Change House	Hx				
Change House Demolition	Hx				
Analytic Lab	Hx				
Gravel Road	Hx				
	Ta	Very Limited	None/Occasional	0.37	Yes
New Steam Plant	Hx	Not Rated	None/None	Not Rated	No
	DaD	Very Limited	None/None	0.20	No
	DaE	Very Limited	None/None	0.20	No
Loading Docks	At	Somewhat Limited	None/None	0.37	Yes
Borrow Pit	HoB	Not Limited	None/None	0.32	Yes
	HoC	Not Limited	None/None	0.32	No

Source: USDA-NRCS 2017b.
Notes: At=Altavista silt loam; DaD=Dandridge shaly silty clay loam, 5–20% slopes; DaE=Dandridge shaly silty clay loam, 20–35 percent slopes; HoB=Holston loam 2–5% slopes; HoC=Holston loam 5–12% slopes; Hx=Holston Urban Land Complex; Ta=Taft silt loam.
[a] Erodibility values range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

3.6.2 Impacts Associated with No Action Alternative

The no action alternative would have no direct or indirect impacts on geology, the local topography, or soils in the HSAAP production area since no changes would occur.

3.6.3 Impacts Associated with Proposed Action

3.6.3.1 Construction

No effects on geology or topography would be expected from construction activities associated with the proposed action.

Short-term minor adverse effects on soils would be expected from implementing the proposed action. TDEC requires operators of construction sites involving clearing, grading, or excavation that result in a cumulative (project total) area of disturbance of one 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. The Army would require that contractors conducting the timber harvest on the proposed location of the new steam plant use Tennessee forestry BMPs to conserve soil, control erosion, and protect water quality.

During demolition activities associated with the proposed action, the Army or its contractor would implement applicable BMPs, as outlined in the *Tennessee Erosion and Sediment Control Handbook*. Following completion of the project, the contractor would leave each site in a stable, non-eroding condition and clean up any soil contaminated by construction equipment oil leaks that might have occurred during implementation of the proposed action. If soil was potentially impacted with explosives, it would be taken to the burning ground for decontamination. Otherwise, it would be disposed of in the on-site class II landfill as a special waste. Equipment would be cleaned before leaving a site to prevent the transfer of potential explosives-containing materials from one site to another.

3.6.3.2 Operations

No effects on geology, topography, or soils would be expected from operational activities associated with the proposed action. 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.

3.6.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for geology, topography, and soils. The proposed action would not be expected to create any significant adverse impact on these resource areas.

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.

3.7 WATER RESOURCES

3.7.1 Affected Environment

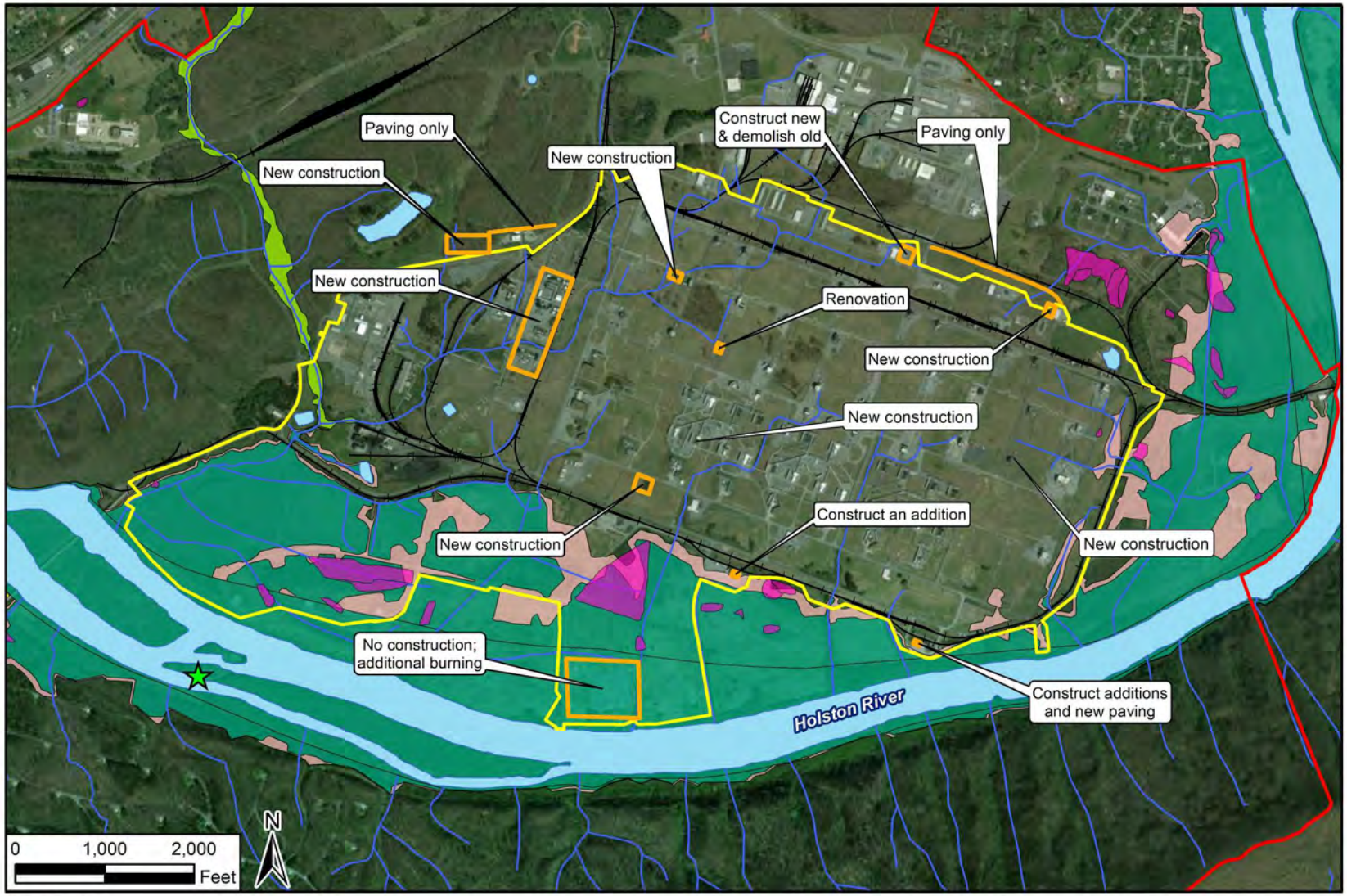
***Surface Waters*.** HSAAP's Area B has two major flowing water bodies: the Holston River and Arnott Branch, a tributary of the Holston River at the west end of Area B. Approximately 4.5 miles of the Holston River flow through HSAAP. In addition to these principal waters, Area B has numerous unnamed ponds and drainage ditches that drain to the Holston River and Arnott Branch. West of the proposed location for the new steam plant is a raw water reservoir. The reservoir holds water from the Holston River for use as noncontact cooling water in the production process. HSAAP holds two NPDES permits that allow the discharge of stormwater, cooling water, treated IWW, and treated domestic wastewater to these water bodies through various outfalls.

Flow data for the Holston River at HSAAP is obtainable from upstream gages. A U.S. Geological Survey gage at Gate City, Virginia records discharge upstream of HSAAP on the North Fork Holston River. Historical data is available from April 2012 through January 2018 (USGS 2018). Flow at the gage varied between 80 cfs in autumn of 2016 to 20,000 cfs in spring of 2017. Mean flows for 2014, 2015, and 2016 at the gage were 751 cfs, 1,077 cfs, and 791 cfs, respectively. The Tennessee Valley Authority records flow out of the dam on the South Fork Holston River at the Fort Patrick Henry Reservoir. Discharge at the reservoir is reported for the previous 48 hours. Average hourly discharge for January 3, 2018 through January 5, 2018 was 1,109 cfs (TVA 2018). These are the recorded discharges upstream from HSAAP nearest to the installation and the data from them serve as an estimate of flow on the Holston River at HSAAP. Flow at HSAAP is estimated at the combined flow from the North Fork and South Fork of the Holston River, as recorded at the locations noted above. The average combined flow was 991 cfs, or 7,413 gallons per second, or approximately 640 MGD. Obviously, daily flow varies greatly with season and rainfall.

HSAAP uses 40–50 million gallons per day (MGD) of water from the Holston River as noncontact cooling water to support production processes. The river water is not treated and passes through production facilities without contacting materials and chemicals used in explosives production processes. Approximately 15 surface acres of relatively fast-moving, shallow waterways that crisscross the production area return the water to the Holston River via multiple outfalls. Under CWA section 303d and HSAAP's NPDES permit, the water temperature in the Arnott Branch, where noncontact cooling water is returned to the stream, must not exceed 30.5 degrees Celsius (°C) and there can be no more than a 3 °C difference in the water at points upstream and downstream of the discharge location.

Floodplains. Generally, 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. Most of the production area lies outside the 100- and 500-year floodplains of the Holston River and Arnott Branch (Figure 3-1) (HSAAP GIS 2017). Small areas of the 500-year flood zone extend into the periphery of the production area, primarily along drainage ditches. Except for buildings 409 and 410 (discussed below), none of the locations for the proposed new and refurbished facilities are within a flood zone. Portions of paved areas around buildings 409 and 410 and a small portion of building 410 lie within the 500-year floodplain of the Holston River. Of the three modifications proposed for building 409, only one of them—the proposed extension (widening) of the road surrounding the facility on the south—would lie in the 500-year floodplain. The other two proposed modifications are not located within floodplain areas. The open burn area is within the 100-year floodplain.

***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



Natural Resources

Figure 3-1

Source: HSAAP GIS 2017. Note: Proposed locations are approximate.

Resources Office. There are no jurisdictional wetlands found on any of the proposed project areas (Figure 3-1).

3.7.2 Impacts Associated with No Action Alternative

The no action alternative would have no effects on water resources since no construction activities would occur and current operations would be unaffected.

3.7.3 Impacts Associated with Proposed Action

3.7.3.1 Construction

Short-term minor adverse effects on surface waters and no adverse effects on floodplains would be expected from construction activities associated with the proposed action. 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 leaked from construction vehicles (e.g., lubricants). 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. Some of the construction activities on the production area could also require rerouting some drainage ditches. HSAAP would consult with TDEC for any disturbances to ditches that could require a permit.

HSAAP would continue to use water from the Holston River for noncontact cooling in the production process and adhere to the requirements of its NPDES permit for the use of that water.

No adverse effects on floodplain areas would be expected from construction activities associated with the proposed action. No effect on the floodplain at building 410 would be expected because the footprint of the facility, including paved areas, would not be increased or altered. The extension (widening) of the road on the south side of building 409 would lie in the 500-year floodplain of the Holston River. No building would be situated within the floodplain area, so any flooding that occurs would be expected to partially inundate the road surface only.

No adverse effects on floodplains would be expected from implementing the proposed action. EO 11988, *Floodplain Management*, requires that federal agencies avoid to the maximum extent possible adverse effects associated with occupying or modifying the 100-year floodplain. No part of the proposed action would occur within a 100-year floodplain.

No effects on wetlands would be expected from construction activities associated with the proposed action.

3.7.3.2 Operations

Long-term minor adverse effects on water quality in the Holston River would be expected from operational activities associated with the proposed action. Three adverse effects on water resources would be expected once the new production facilities are operational: an increased amount of RDX discharged to the river, an increased amount of nitrates discharged to the river, and an increased amount of (warmed) noncontact cooling water returned to surface waters.

The amount of RDX discharged to the Holston River is conservatively estimated to double from the current 5.18 lbs/day[1] to about 10.36 lbs/day with increased explosives production. Regardless of the actual amount of RDX in the waste stream once production capacity has been increased, HSAAP would ensure that the amount discharged to the river would be below the permitted maximum discharge of 12.2 lbs/day, which is required to maintain aquatic life water quality criteria. Similarly, HSAAP would ensure that the amount of nitrates discharged to the Holston River

[1] 5.18 lbs/day is the average from January 2017–January 2018.

associated with IMX production would not exceed the permitted amount. Compliance with the NPDES permits would be accomplished by segregating nitrates from wastewater streams to prevent increased loading at the upgraded IWWTP or through some other method that would improve wastewater treatment efficiency.

Under HSAAP's current NPDES permit, the installation is not limited in the amount of water it can withdraw from the Holston River utilizing the existing intake and pump infrastructure. Because the existing equipment can handle the projected increase in cooling water withdrawal (see section 3.12, Utilities), the permit will not require modification for this increase. HSAAP will submit a revised permit application to TDEC to account for the changes in production, including the processes, production frequency, and associated flow rates, as a revision to the permit application the installation submitted to TDEC in 2013.

HSAAP anticipates that the noncontact cooling water to be returned to the Arnott Branch will be warmer than it currently is once the new production facilities are operational. As noted above, there can be no more than a 3 °C difference in water temperature at points upstream and downstream of the discharge location. The temperature of the noncontact cooling water exiting the expanded production facilities cannot be calculated until a more detailed design is finalized. As design details of the expanded facilities are finalized, HSAAP will determine whether additional temperature controls are needed to comply with the 3 °C difference limitation. HSAAP will incorporate engineering controls into the final design to ensure compliance with CWA section 303d and the installation's NPDES permit.

No effects on floodplains or wetlands would be expected from operational activities associated with the proposed action.

3.7.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for water resources. The proposed action 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 3.6.3.3). 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 BMPs to limit soil erosion and pollution in stormwater runoff resulting from 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.

3.8 BIOLOGICAL RESOURCES

3.8.1 Affected Environment

The 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 located on the production area and three stands of upland hardwoods on the production area are composed primarily of white oak. Deer use these stands as bedding areas and as primary feeding areas when the mast crop is sufficient. Because manufacturing work is conducted in the production area and for safety reasons, natural resources management activities in the 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*). The mowed open fields of the production area are the preferred habitat type of these two species. No hunting is allowed in the production area for safety reasons.

The proposed location for the new steam plant is hardwood forest bordered by an access road, a powerline right-of-way, and developed areas. Oak (*Quercus* sp.), beech (*Fagus grandifolia*),

hickory (*Carya* sp.), and yellow poplar (*Liriodendron tulipifera*) are the dominant species in the area (HSAAP 2015b). A variety of wintering waterfowl use the reservoir. Osprey (*Pandion haliaetus*) have been observed feeding at the reservoir. The hardwoods in the area provide an important source of mast to species such as the southern fox squirrel (*Scirus niger*), white-tailed deer (*Odocoileus virginianus*), and wild turkey (*Meleagris gallopavo*).

***Protected Species*.** The USFWS indicates that four federally listed threatened or endangered (T/E) species could potentially be present on HSAAP: gray bat (*Myotis grisescens*), Indiana bat (*M*. *sodalis*), northern long-eared bat (*M*. *septentrionalis*), and spotfin chub (*Erimonax monachus*) (USFWS 2017a). The only T/E species verified to occur on the installation have been the gray bat and the northern long-eared bat. A gray bat was captured during a 2001 survey, but biologists monitored two caves that could serve as roosting habitat for the bats and observed no presence at either site. The installation lacks the types of caves the bats typically use for roosting, so it is doubtful that the gray bat roosts on the installation. Northern long-eared bats also were captured during the 2001 survey on the installation, but none were captured during a survey done in 2015. The fact that northern long-eared bats were captured during HSAAP's 2001 bat survey but were not captured during the 2015 survey would indicate that the population on the installation has declined. This decline would be reflective of the recent listing of this species as federally threatened because of an overall reduction in its numbers across its entire range. The Indiana bat has the potential to occur on HSAAP because the forested areas on the installation provide suitable summer roosting habitat for the species, but it has never been identified on the installation.

The federally endangered spotfin chub is known to occur in the Holston River approximately 1 mile upstream from the installation's northeastern boundary. A survey for the spotfin chub on the installation was done in September 2015, but none were found in the portion of the river flowing through the installation. USFWS considers the spotfin chub to be a potential transient in the Holston River at HSAAP, but not a resident in the installation's waters. No T/E fish species have been found through any of the surveys conducted on the installation.

Two species of mollusk, the Cumberland bean, or pearlymussel (*Villosa trabalis*), and the purple bean (*V. perpurpurea*) are listed by USFWS as potentially occurring in the Holston River and its tributaries on HSAAP (USFWS 2017a). Surveys of the HSAAP portion of the Holston River, however, have failed to identify these species. The mollusk species are believed to no longer inhabit that portion of the river.

A pair of bald eagles (*Haliaeetus leucocephalus*) has nested on the installation since 2005. A second pair of bald eagles began nesting on the plant in 2017 but the nest was not discovered until January 2018. The second nest is one-half mile or more from the nearest project site. Federal protection for the species under the ESA has been removed, but the species is still protected under the Bald and Golden Eagle Protection Act. The bald eagle nest on HSAAP is approximately three-quarters of a mile from the closest proposed project area.

USFWS listed the rusty patched bumble bee (*Bombus affinis*) as endangered under the ESA effective March 21, 2017. The species was formerly distributed from Minnesota to North Carolina and Maine. Its current distribution is about one-sixth of its original distribution. Reasons for its decline are uncertain, but likely include habitat loss and degradation, intensive farming, disease contracted from commercially raised populations, pesticides, and global climate change.

USFWS categorizes the current distribution of the rusty patched bumble bee 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 2017b). There are no high potential zones

in Tennessee. The low potential zone closest to Hawkins County and, therefore, to HSAAP, is in Sevier County, Tennessee, located three counties southwest of the installation.

Migratory birds are protected under the Migratory Bird Treaty Act. Some species nest on HSAAP, although the majority of migrating birds pass through HSAAP during migration, but generally do not nest on the installation.

HSAAP sent a coordination letter to USFWS in November 2017 requesting a not likely to adversely affect concurrence regarding T/E species. USFWS responded that it would wait to review the EA before concurring (see appendix C). HSAAP sent another letter in February 2018 regarding the location of the proposed new steam plant. Copies of the letters sent and responses received are in appendix C.

3.8.2 Impacts Associated with No Action Alternative

The no action alternative would have no direct or indirect impacts on biological resources because no new construction would occur at HSAAP.

3.8.3 Impacts Associated with Proposed Action

3.8.3.1 Construction

Long-term minor adverse effects on vegetation communities or fish and wildlife would be expected from construction associated with the proposed action. The Army would remove 4.5 acres of hardwood forest at the proposed site of the new steam plant, isolated trees on the production area, and trees along the eastern edge of the 4-acre hardwood stand on the production area to construct other proposed facilities. Construction of the new steam plant would reduce local habitat for deer, turkey, squirrel, and other animals. Abundant similar habitat is available in the same area, but the conversion from forest to development would likely result in small reductions in the populations of these animals. Deer and other animals that use the hardwood stands in the production area are accustomed to human activity, and the deer are primarily active from dusk to dawn, when little to no construction activities would be conducted. Removal of trees from the eastern edge 4-acre hardwood stand would be expected to alter the vegetation along that edge and animal use of the stand until the completion of construction. Construction activities would disturb only a small portion of the production area, so birds and other small animals would be relatively unaffected.

***Protected Species*.** A maximum of approximately 25 scattered mature trees and 26 mature trees from the 4-acre hardwood stand, and an unknown number of mature trees from the 4.5-acre construction site for the steam plant would need to be removed for the proposed action construction (Bruce Cole, HSAAP Natural Resources Manager, personal communication, February 2018). Of those trees, some are potentially suitable as summer roosting sites for the Indiana and northern long-eared bats, exhibiting either exfoliating bark, or being dead snags with cavities or crevices that could be suitable summer roost sites. One or more of the trees are potentially suitable for a maternity colony. There is no roosting habitat for the gray bat on the proposed construction sites; no adverse impacts on the gray bat would be expected. Construction would not affect the 1-acre and 1.5-acre stands of upland hardwoods within the production area.

Vacant buildings are proposed for demolition or renovation as part of the proposed action, which would be implemented over a period of 4–5 years. The HSAAP Natural Resources Manager would inspect each building approximately 3 months before its demolition or renovation to determine whether it was being used by roosting bats or nesting migratory birds. If either was present, he would coordinate with USFWS for guidance and mitigation requirements before the demolition or renovation would be allowed to proceed.

No adverse effects on aquatic species (mollusks or the spotfin chub) would be expected. No construction associated with the proposed project would actively occur in the Holston River, and the mollusk species and spotfin chub are not believed to inhabit the Holston River near HSAAP.

No adverse effects on the rusty patched bumble bee would be expected because there are no zones of high potential for occurrence of the species in Hawkins County.

3.8.3.2 Operations

No adverse effects on vegetation communities, fish and wildlife, or protected species would be expected from operations associated with the proposed action. Other than some increased truck and rail activity, the production area would function very much the same as it does now after the proposed action was implemented, with all activities occurring within the production facilities.

***Protected Species*.** No adverse effects on any T/E species would be expected from operational activities related to the proposed action. Operational activities would not affect forested areas, trees in the production area, or karst features on HSAAP. No adverse effects on the spotfin chub or mollusk species in the Holston River from operational activities would be expected because the permitted discharges to the river from the explosives production process are anticipated to remain the same despite the increase in explosives production. Up to twice as much river water would be removed from the Holston River for cooling and filter water use, but HSAAP would not exceed its permitted water removals, and the water that is returned to the river would either have no contact with production chemicals or have been treated before being returned to the river. Water quality in the river, therefore, would not be expected to be affected by operational activities after implementation of the proposed action, and no adverse effects on aquatic species would be expected. No adverse effects on the rusty patched bumble bee would be expected.

