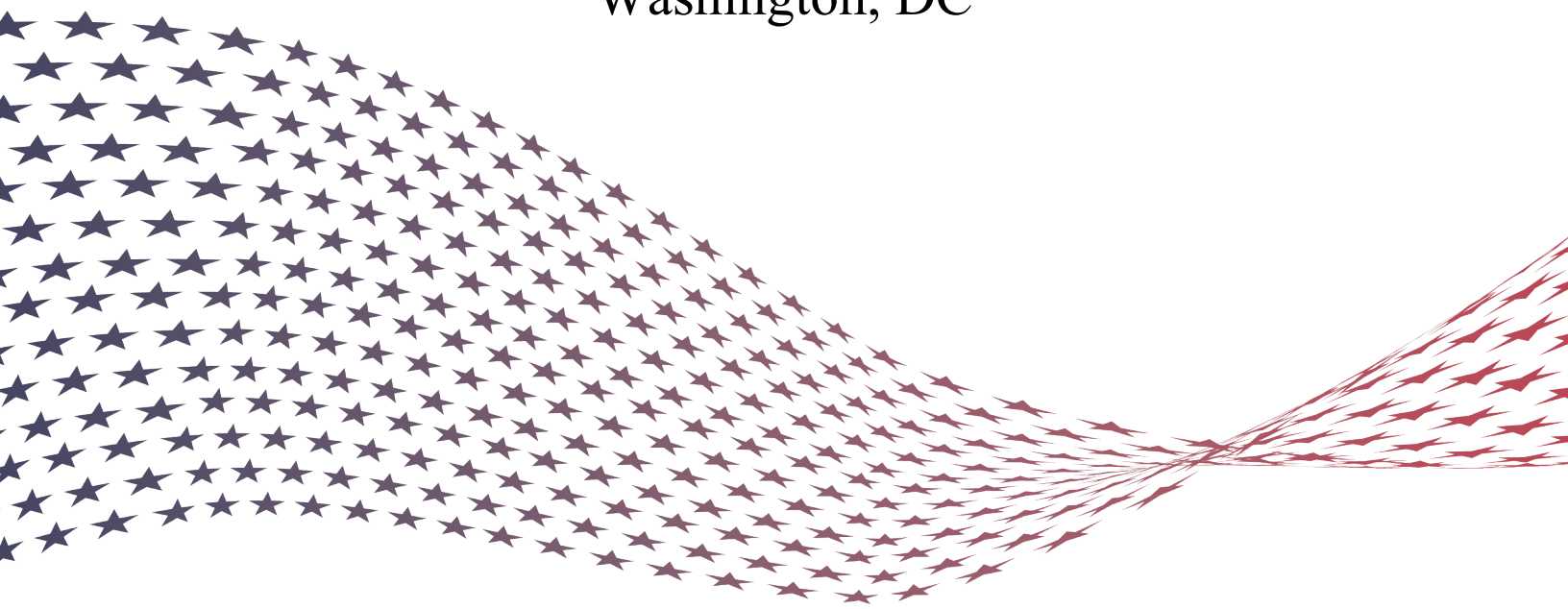
Construction to Support Initial Production of High-Purity Depleted Uranium Project

Supplemental Environmental Assessment

July 2026

U.S. Department of Energy
National Nuclear Security Administration
Washington, DC



It is certified by Brittany Lockhart, Assistant Deputy Administrator for Strategic Materials Production Modernization, with publication of this final document, that DOE/NNSA considered factors mandated by NEPA and represented a good-faith effort to prioritize documentation of the most important considerations within the congressionally mandated page limits and timeframe requirements; this Final EA reflects NNSA's expert judgment and any information left out was not substantive enough to meaningfully inform decision-making.

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LIST OF ACRONYMS

Acronym	Definition
AADT	annual average daily traffic
BMPs	Best Management Practices
BWXT	BWXT Ordnance Tennessee, Inc.
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DU	depleted uranium
EA	environmental assessment
FEMA	Federal Emergency Management Agency
FONSI	finding of no significant impact
HPDU	high-purity depleted uranium
LLC	Little Limestone Creek
LOD	limits of disturbance
MT	metric tons
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
NOG-J	Nuclear Operations Group – Jonesborough
ROW	right-of-way
SEA	supplemental environmental assessment
SWPPP	Stormwater Pollution Prevention Plan
TDEC	Tennessee Department of Environment and Conservation
U.S.	United States
TDOT	Tennessee Department of Transportation
USFWS	U.S. Fish and Wildlife Service
Y-12	Y-12 National Security Complex

1. INTRODUCTION

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the United States (U.S.) Department of Energy (DOE), has a primary responsibility to maintain and enhance the safety, security, and performance of the U.S. nuclear weapons stockpile.

In the *Environmental Assessment (EA) for Off-Site Depleted Uranium Manufacturing* (DOE/EA-2252), NNSA assessed potential environmental impacts related to high-purity depleted uranium (HPDU) manufacturing at commercial facilities in Oak Ridge, Tennessee and Jonesborough, Tennessee to supplement the depleted uranium (DU) operations at the Y-12 National Security Complex (Y-12). This EA included evaluation of the Aerojet Ordnance Tennessee facility located in Jonesborough, Tennessee, a facility acquired by BWXT Ordnance Tennessee, Inc. (BWXT) in January 2025 and now known as BWXT Nuclear Operations Group – Jonesborough (NOG-J) (Figure 1-1). DOE/EA-2252 was completed consistent with existing Council on Environmental Quality regulations at 40 Code of Federal Regulations (CFR) Sections 1500−1508 and DOE *National Environmental Policy Act (NEPA)* implementing regulations at 10 CFR Part 1021. DOE/EA-2252 resulted in a finding of no significant impact (FONSI), issued November 25, 2024.

