FINAL

ENVIRONMENTAL ASSESSMENT FOR A RADIATION FACILITY AT THE LITTLE MOUNTAIN TEST FACILITY, HILL AIR FORCE BASE, UTAH

Department of the Air Force
75th Air Base Wing

EA Unique Identification Number
EAXX-007-25-000-1736848104

April 2025

Privacy Advisory

This Draft Environmental Assessment (EA) has been provided for public comment in accordance with the National Environmental Policy Act (NEPA) and 32 Code of Federal Regulations (CFR) Part 989, *Environmental Impact Analysis Process (EIAP)*, which provides an opportunity for public input on United States Department of the Air Force (DAF) decision making, allows the public to offer input on alternative ways for DAF to accomplish what it is proposing, and solicits comments on DAF's analysis of environmental effects.

Public input allows DAF to make better-informed decisions. Letters or other written or verbal comments provided may be published in this EA. Providing personal information is voluntary. Private addresses will be compiled to develop a stakeholder inventory. However, only the names of the individuals making comments and specific comments will be disclosed. Personal information, home addresses, telephone numbers, and email addresses will not be published in this EA.

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This EA has been verified to be compliant with the 75-page limit, not including appendices, required by 42 United States Code 4336a(e)(2). A page means 500 words and does not include maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information.

The DAF is aware that the President of the United States has issued Executive Order (EO) 14154, *Unleashing American Energy*, which revoked EO 11991, which amended EO 11514. The Council on Environmental Quality has provided notice that it intends to rescind its NEPA regulations.

Cover Sheet

Final Environmental Assessment for a Radiation Facility at the Little Mountain Test Facility, Hill Air Force Base, Utah

a. Lead Agency: Department of the Air Force (DAF); 75th Air Base Wing

b. Cooperating Agency: None

c. Affected Location: Little Mountain Test Facility (LMTF), Hill Air Force Base (AFB), Utah

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e. Designation: Final Environmental Assessment (EA; EAXX-007-25-000-1736848104)

f. Public Comment Period End Date: 15 April 2025

Abstract: This EA has been prepared pursuant to the provisions of the National Environmental Policy Act, Title 42 United States Code §§ 4321 to 4347, implemented by 32 Code of Federal Regulations Part 989, *Environmental Impact Analysis Process*. The LMTF conducts environmental testing in support of multiple government agencies and programs. The current configuration at LMTF consists of multiple buildings in which testing is conducted. As a result of growth, planned test equipment upgrades, and increased demand, there is a requirement for a new test facility. The purpose of the Proposed Action is to support an increase in demand for nuclear hardness simulation testing and planned test equipment upgrades associated with the Sentinel Program. The Sentinel Program is a full recapitalization of the Minuteman III Intercontinental Ballistic Missile weapons system. A fully functional and operational facility is needed at LMTF to provide space for the unique test equipment and personnel required to meet mission requirements for future nuclear hardness testing.

The Proposed Action would construct an approximately 50,000-square-foot facility and associated perimeter road for the funded Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt neutron generator, and self-shielded irradiators. The self-shielded irradiators at LMTF would be relocated to the new building to centralize testing functions. The new facility would include radiation effects laboratories, loading docks, support areas for material storage and dosimetry testing, a conference room, and personnel offices. The facility would meet a 50-year minimum life cycle, provide test and evaluation environment that meet testing requirements for proposed weapon systems, accommodate required staff to operate and maintain the laboratory, and construct the facility consistent with the DAF building requirements. A 12-foot-wide perimeter road would be constructed around the radiation facility to provide access to the exterior of the building and allow for maintenance and snow removal. The new building at LMTF would be constructed as soon as feasible to meet mission requirements.

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LIST OF ACRONYMS AND ABBREVIATIONS

75 ABW	75th Air Base Wing
75 CEG/CEIE	75th Civil Engineer Group/Environmental Branch
°F	degrees Fahrenheit
$K	thousand dollars
µg/m^3	micrograms per cubic meter
ACAM	Air Conformity Applicability Model
ACM	asbestos-containing material
AFB	Air Force Base
AFMAN	Air Force Manual
AICP	American Institute Certified Planner
APE	area of potential effect
AQCR	Air Quality Control Region
ARES	Advanced Radiation Environment Simulator
ARPA	Archaeological Resources Protection Act
AST	aboveground storage tank
BMP	best management practice
CAA	Clean Air Act
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
DAF	Department of the Air Force
dBA	A-weighted decibel
DoD	Department of Defense
DoDI	Department of Defense Instruction
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act

ESOHC	Environmental Safety and Health Council
FONSI	Finding of No Significant Impact
GAA	general access area
GHG	greenhouse gas
GISP	Geographic Information Systems Professional
GWP	global warming potential
HAZMAT	hazardous materials
ICBM	Intercontinental Ballistic Missile
IPaC	Information for Planning and Consultation
LBP	lead-based paint
LMTF	Little Mountain Test Facility
MeV	mega-electron volt
mg/m^3	milligrams per cubic meter
mton	metric ton
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NH_3	ammonia
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NO_x	oxides of nitrogen
NRHP	National Register of Historic Places
NWF	Northern Wasatch Front
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PCB	polychlorinated biphenyl
$PM_{2.5}$	particulate matter, 2.5 microns or less
PM_{10}	particulate matter, 10 microns or less
POLs	petroleum, oils, and lubricants
ppm	parts per million
PSD	Prevention of Significant Deterioration

ROI	Region of Influence
SFXR	Small Flash X-Ray
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	oxides of sulfur
SS	steady state
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
UDEQ	Utah Department of Environmental Quality
US	United States
USC	United States Code
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound
WFRC	Wasatch Front Regional Council

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1.0 PURPOSE OF AND NEED FOR THE ACTION

1.1 Introduction

The 75th Air Base Wing (75 ABW) at Hill Air Force Base (AFB) prepared this Draft Environmental Assessment (EA) to evaluate the proposed construction and operation of a radiation facility at the Little Mountain Test Facility (LMTF). Procedurally, this EA was developed in compliance with the National Environmental Policy Act (NEPA), as amended by Public Law 118-5, Fiscal Responsibility Act of 2023 (42 United States Code [USC] 4321 et seq.) and the Department of the Air Force's (DAF's) *Environmental Impact Analysis Process* (32 Code of Federal Regulations [CFR] 989).

The LMTF is a state-of-the-art test facility. It is an Air Force Materiel Command laboratory dedicated to simulation testing of nuclear hardness, survivability, reliability, and electromagnetic compatibility of defense systems. The Air Force Nuclear Weapons Center test laboratories at the LMTF simulate environments for nuclear radiation, air blast, shock and vibration, electromagnetic pulse, electromagnetic interference, and compatibility testing. It is owned by the DAF and operated and maintained by defense contractors.

Nuclear hardness testing subjects military materials and components to ionizing radiation, electromagnetic pulses, shock waves, neutron radiation, and vibrations to evaluate survivability under wartime conditions. Aging surveillance testing evaluates the effects of aging on various components of missile systems. The LMTF has facilities and equipment to conduct these tests on military materials and components.

1.2 Location

The 1,000-acre LMTF is located approximately 25 miles west of Ogden, Utah (**Figure 1-1**), near the Great Salt Lake. LMTF is in a remote area next to Little Mountain. The LMTF is surrounded by hills on the west, east, and south, and by a mudflat of the Great Salt Lake to the north, with the Great Salt Lake to the south. The nearest community is West Warren, Utah, located about 5 miles to the east. The LMTF is surrounded by approximately 700 acres of DAF-owned land.

1.3 Purpose for the Action

The purpose of the Proposed Action is to support an increase in demand for nuclear hardness simulation testing and planned test equipment upgrades associated with the Sentinel Program. The Sentinel Program is a full recapitalization of the Minuteman III Intercontinental Ballistic Missile (ICBM) weapons system. The Sentinel Program's mission is to deliver the next generation of ICBM nuclear deterrence for the United States (US).

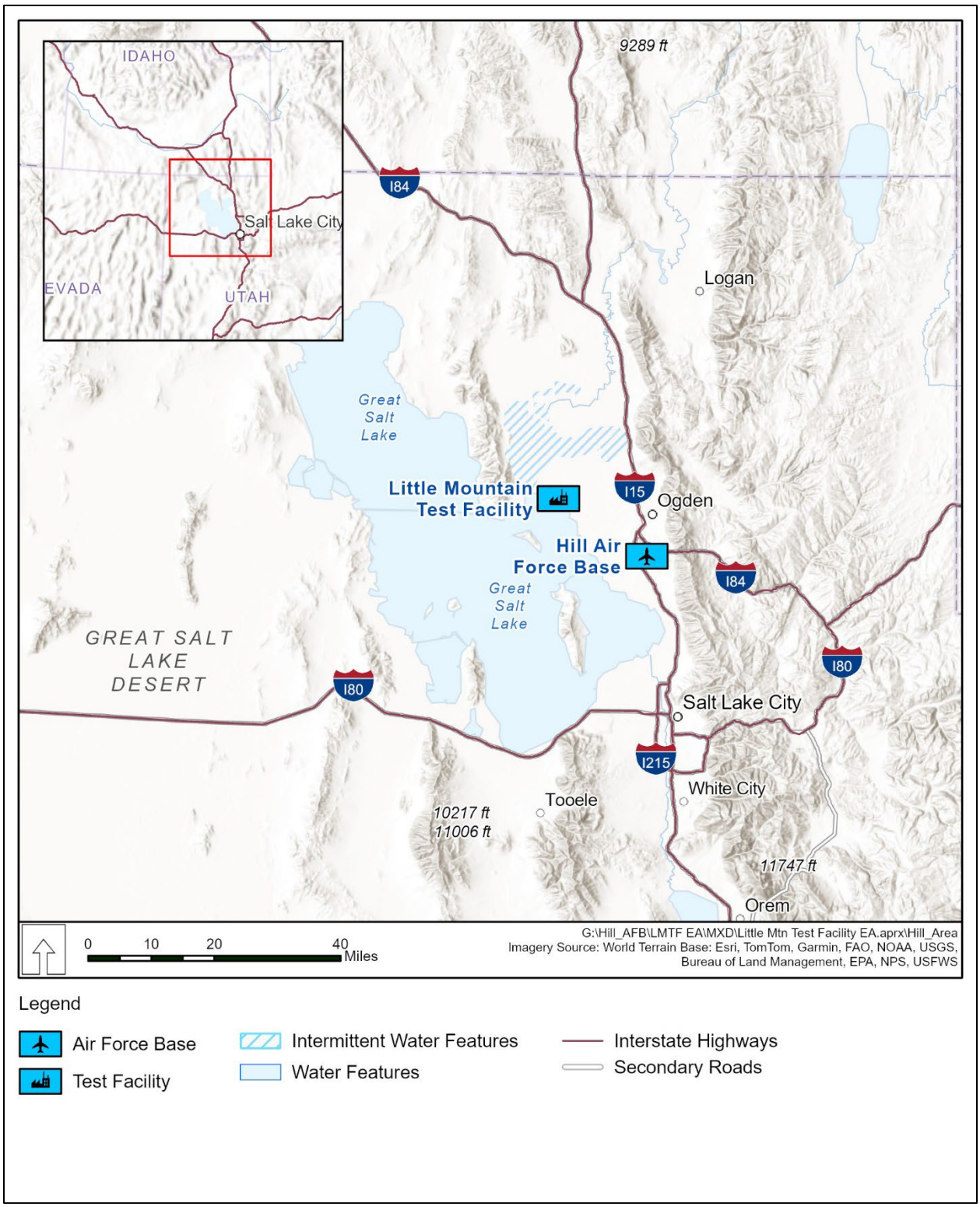

Figure 1-1. Location of the Little Mountain Test Facility and Hill Air Force Base

1.4 Need for the Action

A fully functional and operational facility is needed at LMTF to provide space for the unique test equipment and personnel to meet future mission requirements for nuclear hardness testing. A new facility would have a 50-year minimum life-cycle requirement and provide a test and evaluation environment that would meet testing requirements for planned weapons systems, accommodate required staff to operate and maintain the laboratory, and construct the facility consistent with DAF building requirements.

1.5 Interagency and Intergovernmental Coordination and Consultations

1.5.1 Interagency Coordination and Consultations

Scoping is an early and open process for developing the breadth of issues to be addressed in the EA and for identifying significant concerns related to a Proposed Action. Per the requirements of the Intergovernmental Cooperation Act of 1968 (42 USC § 4231[a]) and EO 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416, federal, state, and local agencies with jurisdictions that could be affected by the Proposed Action were notified during the development of this EA.

Appendix A provides a list of stakeholders consulted during this analysis and copies of example or relevant correspondence.

1.5.2 Government-to-Government Consultations

Consistent with the National Historic Preservation Act's (NHPA's) implementing regulations (36 CFR Part 800) and Department of Defense Instruction (DoDI) 4710.02, *DoD Interactions with Federally-Recognized Tribes*; Department of the Air Force Instruction (DAFI) 90-2002, *Air Force Interaction with Federally Recognized Tribes*; and Department of the Air Force Manual 32-7003, *Environmental Conservation*, the 75 ABW is consulting with federally recognized tribes who have a documented interest in DAF lands and activities, regarding the Proposed Action's potential to affect lands and activities with cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA or the interagency coordination process, and it requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Installation Tribal Liaison Officer for Hill AFB for tribal consultations is the Chief, Environmental Branch.

Appendix B identifies the government-to-government consultation conducted during this analysis and provides copies of or examples of relevant correspondence.

1.5.3 Other Agency Consultations

Compliance with Section 7 of the Endangered Species Act (ESA) and Section 106 of the NHPA is conducted through coordination and consultation with the US Fish and Wildlife Service (USFWS) and the Utah State Historic Preservation Office (SHPO), respectively. Consultation letters and responses are included in **Appendix C.**

1.6 Public Participation

A Notice of Availability (NOA) of the Draft EA and proposed Finding of No Significant Impact (FONSI) was published in the *Standard Examiner* announcing the availability of the Draft EA for review. Publication of the NOA initiated the 30-day Draft EA public and agency review period, which ended on 15 April 2025.

Copies of the Draft EA and FONSI were made available online for review for 30 days from the date of publication of the NOA at https://www.hill.af.mil/Home/Environmental and at the Weber County Library Main Branch, 2464 Jefferson Avenue, Ogden, Utah 84401.

Those unable to access these documents online were asked to call Public Affairs at (801) 777-5201 to arrange alternative access.

No substantive public comments were received during the public and agency review period. During the public review period, the Northern Arapahoe Tribe made a no adverse effect on historic properties determination (**Appendix B**). A NOA of the Final EA and signed FONSI will be published in the *Standard Examiner* and online.

1.7 Decision to Be Made

The EA evaluates whether the Proposed Action would result in significant impacts on the human or natural environment. Based on the analysis in this EA, the 75 ABW will make one of three decisions regarding the Proposed Action: 1) determine the potential environmental consequences associated with the Proposed Action are not significant and sign a FONSI, 2) initiate preparation of an Environmental Impact Statement if it is determined that significant impacts would occur from the implementation of the Proposed Action and alternatives, or 3) select the No Action Alternative, whereby the Proposed Action would not be implemented. As required by NEPA and its implementing regulations, the preparation of an environmental document must precede final decisions regarding the proposed project and be available to inform decision makers of the potential environmental impacts.

This EA, prepared in accordance with NEPA, analyzes the potential environmental consequences associated with the construction of a new radiation facility at LMTF. NEPA ensures that environmental information, including the potential environmental consequences of a proposed action, is available to the public, federal, and state agencies, and the decision maker before decisions are made and actions are taken.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Proposed Action Alternative

The Proposed Action would construct a new 50,000-square-foot facility providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators are currently located at an existing facility at LMTF (**Figure 2-1**). Under the Proposed Action, the self-shielded irradiators would be relocated to the new building to centralize testing functions. Both the relocation of the self-shielded irradiators and the new SFXR would be required to support expanded testing requirements. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF.

The new facility would be entirely climate controlled and include radiation effects laboratories, loading docks, support areas for material storage and dosimetry testing, a conference room, and personnel offices in support of the new testing capabilities planned at LMTF. The proposed single-story building would consist of an administrative wing attached to a high bay wing containing the test cells and other workspaces (**Table 2-1**). The laboratory area would include a receiving area with a loading dock to accommodate forklifts and delivery trucks and sufficient circulation space for testing operations. Overhead bridge cranes would be installed throughout the high bay area. The proposed architectural design character and use of materials would be modern but consistent with the existing character of the buildings on the LMTF campus and within the design standards for Hill AFB. Walls and ceiling would be constructed to shield personnel, civilians, and the environment (e.g., passing wildlife) from the radiation generated by the equipment, using a combination of methods that would include concrete (in-place and modular), earth barriers, and proper standoff distances. A 12-foot-wide perimeter road would be constructed around the radiation facility to provide access to the exterior of the building and allow for maintenance and snow removal. Existing vehicle parking at the LMTF is adequate to support the proposed radiation facility, and no new parking is proposed.

Table 2-1. Proposed Action Construction Components

Proposed Project Component	Functional Use	Area (square feet)
New Facility Administrative Wing	Private and Administrative Offices; Open Workstations; Meeting Room; Break Room; Work Room for Printing; and IT/Telecom Support	10,335
New Facility High Bay Wing	Laboratory Testing; Delivery and Receiving Areas; Materials Storage	39,665
Perimeter Road	Access to the Loading Dock and Around the Facility	12,200
	Total	**62,200**

Figure 2-1. Location of the Proposed Radiation Facility

The proposed facility would be part of the LMTF, with security, camera control, and radiation safety monitoring to ensure safety and security are maintained. The proposed facility would be constructed with a single open-storage vault-type room and a general access area (GAA) for administrative support for the facility. Dedicated access control and intrusion detection systems would be provided for both the GAA and the open-storage areas. These systems would separately support the general access and open-storage areas. The GAA systems would predominately control and monitor entrances for the GAA.

An open-storage vault would include most of the facility outside of the administrative office spaces near the main entrance of the building. Spaces within the open-storage vault would include laboratories and their respective support spaces, as well as flex space that includes the loading dock and storage area, conference room, and restrooms. This area would not include full motion detection coverage for the interior volume; instead, it would protect engineered openings with motion detection coverage. Access control would also be provided for both the boundary as well as select doors within the boundary to restrict access at the discretion of the program.

The Proposed Action would require an additional 30 personnel who would support testing operations at the proposed radiation facility. The facility would be constructed with boilers and appropriate heating, ventilation, and air conditioning infrastructure to ensure climate control. A backup emergency generator and associated fuel tank would support the facility. The Proposed Action would include the construction and use of an approximately 28,000-gallon aboveground storage tank (AST) for dielectric oil (not fuel) to support the ARES. The AST would be used to support ARES maintenance, as the oil is within the equipment, but is drained into the AST for temporary oil storage during ARES maintenance. The ARES would have a reclamation system that captures, weighs, filters and reuses the dielectric oil.

2.2 No Action Alternative

Under the No Action Alternative, the DAF would not construct a new radiation facility at the LMTF. The DAF and contractor personnel would continue to use existing space and would not have the new equipment and testing capability to support the anticipated increased testing operations. The existing self-shielded irradiators would continue to be maintained/operated on the site rather than being relocated to the new building. Under the No Action Alternative, the LMTF would not have the needed new capabilities to support modernized weapon systems (e.g., recapitalized ICBM systems).

The No Action Alternative would not meet the purpose and need. However, analysis of the No Action Alternative provides a benchmark, enabling decision makers to compare the magnitude of the potential environmental effects of the Proposed Action; therefore, the No Action Alternative is carried forward for analysis in this EA.

2.3 Selection Standards for Project Alternatives

The NEPA regulations mandate the consideration of reasonable alternatives for the Proposed Action. “Reasonable alternatives” are those that would meet the purpose of and need for the

Proposed Action. Per the DAF EIAP regulations (32 CFR Part 989), selection standards are used to identify alternatives that meet the purpose of and need for the Proposed Action. Selection standards enable the 75 ABW to critically evaluate whether all reasonable alternatives are included in the analysis. The following selection standards were applied to all the Proposed Action alternatives:

A) **Mission Support Siting** – Alternatives must be located at the LMTF to ensure adjacency of mission functions and operations for nuclear hardness simulation testing consolidated at one secure facility. A radiation facility to support the testing requirements for the Sentinel Program is only functional if it is proximate to existing testing facilities and personnel.

B) **Compatibility with Existing Land Use Plans and Infrastructure** – Alternatives must be compatible with, and use to the greatest extent practicable, existing infrastructure, such as roadways; parking; electrical, water, and sewer utilities; and communications. A radiation facility to support hardness simulation testing could be constructed only at a location with adequate existing infrastructure to ensure it would be fully functional and operational.

C) **Schedule** – Alternatives must provide adequate facility space as soon as feasible to meet mission needs. The future nuclear hardness simulation testing must be available in a timely manner to support the mission requirements of the Sentinel Program.

D) **Capacity** – Alternatives must consider space utilization to meet the existing and future needs for testing operations at LMTF. Alternatives must efficiently support specific mission functions utilizing specialized test equipment as well as potential long-term maintenance and repair costs to manage outdated or underutilized facilities.

The 75 ABW considered various alternatives for supporting the nuclear hardness simulation testing requirements. Those action alternatives are described in **Sections 2.4** through **2.6.**

2.4 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

Under Alternative 1, the DAF would construct a 50,000-square-foot radiation facility as described by the Proposed Action (**Figure 2-2**). The main entrance to the radiation facility would be on the north side of the new building. The radiation facility would be constructed with thick concrete walls and ceiling to lower the photon energy of the machines, mitigating both skyshine and scattering of ionizing radiation. Exterior retaining walls would be erected adjacent to the hillslope on the south side of the proposed building to provide vehicular access all around the building for service, maintenance, and snow removal. This would reduce the cost of the structural support for the building itself, as it would not be required to retain the earth of the adjacent hillslope. As a result, control of access around the back and sides of the building, as well as on the roof, would be maintained and monitored during testing for safety purposes. A radiation safety monitoring program has been implemented at LMTF to address these types of concerns.

Figure 2-2. Location of Alternative 1. New Radiation Facility at the Little Mountain Test Facility

Under Alternative 1, approximately 25,000 cubic yards of soil excavated from the hillslope for the radiation facility construction would either be reused within the footprint of the radiation facility for recontouring of the adjacent slopes and/or be trucked to the Weber County Class VI Construction and Demolition Landfill, located on West 900 South, approximately 0.5 mile from the LMTF access control gate.

2.5 Alternative 2: Renovation of an Existing Facility at the Little Mountain Test Facility

Under Alternative 2, the DAF would renovate an existing facility at LMTF to support nuclear hardness testing requirements. An existing facility would be updated, and additional square footage that would include a new high bay test cell would be added to the existing renovated facility. The renovated facility would require thick concrete walls in the test cells for the necessary horizontal and vertical shielding.

2.6 Alternative 3: New Radiation Facility at Hill Air Force Base

Under Alternative 3, the DAF would construct a new 50,000-square-foot radiation facility as described by the Proposed Action at Hill AFB. There is very limited vacant developable land at Hill AFB, and construction of a new facility would only be possible following the demolition of one or more existing facilities that no longer meet mission requirements.

2.7 Alternatives Eliminated

Table 2-2 compares the alternatives that were identified as potentially meeting the purpose of and need for the Proposed Action and whether each would meet the selection standards presented in **Section 2.3.** Green indicates that the alternative would meet the requirements for that selection standard; red indicates that the selection standard under consideration would not be met.

Table 2-2. Screening of the Alternatives

Alternative Descriptions	Selection Standards				Meets the Purpose and Need
	Mission Support Siting	Compatibility with Existing Land Use Plans and Infrastructure	Schedule	Capacity	
	A	B	C	D	
Alternative 1: New Radiation Facility at the LMTF	Yes	Yes	Yes	Yes	Yes
Alternative 2: Renovation of an Existing Facility at the LMTF	Yes	No	Yes	No	No

Alternative Descriptions	Selection Standards				Meets the Purpose and Need
	Mission Support Siting	Compatibility with Existing Land Use Plans and Infrastructure	Schedule	Capacity	
	A	B	C	D	
Alternative 3: New Radiation Facility at Hill AFB	No	No	No	No	No

LMTF – Little Mountain Test Facility; **AFB** – Air Force Base

Of the reasonable alternatives considered, one action alternative (Alternative 1) and the No Action Alternative are carried forward for further analysis in this EA. The alternatives considered but eliminated from further analysis are described in **Sections 2.7.1** through **2.7.2.**

2.7.1 Alternative 2: Renovation of an Existing Facility at the Little Mountain Test Facility

Alternative 2 was eliminated from further consideration because modifying an existing facility at LMTF would have the disadvantages of attempting to update an older structure with aging infrastructure, known asbestos-containing and lead-containing materials requiring remediation upon disturbance, and various space limitations. No existing facilities at LMTF can accommodate the space and functional requirements for the proposed test equipment and personnel. Therefore, extensive renovations would be required to meet the space and functional requirements and would likely result in a greater construction cost than a designed-to-suit new facility. The renovation of an existing facility would require the existing walls and floors to be modified to provide shielding to lower the photon energy of the machines and escaping ionizing radiation. Additionally, the foundation of a selected existing facility would likely need to be modified to support the weight of the new machines. The renovation of an existing facility would not be compatible with existing infrastructure, as any modified existing infrastructure would require nearly complete demolition before renovation could begin. Further, Alternative 2 would not increase the capacity for the testing mission at LMTF by maintaining existing testing and support facilities while constructing a new radiation facility. Therefore, Alternative 2 does not meet Selection Standards B and D and does not meet the purpose and need.