3.8.3.3 Mitigation Measures and BMPs

The Army would mitigate potential adverse effects of the proposed action on federally protected bats and birds. The Army will limit any harvesting or removal of trees suitable for bat roosting to the period between October 15 and March 31 of any year associated with the proposed action. HSAAP personnel will visually survey each building 3 months prior to its demolition or renovation to determine whether any roosting bats or nesting birds are present. If either is present, HSAAP will coordinate with USFWS for guidance and mitigation requirements before the demolition or renovation will be allowed to proceed.

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 Archaeological Resources Protection Act of 1979 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.

Except for the proposed steam plant, the proposed action will occur in HSAAP's Area B production area. 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 (ACHP) 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 this Program Comment).

As part of this proposed action, HSAAP would demolish an existing change house, renovate the structures proposed for RDX recrystallization and IMX melt cast functions, and construct additions to existing loading dock facilities. The Program Comment covers each of these structures.

The proposed steam plant site abuts the production area and has been surveyed for cultural resources. No sites have been identified near the site. Nine known archeological sites have been identified at HSAAP. They are situated along the Holston River and are separated from all components of the proposed action, including the two loading docks, by a chain link fence and the proposed steam plant by distance, and therefore, are inaccessible or remote to any personnel who would be working on the proposed action.

Additionally, 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 November 2017 and again in February 2018 (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 2.4.2. The Cherokee Nation requested HSAAP's Phase I Cultural Resources Survey with related comments from the SHPO and a map of the area of potential effect. They also requested consultation with HSAAP concerning the project. HSAAP sent requested information on November 29, 2017, and scheduled a telephone call to discuss the project. In response to the furnished information and the telephone call, the Cherokee Nation, by letter dated December 1, 2017, concluded that the Cherokee Nation does not object to the project as long as stipulations are observed. Those stipulations were to protect known archeological sites from direct or indirect construction impacts, that their office be contacted 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. HSAAP sent additional letters to the Tennessee SHPO and the tribes in February 2018 concerning the location of the proposed new steam plant. No coordination with the Tennessee SHPO is required for demolition or refurbishment of structures within the production area of Area B. Copies of the letters sent and responses received are in appendix C.

3.9.2 Impacts Associated with No Action Alternative

The no action alternative would have no effects on cultural resources because existing conditions would remain unchanged.

3.9.3 Impacts Associated with Proposed Action

3.9.3.1 Construction

No effects on cultural resources would be expected from construction related to the proposed action. The demolition, construction, and renovation of structures within the production area are covered under the 2006 Program Comment, which allows such activities, and no known archeological sites are located within the project area.

The possibility exists that previously unrecorded archaeological deposits could be encountered during construction. If that would 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 construction would resume. 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.

3.9.3.2 Operations

No effects on cultural resources would be expected from operations. No ground-disturbing activities would be associated with operations on or abutting the Area B production area after construction was completed.

3.9.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for cultural resources. The proposed action would not be expected to create any 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.

3.10 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, Tennessee. 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 2016 population for the ROI was 213,230 (Table 3-13). The population increased approximately 3 percent between 2000 and 2016. That growth rate was lower than the rates for the state (17 percent) and the nation (15 percent) during the same time period. This population growth in the ROI occurred between 2000 and 2010; between 2010 and 2016, the population in both counties in the ROI declined slightly. The ROI's population is projected to grow to about 228,000 by 2030, which would be a 7-percent increase from 2016 (UTK CBER 2015).

On the basis of population, Sullivan County ranks as the ninth largest and Hawkins County as the 24th largest of the 95 counties in Tennessee (Cubit 2017). Sullivan County has about three times the population of Hawkins County, with a higher population density of 379 persons per square mile than the 116 persons per square mile in Hawkins County. For comparison, the Tennessee population density is 161 persons per square mile and the nation's is 91 (U.S. Census Bureau 2017a).

Table 3-13. Population Trends

Location	2000 Population	2010 Population	2016 Population	Change in Population, 2000–2016	People per square mile, 2016
Hawkins County	53,563	56,829	56,563	5.6%	116
Sullivan County	153,048	156,806	156,667	2.4%	379
ROI	206,611	213,635	213,230	3.2%	237
Tennessee	5,689,283	6,346,298	6,651,194	16.9%	161
United States	281,421,906	308,758,105	323,127,513	14.8%	91

Sources: U.S. Census Bureau 2000, 2017a.

3.10.1.2 Employment, Industry, and Income

The top five industries in the ROI (on the basis of employment by industry) in 2015 were manufacturing, retail trade, government and government enterprises (e.g., federal civilian, military, and state and local government), construction, and accommodation and food services. Together, these five industry sectors accounted for about 50 percent of the ROI's total employment. The largest industry was manufacturing, which provided 14 percent of the county's total employment. Of the employees within the government industry sector, 89 percent were state and local government employees, 5 percent were federal civilians, and 6 percent were military personnel. Farming accounted for about 2 percent of total ROI employment (BEA 2016). HSAAP, which is in the government industry sector, has a government staff of about 20 federal civilian employees and a payroll budget of $2.1 million. Contractor employee information for HSAAP is considered proprietary and, therefore, is not available (HSAAP 2017).

Table 3-14 shows civilian labor force data. The ROI's labor force decreased by about 6 percent between 2010 and 2016. Hawkins County declined by about 7 percent and Sullivan County by about 5 percent. During the same time period, Tennessee's labor force increased by about 1 percent and the nation's labor force increased by about 3 percent. A decline in labor force can indicate a loss of population with workers moving out of an area; and the ROI's population did decline slightly between 2010 and 2016 (Table 3-13). Labor force declines also can be attributed to job losses because of economic recessions (e.g., the recession of 2008–2009) and people leaving the workforce.

The national, state, and county unemployment rates all decreased from 2010 to 2016 (Table 3-14). The ROI 2016 annual unemployment rate was about 5 percent, about the same as the state and national unemployment rates.

ROI income levels were lower than state and national averages (Table 3-15). The ROI per capita personal income (PCPI) of $22,441 was 89 percent of the state PCPI of $25,227 and 78 percent of the national PCPI of $28,930. The ROI median household income of $38,637 was 85 percent of the state median household income of $45,219 and 72 percent of the national median household income of $53,889. Within the ROI, income levels in Sullivan County were higher than in Hawkins County.

Table 3-14. Labor Force and Unemployment

Location	2010 Civilian Labor Force	2016 Civilian Labor Force	Change in Labor Force, 2010–2016	2010 Annual Unemployment Rate	2016 Annual Unemployment Rate
Hawkins County	25,559	23,655	-7.4%	10.9%	5.5%
Sullivan County	73,637	69,786	-5.2%	9.0%	5.3%
ROI	99,196	93,441	-5.8%	9.5%	5.4%
Tennessee	3,090,795	3,135,102	1.4%	9.7%	4.8%
United States	153,889,000	159,187,000	3.4%	9.6%	4.9%

Source: BLS 2017.

Table 3-15. Income, 2011–2015 5-year Estimates

Location	PCPI	Median Household Income
Hawkins County	$20,338	$36,927
Sullivan County	$24,544	$40,346
ROI	$22,441	$38,637
Tennessee	$25,227	$45,219
United States	$28,930	$53,889

Source: U.S. Census Bureau 2017a.
Note: Income reported in 2015 dollars.

3.10.1.3 Housing

Table 3-16 presents housing data. ROI housing costs (mortgage and rent) are lower than state and national levels. The ROI homeowner vacancy rate (about 2 percent) is about the same as the rates for the state and the nation. The ROI rental vacancy rate (about 6 percent) is nearly the same as the state and national rates. The ROI has about 11,250 vacant housing units (U.S. Census Bureau 2017b). There are no residential areas on HSAAP (USACE 2007).

Table 3-16. Housing Data, 2011-2015 5-Year Estimates

Location	Number of Housing Units	Vacant Housing Units	Homeowner Vacancy Rate[a]	Rental Vacancy Rate[b]	Median Selected Monthly Owner Costs for Housing Units with a Mortgage	Median Monthly Gross Rent
Hawkins County	26,834	3,667	3.3%	5.8%	$939	$598
Sullivan County	74,004	7,583	1.6%	5.5%	$1,006	$602
ROI	100,838	11,250	2.4%	5.6%	$973	$600
Tennessee	2,854,542	349,986	2.0%	7.6%	$1,181	$764
United States	133,351,840	16,425,535	1.9%	6.4%	$1,492	$928

Source: U.S. Census Bureau 2017b.
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, 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 does not have a hospital on the installation. The Holston Valley Medical Center hospital, with a level I trauma center, is located in Kingsport about 5 miles east of HSAAP.

3.10.1.5 Schools

The ROI has five public school districts (two in Hawkins County and three in Sullivan County) with a total of 63 public schools and a student enrollment of almost 29,700 students. Sullivan County also has eight private schools with a student enrollment of about 880 students (NCES 2017). There are no primary or secondary schools on HSAAP. The public schools located closest to HSAAP are George Washington and Mount Carmel elementary schools (about 2 miles north), John Sevier Middle School (about 5 miles east), and Dobyns-Bennett High School (about 7 miles east).

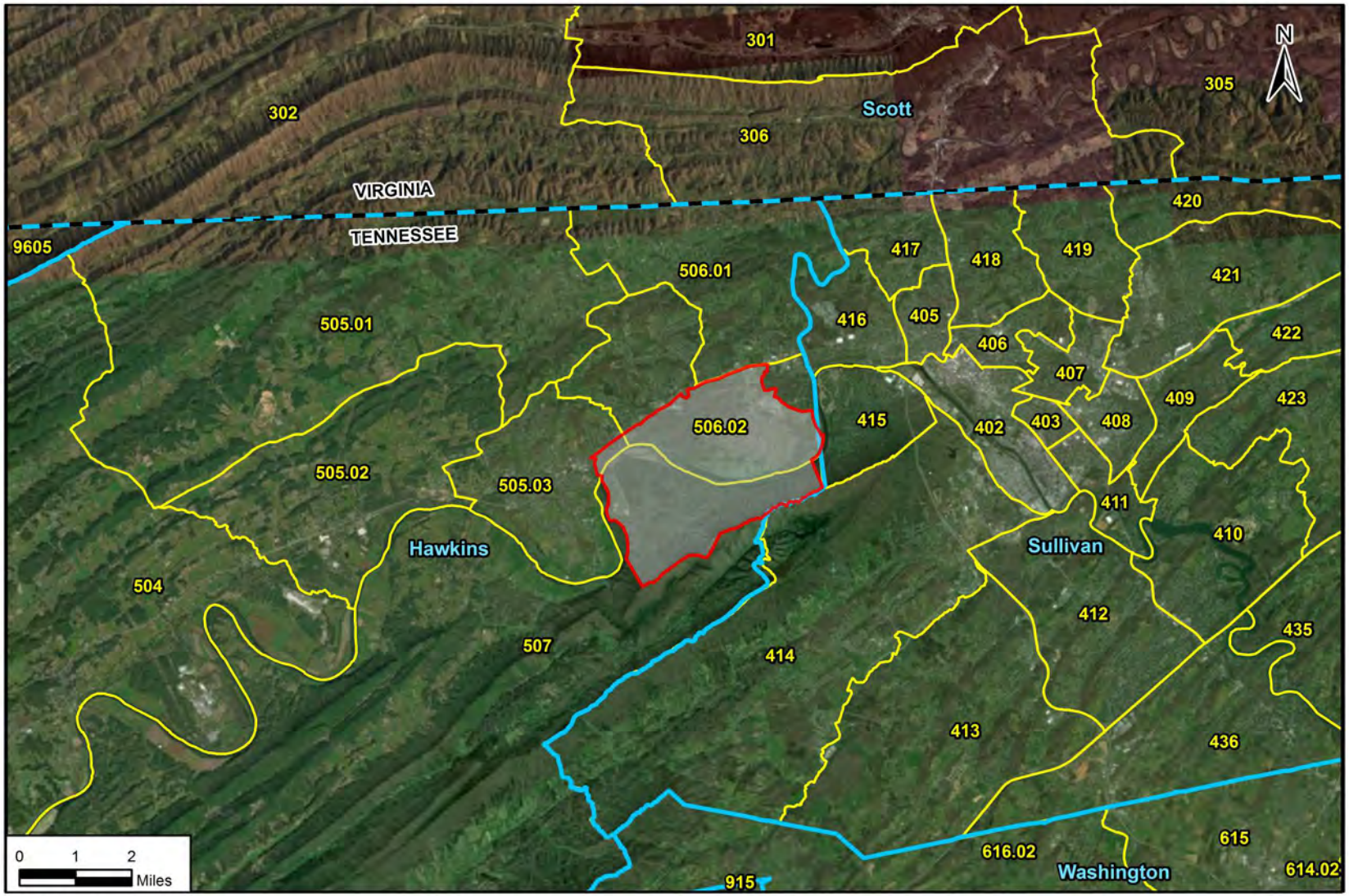
3.10.1.6 Environmental Justice

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, and programs on minority and low-income populations and that the agencies identify alternatives that could mitigate those effects.

To identify potential environmental-justice populations, researchers collected minority and low-income census data on census tracts in the ROI. Census tracts are subdivisions of a county.[2] Figure 3-2 shows the tracts that correspond to HSAAP and the tracts that are contiguous with the boundaries of the installation. Portions of HSAAP are located in three census tracts: 505.03, 506.02, and 507. These three census tracts also include property outside of the installation's boundaries. The proposed action site is located 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 greater 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 or low-income population percentages exceeding those for Tennessee and the United States, which both have lower thresholds than the 50-percent threshold (i.e., 26 percent for the state and 39 percent nationally). 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.

[2] 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.



LEGEND

- HSAAP
- State Boundary
- County Boundary
- Census Tract

Census Tracts

Figure 3-2

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 with 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 $12,082 or less for an individual and $24,036 or less for a family of four (U.S. Census Bureau 2015). The percentage of people below the poverty level is 17 percent for the state of Tennessee and 14 percent for the nation.

Table 3-17 lists minority population and low-income statistics for the census tracts as well as for Tennessee and the United States. Of the eight census tracts identified in the HSAAP area, none of them had a higher percentage of minority residents than Tennessee or the United States. One of the tracts (506.02) had a higher percentage of low-income residents than Tennessee and three of the tracts (506.01, 506.02, and 507) had a higher percentage of low-income residents than the United States as a whole.

Table 3-17. Minority and Low-Income Population Data

Location	Minority	Low Income
Census tract 414	5%	11%
Census tract 415	3%	2%
Census tract 416	7%	12%
Census tract 505.01	1%	12%
Census tract 505.03	6%	11%
Census tract 506.01	10%	15%
Census tract 506.02	4%	18%
Census tract 507	2%	16%
Tennessee	26%	17%
United States	39%	14%

Source: U.S. Census Bureau 2017a, 2017b.

3.10.1.7 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, and standards. The EO recognizes a growing body of scientific knowledge that demonstrates that 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 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. EO 13045 requires federal agencies, to the maximum extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children.

The proposed HSAAP action would be located within the installation's secure boundary and within the restricted production area on the installation in proximity to the existing RDX and IMX manufacturing and support facilities. There are no residential areas or other types of facilities where children are typically present (e.g., day care centers, schools, churches, libraries, playgrounds, or shopping centers) on or off the installation that would be adjacent to or near the proposed RDX and IMX facilities.

3.10.2 Impacts Associated with No Action Alternative

The no action alternative would have no effects on socioeconomics, environmental justice, or the protection of children. No changes would be made to the existing condition of regional socioeconomic resources.

3.10.3 Impacts Associated with Proposed Action

3.10.3.1 Construction

IMPLAN Economic Model

Modelers developed a quantitative estimate of economic effects on the ROI (i.e., Hawkins and Sullivan counties, Tennessee) from the proposed action using the Impact Analysis for Planning (IMPLAN) model. 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 currently 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 estimates economic changes (direct, indirect, and induced) for a defined region. *Direct effects* are the initial production changes or expenditures made by producers/consumers as a result 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, gas, healthcare, and entertainment). 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 2015).

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, modelers estimated impacts on an annual basis for the approximately 4-year design and construction period, and then for the first year of operation when full build-out and employment levels would be expected to be reached. Table 3-18 lists the input variables for the IMPLAN model. The estimated total construction cost of $700 million was divided evenly across the approximately 4-year build-out period ($175 million per year) 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). Section 2.4.2 discusses this cost, which includes construction, renovation, and demolition actions. Operations employment of an estimated 250 jobs represents the number of direct jobs to be generated by the proposed action to increase the RDX and IMX explosives production capacity at HSAAP. The magnitude and duration of regional economic impacts of the project would differ across the construction and operation phases and are discussed separately. This section addresses construction impacts, and section 3.10.3.2 addresses operations impacts.

Table 3-18. IMPLAN Model Input

Input Variable	
Construction, Renovation, and Demolition Cost	$175,000,000
Operational Employment	250

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 employ about 1,651 direct workers during peak construction and to generate additional indirect and induced employment in associated sectors (see Table 3-19). The direct employment numbers were 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 2,226 jobs per year, with indirect jobs being created in sectors such as wholesale trade, truck transportation, architectural and engineering and related services, and commercial and industrial machinery equipment rental and leasing businesses. Induced jobs would be created in the retail, food and beverage, and health services 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 93,440 in 2016, so the direct construction-generated employment would represent about a 1.8-percent increase over that baseline. About 8,600 people are employed in the construction industry in the ROI (BEA 2016). On the basis of the resident workforce data, the model estimated that the regional labor force would fill many of the construction jobs and, if necessary, construction workers could commute from surrounding communities without moving their place of residence, as the construction jobs would be temporary.

Population

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

Table 3-19. IMPLAN Model Output—Annual Construction Economic Impacts

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	1,651	$74,612,076	$80,359,228	$174,999,991
Indirect Effect	152	$7,084,589	$11,412,671	$23,266,335
Induced Effect	423	$16,059,109	$27,314,917	$51,103,212
Total Effect	2,226	$97,755,774	$119,086,816	$249,369,538

Source: IMPLAN model.

Housing

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

Law Enforcement, Fire Protection, and Medical Services

No adverse effects on emergency or medical services would be expected from the proposed construction action. The construction 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 and would not be overextended by the construction action.

Schools

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

Environmental Justice

No adverse effects on environmental justice would be expected from implementing the proposed construction action. The proposed construction site would be in a restricted area on HSAAP that is closed to public access. Constructing the new RDX and IMX facilities would not result in disproportionate adverse environmental or health effects on low-income or minority populations. This action has no potential to substantially affect human health or the environment by excluding anyone, denying anyone benefits, or subjecting anyone to discrimination or disproportionately high environmental health or safety risks.

Protection of Children

No adverse effects would be expected as a result of implementing the proposed action. The proposed construction 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 (e.g., day care centers, schools, churches, libraries, recreational facilities, or shopping centers) adjacent to or near the proposed construction site.

3.10.3.2 Operations

Employment, Industry, and Income

Long-term minor beneficial economic effects would be expected (see Table 3-20). The IMPLAN model was used to calculate the estimated economic impact of the operation of the proposed RDX and IMX facilities. Section 3.10.3.1 discusses the IMPLAN model. It is estimated that the operation of the expanded RDX and IMX facilities at HSAAP would create about 250 permanent, direct jobs. A total of about 544 jobs (direct, indirect, and induced) would be created by operations activity. The indirect jobs would be in sectors such as building services, maintenance and repair, and the wholesale trade, and induced jobs would be in sectors such as the retail trade, restaurants, and health care. New jobs would have a long-term beneficial effect on the regional economy, increasing the tax base, personal income, and expenditures at local businesses.

Population

No adverse effects on population would be expected as a result of implementing the proposed action. To evaluate the potential maximum effect of the proposed operations, analysts assumed that the estimated 250 new permanent jobs created by the operation of the HSAAP RDX and IMX facilities would move into the ROI. Using the U.S. average household size of 2.64 (U.S. Census Bureau 2017b), the estimated total increase in population would be about 660 persons, a minor increase (less than 0.5 percent) compared to the ROI baseline population of more than 213,000.

Table 3-20. IMPLAN Model Output—Operation Economic Impacts

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	250	$28,221,722	$35,333,953	$105,490,998
Indirect Effect	119	$5,419,814	$8,530,490	$20,848,136
Induced Effect	175	$6,611,757	$11,242,412	$21,056,694
Total Effect	544	$40,253,293	$55,106,854	$147,395,829

Source: IMPLAN model.

Housing

No adverse effects on housing would be expected from implementing the proposed action. The proposed operations action would create a demand for 250 additional housing units in the ROI (assuming one housing unit per employee). The ROI should have sufficient housing units to accommodate the incoming population on the basis of the number of vacant housing units and homeowner and rental vacancy rates in the ROI (see section 3.10.1.3); the proposed action would not be expected to create a housing shortage.

Law Enforcement, Fire Protection, and Medical Services

No adverse effects on emergency or medical services would be expected from implementing the proposed action. The new facilities would be in a restricted area 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 and would not be overextended by the operation of the new facilities.

Schools

No adverse effects on schools would be expected as a result of implementing the proposed action. To evaluate the potential maximum effect of the proposed operations action, analysts assumed that the 250 new HSAAP RDX and IMX facility employees would move into the ROI, representing 250 new households. Based on about one-third of U.S. households having one or more children (people under the age of 18) and an average of 1.8 children per family (U.S. Census Bureau 2016, 2017b), the result would be an estimated increase of about 145 children in the ROI. This would be a minor increase (less than 0.5 percent) compared to the ROI baseline school enrollment of about 30,580.