BWXT already conducts DU metal operations for commercial and federal customers at NOG-J and is implementing a pilot-scale project (Project 1) at that location to produce 20 metric tons (MT) of HPDU metal per year. NNSA contracted BWXT on September 30, 2025, to provide HPDU production services, which BWXT is planning to do at NOG-J. NNSA has determined that increasing near-term production of HPDU metal by approximately 150 MT per year at BWXT NOG-J is necessary (Project 2) to fulfill its national security mandates and as such, upgrades to the existing facility and four collocated support structures are necessary.

During the progression of facility design for Projects 1 and 2, notable changes were made from the conceptual plans evaluated in DOE/EA-2252 to better protect worker health and improve worker safety during operations, and to integrate new information related to site infrastructure needs. Some of the original processes intended to be conducted within the existing Building 300 are now planned to occur in closely located standalone structures. After considering the existing analyses contained in DOE/EA-2252 and changes in HPDU metal production plans at BWXT NOG-J, NNSA determined that a supplemental environmental assessment (SEA) to DOE/EA-2252 was warranted to analyze the design changes and construction of four supporting structures near the existing process facility (Building 300). These supportive structures were found necessary to best protect worker health and safety as part of final design assessment and were not part of the design evaluated in DOE/EA-2252.

NNSA recently identified an additional need to produce 300 MT of HPDU metal per year in the future (Project 3). Project 3 is not considered in this SEA as construction and operational design for increased production has not progressed sufficiently far to analyze potential impacts to the human environment. Hence, a separate NEPA analysis will be performed in the future for Project 3.

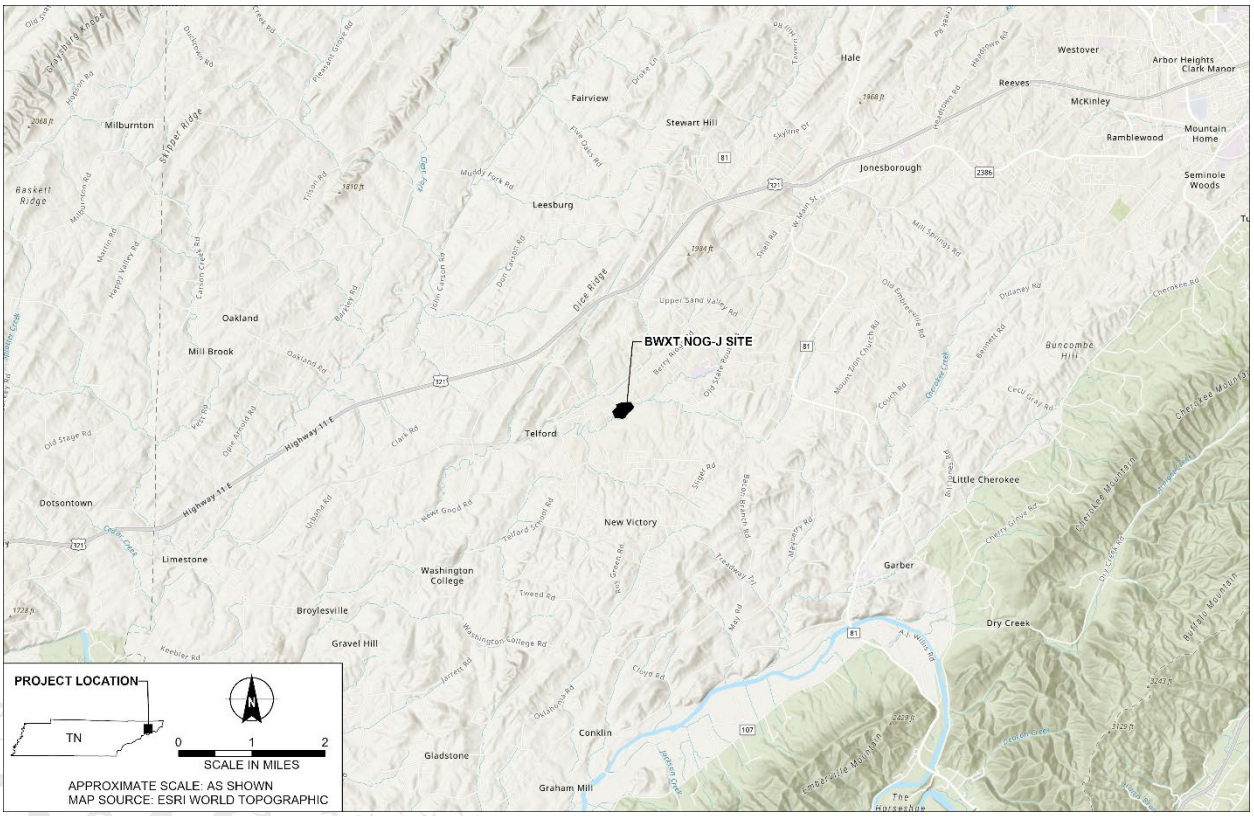

Figure 1-1. Location of BWXT NOG-J Site.

1.1 Purpose and Need

Y-12 is the lead manufacturing plant for DU and DU alloys, which are important strategic materials for ongoing and planned modernization of the nation's nuclear weapons stockpile. To accomplish the modernization mission, NNSA requires a sufficient supply of HPDU metal to feed these processes at Y-12. As Y-12 operations draw down NNSA stockpiles of HPDU metal, NNSA must establish a new source of HPDU metal to maintain future operations. The agency determined that contracting with a private company with existing depleted uranium capabilities would be more efficient and effective than standing up new production at an NNSA site and contracted with BWXT NOG-J to meet that need. Expansion of HPDU metal manufacturing at BWXT NOG-J is desirable because the facility: (1) has conducted pilot scale DU chemistry development onsite for several years; (2) currently maintains technical expertise on site; (3) maintains site and security infrastructure suitable for national security DU manufacturing; and (4) is located 100 miles east of Y-12, making transfer logistics feasible. Construction and facility upgrades are needed to support Project 2's proposed future production of 150 MT of HPDU metal per year.

2. DESCRIPTION OF MODIFIED ACTION

Section 2.2.3 of DOE/EA-2252 describes the existing onsite facilities for DU manufacturing and additional construction work anticipated for HPDU metal production at BWXT NOG-J, including interior and external modifications to the facility and site. This SEA provides additional details on facility upgrades and construction that are modified based on human health risk assessment and design clarifications or changes to support production that were not fully fleshed out in DOE/EA-2252.