2.7.2 Alternative 3: New Radiation Facility at Hill Air Force Base

Alternative 3 was eliminated from further consideration because of the distance between LMTF and Hill AFB, the lack of the associated mission functions at Hill AFB, and the lack of developable space for a new facility at Hill AFB. A radiation facility is only useful for supporting the nuclear hardness testing mission if the facility is proximate to other laboratories and testing

equipment and associated highly trained personnel at LMTF. Further, LMTF provides the necessary security and monitoring for this highly specialized testing environment. Hill AFB lacks compatible security and monitoring support. Therefore, Alternative 3 does not meet any of the selection standards and would not meet the Proposed Action's purpose and need as it would not be sited in a location that provides adequate mission support, is not compatible with the land use plans at Hill AFB, would not be compatible with the security and safety monitoring systems in place at Hill AFB, could not be constructed in a reasonable timeframe to meet the Sentinel Program's mission needs because of the extensive planning required at Hill AFB to identify appropriate building(s) to be demolished to make space for the construction of a new radiation facility, and would not be reasonably possible due to a lack of available developable space at Hill AFB. Alternative 3 does not meet the purpose and need.

2.8 Permits, Licenses, and Other Authorizations

The Proposed Action would involve new facility construction and testing operations. To implement the Proposed Action, the following permits and authorizations would be required:

- General Construction Permit
- Stormwater Permit
- Title V Air Permit Modification
- Hazardous Waste Permit Modification
- Radioactive Material Permit Modification

These permits and authorizations are discussed in Chapter 3.

2.9 Comparison of Environmental Consequences by Alternative

The potential impacts associated with the Proposed Action and No Action Alternative are summarized in **Table 2-3**. The summary is based on information discussed in detail in **Chapter 3** of the EA and includes a concise definition of the issues addressed and the potential environmental consequences associated with each alternative action.

Table 2-3. Summary of Potential Environmental Impacts

Resource	Alternative 1	No Action Alternative
Land Use	There would be long-term, negligible, beneficial impacts on land use. Undeveloped land in the LMTF would be permanently developed as a radiation facility. However, the development of undeveloped lands would be compatible with the LMTF designated land uses.	There would be no new development of a radiation facility. Therefore, there would be no impact on land use.
Noise	There would be minor, short-term impacts from noise during the construction of the radiation facility. There would be an increase in ambient noise levels within the LMTF during construction, but increased noise would not extend beyond the LMTF boundaries. Noise from operations of the radiation facility would	There would be no construction or operational noise because the radiation facility would not be constructed at the LMTF.

Resource	Alternative 1	No Action Alternative
	be minimal and would not exceed noise levels from similar testing operations at other LMTF facilities.	
Air Quality and Greenhouse Gases	There would be minor, short-term and long-term impacts on air quality. There would be an increase in criteria pollutant emissions due to construction activities, but the increase would be minor and localized and would end with the completion of construction activities. Similarly, proposed new combustion equipment (e.g., boilers, generators) and additional personnel commuting daily to the newly constructed radiation facility would generate longer-term emissions, but the impacts on air quality would not be significant. The net change in greenhouse gas emissions (CO_2e) from the Proposed Action would be well below the insignificance indicator (threshold) and would therefore considered to be insignificant on a global scale.	There would be no construction or operational emissions because the radiation facility would not be constructed at the LMTF. There would be no change to existing air quality.
Soils and Topography	There would be short-term and long-term, minor, adverse impacts on soils and topography from the construction of the radiation facility. Approximately 1.4 acres of soils would be disturbed as a result of construction, but best management practices would be implemented to minimize erosion of disturbed soils from stormwater runoff. Increased impermeable surfaces could permanently increase surface soil erosion during stormwater runoff. The local topography of the LMTF would be altered by the construction of the radiation facility.	There would be no impacts on soils or topography as the radiation facility would not be constructed.
Water Resources	Short-term and long-term, minor, adverse impacts on surface water resources would occur from soil disturbance and potential transport of hazardous materials into surface water and groundwater during construction activities. The Hill AFB Integrated Stormwater Management Plan requirements would be followed to minimize these potential impacts. Increased impervious surfaces following construction of the radiation facility could increase the stormwater runoff potential and increase sediment discharge into surface water during precipitation events.	There would be no impacts on water resources as there would be no construction or operation of a radiation facility.
Biological Resources	There would be short-term, negligible, adverse impacts on vegetation and wildlife at the LMTF from the construction of the radiation facility due to the loss of 1.4 acres of primarily nonnative grassland habitat. There are no federally listed species on the LMTF. The proposed threatened monarch butterfly could be present at the LMTF during migration. However, the construction and operation of the radiation facility at the LMTF would not disturb habitat that supports monarch butterflies and would be unlikely to directly	There would be no impacts on vegetation, wildlife, or the monarch butterfly because there would be no construction activities at the LMTF.

Resource	Alternative 1	No Action Alternative
	affect any monarch butterflies, as there are no suitable flowering plants on the site.	
Cultural Resources	The APE falls within the Little Mountain Test Annex Historic District (the District). The proposed project would impact two to three lampposts which have been determined as contributing elements to the District. However, these have been previously modified and the lamppost removal would not impact the overall historic character of the District; therefore, the action would have no adverse effect. The construction of a new radiation facility would be designed to match the look and feel and maintain the function of the District. Neither viewshed nor auditory characteristics were contributing elements to the District; therefore, the construction of the new facility would not result in adverse effects on the District.	There would be no impacts on cultural resources because there would be no construction or operation of a new radiation facility at the LMTF. There would be no ground-disturbing activities, nor would there be any change to the viewshed within the District.
Transportation	Construction activities would have short-term, minor, adverse impacts on transportation from increased vehicle traffic on West 900 South. These impacts would end when construction activities end. The radiation facility operations would have long-term, moderate, adverse impacts on transportation from an increase in approximately 30 personnel commuting to the LMTF daily.	There would be no impacts on local roadway use or at the LMTF access control gate because there would be no construction and operation of a radiation facility.
Hazardous Materials and Wastes, Environmental Restoration Program, and Toxic Substances	There would be short-term, negligible, adverse impacts on hazardous materials and wastes used and generated during construction activities. Only the minimally required quantities of hazardous materials would be used during construction and facility operations. All hazardous wastes generated would be disposed of properly and in accordance with federal, state, and local regulations. There would be no impacts on Environmental Restoration Program sites or toxic substances.	There would be no impacts on hazardous materials and wastes, Environmental Restoration Program sites, or toxic substances because there would be no construction of a radiation facility.
Socioeconomics	There would be short-term and long-term, negligible, beneficial impacts on socioeconomics. There would be short-term beneficial impacts from expenditures associated with the construction of the radiation facility. There would be long-term beneficial impacts from the employment of approximately 30 additional personnel, with an annual expenditure in the region of approximately $4.5 million annually.	There would be no impacts on socioeconomics as there would be no expenditures associated with construction activities and no additional employment of personnel at the LMTF.
Health and Safety	There would be short-term, negligible, adverse impacts on health and safety as a result of the construction of the radiation facility. However, all construction personnel would be responsible for following federal and state safety regulations and would be required to conduct construction activities in a manner that does not increase risk to workers, military personnel, or the public. Because safety of	There would be no health and safety impacts as there would be no risks associated with construction activities or increased risk associated with testing operations.

Resource	Alternative 1	No Action Alternative
	personnel performing testing activities at the LMTF would follow existing health and safety procedures and would be paramount to operations, there would not be any long-term impacts on health and safety from the testing operations at the radiation facility.	

LMTF – Little Mountain Test Facility; **CO_2e** – carbon dioxide equivalents; **AFB** – Air Force Base

FORMAT PAGE

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the environment potentially affected by the Proposed Action and presents an analysis of potential environmental consequences of the Proposed Action and No Action Alternative for the implementation of the Proposed Action. NEPA requires that the analysis address those areas and the components of the environment with the potential to be affected; locations and resources with no potential to be affected need not be analyzed in detail. The existing conditions of each relevant environmental resource are described to give the public and agency decision makers a meaningful point from which to compare potential future environmental, social, and economic effects. Definitions of all resources are provided in **Appendix D**.

The criteria for evaluating impacts and assumptions for the analyses are presented for each resource area. Evaluation criteria for potential impacts were obtained from standard criteria; federal, state, or local agency guidelines and requirements; and/or legislative criteria. Impacts may be direct or indirect and are described in terms of type and degree, which is consistent with the NEPA regulations. “Direct effects” are caused by an action and occur at the same time and place as the action. “Indirect effects” are caused by the action and occur later in time or are farther removed from the place of impact but are reasonably foreseeable. “Cumulative effects” result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. “Beneficial effects” cause a positive change in the condition or appearance of the resource, or a change that moves the resource toward a desired condition. “Adverse effects” cause a change that moves the resource away from a desired condition, or detracts from its appearance or condition.

3.1 Environmental Resource Areas Not Carried Forward for Detailed Analysis

The DAF determined that the Proposed Action would not have the potential for direct, indirect, or cumulative impacts associated with the proposed demolition and construction of facilities at LMTF on the following resource areas. Therefore, these have not been carried forward for detailed analysis in this EA.

Airspace Management. There would be no changes or modifications to airspace, flight activities, or aircraft training activities as a result of the Proposed Action. The Proposed Action would not change the flight patterns for aircraft at an airfield or in special use airspace used for training activities as there is not an aircraft training or operations mission at LMTF. Therefore, there would be no impacts on airspace management as a result of the Proposed Action.

Geology. The Proposed Action would not change or be impacted by the geology at LMTF. The proposed LMTF construction would potentially disturb surface soils and the topography of a hillslope through grading, contouring, and construction. Soils and topography are analyzed in **Section 3.7.** The underlying geology would not be disturbed. Therefore, there would be no impacts on geology as a result of the Proposed Action.

Infrastructure. The Proposed Action would not substantially change the requirements for existing electrical, natural gas, potable water, wastewater, communications, or solid waste management systems at the LMTF. Short-term utility interruptions could occur as electric, water, sewer, gas, and communication lines are connected to the radiation facility from existing sources on the LMTF, but any temporary disruptions would be scheduled to ensure consistency of testing operations at the LMTF. The additional approximately 30 personnel and radiation facility operations would be adequately supported by the existing available communication, electrical, potable water, wastewater, and solid waste infrastructure at the LMTF.

3.2 Analyzed Resources and Regions of Influence

The expected geographic scope of potential environmental consequences is referred to as the region of influence (ROI). The ROI boundaries vary depending on the nature of each resource (**Table 3-1**). For example, the ROI for some resources, such as air quality, extends over a large jurisdiction unique to that resource.

Table 3-1. Region of Influence for the Proposed Action by Resource

Resource	Region of Influence
Land Use	LMTF
Noise	LMTF
Air Quality and Greenhouse Gases	Wasatch Front Intrastate Air Quality Control Region
Soils and Topography	LMTF
Water Resources	LMTF
Biological Resources	LMTF
Cultural Resources	LMTF
Transportation	LMTF
Hazardous Materials and Wastes, ERP, and Toxic Substances	LMTF
Socioeconomics	Weber County, Utah
Health and Safety	LMTF

LMTF – Little Mountain Test Facility; **ERP** – Environmental Restoration Program

3.3 Reasonably Foreseeable Future Actions

Table 3-2 provides a list of the reasonably foreseeable future actions that could interact with the Proposed Action and were considered when evaluating potential cumulative impacts of the action alternatives.

Table 3-2. Reasonably Foreseeable Future Actions

Project	Project Summary	Anticipated Implementation Date	Relationship to Proposed Action
Relevant Hill Air Force Base and Little Mountain Test Facility Future Actions			
Falcon Hill Project	Northrop Grumman Headquarters at Aerospace Research Park	Winter 2025	Air Quality and Socioeconomics
Hill AFB 5G Technology	Test and experiment with 5G Technology	Winter 2025	Socioeconomics
Hill AFB Enhanced Use Lease Gate	State of Utah Enhanced Use Lease at Hill AFB	Winter 2025	Air Quality, Transportation, and Socioeconomics
Propellant Loading Facility	Build a Propellant Loading Facility at LMTF	Summer 2026	Air Quality, Transportation, and Socioeconomics
Other Public Agency and Private Future Actions			
Utah Department of Transportation	Widen West 900 South to three lanes toward LMFT	Fall 2029	Transportation, Water Resources, and Socioeconomics
Union Pacific Railroad	Add third rail line for the Union Pacific Railroad south of the LMTF	Fall 2029	Transportation, Water Resources, and Socioeconomics
Utah Wildlife Resources Management	Preserve and renovate wetlands from the Great Salt Lake toward LMTF	Winter 2025	Biological and Water Resources
West Weber Project Area	9,000-acre industrial/ commercial development area	Fall 2024 through 2029	Air Quality, Noise, Transportation, Water Resources, and Socioeconomics
Weber County Solar Farm	Land near LMTF is proposed to be used for a solar array	Fall 2026	Air Quality, Noise, Transportation, Water Resources, and Socioeconomics

AFB – Air Force Base; **LMTF** – Little Mountain Test Facility; **5G** – fifth generation cellular network technology

3.4 Land Use

See **Appendix D-1** for the definition of the resource.

3.4.1 Affected Environment

Land Use is the term used to describe how land is used and managed and the benefits that come from it. It is a major factor in the relationship between humans and nature, and a significant driver of environmental change. The land use designations guide and encourage land uses in an organized manner that supports the creation of community and enhances the community's character. The vision implemented through land use planning and designations is

intended to provide a wide range of land use options, each in their own appropriate areas and contexts, so that existing and future occupants of the area can enjoy a self-sustaining social and economic environment.

The LMTF where the radiation facility is proposed to be constructed is fully owned by the DAF. LMTF includes industrial land uses compatible with local zoning of industrial areas in West Weber County (Weber County 2024). Land uses for the proposed radiation facility at LMTF are open lands and designated for industrial/manufacturing uses.

3.4.2 Environmental Consequences

Potential impacts on land use are based on the compatibility of the Proposed Action with existing conditions as well as compatibility with land use designations. In general, a land use impact would be adverse if it met one of the following criteria:

- Is inconsistent or noncompliant with existing land use plans or policies.
- Precludes the viability of existing land use.
- Precludes continued use or occupation of an area.
- Is incompatible with adjacent land use to the extent that public health or safety is threatened.
- Conflicts with planning criteria established to ensure the safety and protection of human life and property.

3.4.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

The construction of a new radiation facility and additional perimeter road at the LMTF would have a long-term, negligible, beneficial impact on land use. A portion of the existing radiation facility project area is undeveloped hill slope adjacent to facilities and infrastructure used for testing operations. Under Alternative 1, the undeveloped land would be converted to developed land use. However, the development of the proposed radiation facility on this undeveloped land would be compatible with the overall industrial/ manufacturing land uses at the LMTF.

The proposed radiation facility construction and operations would be entirely on the LMTF, and therefore would not impact off-base land use planning or zoning requirements by Weber County (Weber County 2024). Under the Proposed Action, there would be no change in land ownership or land use categories.

3.4.2.2 No Action Alternative

Under the No Action Alternative, there would be no construction or operation of a new radiation facility. Therefore, there would be no impacts on land use at the LMTF.

3.4.2.3 Cumulative Actions and Other Considerations

There would be no cumulative impacts on land use from the implementation of Alternative 1. The proposed construction of a Propellant Loading Facility at the LMTF would be compatible with existing LMTF land uses. Proposed projects in western Weber County outside of the

boundaries of the LMTF would not impact land uses within the LMTF, and the proposed radiation facility construction and operation on the LMTF would not impact land uses in western Weber County, including those proposed in the Wester Weber Planning Area.

3.5 Noise

See **Appendix D-2** for the definition of the resource.

3.5.1 Affected Environment

The existing LMTF noise environment is primarily dominated by the operations of industrial facilities for the DAF testing mission requirements. There is some noise associated with the use of personal and government vehicles with mission-related work activities on the LMTF and from worker commutes to and from the LMTF, including along the LMTF access road. Given the remote location of the LMTF and the limited noise from the industrial testing operations, current operational noise does not leave the boundaries of the LMTF.

3.5.2 Environmental Consequences

Factors considered in determining whether implementing an alternative may have a significant adverse noise impact include the extent or degree to which implementation of an alternative would expose people to noise levels in excess of applicable standards or at levels that may be harmful. All activities associated with the Proposed Action would generate relatively continuous noise throughout construction activities and would then cease after the facility construction activities would be completed.

3.5.2.1 New Radiation Facility at the Little Mountain Test Facility

The construction of a new radiation facility, including the perimeter road around the facility, would result in minor short-term impacts on noise. There would be an increase in ambient noise levels within the LMTF, as relatively continuous noise would be generated during construction. These continuous noise levels would be generated by equipment that has source levels (at distance of 3.28 feet from the source) ranging from approximately 70 to 110 A-weighted decibels (dBA). Typical noise levels of heavy construction equipment that would likely be involved in the construction of the radiation facility are presented in **Table 3-3.**

Table 3-3. Noise Levels of Heavy Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 Feet (dBA)
Front End Loader	79-80
Excavator	81-85
Crane	75–87
Dump Truck	76-84

Source: US Department of Transportation 2017
dBA – A-weighted decibel

Sound levels decrease with greater distances from a sound source, which is called the attenuation rate. Attenuation rates are highly dependent on the terrain over which the sound is passing and the characteristics of the medium in which it is propagating. The rate used in these estimates represents a decrease in sound level of 4.5 decibel per doubling of distance. This average rate has been shown to be an accurate estimate from field data on grassy surfaces (Harris 1998).

There would be temporary, minor adverse, impacts as a result of noise from the proposed radiation facility construction activities. At a distance of approximately 500 feet from the construction activities, the predicted maximum noise levels would be at or below 65 dBA, a noise level that is equivalent to normal conversation or background music. The proposed project site is not near any buildings or structures outside of the LMTF boundary, and the LMTF boundary is approximately 3,000 feet from the proposed radiation facility construction area; therefore, noise levels beyond the boundaries of the LMTF would remain at or below 65 dBA during construction. Facilities and buildings, parking areas, and walkways within 500 feet of the proposed radiation facility construction activities would be temporarily exposed to higher noise levels, likely as high as 90 dBA during construction. However, upon completion of construction, noise from these construction activities would cease.

Construction activities would temporarily increase traffic noise to and from the proposed construction location. Additional traffic noise from personal vehicles operated by construction workers and transport of construction equipment would be limited to existing roadways that approach the LMTF gate and on-base roadways. Traffic noise would be temporary and would cease at the end of construction activities. Noise from the increased traffic in support of the construction activities would not be perceptible and would not contribute to off-base noise increases.

Noise from operation of the radiation facility would be minimal and not exceed noise levels from similar testing operations at other existing adjacent LMTF facilities. There would be a small increase in vehicular traffic associated with operations, including truck traffic delivering materials for testing operations. However, the access road and gate for the LMTF are remote, and no sensitive noise receptors are present proximate to these LMTF facilities. Therefore, there would be no noise impacts from the radiation facility operations.

3.5.2.2 No Action Alternative

Under the No Action Alternative, there would be no construction of a new radiation facility at the LMTF. The noise environment would remain unchanged. Therefore, there would be no impacts from noise.

3.5.2.3 Cumulative Actions and Other Considerations

Noise from construction activities associated with the proposed radiation facility in combination with other proposed development projects on the LMTF and in western Weber County would have temporary noise impacts that would end when the radiation facility construction activities end. There are no sensitive receptors proximate to the proposed radiation facility construction

area that would be affected by these temporary increases in the noise environment. Therefore, there would be no short-term cumulative noise impacts. The increase in vehicle activity with approximately 30 additional employees commuting to and from the LMTF in support of the radiation facility, operations in combination with future increased industrial and commercial development in west Weber County, would have a negligible, adverse, long-term, cumulative impact on noise. Personal vehicle use on roadways does contribute to changes in the noise environment, and although 30 additional personal vehicles commuting to and from the LMTF would have very little impact on the local and regional noise environment, these vehicles in combination with a regional increase associated with planned development would be noticeable.

3.6 Air Quality and Greenhouse Gases

Definition of this resource and detailed information on air quality regulations and general conformity is provided in **Appendix D-3**.

3.6.1 Affected Environment

Climate. The LMTF is located on the eastern shore of the Great Salt Lake, in a remote, low-lying area surrounded by hills on the west, east, and south, and by mudflats of the Great Salt Lake to the north. Northern Utah is considered to be a cold desert, in that the majority of its annual precipitation falls in the winter in the form of snow. The LMTF averages 35.5 inches of snowfall annually (Hill AFB 2022). In Ogden (the nearest city to the LMTF) the warmest month in the region is July, with average high and low temperatures of 87 degrees Fahrenheit (°F) and 64°F, respectively. January is the coldest month with an average high temperature of 33°F and average low temperature of 21°F (Weatherbase 2024).

In northern Utah, temperature inversions occur during snowy winter months. During an inversion, cold air at the surface is trapped under a layer of warmer air and prevents the normal vertical mixing of air that keeps pollutants from building up to unhealthy levels at the surface. A typical Utah winter has approximately 5 to 6 multiday inversion episodes and, on average, 18 days with levels of high fine particulate matter (particulate matter less than 2.5 microns in diameter; $PM_{2.5}$) exceeding the National Ambient Air Quality Standard (NAAQS). A strong storm or low-pressure system is often needed to clear out the inversion (Utah Department of Environmental Quality [UDEQ] 2024a).

Air Quality. The LMTF is in Weber County, Utah, which falls within the Wasatch Front Intrastate Air Quality Control Region (AQCR) (40 CFR 81.52) and serves as the ROI for the air quality analysis. According to the UDEQ, Division of Air Quality (UDEQ 2024b) and the DAF's Air Conformity Applicability Model ([ACAM], ACAM 2023), the area for air quality analysis is in nonattainment for both ozone (O_3) and $PM_{2.5}$, and attainment or unclassifiable for carbon monoxide (CO), particulate matter 10 microns or less in diameter (PM_{10}), and lead (Pb) (see **Appendix D-3** for definitions of attainment and nonattainment). Therefore, the criteria pollutants of most concern would be O_3 and $PM_{2.5}$ (including their precursors). As a result of the nonattainment designation for O_3 and $PM_{2.5}$, the General Conformity Rule under the Clean Air Act (CAA) (40 CFR Part 93, Subpart B) will apply and a General Conformity Applicability Analysis is required for this Proposed Action.

For all other criteria pollutants, PM_{10}, CO, and Pb, the LMTF is located within areas currently designated attainment (or unclassified) for their respective NAAQS. The attainment or unclassified designation means that the area is currently meeting air quality standards, and the US Environmental Protection Agency (USEPA) and UDEQ expect the area to continue to meet those standards.

For the O_3 nonattainment designation, portions of the Wasatch Front in Utah are divided into two areas, the Northern Wasatch Front (NWF) and the Southern Wasatch Front. As shown in **Figure 3-1**, the NWF, which includes LMTF, is designated as a nonattainment area for the 2015 8-hour O_3 NAAQS. The NWF was initially designated as a marginal nonattainment area, the least stringent nonattainment designation for the 2015 8-hour O_3 standard. However, the area failed to attain the O_3 standard by the attainment date of 3 August 2021 and was subsequently redesignated to moderate nonattainment on 7 November 2022 (87 Federal Register 60897). Monitoring data collected for 2021 and 2022 indicated that the area would not be able to attain the O_3 standard by the moderate attainment date of 3 August 2024. The NWF area is being reclassified by the USEPA to a serious nonattainment area for O_3, effective 8 January 2025 (89 Federal Register 97545). This would require another State Implementation Plan (SIP; see **Appendix D-3**) with more emission reductions (UDEQ 2024c).

As shown in **Figure 3-2**, the LMTF is located within the Salt Lake City, Utah, area, which is currently classified as a serious nonattainment area for the 2006 24-hour $PM_{2.5}$ standard. The 24-hour $PM_{2.5}$ standard is exceeded primarily during the winter months due to the area's topographical and meteorological characteristics and vehicular emissions (UDEQ 2024d). Fine particulates ($PM_{2.5}$) are subject to two standards: a 24-hour standard of 35 micrograms per cubic meter ($\mu g/m^3$) and an annual standard of 12 µg/m3. The nonattainment areas, as described above, do not meet only the 24-hour $PM_{2.5}$ standard. All areas of the state, however, meet the annual $PM_{2.5}$ standard. As of 2024, the USEPA strengthened the annual $PM_{2.5}$ NAAQS from 12 $\mu g/m^3$ to 9.0 $\mu g/m^3$. Utah is currently in the process of receiving a designation from the USEPA for this new NAAQS (UDEQ 2024e).

Note that regional initiatives are in place to reduce fine particulate matter ($PM_{2.5}$). Planned improvements in vehicle emission technologies will be instrumental in the UDEQ, Division of Air Quality's plan to achieve the new $PM_{2.5}$ standard (Wasatch Front Regional Council [WFRC] 2024). The WFRC's Regional Transport Plan will also contribute to the emission reduction effort by reducing pollution from traffic congestion and improving transit service (WFRC 2023).