Environmental Justice

No adverse effects on environmental justice would be expected from implementing the proposed action. The proposed RDX and IMX facilities on HSAAP would be located within the installation's secure boundary and within its secure production area. Operating the new RDX and IMX facilities would not result in disproportionately adverse environmental or health effects on low-income or minority populations. It is not an action with the potential to substantially affect human health or the environment by excluding anyone, denying anyone benefits, or subjecting anyone to discrimination or disproportionately high environmental health or safety risks. The new facilities would be in a restricted area closed to public access. The new RDX and IMX facilities and processes would be more efficient than the current facilities and would be designed to meet all regulatory requirements and DoD design policies. The operating contractor (BAE OSI) would be

required to obtain and comply with the necessary environmental permits (e.g., air emission and wastewater) for operating the new facilities. See sections 3.4, 3.7, and 3.12 for further discussion of impacts to air, water, and wastewater.

Protection of Children

No adverse effects would be expected as a result of implementing the proposed action. The proposed RDX and IMX facilities on HSAAP would be located within the installation's secure boundary and within its secure production area. There are no residential areas or other types of facilities where children are typically present (e.g., day care centers, schools, churches, libraries, recreational facilities, or shopping centers) adjacent to or near the proposed RDX and IMX facilities. The new facilities would be in a restricted area closed to public access.

3.10.3.3 Mitigation Measures and BMPs

Mitigation measures are used to reduce, avoid, or compensate for significant adverse effects. No significant adverse effects or the need for any mitigation measures were identified. No BMPs would be required because identified socioeconomic effects are beneficial.

3.11 TRANSPORTATION

3.11.1 Affected Environment

Road and street networks and pedestrian walkways provide most of the transportation near HSAAP. Interstate (I-) 26 provides regional access. State routes that provide access to the production area include U.S. 11W and U.S. Route 23 North, while University Boulevard provides direct access to the installation. HSAAP Area B is bound on the north by U.S. 11W, an east-west highway from Bristol to Knoxville, Tennessee. U.S. 11W connects to I-26 approximately 2 miles east of HSAAP Area B traveling south to Asheville, North Carolina, and Charleston, South Carolina. I-26 also connects to I-81 approximately 10 miles south of HSAAP. I-81 is a major north-south highway traveling south to Dandridge, Tennessee (where it connects to I-40) and north to the Canadian border north of Syracuse, New York.

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" the worst (congestion, long delays). LOSs A, B, and C are typically considered good operating conditions. Table 3-21 outlines the routes near Area B, their annual average daily traffic (AADT) counts, and their estimated existing LOS. Notably, U.S. 11W is currently congested during peak traffic periods (i.e., LOS D).

Table 3-21. Existing AADT and LOS on Nearby Roadways

Roadway Segment	Number of Lanes	AADT [a]	Peak Hour Volume per Lane [vph]	Volume to Capacity [V/C] Ratio [b]	LOS
I-26	4	26,899	1,009	0.59	C
U.S. 11W	4	33,468	1,255	0.73	D
U.S. Route 23 North	4	13,797	517	0.30	B
University Boulevard	2	3,760	188	0.17	A

[a] *Source*: TDOT 2017a.
[b] Volume-to-capacity ratio (V/C) = 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 1,498 operations per day (AirNav 2017). 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 2017). HSAAP has several tenants that include the Appalachian Rail Service with spurs connecting areas A and B by an interplant railroad (U.S. Army 2016a; HSAAP 2015a). 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, South Carolina (Amtrak 2017).

Public transportation is provided to the Kingsport area by NET Trans for rural public transit servicing seven counties in the region (NET Trans 2017). HSAAP is outside the city limits of Kingsport, and NET Trans does not provide direct bus service to the installation.

3.11.2 Impacts Associated with No Action Alternative

The no action alternative would have no effect on transportation resources. 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 Proposed Action

Short- and long-term minor adverse effects on existing transportation conditions would be expected from implementing the proposed action. Temporary increases in heavy equipment and delivery of materials and supplies during construction activities would cause short-term effects. An increase in traffic from approximately 250 additional personnel and increases in both rail and truck traffic from shipping and receiving materials associated with expanded RDX and IMX production would cause long-term effects. The proposed action would have no appreciable effect on air traffic or public transportation.

3.11.3.1 Construction

Short-term minor adverse effects on transportation and traffic would be expected from construction activities. These effects would be primarily the result of worker commutes and delivery of equipment and materials to and from the sites. Congestion could increase in the immediate area of construction activities because of additional vehicles and traffic delays near the site. Road closures or detours to accommodate utility system work might be required. In addition to regular material deliveries for building construction, it would take approximately 3,500–4,500 truckloads of soil to complete the blast barricades. This would equate to 10–20 truckloads per day, or 2–3 truckloads per hour, over a 6–12-month period. These effects would be temporary and would end with the construction phase. The existing transportation infrastructure would be sufficient to support the increase in construction vehicle traffic. These effects would be minor.

3.11.3.2 Operations

Operation of the proposed facilities and the addition of approximately 250 employees would introduce additional vehicles onto nearby roadways and increase traffic volumes on roadways and at intersections on, and adjacent to, the installation. There would be an increase of approximately 115 vehicles per hour during the peak traffic period (ITE 2003). Table 3-22 lists the estimated LOS for the existing and operational conditions with the new trips from all the facilities. This worst-case assessment assumes that, at any given time, all the new traffic would be on a single roadway during the peak period. The nature and overall levels of traffic on other roadways, both on- and off-post, would experience minor changes in traffic similar to those outlined in Table

3-22. There could be some additional queuing at the gate and at intersections near the new facilities during peak traffic periods. In addition, there would be increases in both rail and truck traffic from shipping and receiving materials associated with the expanded RDX and IMX production. These effects would be long-term minor adverse effects.

As outlined in section 2.4.2, the proposed action would include the reconfiguration and addition of parking areas throughout HSAAP. Adequate parking would be provided, and it is estimated that 284 additional spaces would be required to meet peak parking demand (ITE 2010). Access to the new facilities would be provided from all surface parking lots by sidewalks, curb ramps, and crosswalks. All additional parking would be within a reasonable walking distance of the proposed facilities. These effects would be minor.

Table 3-22. Comparison of LOS with and without the Proposed Action

	Existing			Proposed Action		
Roadway Segment	**Peak Hour Volume per Lane [vph]**	**V/C Ratio [b]**	**LOS**	**Peak Hour Volume per Lane [vph]**	**V/C Ratio[b]**	**LOS**
I-26	1,009	0.59	C	1,038	0.61	C
U.S. 11W	1,255	0.73	D	1,284	0.75	D
U.S. Route 23	517	0.30	B	546	0.32	B
University Boulevard	188	0.12	A	245	0.14	A

[a] *Source*: TDOT 2017a.
[b] Volume-to-capacity ratio = 15 percent of the daily traffic, divided by the number of lanes, divided by a capacity of 1,700 vehicles per hour.

3.11.3.3 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 construction vehicles would be equipped with backing alarms, two-way radios, and Slow Moving Vehicle signs when appropriate. All temporary detours and road closures would be posted with proper signage.

3.12 UTILITIES

3.12.1 Affected Environment

***Potable Water*.** The city of Kingsport Public Works Department supplies HSAAP with potable water at HSAAP, overseeing drinking water services and operating a 29-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 2017a, 2017b). 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. The potable water is not used in the explosives production process (HSAAP/BAE OSI 2017).

***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 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 80,000–120,000 gallons per day, leaving between 0.38–0.42 MGD of

available capacity. All treated effluent from the STP is discharged to Holston River outfall 025 under HSAAP's NPDES permit (HSAAP/BAE email communication 2017).

HSAAP also operates an IWW pretreatment facility and an industrial wastewater treatment plant (IWWTP). The pretreatment facility filters explosives from the waste that is later treated at the burn pans. Catch basins located at production buildings are part of the IWW collection system. The basins allow explosives to settle out before the water proceeds to the pretreatment facility and the IWWTP. The IWWTP uses multiple systems to treat explosives production waste such as wastewater containing acetic acid, anhydrous ammonia, nitrates, nitric acid, residual explosives, and residual solvents. The acetic acid, anhydrous ammonia, nitrates, nitric acid, and residual solvents separated from the waste stream undergo biological digestion during treatment and are collectively referred to as *biosludge*. The biosludge is combined with cinders from HSAAP's coal-fired steam plant and disposed of in the plant's class II industrial landfill. The IWWTP has a maximum design flow capacity of 6.2–6.5 MGD, but that treatment capacity will be increased to accept additional flow once the facility's modernization project, which is currently underway, is complete. The IWWTP currently treats about 4.5 MGD with approximately 855,000 gallons per day of the treated IWW coming from RDX production and approximately 308,000 gallons per day coming from IMX production.[3] The IWWTP operates under an NPDES permit and discharges its treated water to the Holston River at outfall 020. Under the NPDES permit, the IWWTP is permitted to discharge 12.2 pounds per day of RDX in its effluent to the Holston River.[4] From January 2017 to January 2018, HSAAP has averaged 5.18 pounds per day of RDX discharged in its effluent. Low concentrations of nitric acid from the production of IMX is drained to the IWWTP at a controlled rate. Through the treatment process, the nitric acid is broken down and residual nitrates are discharged to the Holston River per permit limits (HSAAP/BAE email communication 2017). To manage higher concentrations of WNA, HSAAP is constructing a NAC/SAC facility that will enable the reconcentration and recycling of WNA for use in the explosives production process. The NAC/SAC facility will reduce or eliminate the need for off-site disposal.

***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 the explosives production process, primarily for RDX. 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. The untreated water does not contact materials and chemicals used in the explosives production process. About 3.5–4 MGD of the river water is treated and used as filter water in the production process. After use, the filter water is treated at the IWWTP and then discharged to the Holston River. The river water pumping capacity is approximately 106 MGD; if needed, up to 126 MGD could be supplied. HSAAP also has a 12.5-million-gallon river water reservoir to supply noncontact cooling water (HSAAP/BAE email communication 2017).

***Stormwater*.** HSAAP has a multisector stormwater NPDES permit number 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

[3] This number is based on an initial study conducted as part of a federal consent order. The number assumes all batch operations are sending water to the sewer at maximum rates at the same time. An event as such is unlikely to occur at HSAAP.

[4] The number is based on drinking water health limiting criteria, which is a 5-year/30-day criterion average that results in a 2-ppb concentration (the health advisory level).

fescue that follows a natural drainage line, channeling surface runoff from the administrative area toward the production area, and then to the Holston River (BAE 2012).

***Energy*.** Electricity purchased from Appalachian Power and steam generated on-site using coal and natural gas-fired boilers supply HSAAP's power needs. HSAAP is installing a cogeneration (CoGen) facility that will provide additional steam and electricity to the site. Natural gas used by HSAAP is purchased from Tenngasco (HSAAP/BAE email communication 2017).

3.12.2 Impacts Associated with No Action Alternative

The no action alternative would have no effects on utilities because the increase in explosives production at HSAAP would not occur. Utility usage would remain at current levels.

3.12.3 Impacts Associated with Proposed Action

Short- and long-term minor adverse effects would be expected from implementing the proposed action. An increase in the use of utilities and an increased discharge of wastewater during both construction and operation would result in adverse impacts.

3.12.3.1 Construction

Short-term minor adverse effects on the demand for potable water, electricity, and natural gas would be expected from construction, and wastewater generation would increase during construction. The existing HSAAP utility infrastructure is adequate to meet the expected construction needs. Contractors supplying their own equipment, water, and portable toilets would like 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.

3.12.3.2 Operations

Long-term minor adverse effects on utilities demand and infrastructure would be expected from operations associated with the proposed action. Expanded operations would increase the volume of domestic wastewater and IWW treated as well as the amounts of river water, potable water, electricity, and natural gas used. The utility infrastructure would be expected to have the capacity to meet the projected demands once the proposed facilities are operational.

Potable Water. Long-term minor adverse effects on potable water demand would be expected from operating the proposed facilities. The additional 250 personnel required to support the increased production could increase potable water demand by about 12,500 gallons per day (USGS 2016c).[5] 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.

***Wastewater*.** Long-term minor adverse effects on wastewater treatment capacity would be expected from operating the proposed facilities. Additional wastewater would be discharged to the STP after the new facilities were operational, but the available treatment capacity of 0.38–0.42 MGD at the STP would be adequate to handle the increased load. Section 3.14.3.2 describes the impacts associated with the resulting increase in the amount of pretreatment waste sludge requiring disposal.

Long-term minor adverse effects on IWW treatment capacity would be expected. Increased explosives production would increase the amount of IWW requiring treatment, but will remain

[5] 250 new personnel at 100 gal/day = 25,000 gallons, divided by 2 = 12,500 based on a 12-hour day.

within the available treatment capacity of the modernized IWWTP. Upon completion of the IWWTP modernization project, the available treatment capacity will be doubled and will provide a designed maximum peak day flow capacity of 10 MGD. Section 3.14.3.2 describes the impacts associated with disposal of increased amounts of pretreatment waste.

***River Water*.** Long-term minor adverse effects on HSAAP's river water pumping capacity would be expected. The increase in explosives production could double the amount of river water used from 40–50 MGD to 80–100 MGD. Such an increase in demand, if required, would decrease available pumping capacity but still be within HSAAP's total river water pumping capacity of approximately 121 to 126 MGD.

***Stormwater*.** No adverse effects on the stormwater infrastructure would be expected from operational activities associated with the proposed action. The stormwater infrastructure at HSAAP would adequately handle any increase in the amount of stormwater runoff from the additional impervious area created by the proposed facilities. All new and renovated facilities would be designed to maintain stormwater generation at preconstruction levels in accordance with federal policies.

Energy. Long-term minor adverse effects would be expected from operational activities associated with the proposed action. There would be an increased demand for power and natural gas; however, the existing power and natural gas supply is expected to be adequate to meet the additional demand. The use of coal to generate steam for production needs would be discontinued with implementation of the proposed action.

3.12.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for utilities. The proposed action 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.

In accordance with the Energy Independence and Security Act of 2007—under which federal agencies are required to reduce stormwater runoff from federal development and redevelopment projects to protect water resources—facilities would be designed to limit the impact on stormwater generation and stormwater impacts on surface waters. BMPs such as low impact development stormwater management practices would be incorporated into the design to ensure that the amount of post-construction runoff from the site would not be more than the amount of preconstruction runoff and that it would not exceed the receiving capacity of ditches and streams to which it flows. BMPs to steady the flow and deliver it to the stormwater drainage system would maintain stormwater flow at the site at preconstruction conditions. Additionally, the Army or its contractor would prepare a site-specific SWPPP that would provide details on BMPs to be used to limit soil erosion and pollution in stormwater runoff resulting from construction activities.

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 these materials in accordance with local, state, and federal regulations and in accordance with established installation standard operating procedures (SOPs).

Raw materials used in the explosives production process (acetic acid, acetic anhydride, anhydrous ammonia, hexamine, and nitric acid) are brought onto HSAAP either by rail or by truck. These raw materials are then distributed to the appropriate areas for use in the explosives production process. In addition, solvents used during the recrystallization process (acetone,

cyclohexanone, ethyl acetate, methyl ethyl ketone, n-octane, and toluene) and other various hazardous and toxic materials (e.g., batteries, plasticizers, and rubber) are also brought onto HSAAP.

3.13.2 Impacts Associated with No Action Alternative

The no action alternative would have no effect on hazardous or toxic materials at HSAAP. Hazardous and toxic material use at HSAAP would not change.

3.13.3 Impacts Associated with Proposed Action

3.13.3.1 Construction

Short-term minor adverse effects on hazardous and toxic materials would be expected from construction because additional quantities of these materials would be used during the construction process. The effects would be seen from having an increased amount of materials on-site.

Petroleum products and hazardous materials would be used, and wastes, including hazardous wastes, would be generated during construction 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.

Contamination is not expected to be encountered during construction activities; however, contractors will contact HSAAP environmental staff for guidance and to obtain necessary authorization before commencing any ground-disturbing activities. If any contamination is encountered during construction activities, work in that area will cease, and contractors will notify HSAAP environmental staff to determine appropriate management procedures.

3.13.3.2 Operations

Implementing the proposed action would result in a long-term increase in the use of hazardous and toxic materials at HSAAP, increasing the number of deliveries of hazardous and toxic materials to the installation and the amount of hazardous materials stored on-site.

Long-term minor adverse effects on hazardous and toxic materials would be expected from increased management and shipping of such materials because of increased operations associated with the proposed action. Currently, 13–15 railcars of anhydrous ammonia per year are delivered to HSAAP. A single railcar delivers anhydrous ammonia to HSAAP approximately every 2 weeks. Under the proposed action, anhydrous ammonia deliveries would increase to approximately 1 per week, or to 26–30 railcars per year.

Approximately 60–65 railcars of nitric acid per year are delivered to HSAAP, occurring in shipments of two to three railcars per week. Under the proposed action, this number would increase to about 120–130 railcars per year, or approximately four to six railcars per week.

Approximately, 104 truck deliveries of hexamine (a white, crystalline powder) per year are made to HSAAP, or approximately two trucks per week. Under the proposed action, this number would increase to approximately 208 truckloads per year, or approximately four deliveries per week.

In addition, long-term minor adverse effects would be expected from additional deliveries of batteries, plasticizers, rubber, and the like to HSAAP. Under the proposed action, shipments of these hazardous and toxic materials would double over their current rates.

3.13.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for hazardous and toxic materials. BMPs are in place to manage these 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 in accordance with established installation procedures.

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. These wastes are managed through a network of regulated on-site facilities, SOPs, and management plans.

HSAAP operates an on-site class II industrial landfill permitted by the state of Tennessee. The landfill is permitted to accept solid waste in the forms of general trash, construction debris, asbestos, flyash generated by the coal-fired steam plant, and biosludge generated from the IWWTP. On average, the landfill accepts approximately 20,000–30,000 cubic yards (yd^3) of solid waste per year, with flyash and cinders from the site's coal-fired steam plant making up at least one-half of the total. The landfill has a permitted capacity of 322,400 yd^3 and is to be expanded by approximately 400,000 yd^3. If needed, HSAAP can use area landfills for disposal of some types of solid wastes.

HSAAP operates a burning ground facility that includes 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 disposal of explosive waste K044 and D003. K044 and D003 are RDX 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 disposed of 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 dispose of heavier explosives-contaminated material such as metal and wood. Open burning is used at HSAAP to safely eliminate the potential for unintentional detonation or deflagration from and residual explosives trapped in confined areas of waste items. U.S. Army policy requires materials that may have come in contact with explosives to be decontaminated before sale as a recyclable material or before land disposal as a solid waste.

HSAAP's IWWTP treats production wastes that are generated on-site such as wastewater containing acetic acid, anhydrous ammonia, nitrates, nitric acid, residual explosives, and residual solvents. Residual explosives in solid form are collected during IWW pretreatment processes and are sent to the RCRA subpart X burn pans for disposal, as described above. The biosludge from the IWWTP is combined with flyash/cinders and disposed of in the class II industrial landfill.

Sludge generated at the HSAAP STP is treated by anaerobic digestion and disposed of at the on-site landfill once per year.

HSAAP is not an EPA National Priorities List site. Thirty-two sites under DoD's Installation Restoration Program (IRP) are located on HSAAP and overseen by TDEC; 23 of the IRP sites have been closed. The remaining nine sites have been investigated and are in long-term monitoring. These remaining sites include landfills, surface disposal areas, and contaminated groundwater. Contaminants of concern in soil, sediment and/or groundwater include explosives, metals, pesticides, polycyclic aromatic hydrocarbons, semi-volatiles, and volatiles.

In addition to wastes being treated and disposed of on-site at HSAAP, some wastes are disposed of at licensed off-site permitted facilities. These wastes are managed in accordance with RCRA, the Toxic Substances Control Act (TSCA), the Occupational Safety and Health Act (OSHA), Army regulations, and the HSAAP Solid and Hazardous Waste Management Plan (SHWMP) (February 15, 2017). The wastes disposed of at licensed off-site permitted facilities include spent acids, ANSol (a by-product of RDX production), test vials, labpacks, solvents, and products for recycling such as used aerosol cans, batteries, cardboard, light ballasts, light bulbs, and used tires. The ANSol is disposed of by diluting it with water by 50 percent and then shipping it off-site by tanker truck to a permitted disposal facility. HSAAP is currently working with related industries to re-establish a commercial outlet for ANSol.

3.14.2 Impacts Associated with No Action Alternative

The no action alternative would have no effect on solid and hazardous waste at HSAAP. No construction activities would occur and current operations would be unaffected.

3.14.3 Impacts Associated with Proposed Action

Short- and long-term minor adverse effects would be expected under the proposed action because of the increase in the amount of solid and hazardous waste generated during construction and operation of the new facilities.

3.14.3.1 Construction

Short-term minor adverse effects would be expected from construction because of the increase in solid waste generation and disposal. The effects would result from adding debris to the on-site class II industrial landfill from a combination of new construction, demolition, and renovation. It is estimated that the construction of the RDX production facility, IMX recrystallization building, FEM, change house, analytical lab, acid line and the new steam plant would amount to a total construction footprint of about 186,600 ft^2. Demolition of the old change house once construction of the new one is completed is estimated to be 6,100 ft^2. Renovation of existing buildings to create the RDX recrystallization facility, IMX melt cast facility, and loading dock improvements is estimated to be 23,300 ft^2.

Expanding explosives production could generate about 1,022 tons of construction, demolition, and renovation debris (Table 3-23). Approximately 50 percent of the debris would be recycled, which would result in about 511 tons of nonhazardous debris for disposal in the on-site class II industrial landfill.