Under the Modified Action, BWXT would construct support facilities as part of expanding HPDU metal production at BWXT NOG-J, located at 1367 Old State Route 34, Jonesborough, Tennessee. Figure 2-1 depicts the approximate footprint of the Modified Action within the existing BWXT NOG-J site boundaries. The current developed area at BWXT NOG-J occupies approximately 28 acres of land. The limits of disturbance (LOD) for construction of the Modified Action would be approximately 3.1 acres in total. Construction would be located entirely within the existing industrial and developed site. Site construction activities within the LOD acreage would include installation of erosion and sediment controls, soil excavation, filling and grading, erection of buildings and pipe bridge, installation of heavy-duty pavement, installation of concrete pads and a collection basin, and connection to existing or upgraded utilities. Figure 2-2 depicts the site plan for the new facilities and the LOD under the Modified Action.

Building 301 (two-story) would be constructed to support operational activities for Project 1's production of 20 MT of HPDU metal per year. In DOE/EA-2252, upgrades to existing Building 300 were proposed to house Project 1's operational activities. In assessing operational requirements of the hydrofluorination reactor, however, BWXT determined that worker health and safety was best served by relocating this operational process to a separate, standalone building. Building 301 would be one story, approximately 25 feet tall and an estimated 540 square feet. Air emission control devices associated with Buildings 300 and 301 operations require the construction of a 52-inch diameter discharge exhaust stack of 105 feet height located adjacent to Building 300, as an outdoor support structure.

Project 2 consists of construction of:

- Building 310 (±13,022 square feet footprint) and outdoor support structures (±2,948 square feet);
- Outdoor 311 Tank Farm (±2,972 square feet);
- Outdoor 312 Tank Farm (±2,200 square feet);
- Elevated pipe bridge;
- Heavy-duty pavement (±15,085 square feet);
- New electrical line connection; and
- New natural gas line connection.

A three-story facility, Building 310, would house a second hydrofluorination reactor and ancillary chemical processes, and would include outdoor support structures. Building 310 would

be 43.5 feet tall except for the fluid bed area, which is estimated at 56.75 feet tall, with a total footprint of approximately 13,022 square feet. The outdoor support structures would support chemical storage, emissions and waste treatment, and byproduct recovery associated with operations, with a total footprint of approximately 2,948 square feet for these structures. The outdoor support structures include construction of five above-ground, open air, 18- to 54-inch-thick reinforced concrete pads and one 30-inch-thick concrete collection basin. The concrete pads and the collection basin would also include 10-inch-thick containment walls. Air emission control devices associated with the Building 310 operations require the construction of a 32-inch diameter discharge exhaust stack of 105 feet height as part of the outdoor support structures.

The outdoor 311 Tank Farm (approximately 2,972 square feet footprint in total) would be constructed for chemical storage and would include the construction of two above-ground, open air, 18-inch-thick reinforced concrete pads with a 12-inch-thick containment wall. The 312 Tank Farm (approximately 2,200 square feet in total) would also be constructed for chemical storage with one above-ground, open air, reinforced concrete pad. The outdoor 312 Tank Farm would also include construction of two additional above-ground, open air concrete pads for other support structures including an air compressor, emergency generator, demineralization system, and cooling tower.

An elevated pipe bridge would be constructed to transport materials from Building 310 to 311/312 Tank Farm and to existing Building 300. Land disturbances would be associated with installation of the pipe bridge foundations, which would be constructed with 30-inch-thick concrete. The foundations range in footprint size (96 to 324 square feet) and the piping overall structure height also ranges (22 to 36 feet), depending on location.

Approximately 15,085 square feet of new heavy-duty asphalt pavement will be installed around Building 310 to support increased traffic for delivery and shipment of materials for future operational activities.

Site construction will also involve the installation of a new medium voltage electrical line (12.47 kilovolts) routed from a primary meter at the facility to a 2,500 kilovolt-ampere transformer and then to Building 310 (480 volts). The electrical line is expected to include overhead and underground sections of conveyance. Ground disturbances associated with electrical utility upgrades include installation of overhead utility poles and trench excavation for underground lines. Final electrical conveyance design and installation will be by the local electrical utility. Utility expansion will also include the installation of a new 3-inch diameter natural gas line from a connection point at Old Route 34, and the installation will be located within previously disturbed areas of the facility. The natural gas line is expected to include overhead (integrated with the elevated pipe bridge) and underground sections of conveyance. Ground disturbances associated with the natural gas utility upgrades include those associated with trench excavation for the section of underground line. Final design and layout of the natural gas line conveyance (underground) will be determined by the local utility and may vary from the depiction in Figure 2.2 and 2.3. No upgrades of water supply or sewer are anticipated for the Modified Action. Site infrastructure changes are further detailed in section 3.2.5.

Interior building construction would include installation of storage/feed tanks, process equipment, utility service and distribution, panels and lighting, plumbing, heating, ventilation, and air conditioning, instrumentation and controls, safety and emission control features, and piping relating to the operations housed within each building.