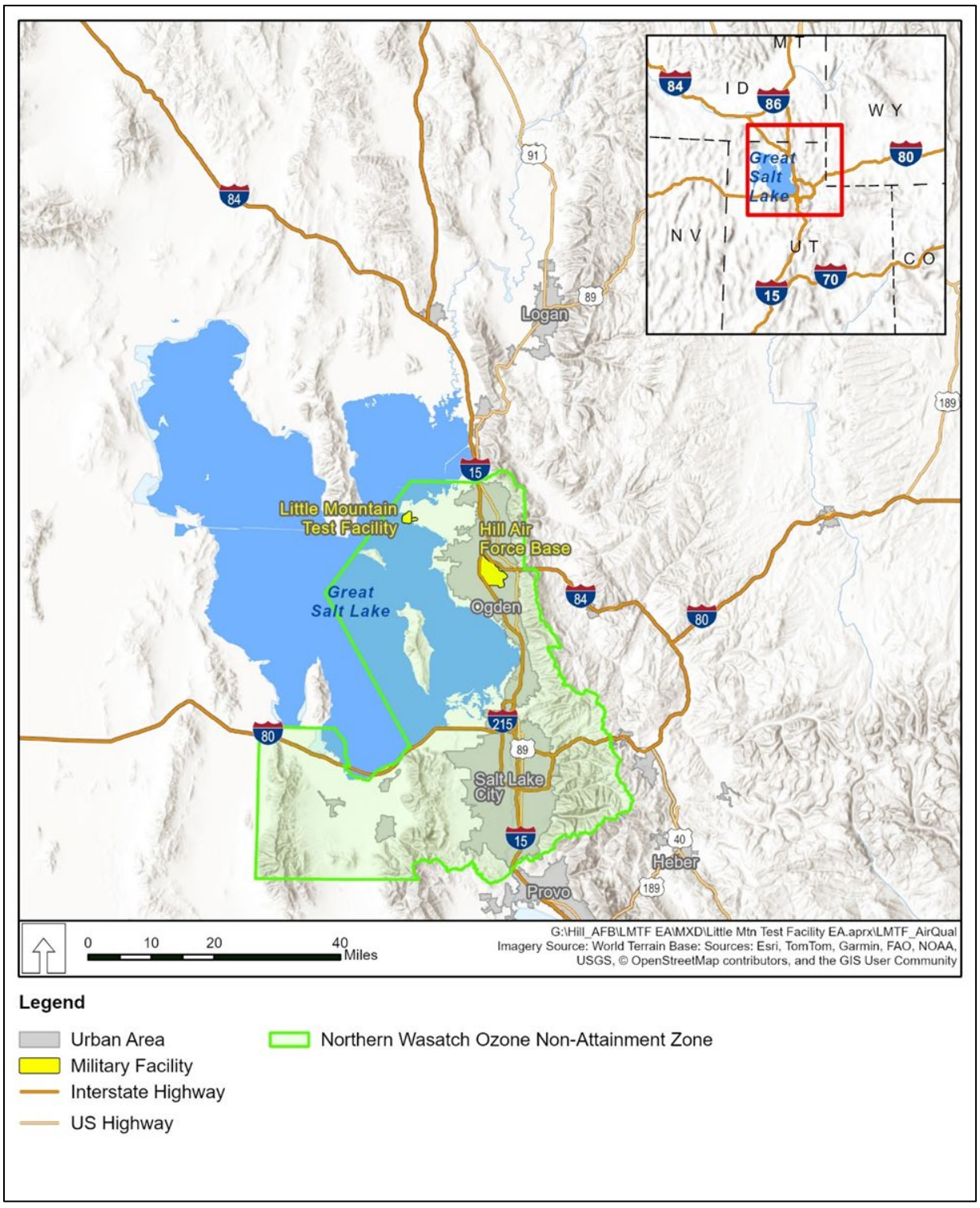

Figure 3-1. Little Mountain Test Facility Located in the Northern Wasatch Ozone Nonattainment Area

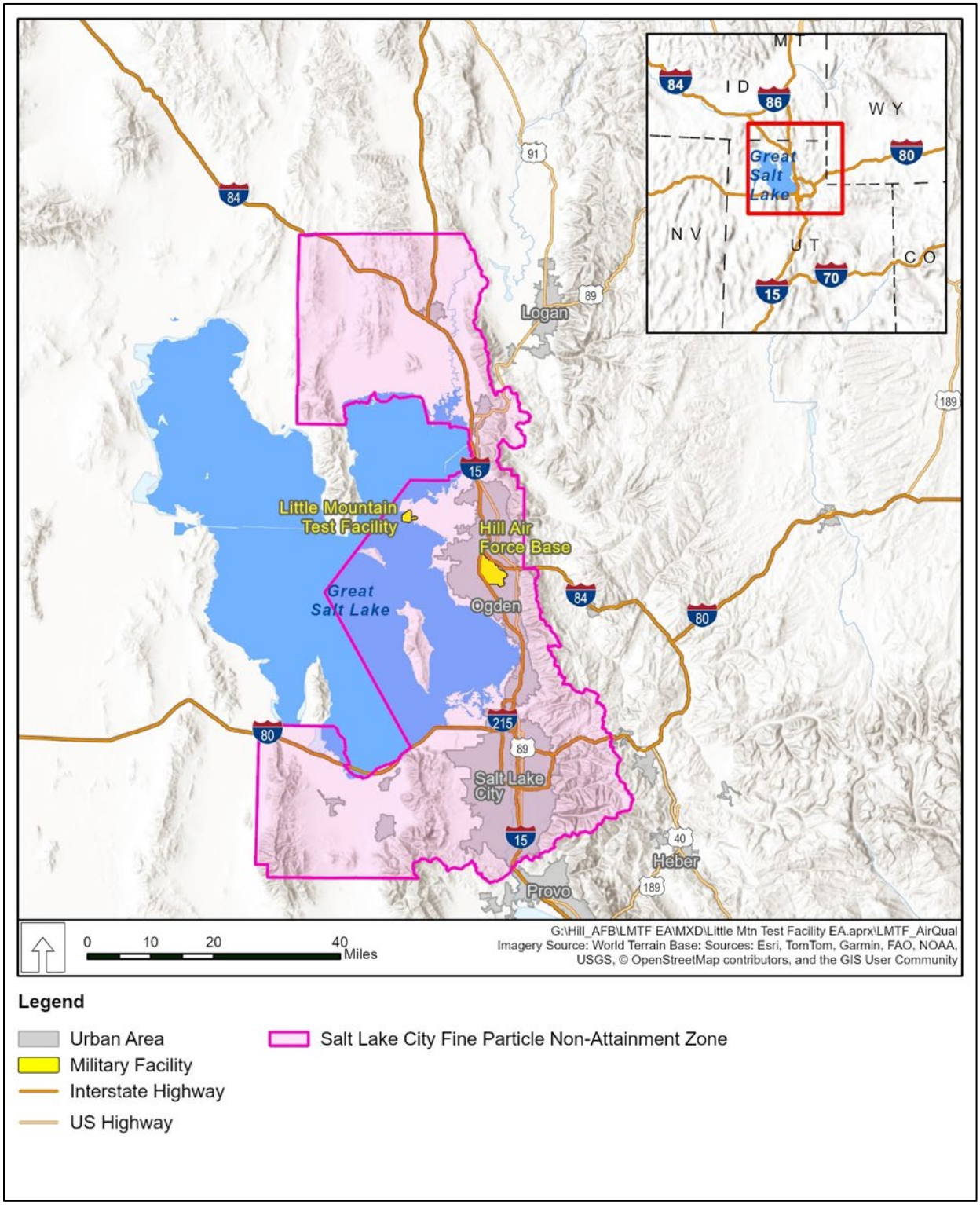

Figure 3-2. Little Mountain Test Facility Located in the Salt Lake City Fine Particulate Matter Nonattainment Area

Air Operating Permit. Hill AFB holds a Title V operating permit (#1100007004), that covers regulated stationary air emissions sources at LMTF (UDEQ 2022), which are subject to specific requirements and operating conditions. Regulated sources at the LMTF primarily include operations that support the facility's various testing, research, and development activities, such as boilers, heaters, generators, fuel storage tanks, surface coating, solvent cleaning, chemical stripping, and abrasive cleaning. The Title V operating permit primarily regulates NOx and volatile organic compounds (VOCs) from these sources at LMTF.

The CAA gives special air quality and visibility protection to areas in the country designated as Class I areas. These areas include national parks larger than 6,000 acres and national wilderness areas larger than 5,000 acres. The Proposed Action at the LMTF is not located close to any USEPA designated Class I area protected by the Regional Haze Rule, so visibility impairment is not a concern. Short-term, localized emissions associated with construction activities would not adversely impact this area.

Greenhouse Gases (GHGs). Like many locations in the country, climate trends within the western US could be adversely affected by greenhouse gas emissions. Utah has warmed 2°F in the last century. Throughout the western US, heat waves are becoming more common, and snow is melting earlier in spring. In the coming decades, the changing climate is likely to decrease the flow of water in Utah's rivers, increase the frequency and intensity of wildfires, and decrease the productivity of ranches and farms (USEPA 2016). Hill AFB (of which LMTF is a part) is one of the many DAF bases in western states identified to be vulnerable to current and future desertification as a result of a changing climate, which could potentially result in damage to infrastructure and delays in training and testing programs (Department of Defense [DoD] 2019).

Statewide emissions of carbon dioxide (CO_2) in Utah totaled 60.1 million metric tons of energy-related CO_2 in 2022. This total includes CO_2 emissions from direct fuel use across all sectors, including residential, commercial, industrial, and transportation, as well as primary fuels consumed for electricity generation (US Energy Information Administration 2022).

Emission estimates from stationary combustion sources at Hill AFB exceed 25,000 metric tons of carbon dioxide equivalent (CO_2e) of direct GHG emissions, making Hill AFB subject to the GHG Mandatory Reporting Rule (40 CFR Part 98). GHG emissions reported for 2023 for Hill AFB amounted to 92,500 metric tons of CO_2e, the majority of which were from the burning of fuels in external combustion sources, such as boilers and heaters (Hill AFB 2024a). Only consolidated GHG emissions data for Hill AFB are available. As such, GHG emissions from combustion sources at the LMTF would be expected to contribute only a fraction of Hill AFB's total GHG emissions due to the relatively small number of combustion sources operating at the LMTF compared to those at the main base.

3.6.2 Environmental Consequences

The General Conformity Rule applies as the LMTF is in an area designated as nonattainment for O_3 (VOC and oxides of nitrogen [NO_x] as precursors) and $PM_{2.5}$ (NO_x, sulfur dioxide [SO_2] and ammonia [NH_3] as precursors), and a General Conformity Applicability Analysis is required

for the Proposed Action. The air quality analysis includes a review of the nonattainment criteria pollutants for applicability to General Conformity. The net-change emissions estimated for each alternative would be compared against the General Conformity *de minimis* values. If the estimated emissions are found to be below the *de minimis* values, the General Conformity Rule requirements would not be applicable, and a formal general conformity determination would not be required. For all other attainment criteria pollutants (PM_{10}, CO, and Pb), the air quality analysis would not consider General Conformity. Based on guidance in Chapter 4 of the *Air Force Air Quality EIAP Guide, Volume II – Advanced Assessments* (DAF 2020), attainment criteria pollutant emissions would be compared against the insignificance indicator of 250 tons per year (tpy) for a Prevention of Significant Deterioration (PSD) major source permitting threshold (except 25 tpy for Pb). These insignificance indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant.

The ACAM Version 5.0.23a (ACAM 2023) was used to estimate criteria, GHGs and precursor pollutant emissions for the Proposed Action construction and operational activities. Assumptions of the data used in the model are discussed in **Appendix D-3.** ACAM results are provided in **Appendix E.**

3.6.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

Table 3-4 presents the net change in estimated emissions from construction and operational activities associated with Alternative 1. As seen in the table, none of the annual net change in estimated emissions would be above established General Conformity threshold values; therefore, the Proposed Action would have an insignificant impact on air quality and a General Conformity Determination would not be applicable. In addition, attainment criteria pollutants would be well below their insignificance indicators. At these insignificant levels of emissions, the implementation of the Proposed Action would have no impact on the region's ability to comply with the NAAQS for regulated pollutants and would not hamper efforts to maintain compliance with all NAAQS under current requirements. These emission findings, along with a detailed emissions report, are documented in the Record of Conformity Analysis and are contained in **Appendix E**.

The potential air quality impacts would result from the anticipated increase in construction and operational emissions. Construction emissions would primarily be associated with earth disturbances, operation of diesel-fuel construction equipment and vehicles hauling materials, worker trips on the site, and paving and architectural coating applications. Impacts from construction would be primarily short-term, direct, and localized. The UDEQ, Division of Air Quality regulates fugitive dust pollution from land development activities as outlined in the *Utah Administrative Code, Rule R307-309: Nonattainment and Maintenance Areas for PM10 and PM2.5: Fugitive Emissions and Fugitive Dust.* At a minimum, reasonable precautions would be followed, such as use of water or chemicals for control of dust in demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land.

Operational emissions would be from new comfort heating equipment, generators, and new personnel commutes. Operational emissions would come into effect once construction ends,

and the new facility would be operational. Hill AFB is a major source of criteria pollutants and has a Title V operating permit with fuel-use limits. Any new heating equipment or new emergency generators planned for installation at the LMTF would not be allowed to operate until the UDEQ, Division of Air Quality established that federal and state requirements would be met, and an amendment to the Hill AFB Title V operating permit would be obtained, as necessary. For new sources that may be installed, Utah Administrative Code Rules as identified in *Section R307* (Air Quality) include, but are not limited to, the following:

- *R307-315: NOx and CO Emission Controls for Natural Gas-Fired Boilers 2.0-5.0 MMBtu,*
- *R307-316: NOx and CO Emission Controls for Natural Gas-Fired Boilers Greater Than 5.0 MMBtu,*
- *R307-230: NOx Emission Limits for Natural Gas-Fired Water Heaters, and*
- *R307-327: Ozone Nonattainment and Maintenance Areas: Petroleum Liquid Storage.*

For new generators, applicable federal regulations (incorporated by reference by UDEQ) include *NSPS Part 60, Subpart A and Subpart III: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, and *MACT Part 63, Subpart A and Subpart ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*. These regulations include emission limits, work practice standards, and requirements for monitoring, recordkeeping and reporting which would need to be reviewed for applicability and compliance prior to construction and operation of the proposed new equipment. The Proposed Action area has recently been redesignated to a more stringent nonattainment classification for O_3. The new redesignation may impose additional operational restrictions or emission limits for VOCs and NO_x at major source facilities, based on Utah's future SIP revisions for this area. Therefore, prior to the installation of any new stationary source of criteria pollutants, the facility's Title V permit conditions would need to be examined, and new stationary source construction requirements would need to be identified.

Table 3-4. Net Change in Criteria Pollutant Emissions from Alternative 1

Activity	Emissions (tons per year)							
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Construction and Demolition[1]	0.785	1.742	2.280	0.004	1.357	0.065	0.000	0.005
Operational[2]	0.213	2.737	2.836	0.035	0.220	0.220	0.000	0.007
General Conformity *de minimis* Thresholds or Insignificance Indicator (tpy)								
General Conformity *de minimis* Precursor[3]	70	70	–	70	–	–	–	70
General Conformity *de minimis* Precursor[4]	100	100	–	–	–	–	–	–
Directly Emitted[5]	–	–	–	–	–	70	–	–
Insignificance Indicator (tpy)	–	–	250	–	250		25	–
Exceeds Threshold/Indicator	No	No	No	No	No	No	No	No

Source: ACAM Summary Report (Appendix E of the EA)

VOC – volatile organic compounds; **NO_x** – oxides of nitrogen; **CO** – carbon monoxide; **SO_x** – oxides of sulfur; **PM_{10}** – particular matter, 10 microns or less; **$PM_{2.5}$** – particulate matter, 2.5 microns or less; **Pb** – lead; **NH_3** – ammonia; **tpy** – tons per year

Notes:

[1] Construction for all Proposed Action activities assumed to occur within a single calendar year (January – December 2026).

[2] Operational emissions assumed to start in January 2027, once construction ends, and would occur indefinitely.

[3] Precursor to serious nonattainment of $PM_{2.5}$

[4] Precursor to moderate nonattainment of O_3 (effective January 2025, the area will be redesignated to serious nonattainment)

[5] Directly emitted particulate matter

GHG. Construction activities proposed for Alternative 1 would generate GHG emissions from the use of fossil fuels in combustion equipment and vehicles. Proposed natural gas boilers, water heaters, and diesel emergency generators that would become operational in the new facilities would also cause an increase in facility-wide GHG emissions.

Table 3-5 summarizes annual GHG emissions estimated in ACAM through the projected life cycle of the proposed radiation facility and provides its relative significance in a global context. Generally, individual projects are not large enough to have an impact on GHG global emissions but cumulatively they can have an impact.

Table 3-5. Annual GHG Emissions Associated with Alternative 1 Compared to Insignificance Indicator

Year	CO_2 (mton/year)[1]	CH_4 (mton/year)[1]	N_2O (mton/year)[1]	CO_2e (mton/year)[1]	Threshold (mton/year)[2]	Exceedance
2026	373	0.0147895	0.00657104	376	68,039	No
2027	2,916	0.05658859	0.05467242	2,921	68,039	No
2028 [SS Year]	2,916	0.05658859	0.05467242	2,921	68,039	No
2029	2,916	0.05658859	0.05467242	2,921	68,039	No
2030	2,916	0.05658859	0.05467242	2,921	68,039	No
2031	2,916	0.05658859	0.05467242	2,921	68,039	No
2032	2,916	0.05658859	0.05467242	2,921	68,039	No
2033	2,916	0.05658859	0.05467242	2,921	68,039	No
2034	2,916	0.05658859	0.05467242	2,921	68,039	No
2035	2,916	0.05658859	0.05467242	2,921	68,039	No
2036	2,916	0.05658859	0.05467242	2,921	68,039	No
2037	2,916	0.05658859	0.05467242	2,921	68,039	No
2038	2,916	0.05658859	0.05467242	2,921	68,039	No
Total GHG (CO_2e) Relative Significance (mton)[1]						
Percent of State Totals	0.00437216%					
Percent of US Totals	0.00005277%					

CO_2 – carbon dioxide; **mton** – metric ton; **CH_4** – methane; **N_2O** – nitrous oxide; **CO_2e** – carbon dioxide equivalent; **SS** – steady–state; **GHG** – greenhouse gas; **US** – United States; **N/A** – not applicable

Notes:
[1] ACAM output results for GHG emissions (**Appendix E** of this EA).
[2] Air Force PSD threshold for GHG of 75,000 tons per year of CO_2e (or 68,039 mton/year) as an indicator or threshold of insignificance for NEPA air quality impacts in all areas.

Total GHG emissions from the Proposed Action between 2026 and 2038 would be approximately 35,426 metric tons of CO_2e, which represents approximately 0.0043 percent of Utah's projected GHG emissions, and approximately 0.000053 percent of the US projected GHG emissions estimated over the same time period. The ACAM Summary of GHGs emissions for Alternative 1 is provided in **Appendix E.**

3.6.2.2 No Action Alternative

Under the No Action Alternative, the proposed construction of a radiation facility at the LMTF would not occur. Therefore, no additional emissions would be generated; as a result, existing conditions would remain unchanged. No air quality impacts would occur.

3.6.2.3 Cumulative Actions and Other Considerations

The Proposed Action, in addition to proposed future actions at the LMTF, Hill AFB, and in Weber County would have a minor, cumulative impact on air quality. The construction and operations included in the establishment of the Proposed Action would generate low levels of criteria pollutant emissions (less than a maximum of 3 tons per year). Criteria pollutants regulated by the NAAQS would be emitted during the respective construction and operational phases of the proposed future projects, including those proposed in West Weber and other areas of Weber County. Quantities of criteria pollutants emitted during each reasonably foreseeable future project would vary widely; however, these emissions would be regulated in accordance with applicable regulatory and permitting requirements to ensure that they do not contribute to the substantial degradation of local or regional air quality or result in a change to an AQCR attainment designation. Construction associated with proposed future actions such as the proposed Propellant Loading Facility would each be short-term and localized and would not likely occur at the same time. Therefore, when considered with these reasonably foreseeable future actions, the Proposed Action would not contribute to significant cumulative impacts on air quality.

The construction and operations included in the establishment of the Proposed Action would generate low levels of GHG emissions. In a global context, the GHG emissions contribution would be negligible when considered within the context of reasonably foreseeable future actions.

3.7 Soils and Topography

See **Appendix D-4** for the definition of this resource.

3.7.1 Affected Environment

There are primarily three soil units at the LMTF and only the mollisol soil unit underlies the proposed radiation facility (**Figure 3-3).** Mollisol soils are good for the growth of mesophytic

plants. Mollisols have dark-colored surface horizons relatively high in content of organic matter. They are very fertile soils and are considered suitable for construction purposes (US Department of Agriculture 1968).

Topographically, the LMTF is located at the base of a small hill rising to 4,200 feet in elevation along the eastern boundary and is located along mudflats associated with the Great Salt Lake along the western boundary (Hill AFB 2020). The proposed location for the construction of the radiation facility and perimeter road is on a gentle hillslope. Land slopes upward, away from the existing developed areas of the LMTF, with an elevation gain of approximately 30 feet from the base of the hill to the top of the radiation facility's proposed construction location.

3.7.2 Environmental Consequences

Factors considered in determining whether implementing an alternative may have a significant adverse impact on soils include the extent or degree to which implementation of an alternative would do the following:

- Result in substantial soil erosion or the loss of topsoil, or
- Expose people or structures to potential substantial adverse effects, involving construction of facilities on inappropriate soil types.

3.7.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

The construction of a new radiation facility would have short- and long-term, minor, adverse impacts on soils and topography. The primary short-term effects would occur during construction activities when vegetation would be cleared, approximately 1.4 acres of soil would be bare, and up to 25,000 cubic yards of soil would be hauled off site and disposed of at a nearby landfill. However, effects are expected to be minor because soils becoming suspended in surface water during stormwater events would be minimized through the use of best management practices (BMPs) as described by the construction project's Stormwater Pollution Prevention Plan (SWPPP), which would be a requirement for the proposed project's Construction General Permit. These BMPs would ensure that exposed and stockpiled soils during construction would be contained and maintained to not move off the construction area due to wind and precipitation events. The construction would also alter the topography of the hillslope, requiring recontouring of the hillslope area to provide a level construction surface for the radiation facility and perimeter road. The excavated soils would be properly transported and disposed of to ensure no waterborne or wind-blown soils would be redistributed into nearby surface waters.

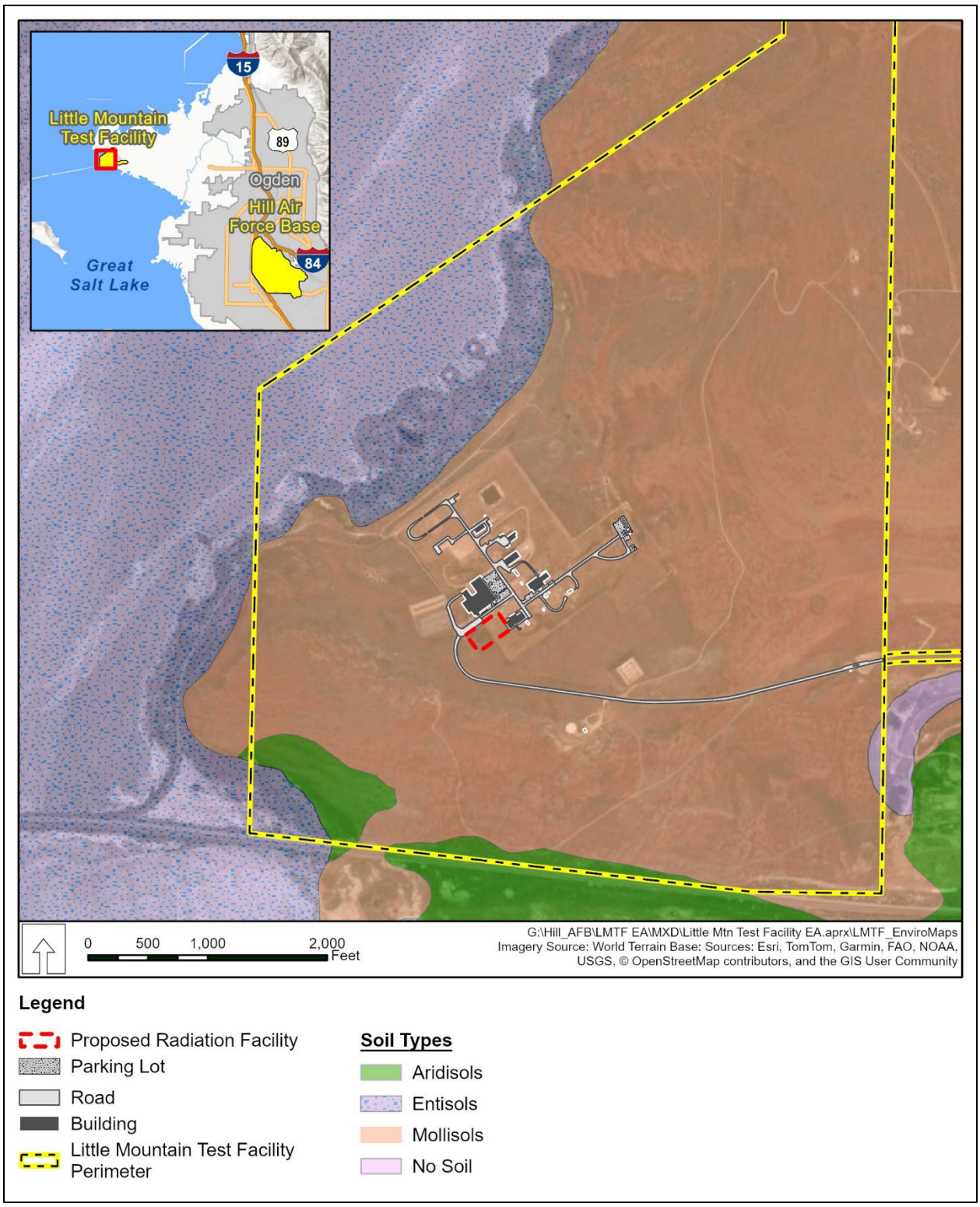

Figure 3-3. Soil Types at and Proximate to the Little Mountain Test Facility

However, the radiation facility would be designed to properly direct and contain stormwater runoff within the existing stormwater management system at the LMTF, and stormwater runoff directed across the undeveloped landscape would be minimized. The altered topography of the hillslope would be retained with the use of slope grading and a retention wall along the perimeter road, to ensure stability of hillslope topography after construction.

3.7.2.2 No Action Alternative

There would be no soil disturbance or change in topography at the LMTF under the No Action Alternative as a new radiation facility would not be constructed.

The long-term effects on soils would be from the potential for additional stormwater runoff associated with the proposed radiation facility's increased impermeable surfaces at the LMTF.