3.14.3.2 Operations

Long-term minor adverse effects would be expected from the proposed action because of the additional amount of solid and hazardous waste that would be generated and managed from operating the proposed facilities. These effects would be seen in the additional waste sent to the landfill, additional wastewater treatment sludge, additional industrial wastewater needing treatment, increase in wastes needing disposal at licensed off-site facilities, increase in explosive waste disposed of at the RCRA subpart X burn pans, and increase in explosives-contaminated waste disposed of at the burn cages and burn piles regulated under the Title V permit.

Long-term minor adverse effects would be expected from the operations in the proposed action because of the additional solid waste that would be disposed of in the on-site landfill. The mixing of fly ash/cinders from the coal-fired plant with biosludge from the IWWTP on a 1:1 basis will be substituted by another binding material using similar quantities. Similarly, the mixture is expected to make up approximately 40 percent of the total volume of waste disposed of in the landfill. The

Table 3-23. Summary of Construction and Demolition Debris

	Type	Debris Generation Rate (lb/ft^2)	Debris Generated (tons)	Quantity Recycled (50%[b]) (tons)	Total Quantity Disposed of in Landfill (tons)
Construction					
186,600 ft^2[a]	Nonresidential	4.4	411	205.5	205.5
Demolition					
6,100 ft^2	Nonresidential	158	482	241	241
Renovation					
23,300 ft^2	Nonresidential	11	129	64.5	64.5
Total			**1,022**	**511**	**511**

Source: USEPA 2003.

Notes: ft^2 = square feet/square foot; lb/ft^2 = pounds per square foot.

[a] Square footage does not include utility connections, blast barricades, or storage tank facility. Tonnage is approximate.

[b] HSAAP will make an effort to reach this percentage during construction and demolition efforts; however, because some material could be contaminated, recycled tonnage might be less.

landfill currently has a life expectancy of approximately 4.8 years without implementing the proposed action, which would increase the amount of general trash by only a small percentage and the amount of biosludge by approximately 30 percent over the current rate. The increase in waste generation along with the disposal of construction and demolition debris will decrease the life of the existing landfill. If needed, HSAAP can use area landfills to extend the life of the on-site landfill until completion of the HSAAP landfill expansion.

Long-term minor adverse effects would be expected from the proposed action because of the increase in the amount of IWW treated at the IWWTP. The additional IWW will create more biosludge and, therefore, increase disposal amounts in the landfill by 30 percent over current rates.

Long-term minor adverse effects would be expected from the increase in the amount of pretreatment waste created and needing to be processed at the STP as a result of the increase in the number of personnel under the proposed action. The STP can accommodate the increase in the amount waste to be processed without needing modification, but the increase in the amount of sludge will have long-term minor adverse effects because of its disposal in the landfill and increased production from the STP.

Long-term minor adverse effects would be expected from the proposed action as seen in the amount of solid and hazardous waste disposed of at licensed off-site permitted facilities. While there will be an increase in the amount of solid and hazardous waste generated and disposed of, the wastes will continue to be disposed of at licensed permitted facilities and at amounts within allowable limits. These effects will be lessened once the NAC/SAC facility comes online, which will recycle and reuse the WNA that is currently being disposed of off-site. These effects would be lessened further by finding an industrial outlet for ANSol.

Long-term minor adverse effects would be expected from the increase in explosives production because of the increased amount of K044 and D003 that will need to be disposed of on the burn pans. In 2017, HSAAP disposed of 135,191 pounds of K044 and 207,890 pounds of D003, for a total of 343,081 pounds of the explosive wastes. This amount is approximately 27.4 percent of the annual allowable amount under the RCRA subpart X permit limit. Under the proposed action, approximately 686,162 total pounds of K044 and D003 would be disposed of on the burn pans,

or approximately 54.9 percent of the annual allowable amount under the RCRA subpart X permit limit.

Long-term minor adverse effects would be expected from the increase in explosives production because of the increased amount of explosives-contaminated material that would need to be decontaminated in the burn cages and burn piles. Under the Title V permit, burning is limited to 1,300 hours per year and restricted to the hours of 12:00 p.m. through 4:00 p.m. The burn cages are currently used 1–2 times a month, and the burn piles are used quarterly. If the proposed action is implemented, the additional explosives-contaminated material decontaminated at the burn cages and burn piles would not exceed the Title V or RCRA subpart X permit limits.

3.14.3.3 Mitigation Measures and BMPs

No mitigation measures would be required for solid and hazardous waste. BMPs are in place to manage these 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 (February 15, 2017). As part of the SHWMP, BAE OSI has provided an overview of all managed wastes, their stored location, and location of SOPs and permits associated with particular waste streams. The plan addresses the management of solid waste (landfills, cinders/flyash, special wastes, pollution prevention, parts cleaners, potentially explosives-contaminated items, Installation Restoration Support, transformers, and asbestos) and hazardous waste (satellite accumulation areas, waste explosives, RCRA subpart X permit, annual reporting, sampling and reporting, 90-day container storage area/tanks, and training).

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).

Current projects at HSAAP include the A2B, NAC/SAC, CoGen, and IWWTP modernization projects that support mission needs. Additional projects still in the planning stages include expansion of the HSAAP landfill and demolition of unneeded buildings. The A2B project involves relocating acid production from Area A to Area B and is nearing completion. The modern acid production facilities being constructed in Area B will increase the efficiency of the acid production process. Construction of the NAC/SAC facility is ongoing and, once completed, will enable reconcentration and recycling of WNA for use in the explosives production process. The NEPA analysis of the NAC/SAC project resulted in minor adverse impacts to air quality and water resources and beneficial impacts to solid and hazardous waste. The CoGen is a turbine that burns natural gas to generate steam and electricity. The modernization of the IWWTP required under a federal consent order is also nearing completion. The design of the landfill expansion project at HSAAP began in 2017 and construction is expected to be completed in 2023. It will increase capacity by about 400,000 yd^3. Lastly, HSAAP is planning to demolish several old structures that are no longer needed to support mission requirements. Environmental impacts associated with demolition 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.

Table 3-24 presents off-post projects identified in Hawkins and Sullivan counties.

Table 3-24. Identified Projects in Hawkins and Sullivan Counties

Company	City/County	Project	Jobs	Investment
Homeland Vinyl–vinyl deck, fencing, and railing manufacturer	Surgoinsville/ Hawkins	50,000-ft^2 facility expansion	50	NA
Miyake Forging–bearing parts manufacturer	Surgoinsville/ Hawkins	New 45,000-ft^2 facility	60	$13.7 million
Cooper Standard–coolant tube hose assemblies, and fuel and brake line manufacturer	Surgoinsville/ Hawkins	New equipment	98	$1 million
Eastman–specialty chemical producer	Kingsport/Sullivan	Building more chemical production capacity	NA	NA

Sources: Hawkins County 2017; Networks 2017.

For the purposes of this EA, a significant cumulative impact on a resource area would occur if the incremental impacts of the proposed action added to the environmental impacts of past, present, and reasonably foreseeable 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. Individual 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.

***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.

***Aesthetics and Visual Resources*.** The adverse effects that the proposed action would have on aesthetics and visual resources would be confined to the construction phase of the proposed project. No significant adverse cumulative effects on aesthetics and visual resources, therefore, would be expected.

Air Quality. Tennessee directly inventories all emissions in nonattainment regions and monitors concentrations of criteria pollutants in attainment regions. By doing so, the state takes into account the effects of all past and present emissions in the state and limits air emissions through permitting processes to ensure that air quality is maintained or improved. The state's air quality rules and regulations are part of its state implementation plan (SIP). A SIP comprises the regulations and other materials for meeting clean air standards and associated CAA requirements, and includes the following:

- State regulations that EPA has approved;
- State-issued, EPA-approved orders requiring pollution control at individual companies; and
- Planning documents such as area-specific compilations of emissions estimates and modeling analyses demonstrating that regulatory limits ensure that air quality standards are met.

The process of implementing the SIP applies either specifically or indirectly to all activities in the region. No projects have been identified that, when combined with the proposed action, would threaten the region's attainment status; produce substantial GHG emissions; or lead to a violation of any federal, state, or local air regulation. Because the proposed expansion would, in and of itself, have moderate adverse effects, cumulative effects on air quality are considered moderately adverse.

Noise. No other projects have been identified that, when combined with the proposed action, would substantially alter the noise environment near HSAAP. Each project would produce localized effects on the noise environment, but the projects and their noise effects would be geographically isolated. The future noise environment in the area immediately surrounding HSAAP would be similar to existing conditions. Cumulative effects on the noise environment would be considered 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**.** Increases in the discharge of RDX and nitrates to the Holston River would remain within the installation's permitted discharge limits. All dischargers of pollutants to the river must be permitted under the NPDES program. Permitted discharge limits of all individual dischargers are set by the issuing authority to ensure that water quality in the receiving waterbody is maintained for its designated uses. Thus, total concentrations of pollutants in the Holston River might increase depending on the actions of HSAAP and other dischargers to the river, but water quality in the river would not degrade to the point at which a regulatory violation would occur. Cumulative effects on surface waters would be considered negligible.

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 HSAAP proposed action analyzed in this EA, other recent or planned projects that would economically benefit the region include off-post actions listed in Table 3-24 and on-post activities that include HSAAP's constructing and operating NAC/SAC and CoGen facilities, upgrading the HSAAP IWWTP, and expanding the HSAAP class II landfill. 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 cumulative effects on potable water, electricity, and natural gas would be considered negligible. While the demand from the proposed action and other development projects in the area would increase, it is expected that the utility infrastructure would be able to accommodate the increased demand. No cumulative adverse effects would be expected on

HSAAP's wastewater or river water infrastructure or capacity because those utilities are confined to the installation and are not available to off-post users.

***Hazardous and Toxic Materials*.** The adverse effects from the increased use of hazardous and toxic materials would be confined to the production area of HSAAP. These materials are managed in accordance with local, state, and federal regulations and in accordance with established installation SOPs, which would continue under the proposed action. Since the use of such materials would be confined to HSAAP, no cumulative effects would be expected.

***Solid and Hazardous Wastes*.** The cumulative effects on solid and hazardous waste generation would be considered minor. While most solid waste generated at HSAAP is disposed at the on-post landfill, the use of off-post permitted landfill facilities would likely be needed in the short-term. The use of off-post landfills would result in lasting effects on the rate at which these facilities reach their permitted waste capacities; however, upon completion of HSAAP's landfill expansion, most on-post generated waste would be diverted back the on-post landfill. The generation and off-post disposal of hazardous waste would increase; however, such waste would continue to be disposed at licensed permitted facilities at amounts within allowable limits. The completion of the NAC/SAC facility will lessen such adverse effects because waste currently being disposed off-post would be recycled and reused. Further reductions of off-post disposal would be realized when HSAAP finds an industrial outlet for ANSol.

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 environment from activities associated with the no action alternative and implementing the proposed action.

Under the no action alternative, the Army would not implement the proposed action—constructing and operating a new explosives production facility, steam plant, and ancillary facilities. There would be no facility construction, renovation, or demolition or increase in explosive production, which would result in no effects on the resource areas analyzed in this document. Baseline conditions at HSAAP would remain the same.

Evaluation of the proposed action assumed that HSAAP would produce twice as much RDX and IMX as is currently being produced and would do so on a continuous basis. In reality, HSAAP would produce these explosives at the rates required by the Army at any given time, but the plant would not run at full capacity at all times. The analysis, however, assesses full-capacity production to identify the upper bounds of potential effects—or the *worst-case scenario*—that could result from implementing the proposed action.

On the basis of 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—construction and operations—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

Resource	Environmental and Socioeconomic Effects		
	No Action	Proposed Action	
		Construction	Operations
Land Use	No effects	Long-term minor adverse and no effects	No effects
Aesthetics and Visual Resources	No effects	Short-term minor adverse and beneficial	No effects
Air Quality	No effects	Short-term minor adverse	Long-term moderate adverse
Noise	No effects	Short-term minor adverse	Long-term minor adverse
Geology and Soils			
Geology/Topography	No effects	No effects	No effects
Soils	No effects	Short-term minor adverse	No effects
Water Resources			
Surface water	No effects	Short-term minor adverse	Long-term minor adverse
Floodplains	No effects	No effects	No effects
Wetlands	No effects	No effects	No effects

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

Resource	Environmental and Socioeconomic Effects		
	No Action	Proposed Action	
		Construction	Operations
Biological Resources			
Vegetation	No effects	Long-term minor adverse	No effects
Wildlife	No effects	Long-term minor adverse	No effects
Threatened and Endangered Species	No effects	No effects	No effects
Cultural Resources	No effects	No effects	No effects
Socioeconomics			
Construction Impacts on Employment, Industry, and Income	No effects	Short-term minor beneficial	NA
Operations Impacts on Employment, Industry, and Income	No effects	NA	Long-term minor beneficial
Population	No effects	No effects	No effects
Housing	No effects	No effects	No effects
Law Enforcement, Fire Protection, and Medical Services	No effects	No effects	No effects
Schools	No effects	No effects	No effects
Environmental Justice	No effects	No effects	No effects
Protection of Children	No effects	No effects	No effects
Traffic and Transportation	No effects	Short-term minor adverse	Long-term minor adverse
Utilities			
Potable Water	No effects	Short-term minor adverse	Long-term minor adverse
Wastewater	No effects	Short-term minor adverse	Long-term minor adverse
River Water	No effects	No effects	Long-term minor adverse
Stormwater	No effects	No effects	No effects
Energy (Electricity and Natural Gas)	No effects	Short-term minor adverse	Long-term minor adverse
Hazardous and Toxic Materials	No effects	Short-term minor adverse	Long-term minor adverse
Solid and Hazardous Waste	No effects	Short-term minor adverse	Long-term minor adverse

4.2 MITIGATION MEASURES AND BMPS

The Army would implement mitigation measures as identified in the EA and BMPs 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.

Table 4-2. Summary of Mitigation Measures and BMPs

Resource Area	Mitigation Measures
Biological Resources	Remove any trees suitable for bat roosting that need to be removed to allow for the proposed construction between October 15 and March 31 of any year associated with the proposed action. Visually inspect each building 3 months prior to its demolition or renovation. If roosting bats or nesting birds are present, consult with USFWS for guidance and mitigation requirements before proceeding with demolition or renovation.
Resource Area	**BMPs**
Aesthetics	Organize and clean up construction sites during and upon completion of individual projects. Specific areas for construction staging. Remove materials and equipment when no longer needed. Stabilize and replant disturbed ground upon individual project completion.
Air Quality	Do not handle, transport, or store any material in a manner that would allow contaminants to become airborne. Employ reasonable measures to minimize fugitive dust. Employ BMPs for permitting and operating the proposed facilities.
Noise	Employ BMPs to further reduce any realized noise effects: • Use heavy equipment primarily during normal weekday business hours. • Properly maintain heavy equipment mufflers. • Ensure personnel use adequate personal hearing protection. Design and construct all facilities and operational equipment not to generate intrusive noise beyond the property boundary.
Soils	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.
Water Resources	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.
Cultural Resources	Adhere to the protocols in the HSAAP integrated cultural resources management plan for inadvertent discoveries of cultural resources during ground-disturbing activities. Ensure proper communication with the SHPO and potentially affected Native American tribes before and during project implementation.
Transportation	Route and schedule heavy equipment and other vehicles to minimize conflicts with traffic. Place staging areas to minimize traffic effects. Equip all construction vehicles with backing alarms, two-way radios, and Slow Moving Vehicle signs. Install proper signage for all temporary detours and road closures.

Table 4-2. Summary of Mitigation Measures and BMPs

Utilities	Design facilities to limit the impact on stormwater generation and stormwater impacts on surface waters. Incorporate low impact development stormwater management practices in facility construction. Steady stormwater flow and delivery to the stormwater drainage system to maintain stormwater flow at the site at preconstruction conditions. Implement a site-specific SWPPP to limit soil erosion and pollution in stormwater runoff due to construction activities.
Hazardous and Toxic Materials	Employ BMPs that are in place at HSAAP to manage the hazardous and toxic materials.
Solid and Hazardous Waste	Employ the BMPs that are in place at HSAAP to manage the solid and hazardous waste produced.

4.3 CONCLUSION

Based on the findings of this assessment, the Army does not expect that implementing the proposed action 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).

SECTION 5.0 REFERENCES

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SECTION 6.0 PERSONS CONSULTED

Ashleigh Hensley, BAE Systems, Program Manager for RDX Capacity Expansion

Billy Shelton, BAE Systems, Environmental Manager

Bob Winstead, BAE Systems, Director, EHSS

Bruce Cole, HSAAP Natural Resources Specialist/Cultural Resources Manager

Chip Zimmerman, BAE Systems, Director, Facility Engineering

Isaac Robinette, BAE Systems, Facilities and Energy Management Engineer

James Ogle, BAE Systems, Environmental Affairs Specialist-Air

Jeff Stremel, BAE Systems, Project Coordinator for Modernization

Johanna Salcedo, Project Director Joint Services, Project Management Officer

Laura Peters, JMC-Holston ACO, Environmental Engineer

Mike Vestal, JMC-Holston ACO, Environmental Engineer

Scott Shelton, JMC-Holston ACO, Chief, Production Engineering Division

Skip Proffitt, BAE Systems, Environmental Affairs Specialist

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SECTION 7.0 LIST OF PREPARERS

Emmy Andrews, Tetra Tech, Inc.
MS, Environmental Management, University of San Francisco
BA, Art and Art History, Duke University
Years of Experience: 13

Greg Hippert, Tetra Tech, Inc.
BS, Earth Science, University of North Carolina at Charlotte
Years of Experience: 22

Jennifer Jarvis, Tetra Tech, Inc.
BS, Environmental Resource Management, Virginia Tech
Years of Experience: 18

Michelle Cannella, Tetra Tech, Inc.
BS, Mineral Economics, Penn State University
Years of Experience: 20

Richard Arnseth, PhD, Tetra Tech, Inc.
PhD, Geological Sciences, Northwestern University
MS, Geological Sciences, Northwestern University
BA, Chemistry, Gustavus Adolphus College
Years of Experience: 34

Sam Pett, Tetra Tech, Inc.
MS, Environmental Science and Policy, University of Massachusetts/Boston
BS, Wildlife Biology and Zoology, Michigan State University
Years of Experience: 25

Timothy Lavallee, PE, LPES, Inc.
MS, Civil and Environmental Engineering, Tufts University
BS, Mechanical Engineering, Northeastern University
Years of Experience: 25

Daniel Ward, Tetra Tech, Inc.
BS, Geosciences, Tennessee Tech University
Years of Experience: 8

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SECTION 8.0 DISTRIBUTION LIST

Agencies

U.S. Fish and Wildlife Service Tennessee Ecological Services Field Office, Cookeville, TN

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

Libraries

Kingsport Public Library, Kingsport, TN

Mt. Carmel Public Library, Mt. Carmel, TN

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
AADT	annual average daily traffic
ACHP	Advisory Council on Historic Preservation
AMC	U.S. Army Materiel Command
ANSI	American National Standards Institute
ANSol	ammonium nitrate solution
AQCR	air quality control region
BACT	best available control technology
BAE OSI	BAE Ordnance Systems Inc.
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
dB	decibel
dBA	A-weighted decibel
de minimis	of minimal importance
DNL	day-night sound level
DoD	Department of Defense
EIS	environmental impact statement
EO	executive order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEM	fluid energy mill
FNSI	finding of no significant impact
ft^2	square foot, square feet
GHG	greenhouse gas
HAP	hazardous air pollutant
HSAAP	Holston Army Ammunition Plant
I	interstate
IRP	Installation Restoration Program
IMPLAN	Impact Analysis for Planning
IWW	industrial wastewater
IWWTP	industrial wastewater treatment plant
JMC	US. Army Joint Munitions Command
L_{eq}	equivalent sound level
LOS	level of service
MACT	maximum achievable control technology
MGD	million gallons per day
MRR	mandatory reporting rule
NAAQS	National Ambient Air Quality Standards
NAC/SAC	nitric acid concentration/sulfuric acid concentration
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act

NNSR	Nonattainment New Source Review
NO_2	nitrogen dioxide
NOI	notice of intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
O_3	ozone
OSHA	Occupational Safety and Health Act
PCPI	per capita personal income
PM_{10}	particulate matter less than 10 microns
$PM_{2.5}$	particulate matter less than 2.5 microns
PSD	prevention of significant deterioration
PTE	potential to emit
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SHPO	State Historic Preservation Office/Officer
SHWMP	solid and hazardous waste management plan
SIP	state implementation plan
SO_2	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. 11W	U.S. Highway 11 West
USFWS	U.S. Fish and Wildlife Service
V/C	volume-to-capacity ratio
WNA	weak nitric acid
yd^3	cubic yard

APPENDIX A

Record of Non-applicability

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RECORD OF NON-APPLICABILITY (RONA)
Holston Army Ammunition Plant Explosives Production Capacity Expansion
Kingsport, Tennessee

The U.S. Army proposes to increase production capacity of explosives at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee, and upgrade steam generation facilities and support structures. As a result of the action, the proposed facilities would generate new direct and indirect emissions from the construction and operations of the proposed facilities. 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, and includes stationary sources that would be permitted under the PSD program (40 CFR 93-153(d)(1)).

Supported documentation and emission estimates:

( ) Are attached

( ) Appear in the National Environmental Policy Act documentation

(X) Other (not necessary)

Joseph R Kennedy — 27 Nov 2018

NAME — 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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DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

October 14, 2010

REPLY TO
ATTENTION OF

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.

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.

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: August 18, 2008

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

February 3, 2006

REPLY TO ATTENTION OF

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.