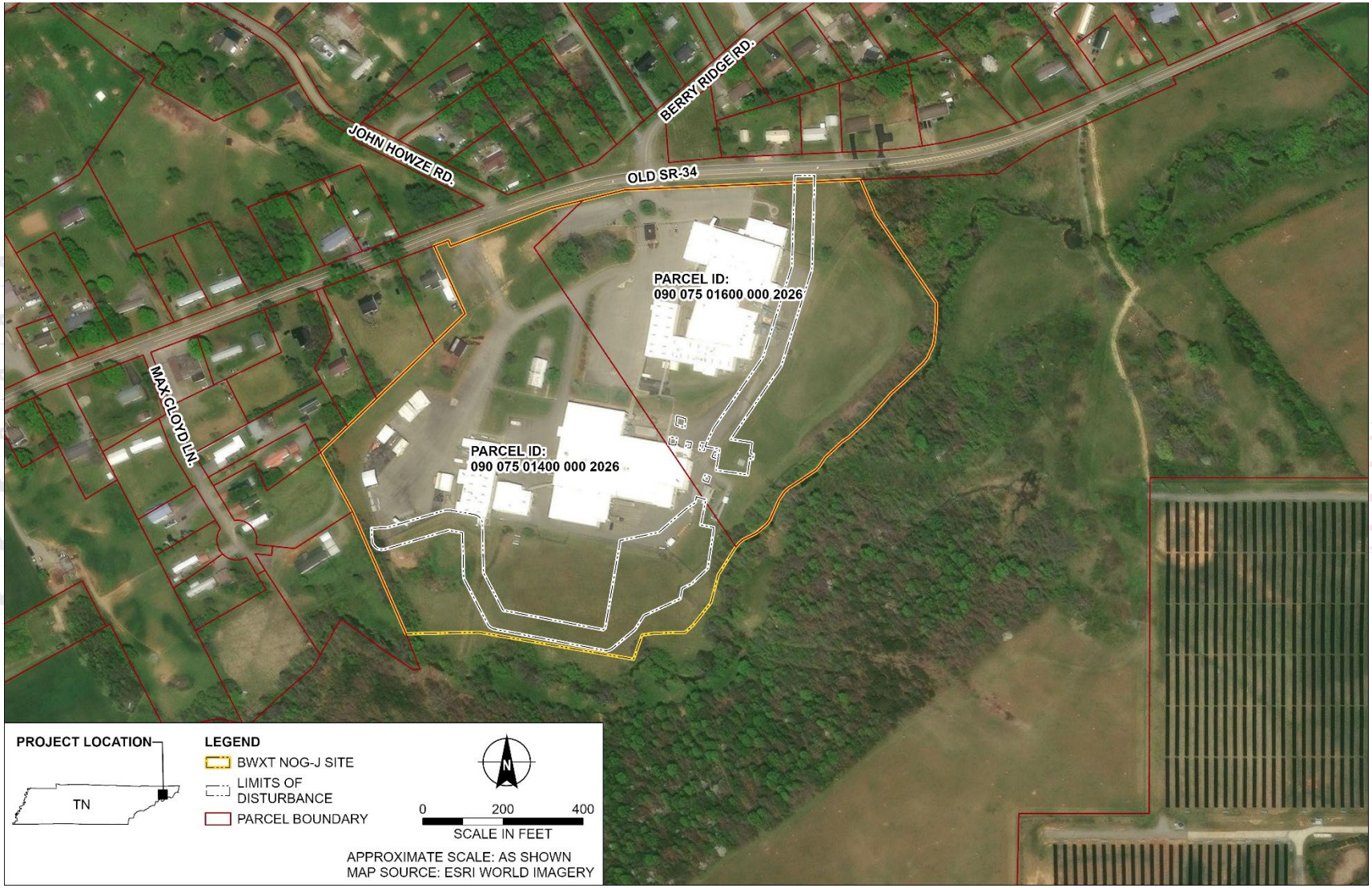

Figure 2-1. Approximate Project Footprint of the Modified Action.