3.7.2.3 Cumulative Actions and Other Considerations

The Proposed Action in combination with other projects proposed at the LMTF such as the Propellant Loading Facility, as well as the road repair and maintenance projects ongoing and proposed in western Weber County, would have a long-term, minor, cumulative impact on soils from soil disturbance during construction activities and increased impermeable surfaces. Increased runoff rates during stormwater events could increase soil erosion and sediment transport. However, all work proposed at LMTF would be subject to BMPs as described by the project's SWPPP, which would be developed prior to construction and would greatly reduce the likelihood of soil erosion and loss.

3.8 Water Resources

See **Appendix D-5** for the definition of this resource.

3.8.1 Affected Environment

There are no permanent streams at the LMTF (Hill AFB 2020), and there are no surface water features at the proposed radiation facility project site. It is entirely an upland area located within the developed portion of the LMTF. Mudflats and wetlands are present proximate to the LMTF and are primarily associated with the shoreline of the Great Salt Lake (**Figure 3-4**). Additionally, the proposed radiation facility is not located within a floodplain; the nearest floodplain location is associated with the Great Salt Lake, near the perimeter of the western boundary of the LMTF (**Figure 3-4**). Because there are no wetlands or floodplains proximate to the proposed radiation facility project site, these are not discussed further.

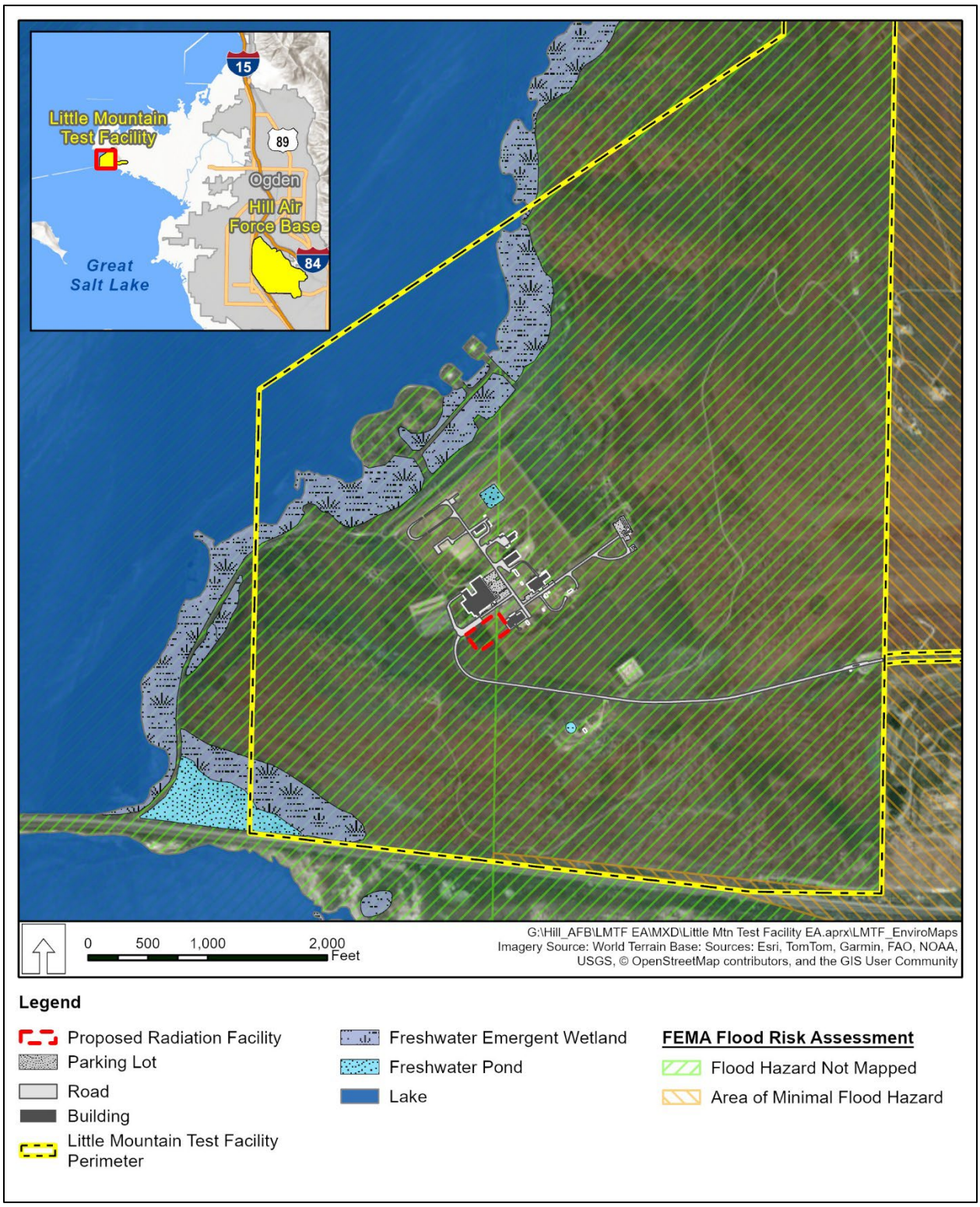

Figure 3-4. Surface Water Resources Proximate to the Little Mountain Test Facility

Surface Water. Stormwater is water that originates from precipitation, including heavy rain and meltwater from hail and snow. Stormwater is water that flows off roofs, streets, and other surfaces after it rains or snows. Hill AFB and the LMTF are subject to municipal stormwater regulations as administered by the Utah Division of Water Quality. Stormwater discharges are regulated under the Utah Pollutant Discharge Elimination System General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) permit (UTR090000), effective 12 May 2021 through 11 May 2026 (DAF 2021). Outside the boundaries of the LMTF, the Weber County Stormwater Management Division handles all flood control issues in the unincorporated portion of the county.

Groundwater. Groundwater in Weber County is an important part of the region's water supply, but it is facing challenges from overdrafts and other issues. These are increased pumping costs, land subsidence, and salt water intrusion from the Great Salt Lake. Additionally, reduced spring and stream flows and dry wells. The Groundwater Management Plan for the Weber Delta Sub-Area (Utah Division of Water Rights 1995) was created to address these issues. There is no groundwater use or extraction on the LMTF.

3.8.2 Environmental Consequences

Evaluation criteria for potential impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. Adverse impacts on water resources would occur if the Proposed Action were to do any of the following:

- Reduce water availability or supply to existing users.
- Cause overdrafts of groundwater basins.
- Exceed safe annual yield of water supply sources.
- Affect water quality adversely.
- Endanger public health by creating or worsening health hazard conditions.
- Violate established laws or regulations adopted to protect water resources.

Potential impacts related to flood hazards can be significant if such actions are proposed in areas with high probabilities of flooding; however, all impacts can be mitigated through the use of design features to minimize the effects of flooding.

3.8.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

The proposed new radiation facility would have both short-term and long-term, minor, adverse impacts on water resources. Construction activities that disturb surface soils could transport sediment and other material into surface waters that lead to the Great Salt Lake. Stormwater can also transport hazardous materials (HAZMAT) used during construction activities, such as petroleum, oil, and lubricants (POLs) used in construction equipment. These POLs have the potential to impact both surface water and groundwater quality. However, Hill AFB has an Integrated Stormwater Management Plan (DAF 2021) that provides tools for protecting the surface water quality through stormwater control measures. Further, a project-specific SWPPP would be developed, and associated BMPs would be implemented during construction. These measures from the Integrated Stormwater Management Plan and the project's SWPPP would

ensure impacts on surface water and groundwater quality from construction activities would be minimized.

There would be an increase of approximately 1.4 acres of impervious surface area following the construction of the radiation facility. The increased impervious area would cause greater runoff potential and include additional developed areas on the LMTF. However, this increased impervious surface area would not alter the size of nearby floodplains, and with the implementation of the low-impact development techniques and stormwater discharge management as described in the Hill AFB Integrated Stormwater Management Plan (DAF 2021), the impacts from this impervious surface would be minimized.

3.8.2.2 No Action Alternative

Under the No Action Alternative, there would be no construction of a new radiation facility. Therefore, there would be no impacts from construction or from an increase in impervious surfaces on water resources.

3.8.2.3 Cumulative Actions and Other Considerations

The Proposed Action, in combination with other proposed projects on LMTF and in western Weber County, has the potential for long-term, minor, adverse cumulative impacts on surface water and groundwater quality. All construction activities that exceed 1 acre would be subject to the requirements of a Construction General Permit, and the BMPs implemented with the associated SWPPP requirements for each of these construction activities would ensure impacts on water quality from stormwater runoff would be minimized. More developed areas would increase the overall impermeable surface area in western Weber County, which could cumulatively increase the rate of stormwater runoff carrying sediment and pollutants to surface water bodies. However, all proposed regional projects off the LMTF would be subject to land use guidance and land use planning requirements developed for western Weber County, and these projects would be developed to manage stormwater runoff and ensure water quality would be sustained with increased development.

3.9 Biological Resources

See **Appendix D-6** for the definition of this resource.

3.9.1 Affected Environment

The information presented in this section was gathered from Hill AFB's Integrated Natural Resources Management Plan (Hill AFB 2020). The status of federally listed species was validated using the USFWS Information for Planning and Consultation (IPaC) system (USFWS 2024).

Vegetation. The LMTF is in the Temperate Desert Division under the Intermountain Semidesert and Desert Province Ecoregion, which is in the Temperate Desert Division. Sagebrush (*Artemisia* spp.) dominates at the lower elevations in this ecoregion. Other common plant species found in this ecoregion include antelope bitterbrush (*Purshia tridentate*), shadscale

(*Atriplex confertifolia*), fourwing saltbush (*Atriplex canescens*), rubber rabbitbrush (*Ericameria nauseosa*), spiny hopsage (*Grayia spinosa*), horsebrush (*Tetradymia* spp.), and short-statured Gambel oak (*Quercus gambelii*) (US Forest Service 1994).

The LMTF has lost most of its historic vegetation to wildland fire. Cheatgrass (*Bromus tectorum*) covers most of the LMTF, disrupting the natural native vegetation from reclaiming the degraded habitat. Some small stands of sagebrush remain, with invasive forbs and rabbitbrush persisting as well throughout the LMTF (Hill AFB 2020). The lands at the proposed radiation facility are dominated by grasses, including invasive cheatgrass.

Wildlife. Wildlife species that could occur at the LMTF are mainly composed of commonly encountered species within the Great Basin region and proximate to the Great Salt Lake. These include bird species such as the California gull (*Larus californicus*), killdeer (*Charadrius vociferus*), western kingbird (*Tyrannus verticalis*), western meadowlark (*Sturnella neglecta*), mourning dove (*Zenaida macroura*), European starling (*Sturnus vulgaris*), northern mockingbird (*Mimus polyglottos*), and horned lark (*Eremophila alpestris*). Raptors such as the red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus*), northern harrier (*Circus cyaneus*), great horned owl (*Bubo virginianus*), burrowing owl (*Athene cunicularia*), and American kestrel (*Falco sparverius*) are likely common on the LMTF (Hill AFB 2020).

Rodent species that could occur on the LMTF include Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontymys megalotis*), sagebrush vole (*Lagurus curtatus*), long-tailed vole (*Microtus longicaudus*), and western jumping mouse (*Zapus princeps*). Other mammal species that likely occur at the LMTF include red fox (*Vulpes macrotis*), ermine (*Mustela erminea*), and striped skunk (*Mephitis mephitis*) (Hill AFB 2020).

Common reptile species that could potentially be present on the LMTF include sagebrush lizard (S*celoporus graciosus*), western fence lizard (*Sceloporus occidentalis*), western whiptail (C*nemidophorus tigris*), striped whipsnake (*Masticophis taeniatus*), gopher snake (*Pituophis catenifer*), long-nosed snake (*Rhinocheilus lecontei*), and western rattlesnake (*Crotalus viridis*) (Hill AFB 2020).

The proximity of the proposed radiation facility project area to the developed areas of the LMTF, with the presence of human activity, noise, and lighting, combined with the lack of habitat structure, limits the quality of the habitat to support wildlife species. Common small mammals such as rodents as well as common reptiles may at times be present at the radiation facility project site, but their overall use and presence are likely very limited.

Invasive Species. Invasive species such as Dyer's woad (*Isatis tinctoria*), cheatgrass, and tamarisk (*Tamarisk* spp.) are known to be present at the LMTF. On LMTF, 41 percent of the vegetation cover consists of invasive plants (Select Engineering Services Inc. 2006). Hill AFB manages invasive species at the LMTF through ongoing removal projects that include hand removal and treatment with herbicides (Hill AFB 2020).

Threatened and Endangered Species. No endangered or threatened species are known to occur on Hill AFB, and there is no designated critical habitat present (Hill AFB 2020; USFWS

2024). However, based on the IPaC database search for the LMTF, one federal proposed threatened species, the monarch butterfly (*Danaus plexippus*), may occur on the LMTF (USFWS 2024). A total of 26 terrestrial (mammal and avian) state species of greatest conservation need have the potential to occur at the LMTF; those species are listed in **Table 3-6** (Hill AFB 2020). There is no suitable breeding or nesting habitat at the proposed radiation facility project site for any of the state species.

Table 3-6. State Species of Greatest Conservation Need with the Potential to Occur at the Little Mountain Test Facility

Species	Potential to Occur at the Proposed Radiation Facility Project Site
Mammals	
Townsend's Big-Eared Bat (*Corynorhinus townsendii*)	Unlikely; there is very limited suitable habitat for foraging bats at the proposed project site.
Dark Kangaroo Mouse (*Microdipodops megacephalus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Kit Fox (*Vulpes macrotis*)	Limited; kit fox could forage on the LMTF, including across the radiation facility project site.
Pygmy Rabbit (*Brachylagus idahoensis*)	Limited; pygmy rabbit could forage on the LMTF, including across the radiation facility project site.
Birds	
American White Pelican (*Pelecanus erythrorhynchos*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Bald Eagle (*Haliaeetus leucocephalus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Brewer's Sparrow (*Spizella breweri*)	Unlikely; the grasslands at the proposed radiation facility are primarily invasive grasses and would not support native sparrow species.
Burrowing Owl (*Athene cunicularia*)	Limited; the burrowing owl could forage on the LMTF, including at the radiation facility project site if suitable fossorial mammal burrows are present.
Eared Grebe (*Podiceps nigricollis*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Ferruginous Hawk (*Buteo regalis*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Golden Eagle (*Aquila chrysaetos*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Grasshopper Sparrow (*Ammodramus savannarum*)	Unlikely; the grasslands at the proposed radiation facility are primarily invasive grasses and would not support native sparrow species.
Greater Sage-Grouse (*Centrocercus urophasianus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Green-Tailed Towhee (*Pipilo chlorurus*)	Limited; the green-tailed towhee could forage on the LMTF, including at the radiation facility project site if suitable fossorial mammal burrows are present.
Lewis's Woodpecker (*Melanerpes lewis*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Loggerhead Shrike (*Lanius ludovicianus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Long-Billed Curlew (*Numenius americanus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Marbled Godwit (*Limosa fedoa*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Peregrine Falcon (*Falco peregrinus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.

Species	Potential to Occur at the Proposed Radiation Facility Project Site
Pinyon Jay (*Gymnorhinus cyanocephalus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Sage Sparrow (*Amphispiza belli*)	Unlikely; the grasslands at the proposed radiation facility are primarily invasive grasses and would not support native sparrow species.
Sage Thrasher (*Oreoscoptes montanus*)	Limited; the sage thrasher could forage on the LMTF, including at the radiation facility project site if suitable fossorial mammal burrows are present.
Short-Eared Owl (*Asio flammeus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Snowy Plover (*Charadrius alexandrinus*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.
Virginia's Warbler (*Vermivora virginiae*)	Limited; the Virginia's warbler could forage on the LMTF, including at the radiation facility project site if suitable fossorial mammal burrows are present.
Willow Flycatcher (*Empidonax traillii*)	None; there is no suitable habitat for this species proximate to the developed areas of the LMTF.

Source: Utah Department of Natural Resources 2023; Hill AFB 2020
LMTF – Little Mountain Test Facility

3.9.2 Environmental Consequences

To evaluate the potential impacts on the biological resources, the level of impact on biological resources is based on the following:

- Importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource
- Proportion of the resource that would be affected relative to its occurrence in the region
- Sensitivity of the resource to the proposed activities
- Duration of potential ecological ramifications

The impacts on biological resources are adverse if species or habitats of high concern are negatively affected over relatively large areas. Impacts are also considered adverse if disturbances cause reductions in population size or distribution of a species of high concern.

As a requirement under the ESA, federal agencies must provide documentation that ensures that agency actions do not adversely affect the existence of any threatened or endangered species. The ESA requires that all federal agencies avoid "taking" threatened or endangered species (which includes jeopardizing threatened or endangered species' habitat). Section 7 of the ESA establishes a consultation process with USFWS that ends with USFWS' concurrence or a determination of the risk of jeopardy from a federal agency project. The DAF has determined that the Proposed Action would have no effects on any federally listed species and would not jeopardize the continued existence of the monarch butterfly. In accordance with Section 7 of the ESA, the DAF initiated informal consultation and conference with the USFWS regarding the monarch butterfly in a letter dated 17 February 2025. The USFWS acknowledged the DAF's no effect determination (**Appendix C**).

3.9.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

The construction and operation of a new radiation facility would have short-term and long-term, negligible, adverse impacts on vegetation and wildlife at the LMTF. There would be a permanent loss of 1.4 acres of grassland, primarily composed of nonnative grasses, with the construction of the radiation facility. Following the completion of construction activities, impacts on vegetation communities would cease, and there would be no long-term impacts on vegetation from operations of the radiation facility. The loss of 1.4 acres of grassland adjacent to the developed area of the LMTF would reduce the available grassland habitat for common small mammals and reptiles, and construction activities could result in the death of rodents or small reptiles that would be present in the project area but could not flee the construction equipment and construction activities. However, the habitat quality is poor at the radiation facility project site, and any species present would be common and normally associated with human disturbance and development. There would be no long-term impacts on wildlife from the operations at the radiation facility.

There are no federally listed species at the LMTF. Therefore, there would be no effects on federally listed species from construction or operation of the LMTF. The proposed project area is dominated by nonnative grasses and lacks habitat to support nectaring monarch butterflies, and the presence of milkweed species, the host plant for monarch butterflies, is highly unlikely to occur in the proposed project area. Therefore, the construction and operation of the radiation facility at the LMTF would not disturb habitat that supports monarch butterflies and would be unlikely to directly affect any monarch butterflies, as there are no suitable flowering plants on the site. The DAF has therefore determined that the construction and operation of the proposed radiation facility at the LMTF would not jeopardize the continued existence of the monarch butterfly.

There is no suitable breeding, nesting, or foraging habitat for any state sensitive species at the radiation facility project site. Therefore, the construction and operation of the proposed radiation facility would not impact state sensitive species.

3.9.2.2 No Action Alternative

Under the No Action Alternative, there would be no construction of a new radiation facility and associated additional pavement at the LMTF. Therefore, there would be no impacts on biological resources

3.9.2.3 Cumulative Actions and Other Considerations

The Proposed Action, in combination with reasonably foreseeable future actions on and off the LMTF, would potentially result in long-term, minor, cumulative adverse impacts on vegetation and wildlife due to a direct loss of vegetation from construction activities associated with other regional projects. However, no federally listed plant or wildlife resources would be impacted as a result of the Proposed Action or other proposed projects, as there are no federally listed species present at the LMTF or in the vicinity of any proposed regional projects. All noise impacts on wildlife from proposed construction projects would be short term. Overall, the cumulative habitat

loss would be minimal, occur primarily in previously disturbed areas or in areas dominated by nonnative grasses, and would impact primarily common wildlife species.

3.10 Cultural Resources

See **Appendix D-7** for additional definition of this resource.

Cultural resources include archaeological, traditional, and architectural sites that provide essential information to understand the prehistory and historical development of the US. The primary laws protecting cultural resources are the NHPA of 1966 and the Archaeological Resources Protection Act (ARPA) of 1979. Under Section 106 of the NHPA, federal agencies must consider the effects of their proposed actions (or undertakings) on historic properties, defined as any district, site, building, structure, or object that is listed or eligible for listing in the National Register of Historic Places (NRHP). To the extent possible, adverse effects on historic properties must be avoided, minimized, or mitigated in consultation with the SHPO and other consulting parties, as appropriate. ARPA was passed to protect archaeological resources on public lands through stronger, better enforceable legal protections, over previous legislation.

Generally, if under Section 106 of the NHPA an action would have an adverse effect on a historic property listed or eligible for listing in the NRHP, the action would also have an adverse impact under NEPA. An adverse effect that is mitigated in consultation with the SHPO and other parties, as appropriate, can generally be considered a less than significant impact under NEPA.

The Proposed Action is considered an undertaking for the purposes of Section 106. The area of potential effect (APE) for this undertaking consists of a 100-foot buffer around the limits of disturbance for the proposed radiation facility as described in **Chapter 2.** In a letter dated 27 November 2024, the DAF initiated consultation with the Utah SHPO in accordance with Section 106 and requested concurrence with the APE; SHPO concurrence with the APE was received on 10 December 2024. SHPO concurrence with Hill AFB's no effect to historic properties determination was received on 28 March 2025. Copies of relevant Section 106 correspondence are provided in **Appendix C.**

Properties of traditional religious and cultural importance, also referred to as traditional cultural places (formerly traditional cultural properties) are places eligible for inclusion in the NRHP because of their association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (National Park Service [NPS] 2024a). EO 13007, *Indian Sacred Sites*, defines Indian Sacred Sites as "specific, discrete, narrowly delineated locations on Federal land that are identified by an Indian tribe…as sacred by virtue of their established religious significance to, or ceremonial use by, an Indian religion." Indian Sacred Sites are strictly religious places and can be recent in age, in contrast with traditional cultural places which can be secular and must meet stricter NRHP eligibility criteria (Advisory Council on Historic Preservation 2018). An Indian Sacred Site can be a traditional cultural place, but not all traditional cultural places are sacred sites. Indian Sacred Sites are considered under the NEPA process as part of the human environment.

Under the Native American Graves Protection and Repatriation Act (NAGPRA), federal agencies are required to plan for and protect Native American human remains or cultural items that may be removed from federal lands and return such remains or items to lineal descendants or tribes (NPS 2024b). DoDI 4710.2, *DoD Interactions with Federally Recognized Tribes* (24 September 2018), establishes policy, assigns responsibilities, and provides procedures for DoD interactions with federally recognized Native American tribes. The 2021 DoD Plan of Action on Tribal Consultation (May 2021) outlines the DoD's commitment to improving implementation of EO 13175, *Consultation and Coordination With Indian Tribal Governments*.

The DAF has initiated government-to-government consultation with Native American tribes having historic, cultural, and religious ties to the LMTF. Copies of relevant government-to-government correspondence are included in **Appendix B.**

3.10.1 Affected Environment

The LMTF was established during the Cold War in 1957 as a joint DAF–Marquardt Corporation testing facility for ramjet engines associated with the Boeing Michigan Aeronautical Research Center missile and space programs (Hill AFB 2024b). Designated as the Little Mountain Hardness Test Center in 1973, the installation's mission was expanded to include the study of the effects of simulated nuclear weapons detonations on ballistic missile systems. The name was changed to Little Mountain Test Annex in 1975, and more recently changed to the LMTF.

As of 2024, 24 historic buildings have been evaluated for NRHP eligibility at the LMTF. As a result, seven buildings have been recommended as eligible, as part of the Little Mountain Test Annex Historic District (District; Hill AFB 2024b; HRA 2019). The District was determined eligible based on Cold War significance for its role in nuclear weapons testing. The District includes five NRHP-eligible buildings and two contributing buildings (**Figure 3-5; Table 3-7**). The Water Supply N/Pot Building is adjacent to the water storage tanks, approximately 800 feet southeast and outside the District boundary. The APE for the Proposed Action is partially located within the District boundary, adjacent to the west side of the Acceptance Laboratory Building.