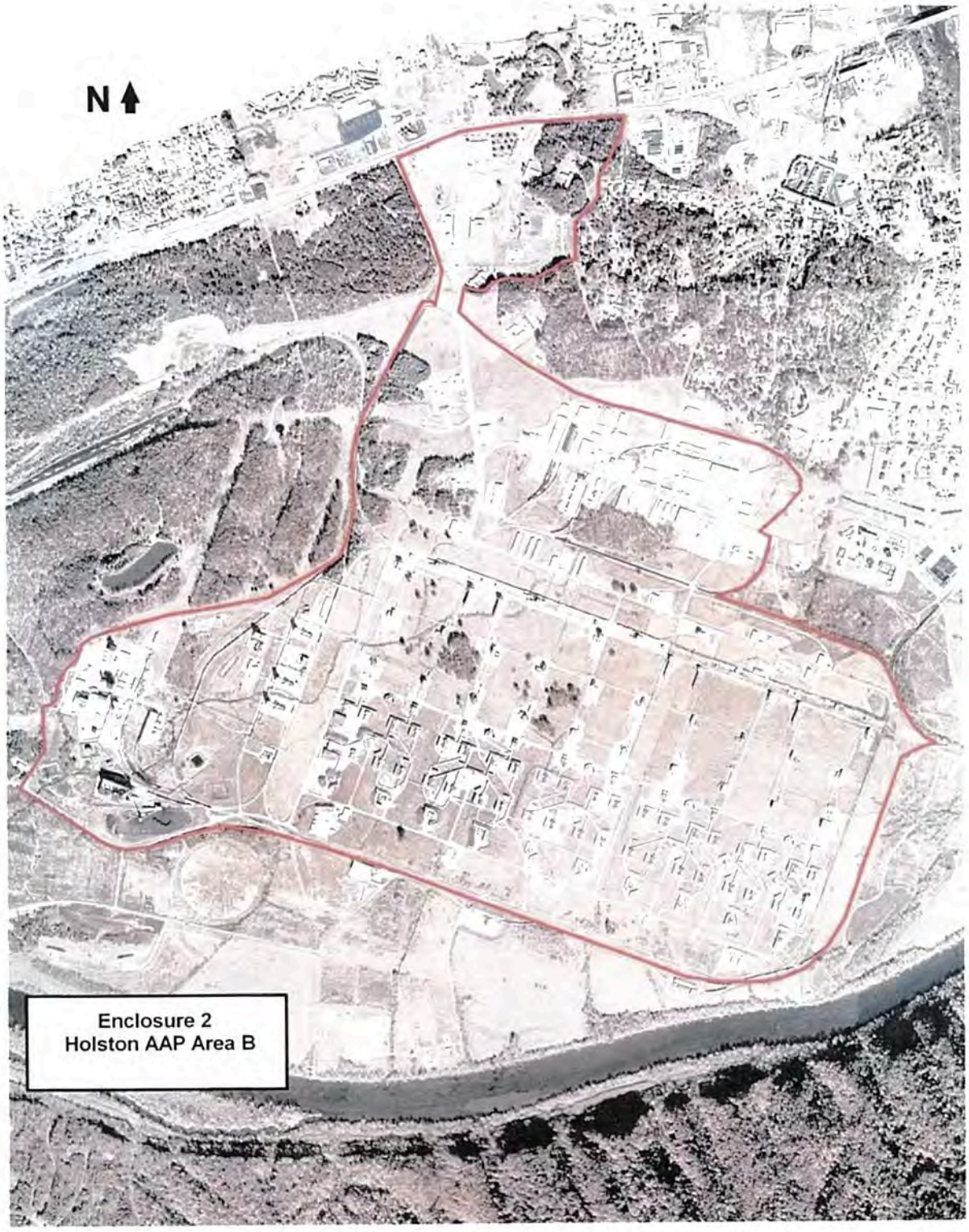
F. Use of land for training exercises, when such training involves no off-road vehicle use or ground disturbance, and when camping occurs in areas previously surveyed for historic properties.

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, KINGSPORT, 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 37660-1048

REPLY TO
ATTENTION OF:

November 7, 2017

Natural Resources Office

Mary Jennings
Field Supervisor
U.S. Fish and Wildlife Service Field Office
446 Neal Street
Cookeville, Tennessee 38501

Dear Ms. Jennings:

Holston Army Ammunition Plant (HSAAP) requests that your office review the proposed action to increase the installation's capacity to produce explosives (Research Development Explosives [RDX] and Insensitive Munitions [IMX]) for any potential impacts on federally listed threatened and endangered species (T/Es).

The anticipated start of the project is March 2018, and the expected duration is approximately 5 years. We are developing an environmental assessment (EA) for this project, but would like to obtain your written concurrence on this project, if possible, as well as any mitigation requirements you might have for inclusion in the EA. Upon completion of the EA for the proposed action (anticipated during the first quarter of 2018), a copy of the document will be sent to your office for review.

The construction (including renovation and demolition) activities associated with this action are depicted on the enclosed map. In addition to construction activities, increasing the production capacity of explosives at HSAAP would require the following relevant operational changes:

a. The quantity of water used for cooling purposes would increase. The precise amount of the increase is not known, but for the sake of analysis in the EA it is assumed that twice as much water would be used. HSAAP currently extracts 40–50 million gallons per day (MGD) of water from the Holston River for cooling purposes and the water is returned to the river at multiple outfalls. The installation is required to ensure there is no more than a 3 degree Celsius (°C) water temperature change between the intake and discharge locations, and that the water temperature at the discharge point does not exceed 30.5 °C. The Army would continue to meet these water quality criteria, and would install a cooling tower to do so if necessary.

b. The increase in RDX production would likely lead to an increase in the amount of RDX discharged into the Holston River. HSAAP is presently upgrading its

wastewater treatment facility, and those upgrades will be completed before explosives production would be increased. The quantity of RDX in river water is currently limited to 12.2 pounds per day (lb/day) (average 5-year/30-day criterion) - a 93 percent reduction from historic discharge levels - to meet the drinking water criteria of 2 parts per billion. HSAAP has made numerous improvements to its production process to decrease the amount of RDX discharged to the river. In 2012 the monthly average of RDX discharged was 175 lb/day. Various improvements reduced that to 60 lb/day, and further improvements reduced it further. In 2016 the monthly average was 6.1 lb/day and in January 2017 it was 1.84 lb/day. Recently the monthly average discharge rate has been less than 1 lb/day. The discharge level is expected to remain this low or drop even lower once the wastewater facility upgrades are completed, and it is anticipated that even with increased explosives production, the quantity of explosives entering the river will be well below the permitted level, and minimal compared to historic levels. With regard to the proposed increase in IMX production, we anticipate that the improved treatment at our wastewater facility also will keep the quantity of nitrates discharged to the river within our NPDES permit limits.

Records indicate the historic presence of T/E mussel species in the Holston River, but those species are believed to be extirpated. A mussel survey conducted on the installation in 1996 failed to verify the presence of any T/Es. In 2015, Conservation Fisheries, Inc. conducted a survey for the Spotfin Chub (Cyprinella monacha) on the installation but the species was not identified. A copy of that report is enclosed. Similarly, we never identified any T/E fish species on the installation in surveys prior to 2015 and do not anticipate that this project will adversely affect any fish species. No aspect of the proposed project would occur in the Holston River, and no changes to HSAAP's permitted discharges to the river are anticipated once the new facilities are operational.

We do not anticipate that this project will impact any terrestrial T/Es such as the gray bat (Myotis grisescens), which is known to forage on the installation; the Indiana bat (M. sodalis), which has never been identified as occurring on the installation but for which suitable summer roosting habitat is present; or the northern long-eared bat (M. septentrionalis), which was identified approximately 15 years ago as occurring on the installation and for which suitable summer roosting habitat is present. An installation-wide survey for T/E bat species conducted in July 2015 using USFWS survey protocols failed to identify either the Indiana bat or the northern long-eared bat on the plant. The proposed action will result in a maximum of 25 scattered, mature trees being removed from the Area B production area. Based on a survey by Bruce Cole, the HSAAP Natural Resources Manager, in October 2017, of those 25 trees, six are potentially suitable for summer roosting sites. Two of the six trees are living and exhibit exfoliating

bark, and could be used as roost sites. The remaining four trees are large (approximately 20 inches dbh), dead snags with cavities/crevices that would be suitable summer roost sites, and one of these trees may potentially be suitable for a maternity colony. All trees that are removed as a result of this action will be cut down prior to April 1, 2018 to ensure that there are no direct impacts on summer roosting bats or nesting migratory bird species. The dead trees are approximately 1,500 feet from a large (approximately 350-acre) area of mature hardwood forest that is considered suitable habitat for summer roosting bats. The large forested area will not be affected by the project. No trees would be removed from the approximately 1 acre stands of oaks on the production area, which serve as bedding areas for deer (Odocoileus virginianus) and harborage for other animals.

Four vacant buildings are proposed for demolition or renovation as part of this action. Because this action might occur over a period of four to five years, surveying these buildings at the present time would not accurately portray wildlife that might occupy them when the demolition or renovation work on each begins. Therefore Mr. Cole will inspect each building approximately three months in advance of its demolition or renovation to verify that it is not being used by roosting bats or nesting migratory birds. If either is present, he will coordinate with your office for guidance and mitigation requirements before the demolition or renovation is allowed to proceed.

With these considerations in mind, we request your written concurrence, if possible, that the proposed action as currently conceived is not likely to adversely affect federally listed T/Es. If the proposed project is changed in any substantial way so that HSAAP thinks an effect on a federally listed T/E might occur, your office will be immediately informed of the change. If you do not feel that our determination of "not likely to adversely affect" is appropriate, or if we need to provide additional information to enable you to make a determination, feel free to contact Mr. Bruce Cole of my staff by phone at 423-578-6276 or by email at bruce.g.cole.civ@mail.mil.

Sincerely,

JOSEPH R. KENNEDY
Commander's Representative

Enclosures

The map mentioned in this letter is not included.

To see proposed construction locations, please see EA Figure 3-1.

BIOLOGICAL SURVEY FOR THE SPOTFIN CHUB, *ERIMONAX MONACHUS*, IN THE HOLSTON RIVER AT HOLSTON ARMY AMMUNITION PLANT (HSAAP)

Final Report to: BAE Systems, Ordnance Systems, Inc.
Prepared by: P. L. Rakes, J. R. Shute, C. L. Ruble, and M. A. Petty
Conservation Fisheries, Inc.
October 30, 2015

INTRODUCTION

The Spotfin Chub (SFC), *Erimonax monachus (*formerly *Hybopsis monacha* and *Cyprinella monacha)* is endemic to the Tennessee River drainage in Georgia, Tennessee, North Carolina, and Virginia (Jenkins and Burkhead 1994, 1984). In the Holston River system it is recently known only from the North Fork Holston River (NFHR) in Scott, Washington, and Smyth County and Middle Fork Holston River (MFHR) in Washington County in Virginia and the NFHR and Holston River in Hawkins and Sullivan County in Tennessee (Tennessee Valley Authority and Virginia Natural Heritage and Conservation Fisheries, Inc. data). Recent surveys by Conservation Fisheries Inc. (CFI) have been unable to locate any specimens in the MFHR (Petty et al. 2015).

The Spotfin Chub is federally threatened and currently restricted to only four populations, with the Holston River system population's distribution greatly reduced relative to probable historical extent (USFWS 1983). Seven or more populations have been eradicated by human activities. CFI is currently involved in attempted restoration of three populations, with two (Tellico and Cheoah River) exhibiting early signs of success. The U. S. Fish and Wildlife Service recommended that BAE Systems, Ordnance Systems, Inc. (BAE) employ CFI to efficiently survey for the species in the Holston River at HSAAP, due to CFI's extended experience and expertise with the species.

METHODS

Spotfin Chubs are specialized minnows, usually confined to very specific habitats, particularly clean bedrock substrate in moderate to swiftly flowing shallow water (typically < 1 meter depth). Extensive bedrock substrates, particularly those forming flat "floors" with ledges and/or boulders provide required crevices for spawning substrates and feeding surfaces for specialized benthic predation on blackfly and other aquatic insect larvae. The very young juveniles are often also found on clean swept sandy and/or bedrock shallows along the stream's edge. CFI work with Spotfin Chubs in several other river systems has shown that, if present, these unique minnows can often be detected efficiently by snorkeling in and near such preferred habitat, visibility conditions permitting.

Suitable habitat was surveyed by snorkeling, with the survey area plotted using GPS, USGS maps and Google Earth. Habitats—both above and below water—were noted and photographed. Records of relative abundance for all species observed were recorded. Fish identifications were

made on site and no fish were taken from the stream. Many species were photographed, but flow conditions prevented successfully capturing quality images of most. Total time snorkeling was recorded to potentially generate "observations per unit effort" (OPUE), much like standard "catch per unit effort" (CPUE) for any target fish observed and counted.

RESULTS

A reconnaissance visit to the HSAAP property on 11 August 2015 was provided by Bruce Cole, Natural Resources Manager, and BAE's Amy Crawford, driving to several access points along the Holston River. All but one reach of the river was too deep and/or slow and/or silty for Spotfin Chubs. The reach of islands, shoals, and bedrock riffles and runs below the bridge at Clay Islands (Holston River Mile [HRM] 137.5+) appeared to have excellent habitat and was thus selected for an extensive snorkel survey effort performed on 24 September 2015. CFI returned with a crew of four experienced snorkelers to visually survey the site to determine presence or absence of Spotfin Chubs. Conditions were as close to ideal as can be expected in a larger river, although swift flows made holding stable positions difficult in many areas, particularly when attempting underwater photography. Water temperature was still warm for the season (75°F); discharge was relatively low with only a modest generation release from Fort Patrick Henry Lake. Visibility was more than a meter and sufficient to locate and visually identify all fish encountered. All four snorkelers were highly experienced, having surveyed for Spotfin Chubs in nearly all known portions of their range. Approximately 8.0 person-hours of snorkel effort were spent searching in both adult and juvenile habitats, as well as adjacent areas. Figure 1 (Appendix) illustrates the area covered by snorkelers.

No Spotfin Chubs were observed despite extensive excellent habitats with bedrock in swift shallow riffles and runs. The diversity of fishes was high (28 species observed). Numbers of most species observed were within expected values. See Table 1 (Appendix) for a list of species and relative numbers. Darters and minnows were well represented, usually indicating good water quality and diverse habitat. Photographs of habitats and some of the species observed are found in the Appendix. A video sampling of many of the fish and habitats observed can be viewed at https://vimeo.com/143897019 (password: holsfc2015CFI). Several species often seen in association with Spotfin Chubs were present in abundance. However several others, most notably Whitetail Shiners (*Cyprinella galactura*), were far less abundant than expected. Whitetail Shiners are perhaps the species most similar to Spotfin Chubs and the two were once considered closely related. Both species spawn in similar habitats and often overlap in nonbreeding season habitats as well.

DISCUSSION/CONCLUSIONS

Overall fish diversity and abundance was greater than expected in a tailwater setting, and comparable to those observed in other recent survey studies with differences attributable to the different sampling techniques (i.e., snorkeling versus electrofishing). We observed much larger numbers of many species than did Evans and Beverly (2010) in a survey just above our site, but snorkeling often reveals far more fish than might be collected by most standard fish sampling

techniques. Results reported in their study as well as those in a longer-running and wider range Academy of Natural Sciences report (2012) largely replicated our species diversity observations with the addition of many larger species (sunfish, suckers) susceptible to their electrofishing methods.

The Spotfin Chub is known from the Holston River system upstream of HSAAP, particularly in the lower North Fork Holston River. It has also been collected on a few occasions in the river downstream of the plant [TVA and Natural Heritage data: Cox Island, Surgoinsville, HRM 118 – 1992, 2001, 2009; Phipps Bend, HRM 122 – 2003; Terrill Creek, HRM 119.5 - 2004], but usually only single specimens. It was not collected in the Evans and Beverly (2010) study. Since Spotfin Chubs occur upstream and are at least occasionally collected downstream of the plant, we must assume that they sometimes pass through HSAAP waters. Spotfin Chubs are very mobile fish. For example, at least one juvenile chub that CFI stocked in Shoal Creek in south-central Tennessee as a part of a rare fish restoration project made it downstream to north Alabama in a little more than a year, a distance of more than 10 stream miles!

We know of no other site where Spotfin Chubs persist in a tailwater situation, where water levels and (presumably) temperatures vary with releases from the upstream dam. This is precisely the condition in the Holston River at this site. Our supposition is that the Chubs are highly prone to predation in deeper waters. We rarely encounter them in water as deep as 1m. Typically, they are found in water less than a half meter deep. Spotfin Chubs in our hatchery are affected by subtle temperature changes, even more than most of the species we work with. Our observations suggest that the fish will cease spawning, at least temporarily, if the water temperature drops more than a few degrees.

Our conclusion is that while the occasional Spotfin Chub passes through HSAAP waters, there is no resident population. Spotfin Chub collections from below the plant have only once yielded more than one specimen in the modern era (N=15 at Cox Island in 2001; see above). These all likely represent waifs from the North Fork Holston, where stable populations exist.

LITERATURE CITED

Academy of Natural Sciences of Drexel University. 2012. 2010 South Fork Holston River environmental monitoring studies. Report No. 10-04F to Eastman Chemical Company. April 2012. 289 pp.

Evans, J. A. and J. Beverly. 2010. An exploratory survey for the threatened Spotfin Chub (*Cyprinella monacha*) for the proposed demolition of bridge #20 at Holston Army Ammunition Plant, Hawkins County, Tennessee. Report to BAE Systems & Holston Army Ammunition Plant, Kingsport, Tennessee. September 2010. 11 pp.

Jenkins, R. E. and N. M. Burkhead. 1994. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland. 1079 p.

Jenkins, R. E. and N. M. Burkhead. 1984. Description, biology and distribution of the Spotfin Chub, *Hybopsis monacha*, a threatened cyprinid fish of the Tennessee River drainage. Bulletin Alabama Museum of Natural History. 8: 1-30.

Petty, M. A., Rakes, P. L. Shute, J. R. and C. L. Ruble. 2015. Surveys for Spotfin Chubs, *Erimonax monachus*, and their habitat in the North Fork and Middle Fork Holston Rivers, Virginia. Final Report to the Virginia Department of Game and Inland Fisheries (Contract #2012-13706), January 8, 2015. 15 pp.

U.S. Fish and Wildlife Service (USFWS). 1983. Recovery Plan for Spotfin Chub *Hybopsis monacha*. U.S. Fish and Wildlife Service, Atlanta, Georgia. 46 pp.

APPENDIX:

Figure 1. Approximate area snorkel surveyed (shaded yellow) by CFI, Holston River Mile 137.5, 24 September 2015.

Scientific Name:	**Common Name:**	
Campostoma oligolepis	Largescale Stoneroller	C/A
Cyprinella galactura	Whitetail Shiner	S
Cyprinella spiloptera	Spotfin Shiner	S
Erimonax monachus	Spotfin Chub	0
Erimystax dissimilis	Streamline Chub	AA
Hybopsis amblops	Bigeye Chub	C
Luxilus chrysocephalus	Striped Shiner	F
Luxilus coccogenis	Warpaint Shiner	F
Nocomis micropogon	River Chub	S/C
Notropis leuciodus	Tennessee Shiner	F
Notropis micropteryx	Highland Shiner	C
Notropis photogenis	Silver Shiner	S
Notropis telescopus	Telescope Shiner	A
Notropis volucellus	Mimic Shiner	AA
Notropis sp. "sawfin shiner"	Sawfin Shiner	F?
Phenacobius uranops	Stargazing Minnow	AA
Hypentelium nigricans	Northern Hogsucker	C
Moxostoma sp.	Redhorse species	S
Micropterus dolomieu	Smallmouth Bass	S
Micropterus punctulatus	Spotted Bass	F
Micropterus salmoides	Largemouth Bass	1
Etheostoma blennioides	Greenside Darter	A
Etheostoma camurum	Bluebreast Darter	C
Etheostoma jessiae	Blueside Darter	F
Etheostoma rufilineatum	Redline Darter	C
Etheostoma simoterum	Snubnose Darter	AA
Etheostoma zonale	Banded Darter	C
Percina burtoni	Blotchside Logperch	1
Percina evides	Gilt Darter	C
	TOTAL # SPECIES OBSERVED:	**28**

Key: F (few) ≤5; S (several) 6-15; C (common) 16-30; A (abundant) >30; AA (very abundant) >100

Table 1. Species observed by CFI snorkeling, Holston River Mile 137.5, 24 September 2015.

Bedrock riffle between lower island and left descending shore.
Patches of suitable Spotfin Chub habitat are above and below riffle.
Note snorkeler standing beyond island.