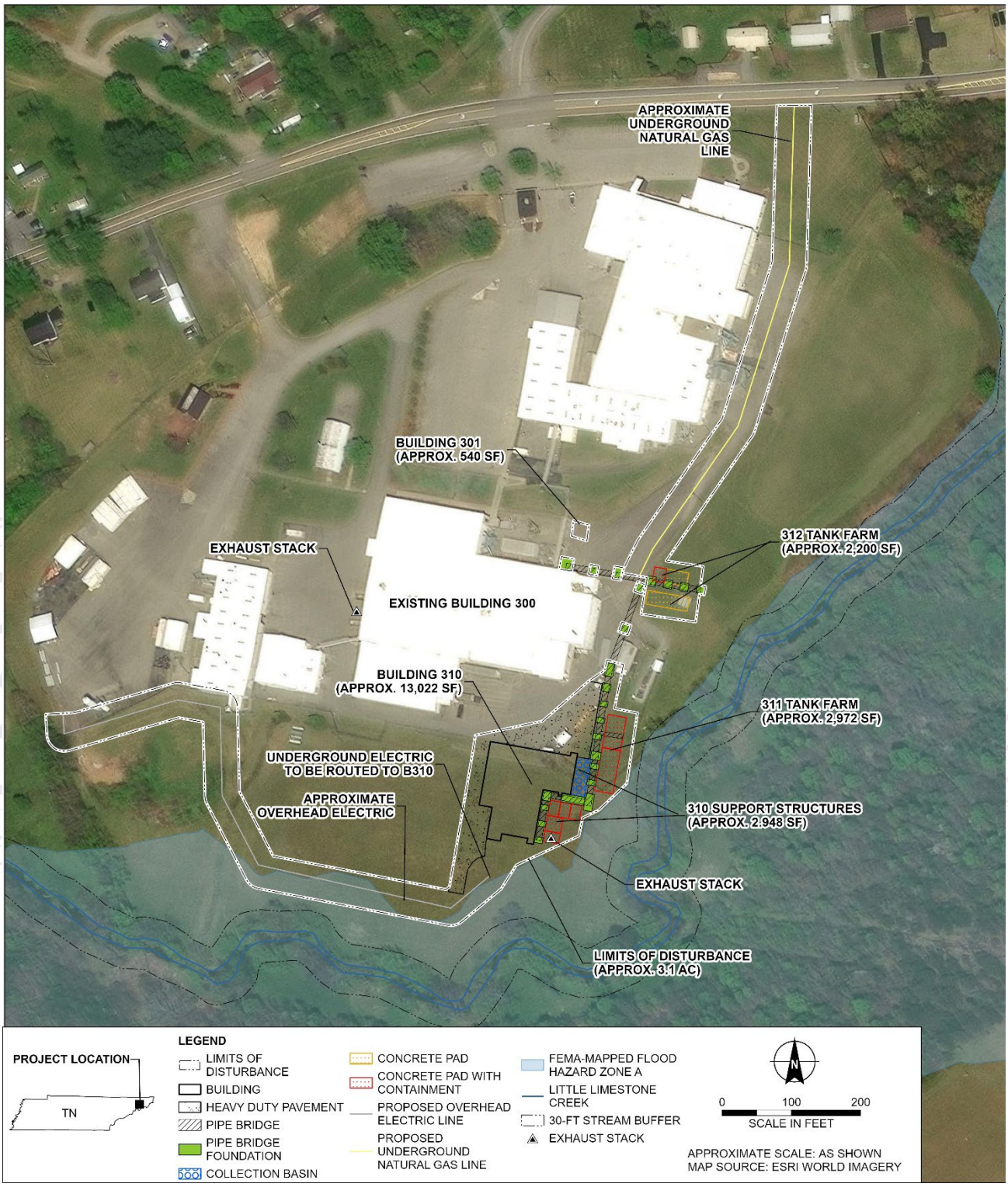

Figure 2-2. Facility Site Plan for the Modified Action

3. AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

Potential impacts from the construction of the combined 20 MT and 150 MT facilities in excess of the impacts assessed in DOE/EA-2252 are discussed herein. These potential impacts were considered in the context of the Modified Action and evaluated by context and intensity to determine significance. Table 3-1 lists the resources considered in the evaluation of the Modified Action.

Table 3-1. Resources Considered in the Evaluation for the Modified Action

Resource	May be Impacted by Construction Design Change (carry forward for analysis)	Present and Not Impacted (per DOE/EA-2252)
Land Use	X	
Visual	X	
Air Quality	X	
Noise		X
Water	X	
Geology and Soils		X
Biological	X	
Cultural		X
Socioeconomic		X
Health and Safety, Accidents, and Intentional Destructive Acts		X
Waste Management		X
Transportation	X	
Site Infrastructure	X	

Only resources present at BWXT NOG-J and which have the potential to be impacted as a result of the Modified Action above the analysis contained in DOE/EA-2252 are further assessed in this SEA. The following resources were determined to be sufficiently considered in DOE/EA-2252 and did not warrant further analyses:

3.1 Resources Present but Not Impacted

- **Noise** – The Modified Action would use similar construction equipment and at a similar scale to that previously reviewed. Construction activities would be temporary, be conducted primarily during daytime hours until building structures are in place, and contractor traffic would be consistent with the current multishift operations at the facility. Potential noise impacts were assessed by DOE/EA-2252 and the FONSI continues to be supported for the Modified Action.

- **Geology and Soils** – The location of the Modified Action is within the same property as previously assessed, so soil and geologic conditions are similar. Construction activities would also be similar in nature to those previously reviewed (e.g., near surface work for utility upgrades, building/equipment foundations, and grading, etc.), which may cause minor impacts to the existing geologic and soils conditions at the site. Required erosion and sediment controls would be used during construction to prevent potential impacts. Geology and soils were assessed within the current construction property by DOE/EA-2252, and the FONSI determination continues to be supported for the Modified Action.
- **Cultural Resources** – Construction activities of the Modified Action are similar in nature to and within the same site footprint of facilities previously reviewed. Unanticipated discoveries of archaeological materials during construction would be evaluated and mitigated, if needed. These resources were assessed within the current construction footprint by DOE/EA-2252, and the FONSI determination continues to be supported for the Modified Action.
- **Socioeconomic Resources** – The Modified Action would not result in impacts to regional economics that were not previously assessed. Impacts from construction activities, while largely positive, would be minimal and temporary. Construction would begin June/July 2026 and would require up to 50 workers on site during the construction period. Construction would expect to be completed in August 2027. The region of influence was assessed within the current construction footprint by DOE/EA-2252, and the FONSI determination continues to be supported for the Modified Action.
- **Health and Safety, Accidents, and Intentional Destructive Acts** – Health and safety would remain typical under construction industry standards for multi-story buildings and process equipment, as previously reviewed. Accident hazards are generally the same as previously considered. Design changes have been made by relocating some operational processes required for Project 1 to a standalone building (Building 301). BWXT has a strong safety culture and would prequalify subcontractors with good safety records for work on this site. Security measures (e.g., gates and fences), as previously reviewed, either already exist or would be replaced to reduce the likelihood of intentional destructive acts. The facility would maintain 24/7–365-day security operations throughout the construction period. This resource was assessed within the current construction footprint by DOE/EA-2252, and the FONSI determination continues to be supported for the Modified Action.
- **Waste Management** – Wastes generated and disposed of during construction of the Modified Action would be similar in nature and quantity to those vetted in DOE/EA-2252. Waste would be managed in accordance with Tennessee's Solid and Hazardous Waste Rules and existing permits. Wastes would be segregated, profiled, and disposed of from the site to appropriately permitted facilities in accordance with the waste characteristics on a routine basis to reduce inventory of wastes held at the site. No increase in waste amounts is anticipated by the Modified Action; waste management was assessed within the current construction footprint by DOE/EA-2252, and the FONSI determination continues to be supported for the Modified Action.

3.2 Analysis of Resources That May Be Impacted by Construction Design Change

3.2.1 Land Use

Section 3.2.1 of DOE/EA-2252 describes the current land use at BWXT NOG-J, which remains relevant for the Modified Action. The Modified Action would occur on previously disturbed land within the existing industrial and developed site footprint and conversion of undeveloped land would be negligible. Construction would disturb paved areas adjacent to existing industrial buildings and mowed and maintained lawn. Land disturbances from construction would be associated primarily with land clearing, filling and grading; and excavation activities which may expose and destabilize soils on site.

The Project identified in DOE/EA-2252 was not expected to exceed one acre of land disturbance. However, ground disturbance from construction of the Modified Action is expected to be approximately 3.1 acres in total. Washington County is designated as a Municipal Separate Storm Sewer System and a Qualified Local Program, which gives the County regulatory authority to issue permits directly through its own stormwater management program. Washington County regulates stormwater discharges for construction projects disturbing more than one acre of land through submission and approval of a land disturbance permit.