Table 3-7. Eligible Historic Buildings within the Little Mountain Test Annex Historic District

Building Name	Year Built	NRHP Status
Acceptance Laboratory	1960	Eligible, Cold War significance
Test Cell Building	1960	Eligible, Cold War significance
Control Center	1960	Eligible, contributing
Propellant Test Facility	1975	Eligible, Cold War significance
Exhaust Cell/Shock Seismic	1960	Eligible, Cold War significance
Water Supply N/Pot Building	1960	Eligible, contributing
General Purpose Building	1960	Eligible, Cold War significance

NRHP – National Register of Historic Places

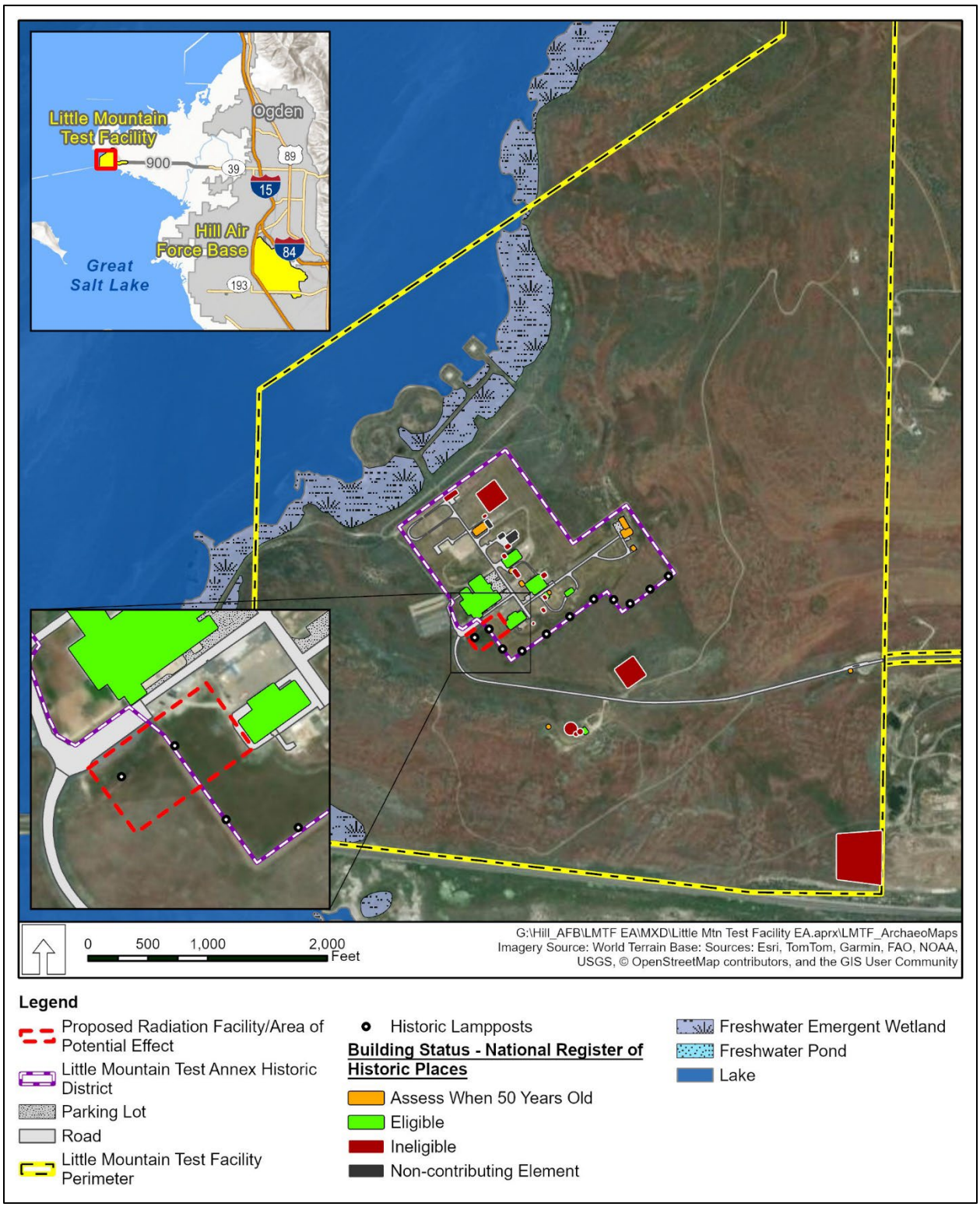

Figure 3-5. Area of Potential Effect in Relation to Historic Structures at the Little Mountain Test Facility

As of 2024, 662 acres of the 692-acre LMTF had been surveyed for archaeological resources (Hill AFB 2024b). As a result, one historical archaeological site was recorded at LMTF. Site 42WB0427, a historical railroad campsite associated with the construction of the Lucin Cutoff rail line (approximately 1902-1904), has been recommended as eligible (Polk and Pagano 2006). The site is located approximately 2,000 feet south of the APE, straddling the installation boundary along the active Union Pacific rail line.

In November 2024, the Hill AFB cultural resources team undertook an intensive level survey of 4.3 acres in the vicinity of and including the APE for the Proposed Action. The survey team documented 11 historic lampposts with distinct features dating to the original construction of LMTF. These lampposts are proposed as contributing elements to the District as they maintain integrity and still operate in the same capacity. Two of the lampposts are located within the APE and one lamppost is located adjacent to the APE (see **Figure 3-5**); these lampposts have the potential to be impacted by the Proposed Action. Though these three lampposts are original, the light fixtures and other elements have been updated or replaced, thus diminishing their historic integrity. The remaining eight lampposts are located outside the APE and maintain the majority of original elements and are not likely to be impacted by the Proposed Action.

The 2024 survey effort also recorded two additional historical archaeological sites. The sites consist of a trash scatters with one site exhibiting evidence of firearm target practice on historic and modern bottles. Both sites are recommended not eligible and located over 2,200 feet to the southeast of the APE.

No federally recognized tribal lands are present within the APE (Bureau of Indian Affairs 2016). Native American tribes with ancestral ties to lands within the APE are listed in **Appendix A.** The DAF initiated government-to-government consultation with these tribes in 10 December 2024. Only one response was received from consulting tribes. The letter from the Northern Arapaho Tribal Historic Preservation Office requested continued consultation throughout the EA process and a second letter dated 5 April 2025 from the Northern Arapaho Tribal Historic Preservation Office commented that there would be no adverse effect on historic properties in the direct and visual APE (see **Appendix B**). To date, no traditional cultural places or Native American sacred sites have been identified within the APE. Consultation with all 21 consulting tribes has been completed.

3.10.2 Environmental Consequences

Section 106 of the NHPA requires all federal agencies to assess the effects of their undertakings on historic properties and seek to avoid, minimize, or mitigate adverse effects on those properties [36 CFR 800.1(a)]. The APE is defined as the “geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” (36 CFR 800.16[d]). Adverse impacts on cultural resources could include altering characteristics of the resource that make it eligible for listing in the NRHP. Such impacts could include introducing visual or audible elements that are out of character with the property or its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of agency ownership (or

control) without adequate enforceable restrictions or conditions to ensure preservation of the property's historic significance. For the purposes of this EA, an effect is considered adverse if it would alter the integrity of a NRHP-listed or -eligible resource or if it has the potential to adversely affect traditional cultural places and the practices associated with the property. For the proposed projects and alternatives described below, should inadvertent discovery of archaeological deposits be made during construction, the DAF will follow standard operating procedures for Discoveries of Archaeological Resources and NAGPRA Cultural Items as detailed in the Hill AFB Integrated Cultural Resources Management Plan (Hill AFB 2024:27).

3.10.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

DAF has determined that impacts on the two to three lampposts within the APE would have no adverse effect on the District due to the lampposts' current condition and loss of integrity (Hill AFB 2025). However, the results of the survey of the proposed radiation facility project area are pending SHPO review.

The construction of a new radiation facility itself would be designed to match the look and feel and maintain the function of the District, as proposed (Hill AFB 2025). Neither viewshed nor auditory characteristics were contributing elements to the District; therefore, the construction of the new facility would not result in adverse effects on the District. There are no other known historic properties within the APE.

In accordance with Section 106 of the NHPA, the DAF requested concurrence from the Utah SHPO on their no adverse effects on historic properties determination. The concurrence from the SHPO with the DAF's determination was received on 28 March 2025.

3.10.2.2 No Action Alternative

Under the No Action Alternative, there would be no historic properties affected because there would be no construction or ground-disturbing activities.

3.10.2.3 Cumulative Actions and Other Considerations

There would be no reasonably foreseeable impacts on known historic properties from the proposed construction of a radiation facility at LMTF when combined with other reasonably foreseeable future projects such as the proposed Propellant Loading Facility. The proposed Propellant Loading Facility planning efforts would also be subject to review under Section 106 of the NHPA.

3.11 Transportation

See **Appendix D-8 f**or the definition of this resource.

3.11.1 Affected Environment

The area surrounding LMTF is primarily rural with select industrial facilities nearby, including the Westinghouse Western Zirconium facility and the Weber County Class VI Construction and Demolition Landfill. The primary access road to LMTF is West 900 South, which provides

access from Interstate 15 via Utah State Highway 39 (i.e., West 1200 South) (**Figure 3-6**). There is one operational entry control facility at LMTF, which is located at the end of West 900 South (**Figure 3-6**). West 900 South is a paved two-lane road to the LMTF entry control facility; however, sections of the road are currently undergoing improvements to add a center turn lane.

The average annual daily traffic count for West 900 South up to the Westinghouse Western Zirconium entrance, which is located just east of the LMTF entrance, was 6,800 vehicles in 2023. The average annual daily traffic count on this section of West 900 South has increased from 5,100 vehicles in 2013. The average annual daily traffic count for West 900 South from the Westinghouse Nuclear Fuel entrance to the LMTF entry control facility was 300 vehicles in 2023, an increase from 230 vehicles in 2013 (Utah Department of Transportation 2024).

3.11.2 Environmental Consequences

The effects on transportation and traffic would be considered significant if an alternative resulted in (1) a substantial increase in on- or off-base traffic or (2) substantial congestion on or around the LMTF.

3.11.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

The construction of a radiation facility would have short-term, minor, adverse impacts on transportation. There would be increased vehicle traffic on West 900 South and at the LMTF entry control facility during construction activities. This would include personal vehicle used by construction workers, and trucks hauling materials and equipment. This short-term impact on vehicle traffic on West 900 South and the LMTF entry control facility would be limited to the period of construction and would cease at the end of construction activities.

The radiation facility operations would have long-term, moderate, adverse impacts on transportation from an increase in the number of personnel working at the LMTF in support of the radiation facility operations. Approximately 30 additional personnel would commute daily to the LMTF to work at and support activities at the radiation facility. These additional vehicles would utilize West 900 South to approach the LMTF entry control facility and enter the LMTF through the existing entry control facility. This represents a 10 percent increase in vehicle traffic at the LMTF entry control facility but less than a 0.5 percent increase in the vehicle traffic on State Highway 39 and West 900 South between Interstate 15 and the LMTF.

3.11.2.2 No Action Alternative

Under the No Action Alternative, there would be no construction of a radiation facility. Therefore, there would be no impacts on regional transportation or transportation at the LMTF entry control facility.

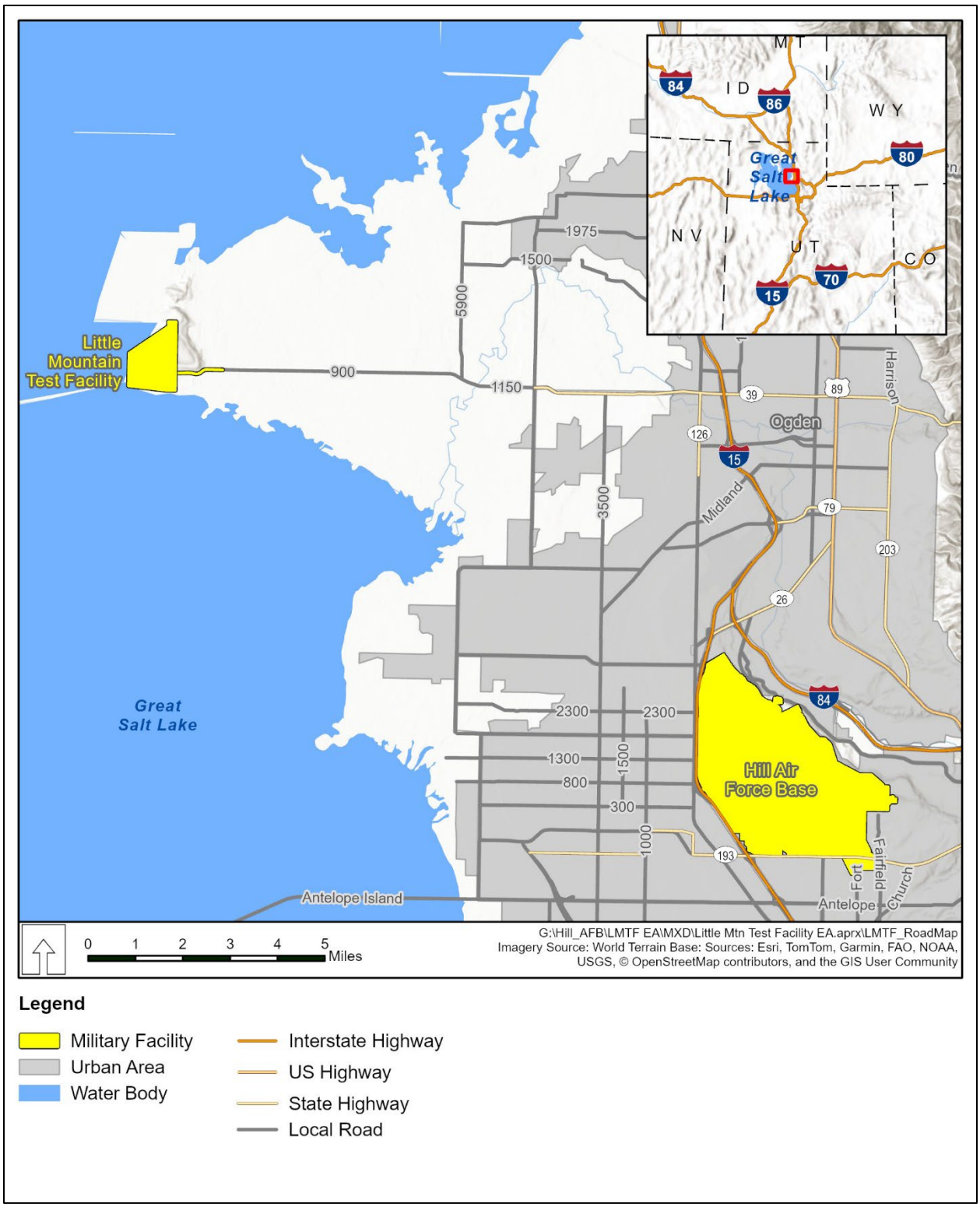

Figure 3-6. Transportation Network Proximate to the Little Mountain Test Facility and Hill Air Force Base

3.11.2.3 Cumulative Actions and Other Considerations

Construction activities associated with the radiation facility composing the Proposed Action and the proposed Propellant Loading Facility, in combination with other reasonably foreseeable infrastructure construction projects in western Weber County as well as proposed transportation improvement and maintenance projects on West 900 South, would have short-term moderate cumulative impacts on transportation, as traffic congestion would increase with more development in the area, as well as temporary lane closures during road improvements. However, there would be long-term, negligible, beneficial cumulative impacts on transportation with the completion of the regional road improvement projects and the associated increase in roadway capacity.

3.12 Hazardous Materials and Wastes, Environmental Restoration Program, and Toxic Substances

See **Appendix D-9** for the definition of this resource.

3.12.1 Affected Environment

Hazardous Materials and Wastes. Hazardous and toxic material procurements at Hill AFB, including the LMTF, are approved by the 75th Civil Engineer Group/Environmental Branch (75 CEG/CEIE), which has overall management responsibility for the Installation's environmental program, and are tracked by Boeing Contractors at the LMTF (Hill AFB 2022). The 75 CEG/CEIE supports and monitors operating permits, HAZMAT, and hazardous waste storage,

spill prevention and response, and is a member of the Environmental Safety and Occupational Health Council (ESOHC) (Hill AFB 2022).

The ESOHC is a network of safety, environmental, and logistics experts who work with HAZMAT Managers, Unit Environmental Coordinators, and other HAZMAT users to ensure safe and compliant HAZMAT management throughout Hill AFB. The Installation Commander is the chairperson of the ESOHC and signs all Resource Conservation and Recovery Act permits and is legally liable for base activities (Hill AFB 2022). The 75 CEG/CEIE provides for hazardous waste disposal through the Defense Logistics Agency Disposition Services. Contracting for the disposal or off-site transfer of hazardous waste without the coordination of 75 CEG/CEIE is prohibited.

The 75 CEG/CEIE maintains the Hazardous Waste Management Plan (Hill AFB 2022) as directed by Air Force Manual (AFMAN) 32-7002, *Environmental Compliance and Pollution Prevention*, and complies with 40 CFR Parts 260 - 272. This plan prescribes the roles and responsibilities of all members of the ESOHC with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The Hazardous Waste Management Plan (Hill AFB 2022) establishes the procedures to comply with applicable federal, state, and local standards for solid waste and hazardous waste management. The plan outlines procedures for transport, storage, and disposal of hazardous wastes.

The 75 CEG/CEIE Hazardous Waste Program Manager ensures that appropriate procedures are properly communicated and followed by all necessary personnel (Hill AFB 2022). The Enterprise Environmental, Safety, and Occupational Health Management Information System (EESOH-MIS) is a database that tracks acquisition and inventory control of HAZMAT. Petroleum products and other HAZMAT such as fuels, flammable solvents, paints, corrosives, pesticides, deicing fluid, refrigerants, and cleaners are used throughout Hill AFB for various functions. including aircraft maintenance, aircraft ground equipment maintenance, and ground vehicles, communications infrastructure, and facilities maintenance.

Hazardous wastes generated at LMTF include waste flammable solvents, contaminated fuels and lubricants, paint/coating, stripping chemicals, waste oils, waste paint-related materials, mixed-solid waste, and other miscellaneous wastes. Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called “universal wastes,” and their associated regulatory requirements are specified in 40 CFR Part 273. Types of waste currently covered under the universal waste regulations include fluorescent light tubes, hazardous waste batteries, hazardous waste thermostats, and hazardous waste lamps.

Hill AFB generates varying amounts of hazardous waste as a Large Quantity Generator (USEPA identification and permit number UT0571724350) as defined by the USEPA (40 CFR § 260.10). LMTF operates an initial accumulation site at Building 4301 and a hazardous waste accumulation site (Building 1100), where up to 55 gallons of total regulated hazardous wastes or up to 1 quart of acutely hazardous wastes are accumulated for up to 90 days (Hill AFB 2021). Hazardous wastes are then transported to an off-base approved hazardous waste landfill or incinerator by an approved hazardous waste hauler.

An inventory of ASTs and underground storage tanks (USTs) is maintained by Hill AFB for the LMTF and includes the location, contents, capacity, containment measures, status, and installation dates. LMTF has fuel storage tanks, oil-filled equipment, and HAZMAT and hazardous waste storage areas. There are six ASTs at LMTF containing POLs: 28,000-gallon mineral oil tanks in Building 4301, a 6,000-gallon diesel fuel tank in Building 3902, a 525-gallon dielectric oil tank in Building 4301, a 100-gallon diesel fuel tank in Building 3902, an 86-gallon diesel fuel tank in Building 4301, and a 500-gallon diesel fuel tank in Building 4301. There is one UST for chemical waste storage at LMTF (Hill AFB 2021).

Environmental Restoration Program/Military Munitions Response Program. Environmental restoration activities have been underway since the signing of a Federal Facilities Agreement in 1991 between Hill AFB and regulatory agencies. Sites of contamination were organized into Operable Units based on similar contaminants and/or geography. Currently, remedial actions are in place at nearly all areas where risk exists for humans or the natural environment on and off-installation. Coordination for soil and water investigation and possible cleanup must be undertaken with the Environmental Management Flight prior to conducting any construction requiring substantial ground disturbance (Hill AFB 2016).

A review of Environmental Restoration Program (ERP) sites at the LMTF proximate to the proposed radiation facility indicate that there is one ERP site that is proximate to, but does not overlap with, the proposed radiation facility project site (**Figure 3-7**). Site ST066 is a gasoline release from a UST formerly associated with Building 4301. This site has been remediated and is closed in the Enterprise, Environmental, Safety, Occupational Health – Management Information System.

Toxic Substances. Toxic substances might pose a risk to human health but are not regulated as contaminants under the hazardous waste statutes. Included in this category are asbestos-containing materials (ACM), lead-based paint (LBP), radon, and polychlorinated biphenyls (PCBs). Asbestos has not been used in construction materials since 1989, and lead has not been used as an additive to paint and pigment since 1978. Only buildings older than these dates have the potential to contain ACM and LBP. Hill AFB's Hazardous Waste Management Plan (Hill AFB 2022) indicates that there are no known PCB materials at the LMTF, and all equipment is PCB free.

The USEPA and the US Surgeon General have evaluated the radon potential around the country to organize and assist building code officials in deciding whether radon-resistant features are applicable in new construction. Radon zones can range from 1.0 (high) to 3.0 (low). The USEPA radon zone for Weber County is Zone 2 (moderate potential); predicted average indoor level may be between 2.0 and 4.0 picocuries per liter; however, radon potential throughout the counties can vary (USEPA 2023). The radon zone designation reflects the average short-term radon measurement that can be expected in a building without the implementation of radon control methods.

3.12.2 Environmental Consequences

Impacts on HAZMAT management would be considered adverse if the federal action resulted in noncompliance with applicable federal and state regulations or increased the amounts of hazardous waste generated or HAZMAT procured beyond current waste management procedures and capacities at the Installation. Impacts on the ERP would be considered adverse if the federal action disturbed (or created) contaminated sites, resulting in negative effects on human health or the environment.

3.12.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

Hazardous Materials and Wastes. There would be short-term, negligible, adverse impacts on HAZMAT and wastes due to the construction of a new radiation facility. The quantity of HAZMAT such as POLs used in vehicles and equipment would increase on the LMTF during construction. However, all HAZMAT required for construction operations would be properly tracked and maintained, and only the smallest quantities necessary to support the construction would be used. Further, all hazardous waste generated as a result of construction activities would be disposed of properly and in accordance with federal, state, and local regulations. By following the HAZMAT management and hazardous waste disposal requirements during construction activities, the proper handling of HAZMAT and disposal of hazardous wastes would be assured.

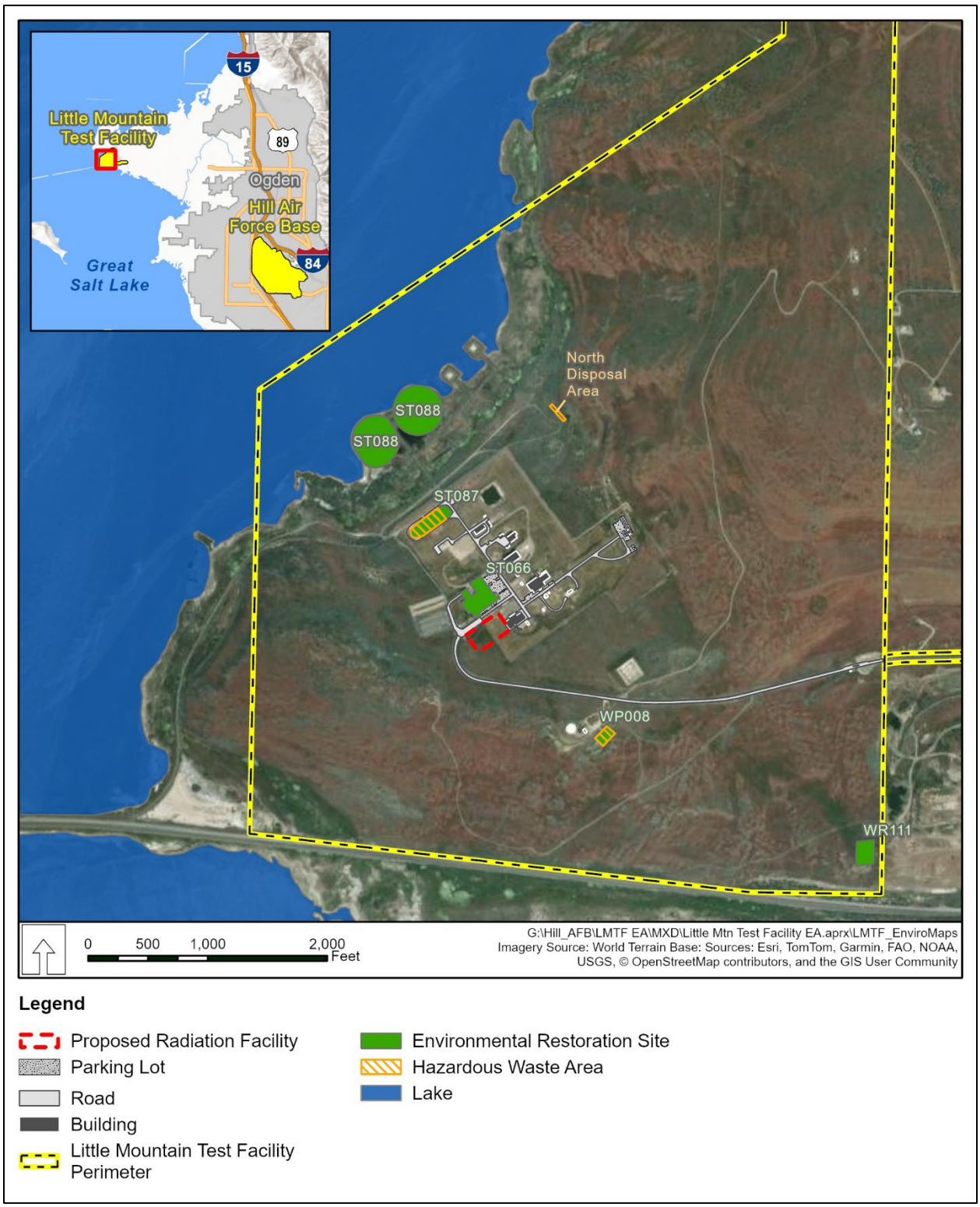

Figure 3-7. Environmental Restoration Sites at the Little Mountain Test Facility

The operation of the radiation facility at the LMTF would require the modification of the Hill AFB and LMTF existing Hazardous Waste Permit as well as the modification of the Hill AFB and LMTF existing Radioactive Material Permit.

Environmental Restoration Program. There would be no impacts on ERP site ST066 as the ERP site is closed and does not overlap the proposed radiation facility project area.

Toxic Substances. There is a moderate potential for radon to pose a health hazard within the proposed radiation facility. However, the new facility would be designed and constructed to eliminate the risk of radon as a health hazard. Therefore, no impact from radon would be anticipated.

Because there would be no building renovation or demolition associated with the Proposed Action, there would be no impacts on ACM or LBP. The LMTF is PCB free (Hill AFB 2022).

3.12.2.2 No Action Alternative

The radiation facility would not be constructed under the No Action Alternative. Therefore, there would be no impacts on HAZMAT and hazardous wastes, ERP sties, or toxic substances.

3.12.2.3 Cumulative Actions and Other Considerations

Hazardous Materials and Wastes. There would be short-term, negligible, adverse, cumulative impacts on HAZMAT and wastes with the construction and operation of the radiation facility in combination with other ongoing testing projects at the LMTF and proposed off-base development and transportation maintenance projects in western Weber County The quantity of HAZMAT such as POLs used in vehicles and equipment would increase cumulatively on the LMTF during construction of these facilities and regionally with proposed development and highway maintenance projects. However, all HAZMAT required for construction and operational activities at the LMTF would be properly tracked and maintained. All hazardous waste generated as a result of the proposed construction activities would be disposed of properly and in accordance with the Hill AFB *Hazardous Waste Management Plan* (Hill AFB 2022). Following the requirements of federal, state, and local regulations during all proposed projects on the LMTF would ensure the proper handling of HAZMAT and disposal of hazardous wastes. For the construction of off-base highway maintenance projects and development projects, the use and tracking of all HAZMAT and disposal of hazardous waste would follow local, state, and federal regulations.