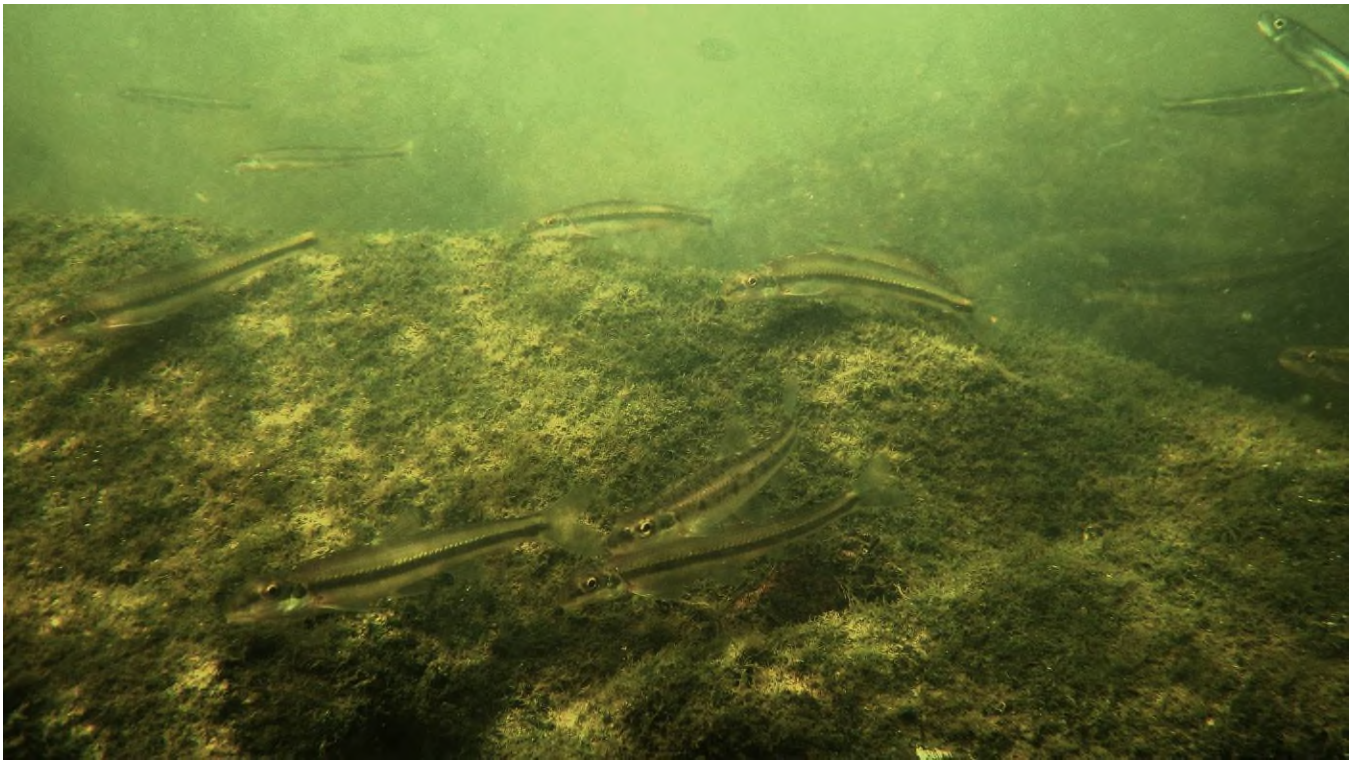
Bedrock riffles between lower island and left descending shore.
Patches of suitable Spotfin Chub habitat are above, below, and between riffles.

**Riffle complex between upper island and left descending shore.
Patches of suitable Spotfin Chub bedrock habitat scattered throughout.
Note snorkeler to left in water.**

**Cyprinids in lee of lower island: Mimic Shiner (top center) and Bigeye Chubs.
Not ideal Spotfin Chub habitat—too slow with no bedrock.**

Streamline Chub (above) and Gilt Darter (below)

Banded Darter



**Stargazing Minnows and Streamline Chub (center with lateral spots)
feeding on bedrock with riverweed—excellent Spotfin Chub habitat between upper islands.**

**Blueside Darter on sandy bottom
(sometimes frequented by juvenile Spotfin Chubs if shallow near bedrock)**

-----Original Message-----
From: Robbie Sykes [mailto:robbie_sykes@fws.gov]
Sent: Tuesday, December 19, 2017 1:05 PM
To: Cole, Bruce G CIV (US) <bruce.g.cole.civ@mail.mil>
Subject: [Non-DoD Source] RE: project letter for explosive production increase at HSAAP

Bruce,

I was talking with some others in the office about the letter and they thought it would be best to wait until we receive the actual EA before we concurring with NLAA. Based on the information provided and negative results from past surveys, we would have no issues with NLAA, but it should be based on the information provided in the EA.

Thanks,

Robbie Sykes
Supervisory Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
446 Neal Street
Cookeville, TN 38501
(tele. 931/525-4979)
(fax. 931/528-7075

-----Original Message-----
From: Cole, Bruce G CIV (US) [mailto:bruce.g.cole.civ@mail.mil]
Sent: Wednesday, November 8, 2017 2:03 PM
To: Robbie Sykes <robbie_sykes@fws.gov>
Subject: project letter for explosive production increase at HSAAP

Robbie,

Please find attached the letter regarding the proposed expansion of production at Holston AAP, a portion of which we had previously discussed.
We have also mailed an "official" hard copy to the USFWS office. This is a massive project that will occur over a period of approximately five years.

We've tried to anticipate and address as many questions as possible, but if you need any additional information, please let me know.

Bruce Cole
Natural Resources Specialist
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660
423-578-6276

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

REPLY TO
ATTENTION OF

February 7, 2018

Natural Resources

SUBJECT: Conditional concurrence of not likely to adversely affect federally protected bat species from the expansion of explosives production capacity on Holston Army Ammunition Plant, Kingsport, Tennessee.

Mary Jennings
Field Supervisor
U.S. Fish and Wildlife Service Field Office
446 Neal Street
Cookeville, Tennessee 38501

Dear Ms. Jennings:

Holston Army Ammunition Plant (HSAAP) corresponded with your office on November 7, 2017 regarding the subject project requesting a *not likely to adversely affect* (NLAA) determination on federally listed threatened and endangered (T/E) species. The proposed project as detailed in that letter has changed in two respects with regards to potential impacts on federally protected bat species (Indiana bat [*Myotis sodalis*] and northern long-eared bat [*M. septentrionalis*]).

The natural gas-fired steam plant is now proposed to be constructed on undisturbed, wooded land outside the production area. Plant construction would require removal of an unknown number of hardwood trees on approximately 4.5 acres. Additionally, design modifications to the proposed new recrystallization building (G3) on the production area would result in the removal of 26 trees from the stand of trees northeast of the proposed building. These trees would be in addition to the 25 trees mentioned in our previous correspondence, resulting in a total of 51 trees to be removed in the production area. The construction sites that will require tree removal and areas of tree removal are depicted on the enclosed figure.

The Army is committed to ensuring that tree removal for the proposed project will not have any adverse effects on federally protected bat species. To that end, the Army would ensure that no trees would be removed in the production area or at the new site of the proposed steam plant to accomplish this project except between October 15 and March 31 of any year during the project's anticipated 5-year implementation.

The Department of Defense considers the above referenced project at HSAAP to be of high priority for national security purposes. It is for this reason that the Army respectfully requests a conditional concurrence of a not likely to adversely affect federally protected bat species due to tree removal provided the Army complies with the above time frame for tree removal. Rest assured that a copy of the final Environmental Assessment will be provided to your office for your full review and official comments upon its release to the public. I would also like to note that the Environmental Assessment will specifically include as mitigation for this proposed project the Army's commitment to limit any harvesting or removal of trees suitable for bat roosting to the period between October 15 and March 31 of any year associated with the proposed action. Your response is respectfully requested by no later than 30 days from receipt of this letter (March 8, 2018).

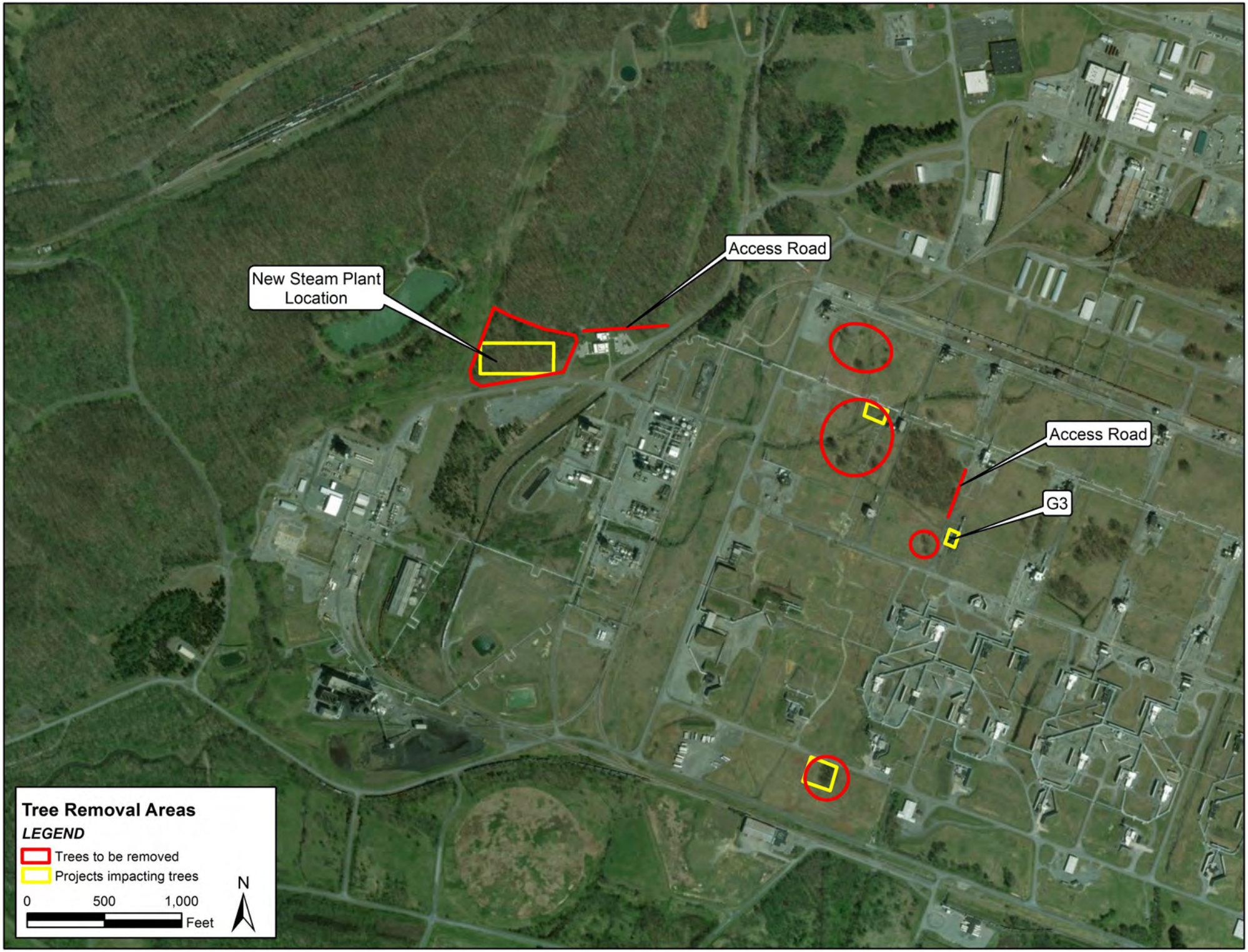
If the proposed project is changed in any substantial way so that HSAAP thinks an effect on a federally listed T/E might occur, your office will be immediately informed of the change. Should you have any questions, feel free to contact Mr. Bruce Cole of my staff by phone at 423-578-6276 or by email: bruce.g.cole.civ@mail.mil.

Sincerely,

Joseph R Kennedy

JOSEPH R. KENNEDY
Commander's Representative

Enclosure


New Steam Plant Location
Access Road
Access Road
G3
Tree Removal Areas
LEGEND
Trees to be removed
Projects impacting trees
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500
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Feet
N

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

November 14, 2017

REPLY TO
ATTENTION OF

Natural Resources Office

E. Patrick McIntyre, Jr.
State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, TN 37243-0442

Dear Mr. McIntyre:

In compliance with section 106 of the National Historic Preservation Act, Holston Army Ammunition Plant (HSAAP), located in Hawkins and Sullivan counties, Tennessee, requests your concurrence with HSAAP's opinion, if possible, that activities associated with increasing the installation's capacity to produce explosives (Research Development Explosives and Insensitive Munitions) will not adversely affect archaeological resources on the installation. Components of the proposed action will include construction of approximately eight new facilities as well as renovation or demolition of others. With two exceptions, all activities/projects associated with the proposed action will occur within the boundary indicated on the enclosed topographic map. You can locate the project area on U.S. Geological Survey 7.5-minute topographic maps for the Church Hill and Kingsport quadrangles. We are developing an environmental assessment (EA) for this project, for which the anticipated start of the project is March 2018, and the expected duration is approximately five years.

As indicated in the second enclosure, we have previously notified 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 (e.g., buildings, barricades, or bridges). Activities covered by the Program Comment include maintenance and repair, rehabilitation, renovation, new construction, and demolition. Since all buildings that will be impacted by the proposed action were constructed during the time frame covered by the Program Comment, the Army has met its section 106 responsibilities as long as the proposed action impacts no other historic resources (e.g., archaeological sites).

Enclosure 3 depicts an area within which, because of previous disturbance, your office indicated during prior coordination in 2006 that ground-disturbing activities would not impact historic properties eligible for listing on the National Register of Historic Places (NRHP) and do not need to be reviewed by the Tennessee Historical Commission. As indicated on the project map, however, two components of the proposed action will occur outside the area that was exempted from coordination.

These components entail construction of an addition to each of two existing buildings. Construction will occur within existing paved areas around each building. In addition, at the easternmost building, an existing road will be widened and paved. Although these two buildings are located outside of the area for which your office made a determination in 2006, undoubtedly each site was heavily disturbed during initial construction of the building, access roads, and parking areas and, therefore, there is no anticipated impact to archaeological resources at either site.

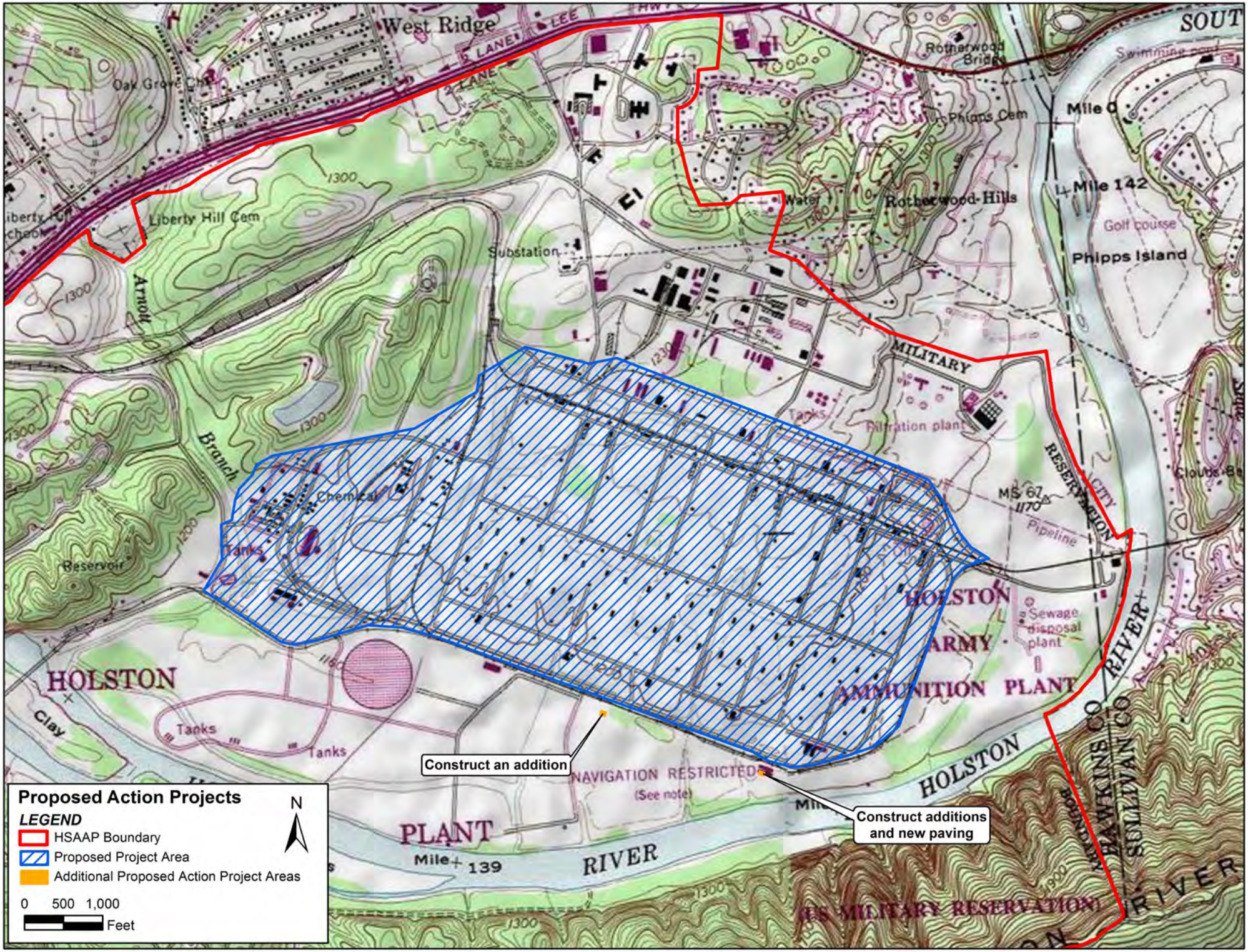
HSAAP completed a survey of the installation for archaeological sites in 1998 (*Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee*), during which nine sites were identified that are potentially eligible for listing on the NRHP. The proposed action will not impact any of those sites. Site 40HW78 is the known archaeological site located closest to any part of the project area that will involve new construction. It is located approximately 1,800 feet away from the new construction site located at latitude 36.530183 longitude -82.636188. In addition, site 40HW78 and the eight remaining archaeological sites are separated from all components of the proposed action, including the two buildings mentioned above, by a chain link fence and, therefore, are inaccessible to any personnel working on the proposed action.

In light of the above factors, we request your concurrence with our opinion, if possible, that the proposed action in its entirety will have no adverse effect on archaeological sites on the installation. If you require additional information, contact Mr. Bruce Cole of my staff at bruce.g.cole.civ@mail.mil or (423) 578-6276.

Sincerely,

Joseph R. Kennedy
Commander's Representative

Enclosures


Construct an addition
Construct additions and new paving
Proposed Action Projects
LEGEND
HSAAP Boundary
Proposed Project Area
Additional Proposed Action Project Areas
0 500 1,000
Feet
N
West Ridge
Liberty Hill Cem
Substation
Rotherwood-Hills
Phipps Island
MILITARY
Filtration plant
Pipeline
HOLSTON
ARMY
AMMUNITION PLANT
Sewage disposal plant
Tanks
Reservoir
Clay
NAVIGATION RESTRICTED
(See note)
PLANT
RIVER
HOLSTON
US MILITARY RESERVATION
HAWKINS CO
SULLIVAN CO
Mile 139
Mile 142

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

October 14, 2010

REPLY TO
ATTENTION OF

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.

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.

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.

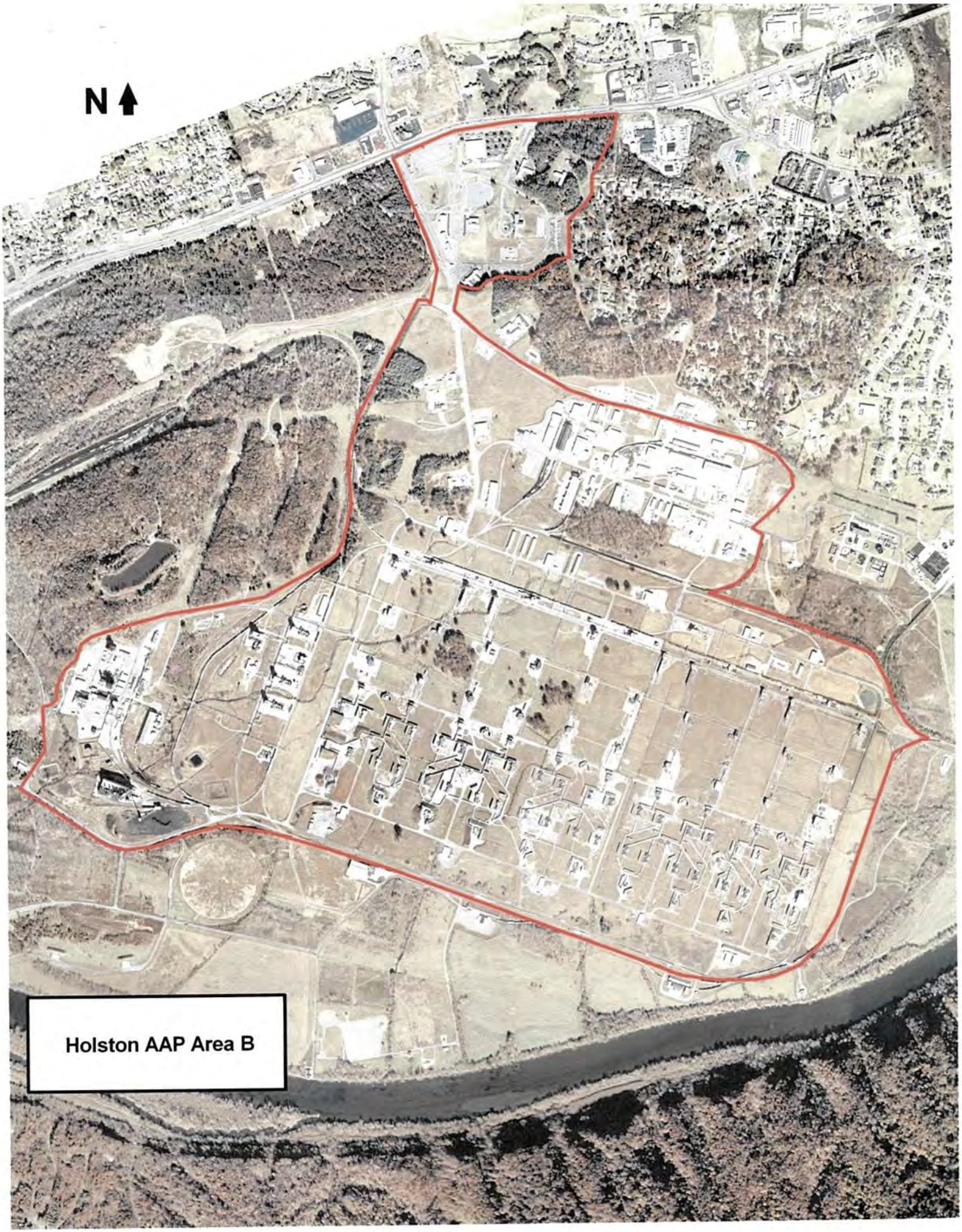
VI. Duration and Review of the Program Comment

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: August 18, 2008


N
Holston AAP Area B

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

November 28, 2017

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

RE: DOD / Department of Defense, Holston Army Ammunition Plant, 2 Building Additions, World War II and Cold War Era Facilities, Kingsport, Hawkins County, TN

Dear Mr. Kennedy:

Pursuant to your request, this office has reviewed documentation concerning the above-referenced 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 applicants 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).