Washington County issued a land disturbance permit on March 23, 2026, which covers ground disturbances addressing initial facility design for Projects 1 and 2. Due to design change per the Modified Action, approximately 1.4 acres of the total 3.1 acres of the LOD is not covered by the current land disturbance permit, notably construction of portions of the electrical and natural gas utility corridors, Building 301, 312 Tank Farm, and ground disturbances associated with some of the pipe bridge foundations. However, site conditions are similar in nature (i.e., existing pavement, maintained lawn, and urban land soils) throughout the LOD and to those areas identified in DOE/EA-2252.

Consequently, BWXT is preparing a revised site plan and amended application for land disturbance permit for submission to Washington County. The associated construction stormwater pollution prevention plan (SWPPP) will include updated site evaluation, assessment, and planning, erosion and sediment control Best Management Practices (BMPs), good housekeeping BMPs, and maintenance and inspection procedures covered under the amended permit. While the Modified Action includes a slightly larger land footprint, implementation of BMPs and/or permit requirements supports a determination that the Modified Action is not likely to result in additional impacts to this resource.

3.2.2 Visual

Section 3.3.1 of DOE/EA-2252 provides a description of the current visual character and aesthetic quality of the area surrounding BWXT NOG-J, which remains relevant for the Modified Action. Figure 2-2 provides updated design information with the final locations of the facilities. The Modified Action would require temporary cranes and other heavy equipment for construction, and taller building and exhaust stacks which may be visible from various locations in the surrounding area. A visual assessment was conducted to define the existing visual setting of the BWXT NOG-J, inventory the existing visually sensitive resources within the vicinity of

the BWXT-NOG-J, classify the major Landscape Similarity Zones and user groups, and evaluate the potential visibility of the Modified Action and any likely visual impacts. The visual assessment used a 1-mile study area surrounding the proposed new facilities. Currently the site is characterized as heavy industrial with facilities consistent in size and height (i.e., buildings of 1-2 stories, 25 to 30 feet in height), housing administrative offices and facilities for conducting DU metal operations surrounded by paved lots and maintained lawn areas.

The Modified Action includes structures not assessed in DOE/EA-2252, including the three-story portion of Building 310 (56.75 feet tall) and the two discharge exhaust stacks (each 105 feet tall), which are taller than existing structures at BWXT NOG-J. The discharge stacks are relatively narrow, 32 to 52-inches in diameter at the top, limiting the overall visual impact.

Based on topographic screening alone, the viewshed analysis indicates the Modified Action would be potentially visible from approximately 65.9 percent of the 1.0-mile radius visual study area. When the screening effect of forest vegetation mapped in the National Land Cover Dataset is included, potential visibility of the Modified Action is reduced from 65.9 percent to 45.6 percent. Areas expected to have visibility based on the forest vegetation-screened viewshed analysis are limited primarily to open hillsides with unobstructed views toward BWXT NOG-J and road corridors in close proximity to BWXT NOG-J.

Modeling indicates that the existing buildings at BWXT NOG-J, including those addressed in DOE/EA-2252, are visible from approximately 35.2 percent of the 1.0-mile radius visual study area. The visibility of the Modified Action alone is 45.6 percent in the vegetation-screened model; approximately 12.8 percent is attributable solely to the discharge stacks. The combined visibility of the Modified Action and the existing BWXT NOG-J facilities is modeled at approximately 47.1 percent of the visual study area.

DOE/EA-2252 concluded BWXT NOG-J would remain visually consistent before and after construction, applying the Bureau of Land Management's Visual Resource Management Class IV for highly developed areas with major landscape modification. This visual classification aligns with the industrial zoning of the construction site. Structures proposed under the Modified Action are would not dominate views and are consistent with current site industrial characteristics.

The viewshed area was also considered by a field assessment in April 2026. During the field visit, views toward the Project site were documented with photographs and field notes from 30 representative viewpoints. Viewpoint locations generally include areas with open or unobstructed views toward BWXT NOG-J, visually sensitive resources, and areas of relatively high public use or visitation. Field verification confirmed that visibility of the existing BWXT NOG-J site is generally most pronounced within the Little Limestone Creek valley and surrounding hillsides. Outside of these areas, visibility is limited due to topographic variation, intervening vegetation, residences, and other built structures. Longer-distance views may occur to the northeast and southwest of the Modified Action site. Where visible, the existing BWXT NOG-J structures are typically seen at foreground/local distances by drivers, residents, and business employees. Views from local roadways are generally fleeting and are often partially screened or obscured by vegetation, topography, and existing development.

Siting the proposed facilities within and immediately adjacent to the existing BWXT NOG-J building infrastructure is considered a primary means of reducing perceived visual contrast and limiting changes to the existing visual character of the area. The structures proposed under the Modified Action would remain visually consistent with heavy industrial areas currently at the BWXT NOG-J site.

3.2.3 Air Quality

Section 3.4.1 of DOE/EA-2252 describes the current air quality conditions in the vicinity of BWXT NOG-J, which remains relevant for the Modified Action. As previously identified, additional buildings, paved areas, and infrastructure would be constructed with the Modified Action. Construction and operation of facilities which would generate future air emission sources through scrubbers and exhaust stacks requires an air construction permit through Tennessee Department of Environmental Compliance (TDEC) Air Pollution Control. This type of permit includes emission control system requirements.

Potential impacts to air quality from construction may vary from what was previously assessed, given the increase in anticipated land disturbances and slight increase in construction labor workforce (from 40 to 50 employees).

Construction would also require some local grading within the previously disturbed areas of the site. Construction emissions are anticipated to include:

- Vehicle emissions from 50 construction workers to and from the site; DOE/EA-2252 provided analysis for an anticipated 40 additional construction workers.
- Diesel vehicle emissions from heavy construction equipment and delivery vehicles.
- Diesel emissions from generator sets to provide power to construction workers until utility connections are made.
- Dust from grading, heavy equipment movement, and excavations.
- Building and constructing emissions including welding, grinding, and coating.