Environmental Restoration Program. The ERP sites on the LMTF would be avoided by construction activities. Therefore, there would be no cumulative impacts on the ERP at the LMTF.

Toxic Substances. No renovation or demolition projects are proposed at the LMTF. Therefore, there would be no cumulative impacts on ACM or LBP from the proposed radiation facility construction and operation. Further, the LMTF is PCB free; therefore, there would be no cumulative impacts on PCBs from the construction and operation of the radiation facility.

3.13 Socioeconomics

See **Appendix D-10** for the definition of this resource.

3.13.1 Affected Environment

As the principal city of the second largest Metropolitan Statistical Area in Utah, Ogden serves as an economic hub for the northern part of the state. Much of central Ogden is occupied by offices of federal, state, county, and municipal government entities. The Internal Revenue Service has a large regional facility in Ogden and is the city's largest employer with over 5,000 employees. Other large employers include McKay Dee Hospital, Weber State University, Ogden City School District, Autoliv, Fresenius, and Convergys.

The western parts of the city of Ogden have several industrial areas. The largest is Business Depot Ogden, a former Army depot that was restructured to be a business park covering more than 1,000 acres. Within western Weber County, newly established or planned employers are Northrop Grumman with 2,250 jobs, YaYa Foods with 300 jobs, and Williams International with 300 new employees. Hill AFB supports an estimated workforce of 26,762 persons (6,008 military, 14,533 civilians; and 6,221 contractors) and approximately 4,407 military dependents with an overall economic impact of $11 billion annually (Hill AFB 2023).

The population of Weber County was estimated to be 271,926 in 2023, and the population has grown 3.7 percent since 2020. This is less than the rate of population growth in Utah from 2020 to 2023, which was 4.5 percent but more than the 2020 to 2023 population growth in the US, which was 1.0 percent (US Census Bureau 2024).

In 2023, the average unemployment rate for Weber County was 2 percent (US Bureau of Labor Statistics 2024a). This unemployment rate was similar to the 2023 average unemployment rate for the state of Utah, which was 2.6 percent, but substantially lower than the average unemployment rate for the US, which was 3.6 percent (US Bureau of Labor Statistics 2024b).

The median household income in 2023 was $87,083 for Weber County. The median household income of Weber County was slightly lower than that of the state of Utah ($91,750), but a higher median household incomes than the US ($78,538). The rate of persons in poverty in 2023 was 8.5 percent for Weber County, which was less than the rate of persons in poverty in Utah (9.0 percent) and in the US (11.1 percent) (US Census Bureau 2024).

The Weber County School District provides a public education for 32,536 students. The school district includes 35 elementary schools, 13 junior high schools, and 5 high schools (Weber County School District no date).

3.13.2 Environmental Consequences

Consequences to socioeconomic resources were assessed in terms of the potential impacts on the local economy from the Proposed Action. The level of impacts associated with construction expenditure is assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing, employment, community resources). The

magnitude of potential impacts can vary greatly, depending on the location of an action. For example, implementation of an action that creates 10 employment positions might be unnoticed in an urban area, but it might have significant impacts in a rural region.

In addition, if potential socioeconomic changes resulting from other factors were to result in substantial shifts in population trends or in adverse effects on regional spending and earning patterns, they may be considered adverse.

3.13.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

Additional materials and labor for the proposed radiation facility construction would have a short-term, negligible, beneficial impact on the socioeconomic condition of the region. There would be increased expenditures in the region during these construction activities, but expenditures such as increased construction-related payroll tax revenue and the purchase of additional equipment, materials, and fuel would cease at the end of construction.

There would be a long-term, negligible, beneficial impact from the operation of the radiation facility. An additional 30 personnel would be employed at the LMTF to support the testing operations at the radiation facility. Assuming an average salary and benefits for each of these new employment positions would average $150,000, the proposed radiation facility would increase the expenditures for labor in the Weber County region by approximately $4.5 million. However, given the total economic activity for Weber County, with its 271,926 people and associated jobs, this is a negligible increase in labor expenditures for the region.

3.13.2.2 No Action Alternative

Under the No Action Alternative, there would be no construction of a new radiation facility. Further, there would be no additional employment associated with the operations at the radiation facility. Therefore, there would be no impacts on socioeconomics.

3.13.2.3 Cumulative Actions and Other Considerations

There would be short-term, minor, beneficial cumulative impacts from the additional materials and labor associated with the radiation facility construction and the proposed Propellant Loading Facility construction in combination with other proposed construction projects in western Weber County. Collectively these proposed construction and improvement projects would provide benefits to the socioeconomic condition of Weber County, Utah. There would be increased expenditures in the region during these construction activities, but expenditures such as increased construction-related payroll tax revenue and the purchase of additional equipment, materials, and fuel would cease at the end of construction of the Proposed Action and other reasonably foreseeable off-base projects. There would be a long-term, minor, beneficial cumulative impact from the employment of 30 additional personnel at the LMTF in combination with the additional employment from the proposed development projects in western Weber County.

3.14 Health and Safety

See **Appendix D-11** for the definition of this resource.

3.14.1 Affected Environment

Daily testing operations conducted at the LMTF are performed in accordance with applicable DAF safety regulations, DAF technical guidance, and the standards stipulated in DAF Occupational Safety and Health requirements. Construction activities on LMTF have associated inherent risks such as chemical (e.g., asbestos, lead, HAZMAT) and physical (e.g., noise propagation, falling, electrocution, collisions with equipment) sources. Companies and individuals contracted to perform construction activities on Air Force installations are responsible for adhering to Occupational Safety and Health Administration (OSHA) requirements to mitigate these hazards. Industrial hygiene programs address exposure to HAZMAT, use of personal protective equipment, and the availability and use of safety data sheets, the latter of which are also the responsibility of construction contractors to provide to workers. Federal civilian and military personnel that have a need to enter areas under construction should be familiar with and adhere to OSHA and DAF Occupational Safety and Health requirements, as well as applicable industrial hygiene programs. Individuals tasked to operate and maintain equipment, such as power generators, are responsible for following all applicable technical guidance, as well as adhering to established OSHA and DAF safety guidelines.

Health and safety hazards can be identified and subsequently reduced or eliminated before an activity begins. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself, together with the exposed population. The degree of exposure to hazards depends primarily on the proximity of the hazard to the population. Hazards include transportation, maintenance and repair activities, noise, and fire. The proper operation, maintenance, and repair of vehicles and equipment are important for reducing safety risks. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments due to noise and fire hazards for nearby populations. Noise environments can also mask verbal or mechanical warning signals such as horns and sirens.

3.14.2 Environmental Consequences

Impacts that pose a long-term risk to human health or safety are evaluated. Impacts would be considered significant if federal civilian, military, or contractor personnel did not comply with established OSHA and DAF safety guidelines. There are potential health and safety concerns with proposed construction and demolition activities. Munitions operations would remain unchanged under the Proposed Action. All management and mitigation of risk from munitions handling and storage would remain the same under the Proposed Action.

The health and safety of on-site military and civilian workers are safeguarded by numerous DoD and military-branch-specific requirements designed to comply with standards issued by federal OSHA, USEPA, and state occupational safety and health agencies. These standards specify health and safety requirements, the amount and type of training required for workers, the use of

personal protective equipment, administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires the evaluation of potential disproportionate health and safety risks to children from federal activities. However, the LMTF is a secure and gated facility, and no children are located on or proximate to the LMTF. Therefore, there would be no health or safety risks to children from any activities at the LMTF.

3.14.2.1 Alternative 1: New Radiation Facility at the Little Mountain Test Facility

There would be short-term, negligible, adverse impacts on health and safety as a result of the construction of the radiation facility. Construction activities inherently pose increased health and safety risks to workers, military personnel, and the public. However, all construction personnel would be responsible for following federal and state safety regulations and DoD and OSHA safety standards and would be required to conduct construction activities in a manner that does not increase risk to workers, military personnel, or the public.

Personnel at the LMTF have been conducting advanced nuclear hardness and aging surveillance testing on military materials and components, such as missile motors, propellants, warheads, and other ordnance since 1970. These personnel perform a variety of job-related tasks that could result in injury, illness, or even death, including exposure to ionizing radiation, if not properly managed. However, to minimize the risks associated with the testing activities at the radiation facility, personnel would follow strict safety standards and procedures, which are reviewed and updated periodically. Workers would all be required to receive adequate training, including upon the start of work activities and then periodic refresher training. They would be required to wear appropriate personal protective equipment and receive medical screening if their testing activity tasks could expose them to conditions that could affect their health. Further, all mishaps would be reported and investigated in accordance with DAFI 91-204, *Safety Investigations and Reports*, and Department of the Air Force Manual (DAFMAN) 91-224, *Ground Safety Investigations and Reports*, to determine how to prevent them in the future. Because safety of personnel performing testing activities at the LMTF would remain paramount, and all DAF guidance on health and safety procedures followed, there would not be any impacts on health and safety from the testing operations at the proposed radiation facility.

3.14.2.2 No Action Alternative

There would be no construction of a radiation facility under the No Action Alternative. There would be no advanced nuclear hardness testing at the proposed radiation facility under the No Action Alternative. Therefore, there would be no change in health and safety risks to workers, military personnel, or the public.

3.14.2.3 Cumulative Actions and Other Considerations

The implementation of the Proposed Action in combination with other reasonably foreseeable projects on and proximate to the LMTF, including the proposed off-base highway maintenance

projects, would have a negligible, cumulative, adverse impact on health and safety due to the inherent increase in health and safety risks associated with conducting construction projects. All proposed construction and demolition projects implemented on the LMTF would follow federal and state safety regulations and DoD and OSHA safety standards. All other proposed construction and demolition projects would be required to conduct construction activities in a manner that does not increase risk to workers, military personnel, or the public.

The proposed highway improvement projects, such as the West 900 South widening project, would be constructed following all federal and state safety regulations, including those required by the Federal Highways Administration and the Utah Department of Transportation. The proposed radiation facility construction when combined with other reasonably foreseeable future construction projects would not have a cumulative adverse impact on health and safety and would not be expected to increase risk to workers and the public.

4.0 LIST OF PREPARERS

The following government agency individuals supported the preparation of this EA.

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Table 4-1 provides the list of preparers from the contractor team for this Environmental Assessment.

Table 4-1. List of Preparers

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Christa Stumpf	Versar Inc.	MS, Forest Resource and Land Use Planning BS, Wildland Management	28	Quality Assurance/Quality Control Review
Eric Webb, PhD	Vernadero Group Inc.	PhD, Oceanography and Coastal Sciences MS, Biology BS, Biology	28	Project Management, Soils, Socioeconomics, Health and Safety
Ralph Tharp, AICP	Vernadero Group Inc.	BS, Urban Geography MS, Urban Geography	35	Land Use, Socio-Economic, Water Resources, Soils and Topography, Infrastructure and Transportation

GISP – Geographic Information Systems Professional; **AICP** – American Institute Certified Planner

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APPENDIX A. INTERAGENCY AND INTERGOVERNMENTAL COORDINATION, PUBLIC NOTICES, AND PUBLIC COMMENTS

FORMAT PAGE

LIST OF AGENCIES AND TRIBES CONTACTED

Agencies

Michelle McConkie, Director
Utah School of Institutional Trust Lands Administration
102 Tower
102 South 200 East, #600
Salt Lake City, Utah 84111

Matt Preston, State Director
Bureau of Land Management
440 West 200 South, Suite 500
Salt Lake City, Utah 84101

LtCol Skenfield, Air Force Representative
Federal Aviation Administration
800 Independence Ave.
Washington, DC 20591

Kim Shelley, Executive Director
Utah Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah 84116

Bill James, NEPA Coordinator
Utah Division of Wildlife Resources
1594 W. North Temple
Salt Lake City, Utah 84116

Brandon Weston, Director of Environmental Services
Utah Department of Transportation
4501 South 2700 West
Salt Lake City, Utah 84114-8450

Stephanie Russell, Economic Development Director
Weber County Economic Development Department
2380 Washington Blvd, Ste 360
Ogden, Utah 84401

Bren Edwards, Chair
Western Weber County Planning Commission
2380 Washington Blvd.
Ogden, Utah 84401

Gage Froerer, Commissioner
Weber County Commission
2380 Washington Blvd., Suite 360
Ogden, Utah 84401

Sharon Bolos, Commissioner
Weber County Commission
2380 Washington Blvd., Suite 360
Ogden, Utah 84401

James Harvey, Commissioner
Weber County Commission
2380 Washington Blvd., Suite 360
Ogden, Utah 84401

Stephanie Pack, Director
Utah Inland Port Authority
60 E. South Temple, Suite 600
Salt Lake City, Utah 84111

Dr. Chris Merritt, State Historic Preservation Officer
Utah State Historic Preservation Office
3760 S. Highland Drive
Millcreek, Utah 84106

George Weekly, Field Office Supervisor
US Fish and Wildlife Service
2369 Orton Circle, Suite 50
West Valley City, Utah 84119

Tribes

Blackfeet Nation

Confederated Tribes of the Goshute Indian Reservation

Crow Tribe of Montana

Duckwater Shoshone Tribe

Eastern Shoshone Tribe

Ely Shoshone Tribe

Hopi Tribe

Little Shell Tribe of Chippewa Indians of Montana

Navajo Nation

Northern Arapaho Tribe

Northwestern Band of the Shoshone Nation

Paiute Tribe of Utah

Pueblo of Zuni

San Juan Southern Paiute Tribe

Shoshone-Bannock Tribes of the Fort Hall Reservation

Shoshone-Paiute Tribes of the Duck Valley Reservation

Skull Valley Band of Goshute Indians

Te-Moak Tribe of Western Shoshone

Ute Indian Tribe

Ute Mountain Ute Tribe

Wells Band of Western Shoshone

EXAMPLE SCOPING LETTER

FORMAT PAGE

DEPARTMENT OF THE AIR FORCE
75TH CIVIL ENGINEER GROUP (AFMC)
HILL AIR FORCE BASE UTAH

27 November 2024

Amanda Burton
Chief, Environmental Branch
7290 Weiner St, Building 383
Hill AFB UT 84056

Matt Preston
State Director
Bureau of Land Management
440 West 200 South, Suite 500
Salt Lake City Utah 84101

SUBJECT: Proposed Radiation Facility at the Little Mountain Test Facility, Hill Air Force Base, Utah

Dear Matt Preston

Hill Air Force Base (AFB) is proposing to construct a radiation facility at the Little Mountain Test Facility (LMTF), Weber County, Utah (Figure 1), to support an increased demand for nuclear hardness simulation testing and planned test equipment upgrades associated with the Sentinel Program. In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council of Environmental Quality regulations, and Department of the Air Force NEPA regulations, Hill AFB is preparing a Draft Environmental Assessment and proposed Finding of No Significant Impact to assess potential environmental impacts of the proposed construction and operation of a radiation facility at the LMTF.

The Proposed Action would construct a new 50,000-square foot facility (Figure 2) providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators would be relocated to the new building to centralize testing functions. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF. The new facility would include radiation effects laboratories, loading docks, support areas for material storage and dosimetry testing, a conference room, and personnel offices. A 12-foot-wide perimeter road would be constructed around the radiation facility to provide access to the exterior of the building and allow for maintenance and snow removal. The Proposed Action would include an additional 30 personnel who would support testing operations at the proposed radiation facility.

Please forward your written comments or requests for additional information to Steve Vlaming, 75 CEG/CEIEA, NEPA/EIAP Project Manager, 7290 Weiner St (Bldg 383), Rm 103, Hill AFB, UT 84056-5003. Mr. Vlaming can also be reached at 801-777-2783 or by email at stephen.vlaming.1@us.af.mil. We request your comments within 30 days of receipt of this letter

to ensure we can address them during the environmental impact analysis process. Thank you for your assistance.

Sincerely

BURTON.AMANDA.CHRISTINE.1270023068

Digitally signed by BURTON.AMANDA.CHRISTINE.1270023068
Date: 2024.12.03 12:05:51 -07'00'

AMANDA C BURTON, NH-III, DAF
Chief, Environmental Branch

Attachments:
1. Figure 1. Little Mountain Test Facility Regional Map
2. Figure 2. Proposed Radiation Facility at the Little Mountain Test Facility

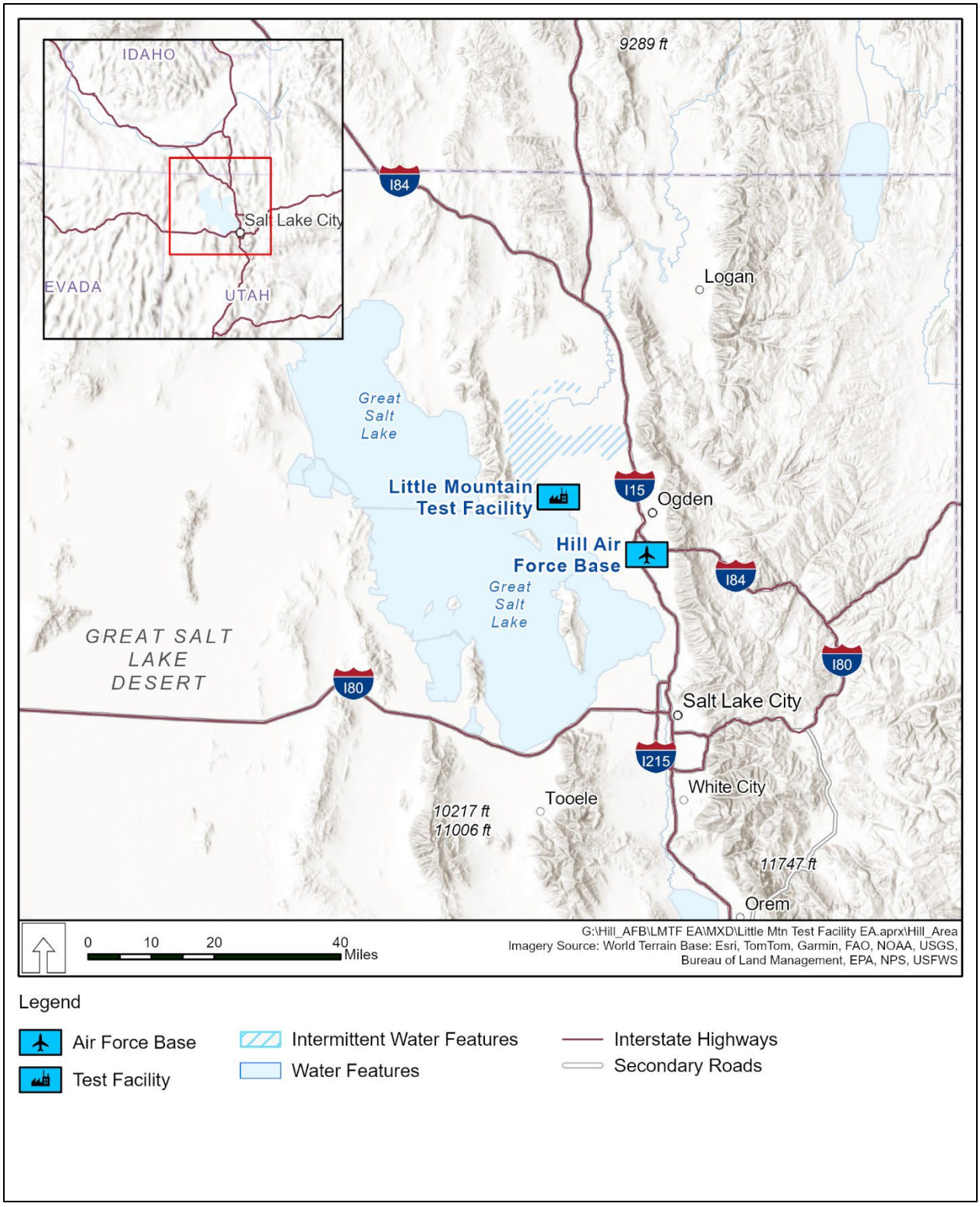

Figure 1. Little Mountain Test Facility Regional Map

Figure 2. Proposed Radiation Facility at the Little Mountain Test Facility

PUBLIC NOTICES

FORMAT PAGE

AFFIDAVIT OF PUBLICATION IN THE FIRST JUDICIAL DISTRICT COURT

State of Utah ss
County of Utah

Jamie Rivera being duly sworn, says:

That she is the Legals Billing Clerk of the Standard Examiner, which is, and was at the times of publication, hereinafter mentioned, a newspaper printed and published in Weber County in the State of Utah:
that the copy, a copy of which is attached hereto, was published in the said newspaper on the dates listed below.

Was published in said newspaper First, on **3/15/2025** 2 TIMES and last on **3/18/2025**

That said newspaper was regularly issued and circulated on those dates. Same was also published online at utahlegals.com, according to Section 45-1-101 -Utah code Annotated, beginning on the first date of publication, for at least 30 days thereafter and a minimum of 30 days prior to the date of scheduled.

Jamie Rivera

Legals Billing Clerk

Subscribed and sworn to before me on this date **3/18/2025**

Jayne Dunn

Jayne Dunn, Notary Public, Weber County, Utah
My Commission Expires: September 10, 2026

JAYNE DUNN
NOTARY PUBLIC • STATE OF UTAH
COMMISSION NO. 726614
COMM. EXP. 09/10/2026

NOTICE OF AVAILABILITY

Draft Environmental Assessment for a Radiation Facility at the Little Mountain Test Facility, Hill Air Force Base, Utah

A Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) have been prepared by the Department of the Air Force (DAF) to analyze the impacts associated with the proposed construction of a radiation facility at the Little Mountain Test Facility (LMTF), Weber County, Utah.

The Proposed Action would construct a new 50,000-square foot facility providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators would be relocated to the new building to centralize testing functions. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF. The new facility would include radiation effects laboratories, loading docks, support areas for material storage and dosimetry testing, a conference room, and personnel offices. A 12-foot-wide perimeter road would be constructed around the radiation facility for access to the exterior of the building and to allow for maintenance and snow removal. The Proposed Action would include an additional 30 personnel who would support testing operations at the proposed radiation facility.

The Draft EA and Draft FONSI are available electronically at the Hill Air Force Base (AFB) website at **https://www.hill.af.mil/Home/Environmental/**. A printed copy has also been made available at the Weber County Library Main Branch, 2464 Jefferson Avenue, Ogden, Utah 84401.

The public comment period for this Draft EA and Draft FONSI extends from 15 March 2025 through 15 April 2025. During this time, comments may be sent to Mr. Steve Vlaming, 75 CEG/CEIEA, NEPA EIAP Project Manager, 7290 Weiner St (Bldg 383), Rm 103, Hill AFB, Utah 84056-5003, or emailed to stephen.vlaming.1@us.af.mil. If you have any questions, please contact Hill AFB Public Affairs at (801) 777-5201. Please note that in accordance with Privacy Act provisions, the DAF will not publish personal information of commenters, such as home addresses, e-mail addresses, or phone numbers.

APPENDIX B. GOVERNMENT-TO-GOVERNMENT CONSULTATION LETTERS

FORMAT PAGE

Example Tribal Scoping Letter

From: KITTERMAN, ANYA D CIV USAF AFMC 75 CEG/CEIEC
To: [redacted]
Subject: Tribal Notification - Little Mountain Test Facility Project and Environmental Assessment Notificatior
Date: Tuesday, December 10, 2024 3:16:0[redacted] PM
Attachments: LMTF Radiation Facility_Tribal Notification LTR_Wells Band.pdf

---

To Whom it May Concern:

Hill AFB is currently undertaking all tribal consultation digitally. We are notifying you of an upcoming Little Mountain Test Facility project. The project will require an environmental assessment (EA) and the Air Force is inviting you to consult. Please see the attached invitation letter and forward all comments, questions, or concerns for the project to me at the contact information below. We look forward to working with you.

Very Respectfully,

Anya Kitterman
Cultural Resource Manager
7290 Weiner St, Bldg 383
Hill AFB, UT 84056
[redacted]

DEPARTMENT OF THE AIR FORCE
75TH CIVIL ENGINEER GROUP (AFMC)
HILL AIR FORCE BASE UTAH

3 December 2024

Amanda Burton
Chief, Environmental Branch
Installation Tribal Liaison Officer
7290 Weiner St, Building 383
Hill AFB UT 84056

Julius Murray
Chairman
Ute Indian Tribe
PO Box 190
Fort Duchesne UT 84026

SUBJECT: Proposed Radiation Facility at the Little Mountain Test Facility, Hill Air Force Base, Utah

Dear Chairman Murray

In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council of Environmental Quality regulations, and the Department of Air Force (DAF) NEPA regulations, Hill Air Force Base (AFB) is preparing an Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI), to assess the potential environmental impacts of constructing a radiation facility at the Little Mountain Test Facility (LMTF), Weber County, Utah (Figure 1). The proposed radiation facility would support an increased demand for nuclear hardness simulation testing and planned test equipment upgrades associated with the Sentinel Program.

The Proposed Action would construct a new 50,000-square foot facility (Figure 2) providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators would be relocated to the new building to centralize testing functions. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF. The new facility would include radiation effects laboratories, loading docks, support areas for material storage and dosimetry testing, a conference room, and personnel offices. A 12-foot-wide perimeter road would be constructed around the radiation facility to provide access to the exterior of the building and allow for maintenance and snow removal. The Proposed Action would include an additional 30 personnel who would support testing operations at the proposed radiation facility.

The EA will assess potential environmental consequences associated with the Proposed Action and the No Action Alternative. As part of the Air Force's Environmental Impact Analysis Process, and pursuant to Section 106 of the National Historic Preservation Act, implementing 36 Code of Federal Regulations Part 800, and Department of Defense Instruction 4710.02 Section 3, *DoD Interactions with Federally Recognized Tribes*, we request government-to-government consultation on this Proposed Action. Specifically pursuant to 36 Code of Federal Regulations § 800.4(a)(4), we invite you to provide information on any properties of historic, religious, or cultural significance that may be affected by the implementation of the proposed undertaking.