Based on the information provided, we concur that the project area contains a cultural resource eligible for listing in the National Register of Historic Places. We further find that the project as currently proposed will not adversely affect this historic property.

This office has no objection to the implementation of this project as currently planned. If project plans are changed or previously unevaluated archaeological resources are discovered during project construction, 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. Questions and comments may be directed to Jennifer M. Barnett (615) 687-4780. We appreciate your cooperation.

Sincerely,

E. Patrick McIntyre, Jr.

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

EPM/jmb

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

REPLY TO
ATTENTION OF

February 15, 2018

Natural Resources Office

E. Patrick McIntyre, Jr.
State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, TN 37243-0442

Dear Mr. McIntyre:

Holston Army Ammunition Plant (HSAAP) initially corresponded with your office on November 14, 2017 for concurrence that the installation's proposed effort to increase its explosives production capacity would have no adverse effect on archaeological resources on the installation. We received your concurrence regarding this effort on November 28, 2017. However, per guidance contained in your concurrence letter, we are notifying you because the proposed project as detailed in that letter has changed in one respect.

The natural gas fired steam plant, originally sited to be built in the production area, is now proposed to be constructed on undisturbed, wooded land outside the production area and project boundary that you initially reviewed. Steam plant construction would require ground disturbance and removal of trees on approximately 4.5 acres. The proposed location of the new steam plant is depicted on an enclosed aerial photograph and on the U.S. Geological Survey 7.5-minute topographic map for the Church Hill quadrangle.

As indicated in our initial correspondence, HSAAP completed a survey of the installation for archaeological sites in 1998 (*Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee*), during which nine sites were identified that are potentially eligible for listing on the NRHP. However, there were no archaeological sites identified either on, or near, the proposed site for the steam plant. Also, the proposed site for the new steam plant, relative to the other projects associated with the proposed production expansion, is the farthest project site away from the known archaeological sites, which are located along the Holston River.

The Army is committed to ensuring that the expansion of explosives production capacity on HSAAP will not have any adverse effects on archaeological resources. To that end, the HSAAP Commander will ensure compliance with the Native American

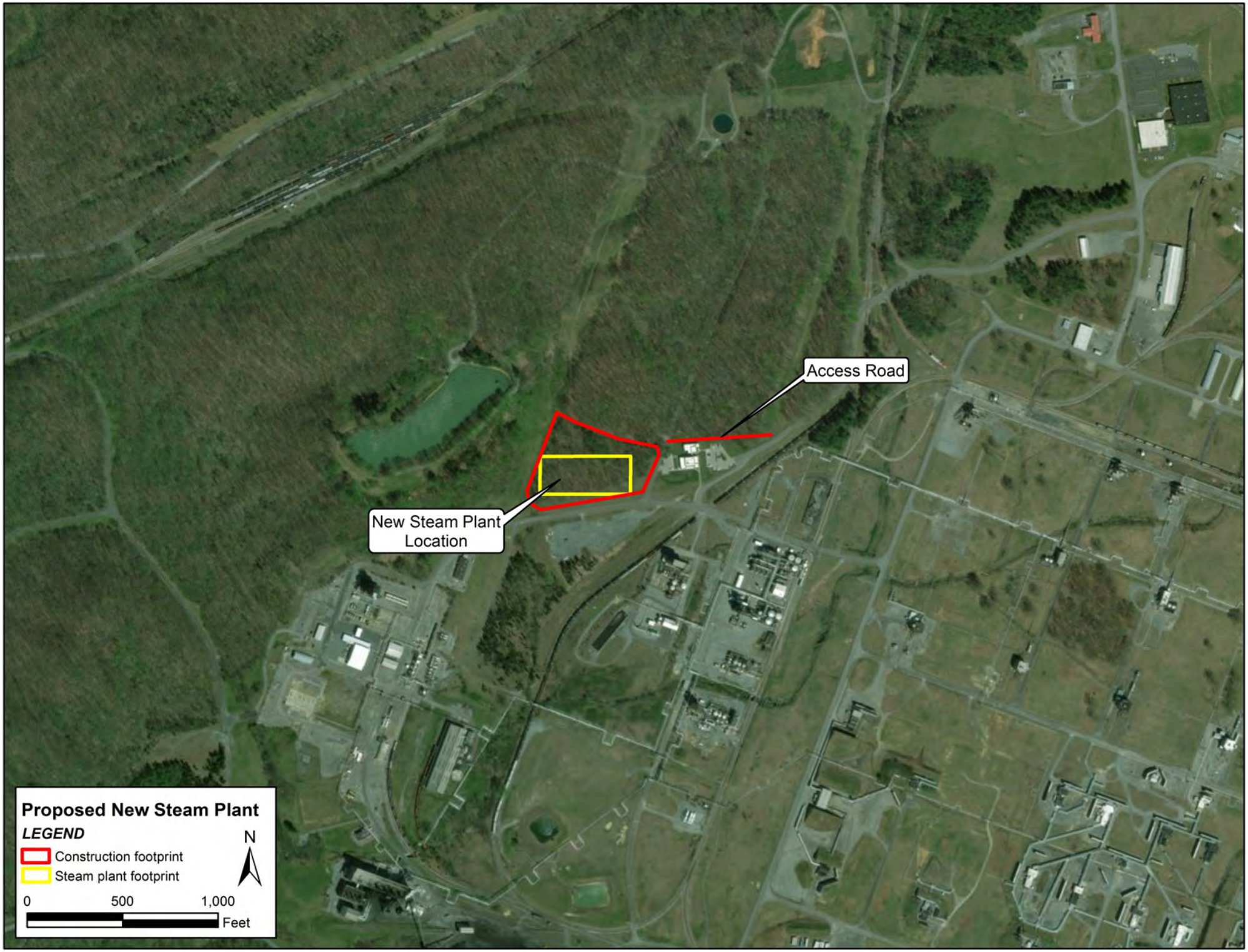
Graves Protection and Repatriation Act (25 USC 3001 *et seq.*) and it's implementing regulation (43 CFR Part 10). The Army will adhere to standard operating procedures in the event of an inadvertent discovery, including notifications, cessation of the activity for 30 days in the area of the discovery, protection of the discovery, consultation with Indian tribes affiliated with the discovery in accordance with 43 CFR Section 10.5, and preparation of a written Plan of Action.

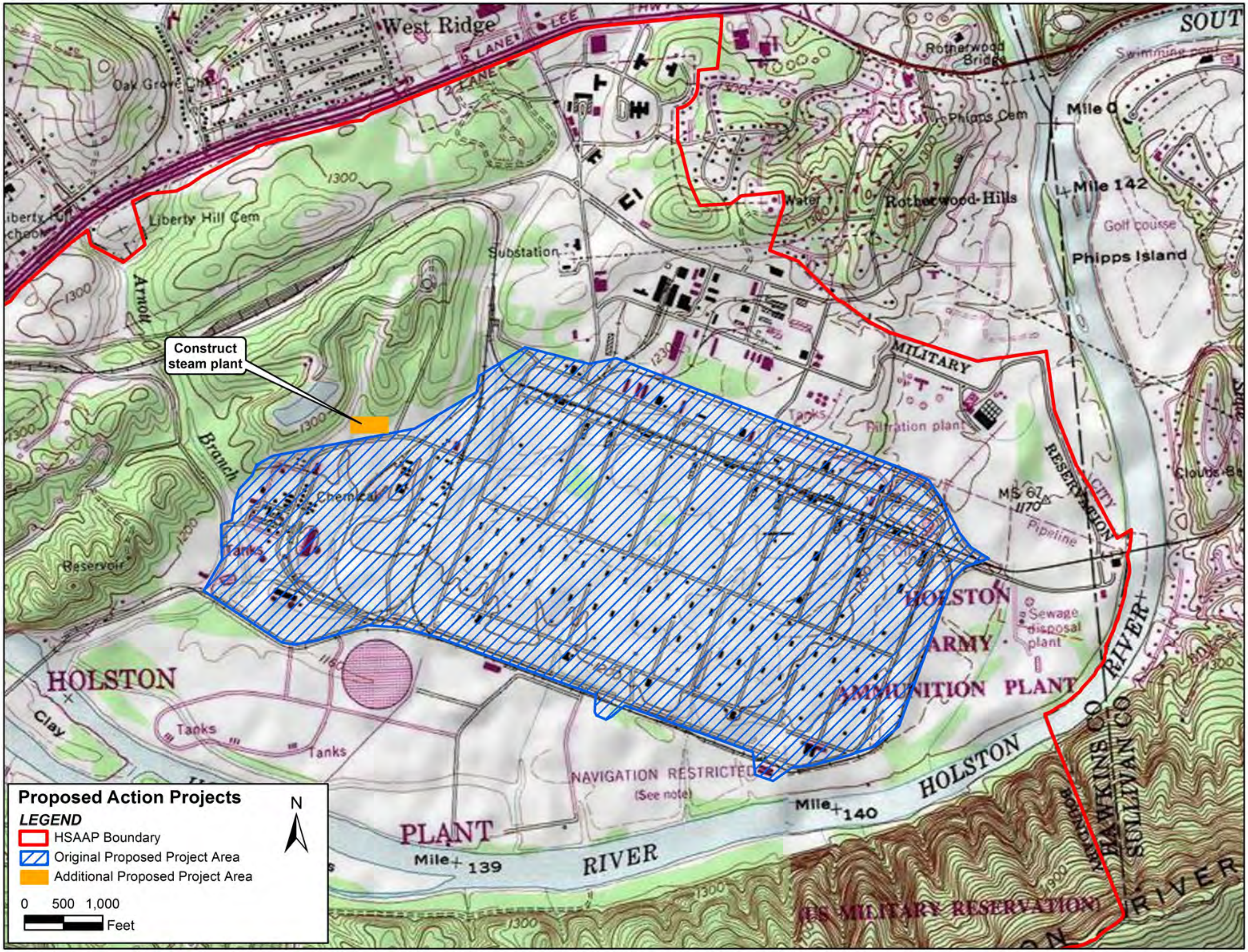
In light of the above factors, we request your concurrence with our opinion, if possible, that the proposed change to HSAAP's production expansion effort will have no adverse effect on archaeological resources on the installation. Your response is respectfully requested no later than 30 days from receipt of this letter (March 15, 2018). If you require additional information, please contact Mr. Bruce Cole of my staff at bruce.g.cole.civ@mail.mil or (423) 578-6276.

Sincerely,

JOSEPH R. KENNEDY
Commander's Representative

Enclosures


Access Road
New Steam Plant Location
Proposed New Steam Plant
LEGEND
Construction footprint
Steam plant footprint
N
0
500
1,000
Feet


Construct steam plant
Proposed Action Projects
LEGEND
HSAAP Boundary
Original Proposed Project Area
Additional Proposed Project Area
0 500 1,000
Feet
N
West Ridge
Oak Grove Ch
Liberty Hill Cem
Substation
Rotherwood Bridge
Phipps Cem
Rotherwood Hills
Mile 0
Mile 142
Golf course
Phipps Island
MILITARY
Filtration plant
Tanks
Chemical
Reservoir
Arnott
Branch
HOLSTON
Clay
Tanks
HOLSTON ARMY AMMUNITION PLANT
Sewage disposal plant
MS 67
Pipeline
RESERVATION
NAVIGATION RESTRICTED
(See note)
Mile 140
Mile 139
PLANT
RIVER
HOLSTON
HAWKINS CO
SULLIVAN CO
(US MILITARY RESERVATION)
RIVER

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

March 1, 2018

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, Natural Gas Fired Steam Plant, Kingsport, Hawkins County, TN

Dear Mr. Kennedy:

In response to your request, we have reviewed the archaeological review documentation submitted by you regarding the above-referenced 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 applicants 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).

Considering the information provided, we concur that no archaeological resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, 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. Complete and/or updated Tennessee Site Survey Forms should be submitted to the Tennessee Division of Archaeology for all sites recorded and/or revisited during the current investigation. Questions or comments may be directed to Jennifer Barnett (615) 687-4780.

Your cooperation is appreciated.

Sincerely,

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

EPM/jmb

DEPARTMENT OF THE ARMY
HOLSTON ARMY AMMUNITION PLANT
4509 WEST STONE DRIVE
KINGSPORT, TN 37660-1048

REPLY TO
ATTENTION OF:

November 1, 2017

Natural Resources Office

Cherokee Nation
Chief Bill John Baker
Tribal Historic Preservation Officer
P.O. Box 948
Tahlequah, OK 74465-0948

Dear Chief Baker:

The U.S. Army proposes to expand its production capacity of explosives at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. HSAAP is located in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing new facilities and renovating and demolishing existing facilities on the installation. All activities related to the proposed action will occur within the production area of Area B, an area that was heavily disturbed during construction of the installation in 1942. Construction is scheduled to start in March 2018. An environmental assessment of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA).

In accordance with Title 36 of the *Code of Federal Regulations* (CFR) Part 800, the National Historic Preservation Act, and NEPA, this letter is an invitation to initiate government-to-government consultation between the U.S. Army and the Cherokee Nation to discuss any effects the proposed action might have on your tribe and/or its resources. The Army is inviting the Cherokee Nation 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 survey of the installation in 1997, which resulted in the identification of nine prehistoric archaeological sites on the property. The proposed action will not impact any of the known archaeological sites as the site closest to any area of new construction is approximately 1,800 feet away. In addition, this archaeological site, as well as the remaining sites, are separated from all components of the proposed action by a chain link fence and are in areas inaccessible to personnel working on this project. Consultation with the Tennessee State Historical Commission also is 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 a meeting between you and your tribal council and/or cultural resource, Native American Graves Protection and Repatriation Act 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 advise 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.

Sincerely,

JOSEPH R. KENNEDY
Commander's Representative

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CHEROKEE NATION®
P.O. Box 948 • Tahlequah, OK 74465-0948 • 918-453-5000 • cherokee.org

Office of the Chief

Bill John Baker
Principal Chief
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S. Joe Crittenden
Deputy Principal Chief
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November 20, 2017

Bruce Cole
Department of the Army
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660-1048

Re: Hoston Army Ammunitions Plant, Kinsport, TN

Mr. Bruce Cole:

The Cherokee Nation (CN) is in receipt of your correspondence about **Hoston Army Ammunitions Plant, Kinsport, TN**, and appreciates the opportunity to provide comment upon this project. Please allow this letter to serve as the CN's interest in acting as a consulting party to this project.

This Office requests a copy of the *Phase I* survey with any related comments from the State Historic Preservation Office for our review in addition to a map of the Area of Potential Effect. We look forward to discuss this project with you.

Additionally, the CN 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 CN databases or records.

Also, please contact this Office to determine an amenable day and time for consultation. 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,

Elizabeth Toombs, Special Projects Officer
Cherokee Nation Tribal Historic Preservation Office
elizabeth-toombs@cherokee.org
918.453.5389

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CHEROKEE NATION®
P.O. Box 948 • Tahlequah, OK 74465-0948 • 918-453-5000 • cherokee.org

Office of the Chief

Bill John Baker
Principal Chief
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S. Joe Crittenden
Deputy Principal Chief
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December 1, 2017

Bruce Cole
Department of the Army
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660-1048

Re: Holston Army Ammunitions Plant, Kingsport, TN

Mr. Bruce Cole:

The Cherokee Nation (CN) is in receipt of your correspondence about **Holston Army Ammunitions Plant, Kingsport, TN**, and appreciates the opportunity to provide comment upon this project.

The CN 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 intersects or adjoins such resources. However, the CN does not object to the project proceeding as long as the following stipulations are observed:

- The CN concurs with the provided work plan to maximize buffers to protect known archeological sites from direct and indirect construction impacts;

- The CN requests that the Department of the Army (Army) re-contact our Offices if there are any changes to the activities or scope of the Area of Potential Effect;

- The CN 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

- The CN 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 CN databases or records.

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,

Elizabeth Toombs, Special Projects Officer
Cherokee Nation Tribal Historic Preservation Office
elizabeth-toombs@cherokee.org
918.453.5389

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

REPLY TO
ATTENTION OF

February 15, 2018

Natural Resources Office

Cherokee Nation
Elizabeth Toombs, Special Projects Officer
Tribal Historic Preservation Office
P.O. Box 948
Tahlequah, OK 74465-0948

Dear Ms. Toombs:

Holston Army Ammunition Plant (HSAAP) initially corresponded with the Cherokee Nation on November 1, 2017 regarding the installation's proposed project to increase its explosives production capacity. Upon your request, we consulted with you regarding this effort, and received your response dated December 1, 2017. Per guidance contained in your letter, we are re-contacting your office because there has been a change in the scope of the Area of Potential Effect.

The natural gas fired steam plant, originally sited to be built in the production area, is now proposed to be constructed on undisturbed, wooded land outside the production area and project boundary that you initially reviewed. Steam plant construction would require ground disturbance and removal of trees on approximately 4.5 acres. The proposed location of the new steam plant, relative to the original project boundary, is depicted on the enclosed figure.

As indicated in our previous correspondence, HSAAP completed a survey of the installation for archaeological sites in 1998 (*Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee*), during which nine sites were identified that are potentially eligible for listing on the NRHP. However, there were no archaeological sites identified either on, or near, the proposed site for the steam plant. Also, the proposed site for the new steam plant, relative to the other projects associated with the proposed production expansion, is the farthest project site away from the known archaeological sites, which are located along the Holston River.

The Army is committed to ensuring that the expansion of explosives production capacity on HSAAP will not have any adverse effects on the Cherokee Nation or its resources. To that end, the HSAAP Commander will ensure compliance with the Native American Graves Protection and Repatriation Act (25 USC 3001 *et seq.*) and it's implementing regulation (43 CFR Part 10). The Army will adhere to standard operating

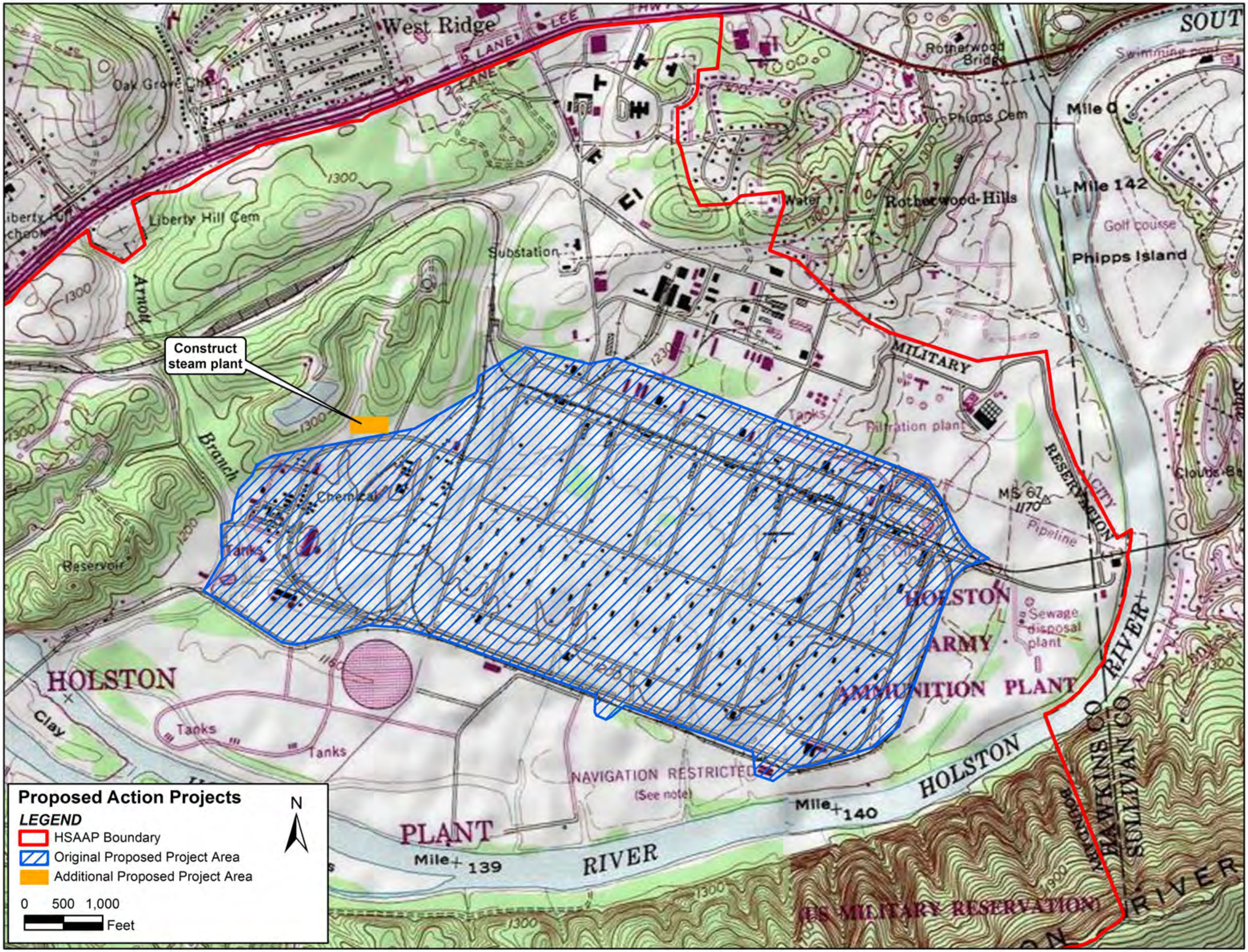
procedures in the event of an inadvertent discovery, including notifications, cessation of the activity for 30 days in the area of the discovery, protection of the discovery, consultation with Indian tribes affiliated with the discovery in accordance with 43 CFR Section 10.5, and preparation of a written Plan of Action.