Each of these construction-related emissions sources were previously assessed in DOE/EA-2252, but with the modified design, some increase in emissions is anticipated. BMPs and permit conditions for air emissions during construction include dust mitigation techniques and wetting. Compliance with permit requirements specifically designed to prevent significant emissions impacts is mandated, and thus, construction and subsequent operation is unlikely to have significant impacts to air resources.

3.2.4 Water and Biological Resources

Section 3.6.1 and 3.8.1 of DOE/EA-2252 describe current conditions for water and biological resources located at BWXT NOG-J, and remains relevant for the Modified Action. The BWXT NOG-J site and area under the Modified Action is largely comprised of industrial buildings and paved surfaces, with areas of maintained lawn, providing limited habitat for terrestrial biological resources. Groundwater and surface water from the site generally flow south towards Little Limestone Creek (LLC). The state lists LLC as a 303[d] impaired waterbody and recreation use

is not permitted due to *Eschericha coli* (*E. coli*), nutrients, sedimentation and siltation, alterations in vegetation covers and channel substrate (TDEC, 2024). The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory maps a freshwater forested/shrub wetland associated with LLC and its riparian area near the southern boundary of BWXT NOG-J (USFWS, 2026). These resources may also provide supportive habitat to a variety of aquatic and animal species common to the region. Direct impacts to aquatic habitats and species (e.g., fish, macroinvertebrates, aquatic plants) from construction of the Modified Action are not proposed. Consistent with DOE/EA-2252, construction activities will not cross any aquatic habitats, and no surface or groundwater withdrawals are proposed. The larger disturbed land footprint and closer proximity to aquatic habitats associated with construction of the Modified Action, compared to those covered in DOE/EA-2252, may increase the potential for indirect impacts to aquatic habitats and species resulting from sedimentation and siltation or from dust accumulation. These indirect impacts can cause alterations to aquatic habitat structure, impaired foraging and behavioral changes of aquatic animals, and reductions in photosynthetic capabilities to aquatic plants.

Given the existing industrial activities occurring at the site, construction and subsequent operations under the Modified Action are not expected to impact or permanently disrupt significant wildlife travel corridors. Mobile wildlife species would likely avoid the site during construction and there would be temporary displacement of some local wildlife populations due to increases in noise and land clearing activities. No tree or brush clearing is proposed for construction activities that would disrupt potential migratory bird or bat habitat. The Modified Action also includes erection of buildings and the exhaust stacks not previously identified in DOE/EA-2252, which may result in a collision risk for avian and bat species. Construction of these structures would include implementation of collision avoidance and minimization measures, such as reducing artificial nighttime lighting or installing “bird-friendly” lighting (e.g., motion-sensor lights or flashing lights with appropriate flash rates) if lighting is necessary (USFWS, 2024). Permanent external modifications at the site would be increased by approximately 2 acres and include larger vegetated lawn areas than detailed in DOE/EA-2252. Terrestrial species may use the vegetated lawn areas to travel between more suitable habitats. Additionally, avian and bat species may use forested areas directly adjacent to the site and may pass over the site.

As described in section 3.1 of this SEA, construction activities for the Modified Action would follow procedures in the SWPPP designed to protect aquatic and terrestrial resources from indirect impacts, and would adhere to the Washington County land disturbance permit. LLC is the receiving waterbody for potential stormwater runoff from land-disturbing activities. The primary potential source of stormwater contamination would be erosion of exposed soils during construction, entraining sediment in storm water runoff, and dust accumulation from construction equipment. Section 3.6.2 of DOE/EA-2252 describes the general use of BMPs to minimize the potential for stormwater pollution. However, given the Modified Action proposes increased overall land disturbance and changes in excavation and grading extents at BWXT NOG-J that were not addressed in DOE/EA-2252, more specific erosion prevention and sediment controls have been designed in the SWPPP to control site runoff from a 5-year, 24-hour storm. Implementation of BMPs as documented in the SWPPP include:

- Wire-backed silt fence will be installed and maintained along the downslope of the construction limits to prevent siltation and sedimentation into LLC.
- Vegetation will not be disturbed more than 15 days prior to excavating activities.
- Temporary stabilization measures, including silt fence and temporary seeding. Permanent stabilization measures include permanent seeding and mulching.
- Slopes are not to exceed 2:1.
- Muddy water to be pumped from excavation and work areas will be held in settling basins, filtered, or chemically treated prior to its discharge into surface waters. Discharge water must be conveyed through an approved stormwater treatment facility such as a well-grassed or lined channel, or other equivalent means so that the discharge does not cause erosion and sedimentation. Discharge water must not cause an objectionable color contrast with the receiving stream.
- When all construction activity is complete and the site is stabilized, filter sock/silt fences and other temporary controls will be removed.

Fugitive dust from construction activities will be managed consistent with mitigation measures described in DOE/EA-2252 to prevent dust accumulation in nearby terrestrial and aquatic habitats. Construction will not occur within the riparian buffer of LLC. Additionally, the riparian buffer of LLC will be protected from indirect impacts of adjacent land disturbances through the implementation of erosion and sediment controls as described above.

Floodplain management, governed by Executive Order 11988 (1977) and DOE's 10 CFR Part 1022, requires federal agencies to avoid adverse impacts on floodplains to the extent practical. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps panels 47179C0145D and 47179C0235D, a 100-year floodplain (Zone A) hazard area is located along the southern and eastern edge of the proposed LOD (FEMA, 2026), see Figure 2.2. DOE/EA-2252 describes no direct or indirect impacts to floodplains resulting from construction. Direct or indirect disturbances to a floodplain from land clearing, erosion, and sedimentation can disrupt the floodplain's ability to store water, filter sediments, and support biodiversity.