Regardless of whether you choose to consult on this project, Hill AFB will comply with the Native American Graves Protection and Repatriation Act and the Archaeological Resources Protection Act by informing you of any inadvertent discovery of archaeological or human remains (though none are anticipated as no ground-disturbing activities are associated with the Proposed Action). Being defined as a federal undertaking, we are seeking input and inviting participation from other consulting parties, such as the Utah State Historic Preservation Office.

Please forward your written comments or requests for additional information at your earliest convenience to Anya Kitterman, Hill AFB Cultural Resource Manager, at [redacted], and Amanda Burton, Environmental Branch Chief/Installation Tribal Liaison Officer, at [redacted]. This will ensure Hill AFB has sufficient time to fully consider your inputs when preparing the Draft EA and proposed FONSI. I look forward to receiving any input you may have regarding this endeavor. Thank you in advance for your assistance with this request.

Sincerely,

Amanda Burton

AMANDA BURTON, NH-III, DAF
Chief, Environmental Branch
Installation Tribal Liaison Officer

Attachments:
Figure 1. Little Mountain Test Facility Regional Map
Figure 2. Proposed Radiation Facility Area of Potential Effect (APE)

cc:
Betsy Chapoose, THPO

Distribution List:
Blackfeet Nation; Confederated Tribes of the Goshute Indian Reservation, Nevada and Utah; Crow Tribe of Montana; Duckwater Shoshone Tribe of the Duckwater Reservation; Eastern Shoshone Tribe of the Wind River Reservation, Wyoming; Ely Shoshone Tribe of Nevada; Hopi Tribe of Arizona; Navajo Nation of Arizona, New Mexico, and Utah; Northern Arapaho Tribe of the Wind River Reservation, Wyoming; Northwestern Band of the Shoshone Nation; Paiute Tribe of Utah; Pueblo of Zuni; Shoshone-Bannock Tribes of the Fort Hall Reservation; Shoshone-Paiute Tribes of the Duck Valley Reservation; Ute Indian Tribe; Ute Mountain Ute Tribe; Confederated Salish & Kootenai Tribes of the Flathead Reservation; San Juan Southern Paiute Tribe of Arizona; Skull Valley Band of Goshute Indians; Te-Moak Tribe of Western Shoshone Indians of Nevada; Wells Band of Western Shoshone

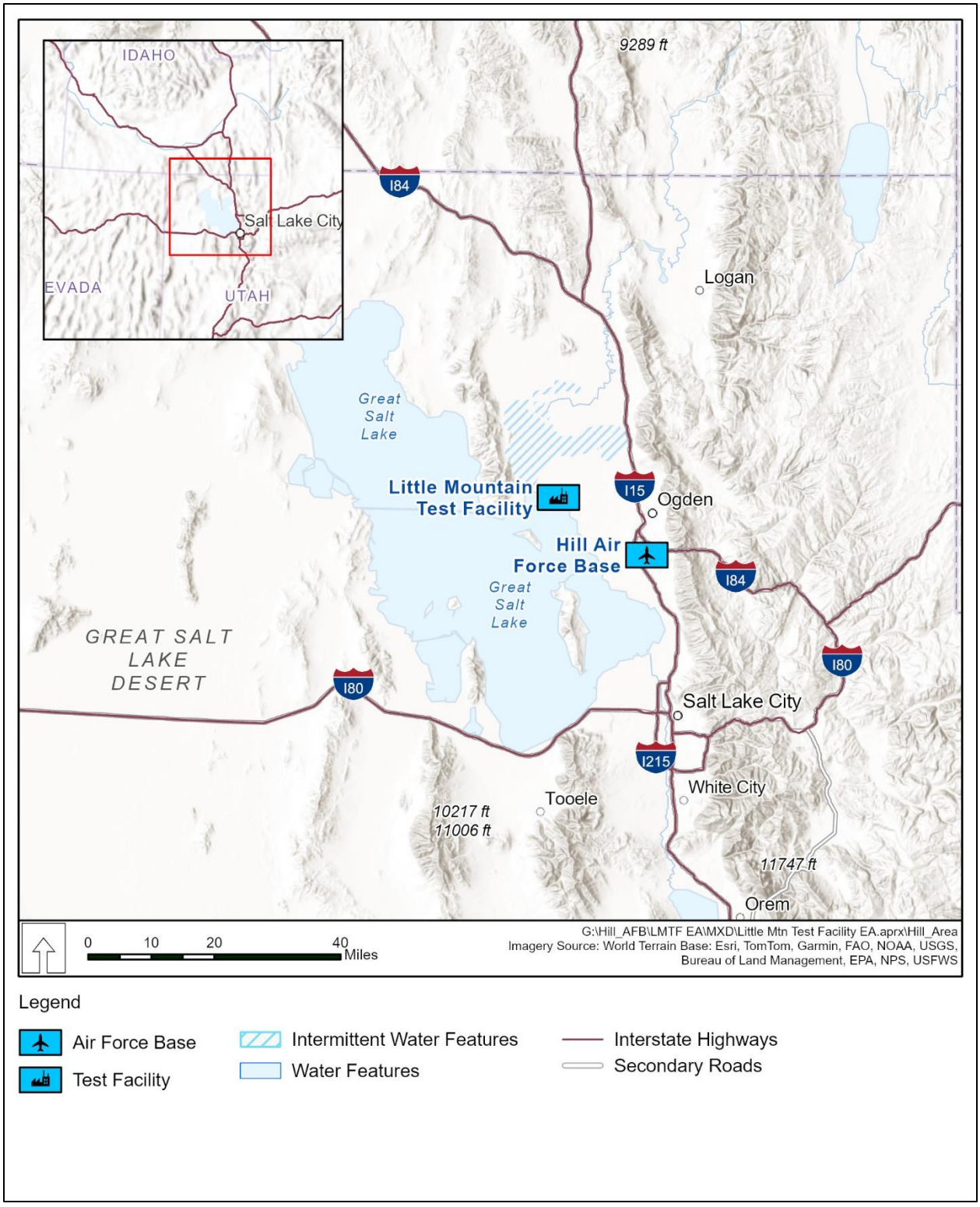

Figure 1. Little Mountain Test Facility Regional Map

Figure 2. Proposed Radiation Facility Area of Potential Effect (APE)

APPENDIX C. AGENCY CONSULTATION LETTERS

FORMAT PAGE

DEPARTMENT OF THE AIR FORCE
75TH CIVIL ENGINEER GROUP (AFMC)
HILL AIR FORCE BASE UTAH

10 December 2024

Amanda Burton
Chief, Environmental Branch
7290 Weiner St, Building 383
Hill AFB UT 84056

Dr. Chris Merritt
Utah State Historic Preservation Officer
3760 S. Highland Dr
Millcreek, Utah 84106

SUBJECT: Proposed Radiation Facility at the Little Mountain Test Facility, Hill Air Force Base, Utah

Dear Dr. Merritt:

Hill Air Force Base (AFB) is proposing to construct a radiation facility at the Little Mountain Test Facility (LMTF), Weber County, Utah (Figure 1), to support an increased demand for nuclear hardness simulation testing and planned test equipment upgrades associated with the Sentinel Program. In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council of Environmental Quality regulations, and Department of the Air Force NEPA regulations, Hill AFB is preparing a Draft Environmental Assessment and proposed Finding of No Significant Impact to assess potential environmental impacts of the proposed construction and operation of a radiation facility at the LMTF.

The Proposed Action would construct a new 50,000-square foot facility (Figure 2) providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators would be relocated to the new building to centralize testing functions. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF. The new facility would include radiation effects laboratories, loading docks, support areas for material storage and dosimetry testing, a conference room, and personnel offices. A 12-foot-wide perimeter road would be constructed around the radiation facility to provide access to the exterior of the building and allow for maintenance and snow removal. The Proposed Action would include an additional 30 personnel who would support testing operations at the proposed radiation facility. The proposed Area of Potential Effects (APE) for the construction and operation of the radiation facility is illustrated in Figure 2.

In compliance with Section 106 of the National Historic Preservation Act, we respectfully request your review of the attached materials and comments on the proposed APE.

Please direct all correspondence to Anya Kitterman, Hill AFB Cultural Resource Manager, at [redacted]. Thank you in advance for your assistance.

Sincerely,

BURTON.AMANDA.CHRISTINE.1270023068

Digitally signed by BURTON.AMANDA.CHRISTINE.1270023068
Date: 2024.12.10 13:52:52 -07'00'

AMANDA BURTON, NH-III, DAF
Chief, Environmental Branch
Installation Tribal Liaison Officer

Attachments:
Figure 1. Little Mountain Test Facility Regional Map
Figure 2. Proposed Radiation Facility Area of Potential Effect (APE)

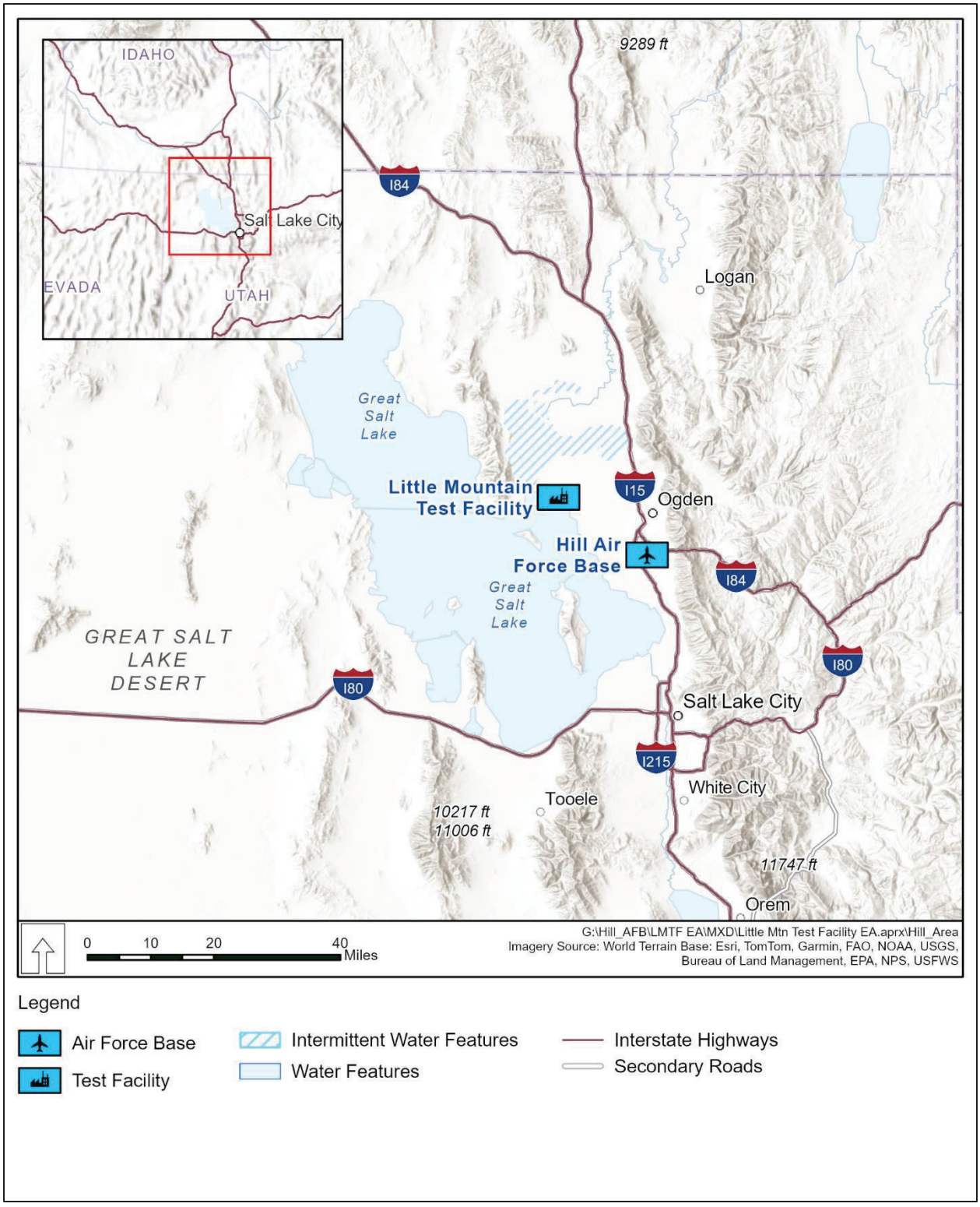

Figure 1. Little Mountain Test Facility Regional Map

Figure 2. Proposed Radiation Facility Area of Potential Effect (APE)

From: noreply@salesforce.com on behalf of Utah SHPO e106 Team
To: KITTERMAN, ANYA D CIV USAF AFMC 75 CEG/CEIEC
Subject: [Non-DoD Source] Thank You for Submitting a Section 106 Compliance (Case #24-3058)
Date: Tuesday, December 10, 2024 3:38:09 PM

Dear Ms Kitterman,
Thank you for submitting your undertaking "Little Mountain RAD Facility Project" to the Utah SHPO via e106. This email is confirmation of receipt, for future correspondence please reference Case Number 24-3058.
Sincerely,
Utah SHPO e106 team

ref:!00D70088Eu.!500Rh0RfXOk:ref

Spencer J. Cox
Governor

Deidre M. Henderson
Lieutenant Governor

Donna Law
Interim Executive Director

Utah SHPO

Christopher Merritt
State Historic Preservation Officer
Utah State Historic Preservation Office

December 10, 2024

Amanda Burton
Chief, Environmental Branch
Hill Air Force Base Archaeology
7290 Weiner St
Bldg. 383
Hill AFB, Utah 84056

RE: Little Mountain RAD Facility Project

For future correspondence, please reference Case No. 24-3058

Dear Amanda Burton,

The Utah State Historic Preservation Office received your submission and request for our comment on the above-referenced undertaking on December 10, 2024.

We concur with your determination of effect for this undertaking.

This letter serves as our comment on the determinations you have made within the consultation process specified in §36CFR800.4. If you have questions, please contact me at [redacted] or by email at [redacted]

Sincerely,

Ryan P McGrath

Ryan McGrath
Compliance Archaeologist

Spencer J. Cox
Governor

Deidre M. Henderson
Lieutenant Governor

Donna Law
Interim Executive Director

Christopher Merritt
State Historic Preservation Officer
Utah State Historic Preservation Office

March 28, 2025

Amanda Burton
Chief, Environmental Branch
Hill Air Force Base Archaeology
7290 Weiner St
Bldg. 383
Hill AFB, Utah 84056

RE: Little Mountain Test Facility, RAD Facility/EPU F16 Facility, Weber County

For future correspondence, please reference Case No. 25-0317

Dear Amanda Burton,

The Utah State Historic Preservation Office received your submission and request for our comment on the above-referenced undertaking on March 27, 2025.

We concur with your determinations of eligibility and effect for this undertaking.

This letter serves as our comment on the determinations you have made within the consultation process specified in §36CFR800.4. If you have questions, please contact me at [redacted] or by email at [redacted]

Sincerely,

Ryan P McGrath

Ryan McGrath
Compliance Archaeologist

DEPARMENT OF THE AIR FORCE
75TH CIVIL ENGINEER GROUP (AFMC)
HILL AIR FORCE BASE UTAH

17 February 2025

Amanda C Burton
Chief, Environmental Branch
7290 Weiner St, Building 383
Hill AFB, UT 84056

Goerge Weekly
Field Office Supervisor
US Fish and Wildlife Service
2369 Orton Circle, Suite 50
West Valley City, UT 84119

SUBJECT: Endangered Species Act Section 7 Consultation for the Proposed Radiation Facility at the Little Mountain Test Facility, Hill Air Force Base, Utah

Dear Mr. Weekly

The Department of the Air Force (DAF) requests informal Section 7 consultation under the Endangered Species Act (ESA) for the proposed radiation facility at the Little Mountain Test Facility (LMTF), Weber County, Utah (Figure 1). The construction of the radiation facility at the LMTF would support an increased demand for nuclear hardness simulation testing and planned test equipment upgrades associated with the Sentinel Program. There are no federally listed species known to occur on the LMTF, and there is no designated critical habitat present. One federal proposed threatened species, the monarch butterfly (*Danaus plexippus*), may occur on the LMTF; however, the DAF has determined that the proposed radiation facility construction and operation would not jeopardize the continued existence of the monarch butterfly.

The Proposed Action would construct a new 50,000-square foot facility (Figure 2) providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators would be relocated to the new building to centralize testing functions. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF. The new facility would include radiation effects laboratories, loading docks, support areas for material storage and dosimetry testing, a conference room, and personnel offices. A 12-foot-wide perimeter road would be constructed around the radiation facility to provide access to the exterior of the building and allow for maintenance and snow removal. The Proposed Action would include an additional 30 personnel who would support testing operations at the proposed radiation facility. A total of 1.4 acres of disturbance would result from the construction of the radiation facility. Approximately 25,000 cubic yards of soil would be excavated from the hillslope from construction and would either be reused within the footprint of the radiation facility for recontouring of the adjacent slopes and/or be trucked to the Weber County Class VI Construction and Demolition Landfill, located approximately one mile from the LMTF access control gate.

The Hill AFB Integrated Natural Resources Management Plan (Hill AFB 2020) and US Fish and Wildlife Service (USFWS) Information for Planning and Consultation System (USFWS 2024) were reviewed for the most up-to-date information concerning federally listed threatened and endangered species on the LMTF. The Integrated Natural Resources Management Plan indicates that there is no suitable habitat to support listed species on the LMTF and no designated critical habitat for any listed

species on the LMTF. The USFWS Information for Planning and Consultation database search identified one proposed threatened species, the monarch butterfly, that could occur on the LMTF. The proposed project area is dominated by nonnative grasses and lacks habitat to support nectaring monarch butterflies. Further, the presence of milkweed species, the host plant for monarch butterflies, is unlikely to occur in the proposed project area. Therefore, the construction and operation of the radiation facility at the LMTF would not disturb habitat that supports monarch butterflies and would be unlikely to directly affect any monarch butterflies.

The Proposed Action would have no effect on federally listed species, because there is no suitable habitat for listed species on the LMTF. The DAF has therefore determined that the construction and operation of the proposed radiation facility at the LMTF would not jeopardize the continued existence of the monarch butterfly. I am requesting your written concurrence with DAF's determinations for this proposed threatened species. Please provide concurrence or comments and additional information concerning the Proposed Action within 30 days of the date of this letter to Steve Vlaming, 75 CEG/CEIEA, NEPA/EIAP Project Manager, 7290 Weiner St (Bldg 383), Rm 103, Hill AFB, UT 84056-5003. Mr. Vlaming can also be reached at 801-777-2783 or by email at stephen.vlaming.1@us.af.mil. Thank you in advance for your assistance.

Sincerely,

2/19/2025

X Amanda Burton

Signed by: BURTON.AMANDA.CHRISTINE.1270023068

AMANDA C. BURTON, NH-III, DAF
Chief, Environmental Branch

Attachments:
1. Figure 1. Little Mountain Test Facility Regional Map
2. Figure 2. Proposed Radiation Facility at the Little Mountain Test Facility

References:

1. Hill Air Force Base (AFB). 2020. Hill Air Force Base Integrated Natural Resources Management Plan 2020 – 2024.
2. US Fish and Wildlife Service (USFWS) - 2024. Information for Planning and Consultation Database Web page (portal). https://ipac.ecosphere.fws.gov. Accessed December 2024.

Figure 1. Location of the Little Mountain Test Facility

Figure 2. Proposed Radiation Facility at the Little Mountain Test Facility

From:	Reisor, Rita S
To:	Eric Webb
Subject:	[External] - ESA Section 7 Informal Consultation for Proposed Radiation Facility at the Little Mountain Test Facility, Hill AFB, Utah
Date:	Friday, February 21, 2025 2:35:53 PM
Attachments:	ESA Letter Radiation Facility LMTF.pdf

Hello Eric,

This letter is in reference to the inquiry we have received from your office for the Radiation Test Facility, Hill AFB and for your findings of "no effect" under section 7 of the Endangered Species Act as amended, (16 USC 1531 et seq., [ESA]).

We have no regulatory or statutory authority for concurring with "no effect" determinations and are not required to provide concurrence or non-concurrence on a "no effect" determination. As a reminder, it is the action agency's (e.g., Federal Communications Commission) responsibility to make effect determinations for compliance with section 7(a)(2) of the Act. When a "no effect" determination is reached, no further action is necessary. However, projects should be re-analyzed if project plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered. We are available to assist with any determinations you have questions about.

If you require further technical assistance on an ESA effect determination, we encourage [Insert Action Agency] to contact our office. For all of your projects, information found on our IPaC website (https://ipac.ecosphere.fws.gov/) can help you determine the potential for any listed species or their habitat to occur in your project area. We recommend that you conduct a comprehensive analysis before concluding that a project will not affect a listed species.

We also encourage you to review your projects relative to responsibilities under the Migratory Bird Treaty Act (MBTA). The Migratory Bird Treaty Act prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by U.S. Fish and Wildlife Service. The Bald and Golden Eagle Protection Act (BGEPA) affords eagles additional protections beyond those provided by the MBTA by making it unlawful to "molest or disturb" eagles or destroy their nests. To reduce effects to migratory birds, we recommend constructing outside of migratory bird nesting season, using self-supporting structures without guy wires, and keeping habitat disturbance to a minimum. We recommend completing habitat, raptor, and migratory bird surveys prior to siting, and siting the tower in conjunction with other tower locations to reduce habitat disturbance and potential effects to migratory birds. Additional guidance relative to the MBTA can be found at the following website:

https://www.fws.gov/media/recommended-best-practices-communication-tower-design-

siting-construction-operation

We appreciate your efforts to ensure conservation of federally listed species. If you have any questions regarding this letter, please contact our office at utahfieldoffice_esa@fws.gov.

Thank you,

Rita Reisor

Deputy State Supervisor
USFWS Utah Ecological Services Field Office
Teams:
Work Cell:
Main Office:

https://www.fws.gov/utahfieldoffice/
Submit project requests to: utahfieldoffice_esa@fws.gov

From: Eric Webb
Sent: Wednesday, February 19, 2025 2:55 PM
To: Weekley, George M
Cc: VLAMING, STEPHEN T CIV USAF AFMC 75 CEG/CEIEA
Subject: [EXTERNAL] ESA Section 7 Informal Consultation for Proposed Radiation Facility at the Little Mountain Test Facility, Hill AFB, Utah

Mr. Weekley,

Attached please find an informal Section 7 consultation letter prepared by the Department of the Air Force for the proposed radiation facility at the Little Mountain Test Facility, Weber County, Utah. Please let Mr. Steve Vlaming and me know if you have any questions.

Thanks,

Eric

Eric Webb, Ph.D.
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Consulting Scientists, Planners, and Engineers
Specializing in Infrastructure and the Environment
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APPENDIX D. DEFINITION OF SELECT RESOURCES

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APPENDIX D-1. DEFINITION OF LAND USE

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws.

Land use planning ensures orderly growth and compatibility between nearby property parcels or land areas. Land use planning in the Department of Defense (DoD) is guided by Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*. This document sets forth the responsibilities and requirements for comprehensive planning and describes procedures for developing, implementing, and integrating an Installation Development Plan with Activity Management Plans. In addition, land use guidelines established by the United States (US) Department of Housing and Urban Development and findings of the Federal Interagency Committee on Noise are used to recommend acceptable levels of noise exposure for land use.

Recreational resources are often considered as part of land use. Recreational resources include federal, state, and local parks, trails, scenic areas, beaches, indoor and outdoor community recreation centers, and playgrounds. Recreation areas are primarily limited to running and bicycle trails, ballfields, swimming pools, bowling alleys, theatres, playgrounds for children, and gymnasium facilities.

Industrial buildings, associated facilities, parking lots, and open spaces compose most of the visual environment at the Little Mountain Test Facility (LMTF). Prominent visual features include buildings, security fencing, and parking areas.

APPENDIX D-2. DEFINITION OF NOISE

Noise is often defined as unwanted sound that can interfere with normal activities or otherwise diminish the quality of the environment. Depending on the noise level, it has the potential to disrupt sleep, interfere with speech communication, or cause temporary or permanent changes in hearing sensitivity in humans and wildlife. Noise sources can be continuous (e.g., constant noise from traffic or air conditioning units) or transient (e.g., a jet overflight or an explosion) in nature. Noise sources also have a broad range of frequency content (pitch) and can be nondescript, such as noise from traffic, or be specific and readily definable, such as a whistle or a horn. The way the acoustic environment is perceived by a receptor (animal or person) is dependent on the hearing capabilities of the receptor at the frequency of the noise and the receptor’s perception of the noise.

The amplitude of sound is described in a unit called the decibel (dB). Because the human ear hears a broad range of encountered sound pressures, dBs are measured on a quasi-logarithmic scale. The dB scale simplifies this range of sound pressures and allows the measurement of sound to be more easily understood.

There are many methods for quantifying noise, depending on the potential impacts in question and on the type of noise. One useful noise measurement in determining the effects of noise is the one-hour average sound level (L_{eq1H}). The L_{eq1H} can be thought of in terms of *equivalent*

sound; that is, if a L_{eq1H} is 45.3 dB, this is what would be measured if a sound measurement device were placed in a sound field of 45.3 dB for one hour. The L_{eq1H} is usually A-weighted (dBA) unless specified otherwise. A-weighting is a standard filter used in acoustics that approximates human hearing and in some cases is the most appropriate weighting filter when investigating the impacts of noise on wildlife as well as humans. Examples of L_{eq1H} A-weighted noise levels for various common noise sources are shown in **Table D-1.**

Table D-1. Comparative A-Weighted Sound Levels

Noise Level (dBA)	Common Noise Levels	
	Indoor	Outdoor
100–110	Rock band inside New York subway	Jet flyover at 1,000 feet
90–100	Food blender at 3 feet	Gas lawnmower at 3 feet
80–90	Garbage disposal at 3 feet	Diesel truck at 50 feet; noisy urban daytime
70–80	Shouting at 3 feet; vacuum cleaner at 10 feet	Gas lawnmower at 100 feet
60–70	Normal speech at 3 feet	Commercial area heavy traffic at 330 feet
50–60	Large business office; dishwasher next room	
40–50	Small theater or large conference room (background)	Quiet urban nighttime
30–40	Library (background)	Quiet suburban nighttime
20–30	Bedroom at night	Quiet rural nighttime
10–20	Broadcast and recording studio (background)	–
0–10	Threshold of hearing	–

dBA – A-weighted decibel

APPENDIX D-3. DEFINITION OF AIR QUALITY AND GREENHOUSE GASES

Air quality in various areas of the country is affected by air pollutants emitted by numerous sources, including natural and anthropogenic. Weather conditions and topography of the area will further influence the amounts and types of pollutants that are present in the ambient air.