In light of the above factors, we request your concurrence with the proposed change to HSAAP's production expansion effort. Your response is respectfully requested no later than 30 days from receipt of this letter (March 15, 2018). If you require additional information, please contact Mr. Bruce Cole, HSAAP's Native American Affairs Coordinator, at bruce.g.cole.civ@mail.mil or (423) 578-6276.

Sincerely,

JOSEPH R. KENNEDY
Commander's Representative

Enclosure


Proposed Action Projects
LEGEND
HSAAP Boundary
Original Proposed Project Area
Additional Proposed Project Area
0 500 1,000
Feet
N
Construct steam plant
West Ridge
Oak Grove Ch
Liberty Hill Cem
Rotherwood Bridge
Phipps Cem
Mile 0
Mile 142
Rotherwood Hills
Golf course
Phipps Island
Substation
Arnott
Branch
Chemical
Tanks
Reservoir
MILITARY
Filtration plant
RESERVATION
MS 67
Pipeline
HOLSTON
ARMY
AMMUNITION PLANT
Sewage disposal plant
HOLSTON
Clay
Tanks
NAVIGATION RESTRICTED
(See note)
HOLSTON
Mile 140
PLANT
Mile 139
RIVER
HAWKINS CO
SULLIVAN CO
RIVER
(US MILITARY RESERVATION)

APP C3e Cherokee Nation Correspondence Steam site

Subject: FW: Holston Army Ammunition

From: Cole, Bruce G CIV (US)
Sent: Wednesday, March 14, 2018 3:47 PM
To: 'Elizabeth Toombs' <elizabeth-toombs@cherokee.org>
Subject: FW: Holston Army Ammunition

Ms. Toombs,

Since we are approaching a thirty day time frame since I touched base with you regarding a project
change to the proposed production expansion effort at Holston Army Ammunition Plant and we have
not received a response, I wanted to touch base once again to insure that you had no issues or
comments regarding the change in the Area of Potential Effect. I am resending the attachments
containing the information regarding the project change for your convenience.
Thanks!

-----Original Message-----
From: Cole, Bruce G CIV (US)
Sent: Thursday, February 15, 2018 3:58 PM
To: 'Elizabeth Toombs' <elizabeth-toombs@cherokee.org>
Subject: RE: Holston Army Ammunition

Ms. Toombs,

Please find attached information regarding the proposed change in our production expansion project at
Holston AAP. I have included a topo map as referenced in the letter indicating the new location of the
steam plant relative to the project area that you previously reviewed. Also, I am resending a map
showing the location of the known archaeological sites on an aerial photo. If you need additional
information or have any questions, please don't hesitate to touch base.

Many thanks!

-----Original Message-----
From: Elizabeth Toombs [mailto:elizabeth-toombs@cherokee.org]
Sent: Thursday, February 15, 2018 9:00 AM
To: Cole, Bruce G CIV (US) <bruce.g.cole.civ@mail.mil>
Subject: [Non-DoD Source] RE: Holston Army Ammunition

Many thanks for your e-mail and update, Mr. Cole. E-mail is fine.

Wado,

Elizabeth Toombs, Tribal Historic Preservation Officer Cherokee Nation Tribal Historic Preservation
Office PO Box 948 Tahlequah, OK 74465-0948
918.453.5389

-----Original Message-----
From: Cole, Bruce G CIV (US) [mailto:bruce.g.cole.civ@mail.mil]
Sent: Thursday, February 15, 2018 6:08 AM
To: Elizabeth Toombs <elizabeth-toombs@cherokee.org>
Subject: <EXTERNAL> RE: Holston Army Ammunition

Ms. Toombs,

We have had a change in the Area of Potential Effect regarding the project on which we have previously consulted with you. We have prepared a letter discussing that change with a map of the project location. I just wanted to touch base with you and see if it is ok to send the letter to you via email for your review or if you prefer it to be sent by regular mail, as I can do either.

Respectfully,

-----Original Message-----
From: Elizabeth Toombs [mailto:elizabeth-toombs@cherokee.org]
Sent: Friday, December 01, 2017 2:41 PM
To: Cole, Bruce G CIV (US) <bruce.g.cole.civ@mail.mil>
Subject: [Non-DoD Source] Holston Army Ammunition

Good Afternoon, Mr. Cole:

Many thanks for your time and conversation this afternoon. Attached is Cherokee Nation's response to the review request for Holston Army Ammunition Plant. Please let me know if there are any questions or concerns.

Wado,

Elizabeth Toombs, Special Projects Officer

Cherokee Nation

Tribal Historic Preservation Office

PO Box 948

Tahlequah, OK 74465-0948

918.453.5389

DEPARTMENT OF THE ARMY
HOLSTON ARMY AMMUNITION PLANT
4509 WEST STONE DRIVE
KINGSPORT, TN 37660-1048

REPLY TO
ATTENTION OF:

November 1, 2017

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:

The U.S. Army proposes to expand its production capacity of explosives at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. HSAAP is located in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing new facilities and renovating and demolishing existing facilities on the installation. All activities related to the proposed action will occur within the production area of Area B, an area that was heavily disturbed during construction of the installation in 1942. Construction is scheduled to start in March 2018. An environmental assessment of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA).

In accordance with Title 36 of the *Code of Federal Regulations* (CFR) Part 800, the National Historic Preservation Act, and 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 survey of the installation in 1997, which resulted in the identification of nine prehistoric archaeological sites on the property. The proposed action will not impact any of the known archaeological sites as the site closest to any area of new construction is approximately 1,800 feet away. In addition, this archaeological site, as well as the remaining sites, are separated from all components of the proposed action by a chain link fence and are in areas inaccessible to personnel working on this project. Consultation with the Tennessee State Historical Commission also is 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 a meeting between you and your tribal council and/or cultural resource, Native American Graves Protection and Repatriation Act 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 advise 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.

Sincerely,

Joseph R Kennedy

JOSEPH R. KENNEDY
Commander's Representative

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

REPLY TO
ATTENTION OF

February 15, 2018

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:

The U.S. Army proposes to expand its production capacity of explosives at Holston Army Ammunition Plant (HSAAP), in Kingsport, Tennessee. HSAAP is in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing new facilities and renovating and demolishing existing facilities on the installation. Most activities related to the proposed action will occur within the production area of Area B, an area that was heavily disturbed during construction of the installation in 1942. One project, a new steam plant, will occur outside the production area and require ground disturbance and tree removal on about 4.5 acres of undisturbed land. Construction is scheduled to start in May 2018. An environmental assessment of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA).

In accordance with Title 36 of the *Code of Federal Regulations* (CFR) Part 800, the National Historic Preservation Act, and 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 completed a survey of the installation for archaeological sites in 1998 (*Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee*), during which nine prehistoric sites were identified that are potentially eligible for listing on the NRHP. The proposed action will not impact any of the known archaeological sites as the site closest to any area of new construction is approximately 1,800 feet away. In addition, this archaeological site, as well as the remaining sites, are separated from all components of the proposed action by a chain link fence and are in areas inaccessible to personnel working on this project.

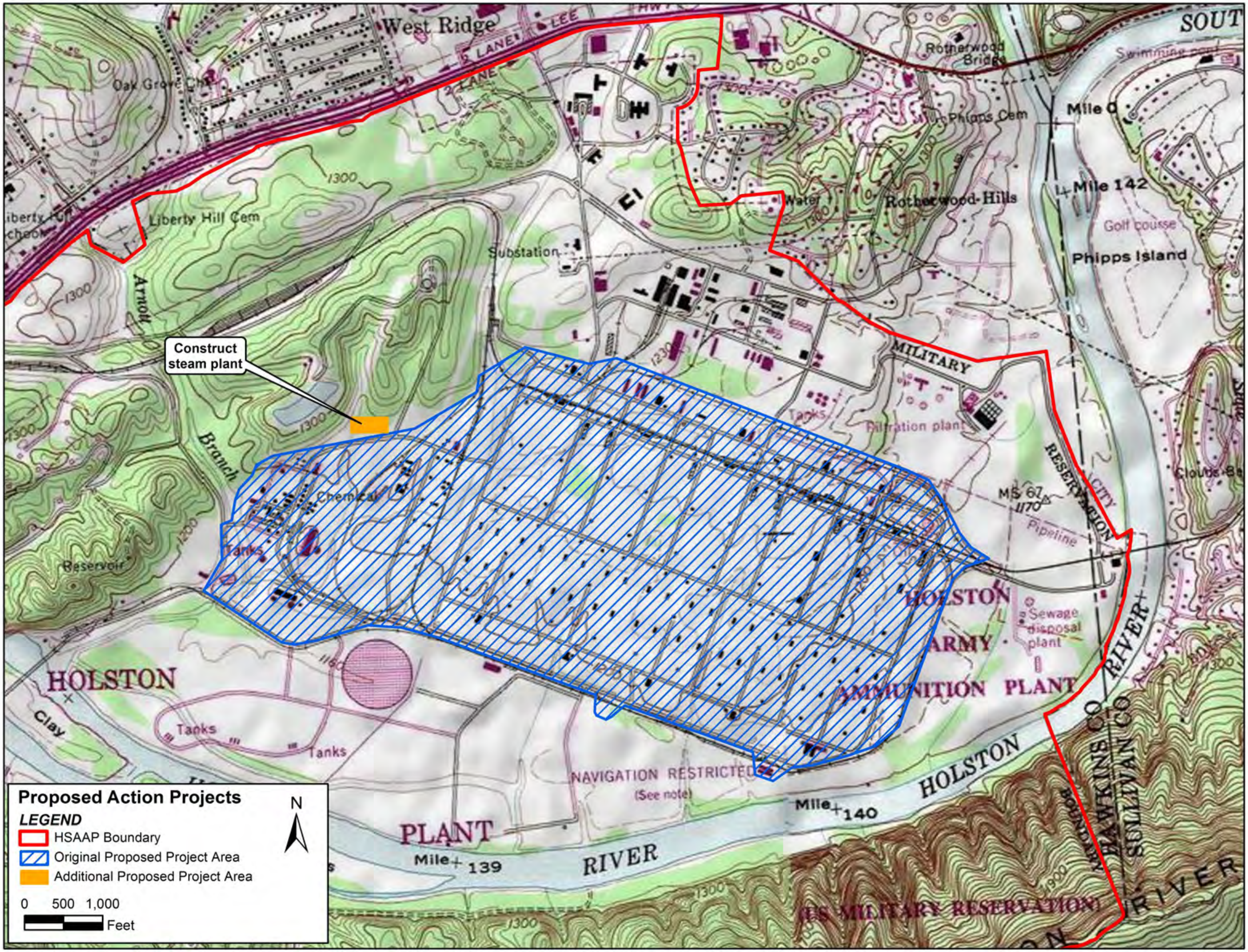
Consultation with the Tennessee State Historical Commission also is being initiated for this action. This and all actions that potentially affect cultural resources are covered under HSAAP's integrated cultural resources management plan, which outlines U.S. Army policies, procedures, and responsibilities 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 resource, Native American Graves Protection and Repatriation Act 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 advise 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.

Sincerely,

JOSEPH R. KENNEDY
Commander's Representative


Construct steam plant
Proposed Action Projects
LEGEND
HSAAP Boundary
Original Proposed Project Area
Additional Proposed Project Area
0 500 1,000
Feet
N
West Ridge
Oak Grove Ch
Liberty Hill Cem
Rotherwood Bridge
Phipps Cem
Rotherwood Hills
Substation
Phipps Island
Golf course
Mile 0
Mile 142
Military
Filtration plant
Tanks
Chemical
Reservoir
HOLSTON
ARMY
AMMUNITION PLANT
Sewage disposal plant
Pipeline
NAVIGATION RESTRICTED
(See note)
Mile 140
Mile 139
HOLSTON
RIVER
PLANT
HAWKINS CO
SULLIVAN CO
(US MILITARY RESERVATION)

DEPARTMENT OF THE ARMY
HOLSTON ARMY AMMUNITION PLANT
4509 WEST STONE DRIVE
KINGSPORT, TN 37660-1048

REPLY TO
ATTENTION OF:

November 1, 2017

Natural Resources Office

Eric Oosahwee-Voss
Tribal Historic Preservation Officer
United Keetoowah Band of Cherokee Indians in Oklahoma
P.O. Box 746
Tahlequah, OK 74465-0746

Dear Mr. Oosahwee-Voss:

The U.S. Army proposes to expand its production capacity of explosives at Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee. HSAAP is located in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing new facilities and renovating and demolishing existing facilities on the installation. All activities related to the proposed action will occur within the production area of Area B, an area that was heavily disturbed during construction of the installation in 1942. Construction is scheduled to start in March 2018. An environmental assessment of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA).

In accordance with Title 36 of the *Code of Federal Regulations* (CFR) Part 800, the National Historic Preservation Act, and NEPA, this letter is an invitation to initiate government-to-government consultation between the U.S. Army and the United Keetoowah Band of Cherokee Indians in Oklahoma to discuss any effects the proposed action might have on your tribe and/or its resources. The Army is inviting the United Keetoowah Band of Cherokee Indians in Oklahoma 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 survey of the installation in 1997, which resulted in the identification of nine prehistoric archaeological sites on the property. The proposed action will not impact any of the known archaeological sites as the site closest to any area of new construction is approximately 1,800 feet away. In addition, this archaeological site, as well as the remaining sites, are separated from all components of the proposed action by a chain link fence and are in areas inaccessible to personnel working on this project. Consultation with the Tennessee State Historical Commission also is 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 a meeting between you and your tribal council and/or cultural resource, Native American Graves Protection and Repatriation Act 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 advise 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.

Sincerely,

Joseph R Kennedy

JOSEPH R. KENNEDY
Commander's Representative

DEPARTMENT OF THE ARMY
Holston Army Ammunition Plant
4509 West Stone Drive
Kingsport, TN 37660

REPLY TO
ATTENTION OF

February 15, 2018

Natural Resources Office

Eric Oosahwee-Voss
Tribal Historic Preservation Officer
United Keetoowah Band of Cherokee Indians in Oklahoma
P.O. Box 746
Tahlequah, OK 74465-0746

Dear Mr. Oosahwee-Voss:

The U.S. Army proposes to expand its production capacity of explosives at Holston Army Ammunition Plant (HSAAP), in Kingsport, Tennessee. HSAAP is in Hawkins and Sullivan counties in the northeastern corner of the state. The action will entail constructing new facilities and renovating and demolishing existing facilities on the installation. Most activities related to the proposed action will occur within the production area of Area B, an area that was heavily disturbed during construction of the installation in 1942. One project, a new steam plant, will occur outside the production area and require ground disturbance and tree removal on about 4.5 acres of undisturbed land. Construction is scheduled to start in May 2018. An environmental assessment of the proposed action is being prepared pursuant to the requirements of the National Environmental Policy Act (NEPA).

In accordance with Title 36 of the *Code of Federal Regulations* (CFR) Part 800, the National Historic Preservation Act, and NEPA, this letter is an invitation to initiate government-to-government consultation between the U.S. Army and the United Keetoowah 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 United Keetoowah 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 completed a survey of the installation for archaeological sites in 1998 (*Phase I Historic Resources Survey in Portions of Plant B, Holston Army Ammunition Plant, Hawkins County, Tennessee*), during which nine prehistoric sites were identified that are potentially eligible for listing on the NRHP. The proposed action will not impact any of the known archaeological sites as the site closest to any area of new construction is approximately 1,800 feet away. In addition, this archaeological site, as well as the remaining sites, are separated from all components of the proposed action by a chain link fence and are in areas inaccessible to personnel working on this project. Consultation with the Tennessee State Historical Commission also is being initiated for

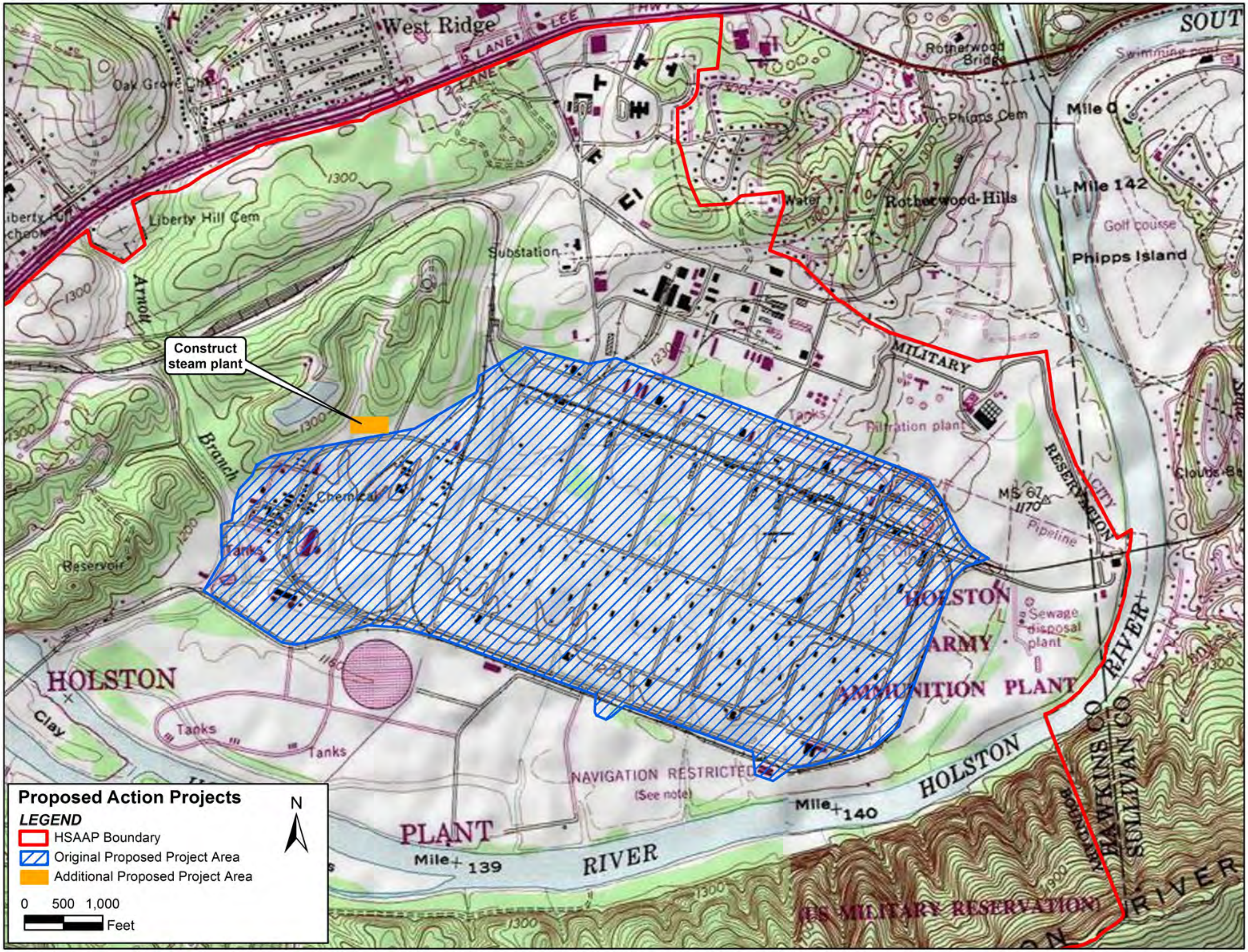
this action. This and all actions that potentially affect cultural resources are covered under HSAAP's integrated cultural resources management plan, which outlines U.S. Army policies, procedures, and responsibilities for meeting cultural resources compliance and management requirements on the facility.

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 resource, Native American Graves Protection and Repatriation Act 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 advise 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.

Sincerely,

JOSEPH R. KENNEDY
Commander's Representative


Construct
steam plant
Proposed Action Projects
LEGEND
HSAAP Boundary
Original Proposed Project Area
Additional Proposed Project Area
0 500 1,000
Feet
N
West Ridge
Oak Grove Ch
Liberty Hill Cem
Substation
Rotherwood Bridge
Phipps Cem
Rotherwood Hills
Mile 0
Mile 142
Golf course
Phipps Island
MILITARY
Filtration plant
Tanks
Chemical
Reservoir
Arnott
Branch
HOLSTON
Clay
Tanks
HOLSTON
ARMY
AMMUNITION PLANT
Sewage disposal plant
RESERVATION
Pipeline
NAVIGATION RESTRICTED
(See note)
Mile 140
HOLSTON
PLANT
Mile 139
RIVER
HAWKINS CO
SULLIVAN CO
(US MILITARY RESERVATION)
RIVER