No permanent facilities or structures would be built within this floodplain zone under the Modified Action. Approximately 0.22 acre of the floodplain would be temporarily impacted by ground disturbance due to installation of the new electrical line (including trench excavation), staging construction and electrical equipment in the construction right-of-way (ROW) and installation of overhead electric poles. The portion of the floodplain that would be temporarily impacted by the electrical utility corridor construction is located in a maintained lawn area of the BWXT NOG-J site. After installation of the electric line disturbed areas in the floodplain would be restored to pre-existing conditions.

Given the implementation of permit-based land management requirements and the Modified Action design that avoids locating permanent structures in the floodplain, no significant adverse impact to water or biological resources is likely.

3.2.5 Site Infrastructure and Transportation

Site infrastructure for BWXT NOG-J, including electricity, natural gas and fuel, water, and wastewater, are described in section 3.14.1 of DOE/EA-2252. Future operational activities

associated with production of 150 MT of HPDU metal per year within Buildings 300 and 310 would require a new electrical line routed from the primary meter of the existing facility to Building 310, which was not described in DOE/EA-2252. Design and construction by the local utility would likely include installation of an overhead electrical line with permanent utility poles, and underground electrical line. A 50-foot-wide construction ROW would be used for installation of the utility corridor to accommodate temporary construction and electrical equipment. The overhead power line height would be approximately 30 feet high. Construction for the underground sections would require trench excavations and installation of an electrical transformer to tie-in to building infrastructure. The underground line would be installed with minimum cover in accordance with National Electrical Code Table 300.50, as determined by system voltage, installation conditions, and raceway type; typically 30 inches below finished grade.

The Modified Action would require a new 3-inch diameter natural gas line (approximately 1,250 feet in total) routed from a connection point at Old State Route 34 to Buildings 300 and 310. Impacts from this infrastructure change was not assessed in DOE/EA-2252. Design and construction by the local utility would likely include installation of an underground section of natural gas line (approximately 734 feet) from the road to the elevated pipe bridge where it would be installed overhead to Buildings 300 and 310. Construction will also include installation of a metering system adjacent to Building 300 with isolation valves along the line. The new natural gas line would be installed within previously disturbed industrial and maintained lawn areas and would be routed to avoid impacting an existing internment cell located in the northeast portion of the site (TDEC, 2026). Final design layout and construction of new utility upgrades will be engineered and carried out by local utilities.

Construction activities for the Modified Action would require minimal water consumption, approximately 2,000 gallons per day from the existing public water supply, primarily for dust control and cleaning of the site. No upgrade of site water supply or sewers is anticipated. New site infrastructure demands for electricity, natural gas, and water are anticipated to be negligible compared to the supply in the region, and construction equipment and commuting vehicles would be fueled off-site.

Existing transportation routes for construction personnel and non-hazardous material deliveries/shipments would likely include access from interstate and intrastate highways such as I-81 (west) and US-26 (east). Collector roads to BWXT NOG-J that are open to the public and allow through-truck traffic include SR-354 (Boones Creek Road), SR-381 (N State of Franklin Road), US-11E (John Exum Parkway/Andrew Johnson Highway), US-321/US-11E (Jackson Boulevard), Persimmon Ridge Road, SR-81 (W Main Street), and SR-353 (Old State Route 34).

Table 3-2 depicts the annual average daily traffic (AADT) on collector roads proximate to BWXT NOG-J [Tennessee Department of Transportation (TDOT), 2025]. In the vicinity of the BWXT NOG-J, local roads have traffic speeds between 20 and 45 miles per hour. Construction identified in the Modified Action would adhere to through-truck prohibitions and established truck routes through the Town of Jonesborough, and TDOT weight and size restrictions for roads and bridges along the transportation route (TDOT, 2026).

Construction of new buildings, pavement, and outdoor structures with concrete pads and foundations as proposed under the Modified Action is expected to result in increased traffic and transportation conditions that have not been assessed in section 3.13.2 of DOE/EA-2252, which anticipated construction to add approximately 40 vehicles to daily traffic counts in the area.

Increased traffic to the site includes commutes of construction workers, delivery of materials, and heavy equipment delivery. It is anticipated that the majority of heavy construction equipment would be kept onsite during construction and would not require daily trips. Table 3-3 depicts the estimated number of trucks and non-hazardous deliveries expected during the construction period, which would vary based on the specific construction activity. Additional traffic during construction has been estimated to include 100 personal vehicle trips per day for 50 construction workers and a maximum of 16 (eight round trip) non-hazardous truck deliveries per day. This would account for an approximately 0.4 (Jackson Boulevard) to 6 percent (Old State Route 34) increase in the 2025 AADT counts on the collector roads to BWXT NOG-J.

Given the adherence to through-truck restrictions and the number of collector roads and current volume of traffic, the Modified Action would not have a significant impact on transportation in the vicinity of BWXT NOG-J.

Table 3-2. Annual Average Daily Traffic Counts on Collector Roads for the Modified Action

Road	2023	2024	2025
Boones Creek Road (North of Jonesborough)	10,217	10,217	9,368
N State of Franklin Road (Johnson City)	18,034	28,584	27,799
John Exum Parkway (North Johnson City)	23,976	22,404	22,861
Andrew Johnson Highway (near Greene County line)	12,454	14,172	13,622
Andrew Johnson Highway (north of Midway)	16,339	19,072	18,736
Jackson Boulevard (Jonesborough)	31,528	31,961	30,454
Persimmon Ridge Road	3,412	3,412	4,122
W Main Street (southwest of Jonesborough)	9,827	11,075	10,594
Old State Route 34 (towards Telford)	2,117	2,272	2,302
Old State Route 34 (towards Jonesborough)	2,055	1,839	1,863

Table 3-3. Estimated Number of Non-Hazardous Truck Deliveries During Construction for the Modified Action

Activity	Construction Duration (days)	Estimated Total # Trucks/ Deliveries	#/Day
Temporary Facilities	79	75	0.9494
Phase 1 Site	194	262	1.3505
Phase 2 Site	105	285	2.7143
311 – Process Trestle	151	135	0.894
310 – Reactor Building	172	404	2.3488
		Maximum Total:	8.257

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