As mandated under the Clean Air Act, the US Environmental Protection Agency (USEPA) set the National Ambient Air Quality Standards (NAAQS) (40 Code of Federal Regulations [CFR] Part 50) for select pollutants that are known to affect human health and the environment. The NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulates equal to or less than 10 microns in diameter [PM_{10}] and particulates equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). Criteria pollutants, such as CO and SO_2, are directly emitted into the air, but O_3 is formed in the atmosphere because of complex chemical reactions of pollutants in the presence of heat and sunlight. Nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are emitted from various sources are primarily responsible for O_3 formation and are also referred to as “ozone precursors.” Regulatory agencies typically limit atmospheric O_3 concentrations by controlling VOC pollutants and NO_x.

The USEPA has recognized that particulate matter emissions can have different health effects depending on particle size and, therefore, developed separate NAAQS for coarse particulate

matter (PM_{10}) and fine particulate matter ($PM_{2.5}$). The pollutant $PM_{2.5}$ can be emitted from emission sources directly as very fine dust and/or liquid mist or formed secondarily in the atmosphere as condensable particulate matter, typically forming nitrate and sulfate compounds. Ammonia (NH_3), for example, is evaluated as a precursor of $PM_{2.5}$. Secondary (indirect) emissions vary by region depending upon the predominant emission sources located there and thus which precursors are considered significant for $PM_{2.5}$ formation are identified for ultimate control.

The USEPA has established Air Quality Control Regions (AQCRs) throughout the US to evaluate compliance with the NAAQS. Each AQCR has regulatory areas that are designated as an attainment or nonattainment area for each of the criteria pollutants depending on whether it meets or exceeds the NAAQS. Attainment areas that were reclassified from a previous nonattainment status to attainment are called maintenance areas and are required to prepare a maintenance plan for air quality. LMTF is in Weber County in Utah. Areas within this county are designated nonattainment for some criteria pollutants.

Stationary sources of air pollution are required to obtain permits prior to starting new construction or major modifications. New Source Review (NSR) Prevention of Significant Deterioration (PSD) approval would be required if the proposed project was a new source having the potential to emit 250 tons per year or more of a criteria pollutant. The approval would also be required if the proposed project was an existing major source of emissions making a major modification in an attainment area and would result in a net emission increase above a specified level.

Federal actions in NAAQS nonattainment and maintenance areas are required to comply with USEPA's General Conformity Rule (40 CFR Part 93). These regulations ensure that federal actions do not impede local efforts to achieve or maintain attainment with the NAAQS. Proposed federal actions are evaluated to determine if the total indirect and direct net emissions from the action would be below *de minimis* levels for each of the pollutants as specified in 40 CFR 93.153. If the *de minimis* levels would not be exceeded for any of the pollutants, no further evaluation is required. However, if net emissions from a proposed action would exceed the *de minimis* thresholds for one or more of the specified pollutants, a demonstration of conformity, as prescribed in the General Conformity Regulations (40 CFR Parts 51 and 93), is required.

Greenhouse Gases. Greenhouse gases (GHGs) are gases, occurring from natural processes and human activities, that trap heat in the atmosphere. GHGs are generally not a concern to human health at normal ambient levels and can only potentially cause warming of the climatic system at a cumulative global scale.

Emissions from GHGs are expressed in terms of the carbon dioxide equivalent emissions (CO_2e), which is a measure used to compare the emissions from various GHGs based upon their Global Warming Potential (GWP). The GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more a given gas warms the earth

compared to CO_2 over the same time period. Analysts cumulatively compare emission estimates of different gases using standardized GWPs.

D-3.1 Air Quality

The following sections present an overview of the Clean Air Act (CAA) and the relevant Utah air quality regulations and standards. It also includes the assumptions used for the air quality analyses (**Appendix E**) presented in the Air Quality sections of this Environmental Assessment (EA).

D-3.1.1 Criteria Pollutants and National Ambient Air Quality Standards

To protect public health and welfare, the USEPA has developed numerical concentration-based standards, or NAAQS, for six "criteria" pollutants (based on health-related criteria) under the provisions of the CAA Amendments of 1970. There are two kinds of NAAQS: primary and secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (40 CFR Part 50). The primary and secondary NAAQS are presented in **Table D-2.**

Table D-2. National Ambient Air Quality Standards

Pollutant	Standard Value [6]		Standard Type
Carbon Monoxide (CO)			
8-hour average	9 ppm	(10 mg/m^3)	Primary
1-hour average	35 ppm	(40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)			
Annual arithmetic mean	0.053 ppm	(100 µg/m^3)	Primary and Secondary
1-hour average [1]	0.100 ppm	(188 µg/m^3)	Primary
Ozone (O_3)			
8-hour average [2]	0.070 ppm	(137 µg/m^3)	Primary and Secondary
Lead (Pb)			
3-month average [3]		0.15 µg/m^3	Primary and Secondary
Particulate <10 Micrometers (PM_{10})			
24-hour average [4]		150 µg/m^3	Primary and Secondary
Particulate <2.5 Micrometers ($PM_{2.5}$)			
Annual arithmetic mean [4]		12 µg/m^3	Primary
Annual arithmetic mean [4]		15 µg/m^3	Secondary
24-hour average[4]		35 µg/m^3	Primary and Secondary
Sulfur Dioxide (SO_2)			
1-hour average [5]	0.075 ppm	(196 µg/m^3)	Primary
3-hour average [5]	0.5 ppm	(1,300 µg/m^3)	Secondary

Source: USEPA 2023

ppm – part(s) per million; **mg/m^3** – milligram(s) per cubic meter; **µg/m^3** – microgram(s) per cubic meter

Notes:

[1] In February 2010, the USEPA established a new 1-hour standard for NO_2 at a level of 0.100 ppm, based on the 3-year average of the 98th percentile of the yearly distribution concentration, to supplement the then-existing annual standard.

[2] In October 2015, the USEPA revised the level of the 8-hour standard to 0.070 ppm, based on the annual fourth-highest daily maximum concentration, averaged over 3 years; the regulation became effective on 28 December 2015. The previous (2008) standard of 0.075 ppm remains in effect for some areas. A 1-hour standard no longer exists.

[3] In November 2008, USEPA revised the primary Pb standard to 0.15 µg/m^3. USEPA revised the averaging time to a rolling 3-month average.

[4] In October 2006, USEPA revised the level of the 24-hour $PM_{2.5}$ standard to 35 µg/m^3 and retained the level of the annual $PM_{2.5}$ standard at 15 µg/m^3. In 2012, USEPA split standards for primary and secondary annual $PM_{2.5}$. All are averaged over 3 years, with the 24-hour average determined at the 98th percentile for the 24-hour standard. USEPA retained the 24-hour primary standard and revoked the annual primary standard for PM_{10}.

[5] In 2012, the USEPA retained a secondary 3-hour standard, which is not to be exceeded more than once per year. In June 2010, USEPA established a new 1-hour SO_2 standard at a level of 75 parts per billion, based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations.

[6] Parenthetical value is an approximately equivalent concentration for NO_2, O_3, and SO_2.

The CAA gives states the authority to establish air quality rules and regulations. In Utah, the USEPA delegates the enforcement and maintenance of the NAAQS and other rules of the CAA to the Utah Department of Environmental Quality (UDEQ), Division of Air Quality. The state of Utah has adopted the federal NAAQS as stated in the Utah Administrative Code R307-101-1.

Utah is required to develop a State Implementation Plan (SIP) that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in the attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area.

The air quality monitoring network is used to identify areas where the ambient air quality standards are being violated and plans are needed to reduce pollutant concentration levels to be in attainment with the standards. Also included are areas where the ambient standards are being met, but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth. The USEPA has specific requirements for a minimum number of monitoring sites, known as national air monitoring sites. Monitoring stations collect representative data that indicates how much of a pollutant is in the air. Currently, 24 air-monitoring stations are strategically located across the Wasatch Front and in southwestern Utah (UDEQ 2024).

Section 176(c) (1) of the CAA contains legislation that ensures federal activities conform to relevant SIPs and thus do not hamper local efforts to control air pollution. As such, a general conformity analysis is required for areas of nonattainment or maintenance where a federal action is proposed. The action can be shown to conform by demonstrating that the total direct and indirect emissions are below the *de minimis* levels (**Table D-3**), and/or showing that the Proposed Action emissions are within the state- or tribe-approved budget of the facility as part

of the SIP or Tribal Implementation Plan. A conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of that pollutant equal or exceed its *de minimis* rates (40 CFR § 93.153).

Table D-3. General Conformity Rule *de Minimis* Emission Thresholds

Pollutant	Attainment Classification	Tons per Year
Ozone (VOC and NO_x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region (applicable to all three airport alternatives)	100
Ozone (NO_x)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon Monoxide (SO_2 and NO_2)	All nonattainment and maintenance	100
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
$PM_{2.5}$ (direct emissions, SO_2, NO_x, VOC, and ammonia)	All nonattainment and maintenance	100
Lead	All nonattainment and maintenance	25

Source: USEPA 2022
VOC – volatile organic compound; **NO_x** – nitrogen oxides; **SO_2** – sulfur dioxide; **NO_2** – nitrogen dioxide; **PM_{10}** – particulates equal to or less than 10 microns in diameter; **$PM_{2.5}$** – particulates equal to or less than 2.5 microns in diameter

Under the CAA, new stationary emissions sources are subject to NSR in order to obtain a construction permit. Permits are required for new major sources or sources making major modifications. In areas that meet the NAAQS the permits are referred to as PSD permits and the process to obtain permit approval is called PSD review. In nonattainment areas the permitting process is referred to as nonattainment NSR. The purpose of PSD review is to ensure that sources are constructed without causing significant adverse deterioration to clean air in the area. Nonattainment NSR purpose is to ensure new sources do not impede a region's progress to achieve compliance with NAAQS through the use of emission control technology and by offsetting the emission increases. The PSD rule also provides special protections for specific national parks or wilderness areas, known as Mandatory Federal Class I Areas (40 CFR Part 81), where any appreciable deterioration in air quality is considered significant. Class 1 areas are given special air quality and visibility protection under the CAA.

LMTF must comply with UDEQ requirements when constructing new facilities, such as controlling fugitive dust and open burning. All persons responsible for any operation, process,

handling, transportation, or storage facility that could result in fugitive dust would take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions might include using water to control dust from building construction, road grading, or land clearing, as well as covering, at all times when in motion, open-bodied trucks transporting materials likely to give rise to airborne dust. In addition, the Proposed Action would proceed in full compliance with current state air quality regulations.

D-3.1.2 Assumptions

The following are assumptions were used in the air quality modeling and analysis for the proposed alternative actions:

1. For air quality analysis, the proposed construction projects are assumed to occur within a single calendar year to provide a conservative estimate of emissions. The duration of the construction project is assumed to start in January 2026. For operational emissions, the start date is assumed to be the beginning of the year following completion of construction (January 2027) and would occur indefinitely.

2. The calculations assumed there were no controls used to reduce fugitive emissions. It is assumed that reasonable mitigation measures would be used during construction and demolition activities to reduce particulate matter emissions.

3. Construction phase emissions for the Proposed Action Alternative 1 are included for demolition, grading, trenching, construction, architectural coating, and paving. Operational emissions are for comfort heating, backup diesel generators proposed for installation at the new facilities, and new employee commutes.

4. If the square footage for construction, renovation, or land disturbance was available, then it was used for Air Conformity Applicability Model (ACAM) modeling. In the absence of square footage data for construction, an estimate of the area proposed for construction was derived from design diagrams and online maps.

5. Duration of construction phase activities was estimated based on the area proposed for construction or renovation. The duration of the project provided by the facility was taken into consideration for estimating the timeline for construction for each phase.

6. Typically, area proposed for grading was assumed to be twice the total area proposed for construction or renovation.

7. For grading, if data on the amount of material hauled in and hauled out (in cubic yards) was provided by the facility, then it was used in ACAM. In the absence of these data, it has been estimated using the assumed depth and graded area. Fill depth for gravel and grading depth is assumed based on the type of project.

8. In the absence of trenching data, trenching in linear feet for utility was derived based on the size of the project. An estimated trench depth and trench width is assumed based on the nature of the project.

9. An on-site concrete mixer was not assumed for this Proposed Action.

10. Emissions from personnel commute is performed as new personnel are proposed to be working at the new facilities upon completion of construction of the project. An additional 30 personnel would support testing operations at the proposed radiation facility.

APPENDIX D-4. DEFINITION OF SOILS

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

The Farmland Protection Policy Act (7 United States Code Section 4201 et seq.) protects important farmland categorized as prime farmland, unique farmland, or farmland of statewide or local importance. The purpose of the Farmland Protection Policy Act is to minimize the extent that federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. However, construction for national defense purposes and construction within an existing right-of-way purchased by the DoD on or before 4 August 1984 are activities not subject to the Farmland Protection Policy Act. The Proposed Action would construct facilities for national defense purposes on land acquired by the DoD prior to 1984.

APPENDIX D-5. DEFINITION OF WATER RESOURCES

Water resources include surface waters, groundwater, and floodplains. Surface waters include all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed. Wetlands are transitional areas between terrestrial and aquatic systems with land covered by shallow surface water. Groundwater resources include water contained in soils, permeable and porous rock, or unconsolidated substrate. Floodplains are areas that are flooded periodically by the lateral overflow of surface water bodies.

Surface waters, as defined in 33 CFR 328.3, are regulated under Sections 401 and 404 of the Clean Water Act (CWA; 33 United States Code [USC] § 1251 et seq.) and Section 10 of the Rivers and Harbors Act. The CWA regulates discharges of pollutants in surface waters of the US. Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the US, including wetlands. The US Army Corps of Engineers defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions” (Environmental Laboratory 1987). Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328). Federal protection of wetlands is also promulgated under Executive Order (EO) 11990, *Protection of Wetlands,* the purpose of which is to reduce adverse impacts associated with the destruction or modification of wetlands. This order directs federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands.

The CWA provides the authority to establish water quality standards, control discharges into surface and subsurface waters (including groundwater), develop waste treatment management plans and practices, and issue permits for discharges. A National Pollutant Discharge Elimination System (NPDES) permit under Section 402 of the CWA is required for discharges into surface waters. The USEPA oversees the issuance of NPDES permits at federal facilities as well as water quality regulations (Section 401 of the CWA) for both surface and groundwater within states.

Under Section 438 of the Energy Independence and Security Act of 2007 (EISA), federal agencies are required to reduce stormwater runoff from development and redevelopment projects implemented by the federal government in order to protect water resources. Federal agencies can comply with Section 438 of EISA by implementing a variety of stormwater management practices, such as green infrastructure or low-impact development practices. Examples of these stormwater management practices include reducing impervious surfaces by using increased vegetation cover on surface, implementing porous pavements, integrating cisterns, and building green roofs (USEPA 2024).

Groundwater is water that occurs in the saturated zone beneath the earth's surface and includes underground streams and aquifers. It is an essential resource that functions to recharge surface water and can be used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations. The susceptibility of aquifers to groundwater contamination relates to geology, depth to groundwater, infiltration rates, and solubility of contaminants. Groundwater resources are regulated on the federal level by the USEPA under the Safe Drinking Water Act, 42 USC § 300f et seq. The USEPA's Sole Source Aquifer Program, authorized by the Safe Drinking Water Act, further protects aquifers that are designated as critical to water supply and makes any proposed federal or federal financially assisted project that has the potential to contaminate the aquifer subject to USEPA review.

Floodplains are areas of low-level ground along rivers, stream channels, or coastal waters that provide a broad area to inundate and temporarily store floodwaters. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated and mapped by the Federal Emergency Management Agency, which defines the 100-year (regulatory) floodplain. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, provides guidelines that agencies should carry out as part of their decision making on projects that have potential impacts to or within the floodplain. This EO requires federal agencies to avoid, to the extent possible, the long- and short-term adverse

impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

APPENDIX D-6. DEFINITION OF BIOLOGICAL RESOURCES

Biological resources include native or invasive plants and animals, sensitive and protected floral and faunal species, and the habitats, such as wetlands, forests, and grasslands, in which they exist. Habitat can be defined as the resources and conditions in an area that support a defined suite of organisms. The following is a description of the primary federal statutes that form the regulatory framework for the evaluation of biological resources.

Endangered Species Act (ESA). The ESA of 1973 (16 USC § 1531 et seq.) established protection over and conservation of threatened and endangered species and the critical habitat upon which they depend. Sensitive and protected biological resources include plant and animal species listed as threatened, endangered, or special status by the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service. Under the ESA (16 USC § 1536), an "endangered species" is defined as any species in danger of extinction throughout all, or a large portion, of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The USFWS maintains a list of species considered to be candidates for possible listing under the ESA. The ESA also allows the designation of geographic areas as critical habitat for threatened or endangered species. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and may warrant protection under the ESA.

Section 4(a)(3)(B)(i) of the ESA was amended by the National Defense Authorization Act of 2004 to preclude the Secretaries of Interior (USFWS) and Commerce (National Marine Fisheries Service) from designating critical habitat on any lands or other geographical areas owned or controlled by the DoD, or designated for its use, that are subject to an approved DoD Integrated Natural Resource Management Plan (INRMP) developed under the Sikes Act Improvement Act of 1997 (16 USC §670a), provided that the appropriate Secretaries certify in writing that the INRMP benefits the federally listed species.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act of 1918 makes it unlawful for anyone to take migratory birds or their parts, nests, or eggs unless permitted to do so by regulations. Per the Migratory Bird Treaty Act, "take" is defined as "pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). Migratory birds include nearly all avian species in the US, with the exception of some upland game birds and nonnative species.

EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires all federal agencies undertaking activities that may negatively impact migratory birds to follow a prescribed set of actions to further implement the Migratory Bird Treaty Act. EO 13186 directs federal agencies to develop a Memorandum of Understanding with the USFWS that promotes the conservation of migratory birds.

The National Defense Authorization Act for fiscal year 2003 (Public Law 107-314, 116 Stat. 2458) provided the Secretary of the Interior with the authority to prescribe regulations to exempt the armed forces from the incidental take of migratory birds during authorized military readiness activities. Congress defined military readiness activities as all training and operations of the US armed forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.

In December 2017, the US Department of the Interior issued M-Opinion 37050, which concluded that the take of migratory birds from an activity is not prohibited by the Migratory Bird Treaty Act when the underlying purpose of that activity is not the take of a migratory bird. However, Solicitor Opinion M-37050 was revoked and withdrawn on 8 March 2021. On 4 October 2021, the USFWS published a final rule to allow for implementing the Migratory Bird Treaty Act as prohibiting incidental take and applying enforcement discretion, consistent with agency practice prior to 2017.

Bald and Golden Eagle Protection Act. The Bald and Golden Eagle Protection Act of 1940 (16 USC § 668-668c) prohibits the “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” “Take” is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb," and “disturb” is defined as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle, a decrease in productivity by substantially interfering with the eagle’s normal breeding, feeding or sheltering behavior, or nest abandonment by substantially interfering with the eagle’s normal breeding, feeding or sheltering behavior.” The Bald and Golden Eagle Protection Act also prohibits activities around an active or inactive nest site that could result in an adverse impact on the eagle.

APPENDIX D-7. DEFINITION OF CULTURAL RESOURCES

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture or community for scientific, traditional, religious, or other purposes. These resources are protected and identified under several federal laws and EOs. Cultural resources include the following subcategories:

- Archaeological (i.e., prehistoric or historic sites where human activity has left physical evidence of that activity, but no structures remain standing)
- Architectural (i.e., buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance)
- Traditional cultural places (resources of significance to a living community because of its association with cultural beliefs, customs, or practices that are rooted in the community’s history and that are important in maintaining the community’s cultural identity)

Significant cultural resources are those that have been listed on the National Register of Historic Places (NRHP) or determined to be eligible for listing. To be eligible for the NRHP, properties must be 50 years old and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. They must possess sufficient integrity of

location, design, setting, materials, workmanship, feeling, and association to convey their historical significance and meet at least one of four criteria:

- Criterion A: Associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B: Associated with the lives of persons significant in our past
- Criterion C: Embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D: Have yielded or be likely to yield information important in prehistory or history

Properties that are less than 50 years old can be considered eligible for the NRHP under Criterion Consideration G if they possess exceptional historical importance. Those properties must also retain historic integrity and meet at least one of the four NRHP criteria listed above. The term “historic property” refers to national historic landmarks and to NRHP-listed and NRHP-eligible cultural resources.

Federal laws protecting cultural resources include the Archaeological and Historic Preservation Act of 1960 as amended, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, the Native American Graves Protection and Repatriation Act of 1990, and the National Historic Preservation Act (NHPA), as amended through 2016, and associated regulations (36 CFR 800). The NHPA requires federal agencies to consider the effects of federal undertakings on historic properties prior to making a decision or taking an action and to integrate historic preservation values into their decision-making process. Federal agencies fulfill this requirement by completing the Section 106 consultation process, as set forth in 36 CFR 800. Section 106 of the NHPA also requires agencies to consult with federally recognized Indian tribes with a vested interest in the undertaking.

Section 106 of the NHPA requires all federal agencies to seek to avoid, minimize, or mitigate adverse effects on these properties (36 CFR 800.1[a]). For cultural resource analysis, the area of potential effect (APE) is used as the region of influence. APE is defined as the “geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” (36 CFR 800.16[d]), and thereby diminish their historic integrity.

.APPENDIX D-8. DEFINITION OF TRANSPORTATION

Transportation is defined as the system of roadways, highways, and transit services that are in the vicinity of the installation and could be reasonably expected to be potentially affected by the Proposed Action.

APPENDIX D-9. DEFINITION OF HAZARDOUS MATERIALS AND WASTES, ENVIRONMENTAL RESTORATION PROGRAM, AND TOXIC SUBSTANCES

Hazardous Materials and Wastes. The Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act and the Toxic Substances Control Act, defines hazardous materials. Hazardous materials are defined as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, or incapacitating reversible illness, or that might pose a substantial threat to human health or the environment. Occupational Safety and Health Administration (OSHA) is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety under 29 CFR 1910. OSHA also includes the regulation of hazardous materials in the workplace and ensures appropriate training in their handling.

The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act, which was further amended by the Hazardous and Solid Waste amendments, defines hazardous wastes. Hazardous waste is defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes, that pose a substantial present or potential hazard to human health or the environment. In general, both hazardous materials and hazardous wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, might present substantial danger to public health and welfare or the environment when released or otherwise improperly managed.

Air Force Policy Directive 32-70 establishes the policy that the Department of the Air Force (DAF) is committed to the following:

- Cleaning up environmental damage resulting from its past activities
- Meeting all environmental standards applicable to its present operations
- Planning its future activities to minimize environmental impacts
- Responsibly managing the irreplaceable natural and cultural resources it holds in public trust
- Eliminating pollution from its activities wherever possible

Department of the Air Force Manual (DAFMAN) 32-1067, *Water and Fuel Systems*, implements Air Force Policy Directive 32-70 and identifies compliance requirements for underground storage tanks (USTs), aboveground storage tanks (ASTs), and associated piping that store petroleum products and hazardous substances. Evaluation of hazardous materials and hazardous wastes focuses on USTs and ASTs, as well as the storage, transport, and use of pesticides, fuels, oils, and lubricants. Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and hazardous wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of release of hazardous materials or hazardous wastes, the extent of contamination varies based on type of soil, topography, weather conditions, and water resources.

Air Force Manual (AFMAN) 32-7002, *Environmental Compliance and Pollution Prevention*, establishes procedures and standards that govern management of hazardous materials throughout the DAF. It applies to all DAF personnel who authorize, procure, issue, use, or dispose of hazardous materials, and to those who manage, monitor, or track any of those activities.

Through the Environmental Restoration Program (ERP) initiated in 1980, a subcomponent of the Defense ERP that became law under the Superfund Amendments and Reauthorization Act (formerly the Installation Restoration Program), each DoD installation is required to identify, investigate, and clean up hazardous waste disposal or release sites. Remedial activities for ERP sites follow the Hazardous and Solid Waste Amendment of 1984 under the Resource Conservation and Recovery Act Corrective Action Program. The ERP provides a uniform, thorough methodology to evaluate past disposal sites, control the migration of contaminants, minimize potential hazards to human health and the environment, and clean up contamination through a series of stages until it is decided that no further remedial action is warranted.

The description of ERP activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in identification of properties and their usefulness for given purposes (e.g., to complete remediation, activities that are dependent on groundwater usage might be foreclosed where a groundwater contaminant plume remains).

Toxic substances might pose a risk to human health but are not regulated as contaminants under the hazardous waste statutes. Included in this category are asbestos-containing materials (ACMs), lead-based paint (LBP), radon, and polychlorinated biphenyls (PCBs). The presence of special hazards or controls over them might affect, or be affected by, a proposed action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of a proposed action.

Asbestos. AFI 32-1001, *Civil Engineer Operations*, provides the direction for asbestos management at DAF installations. This instruction incorporates by reference applicable requirements of 29 CFR 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the Clean Air Act, and other applicable AFIs and DoD directives. AFI 32-1001 requires bases to develop an Asbestos Management Plan to maintain a permanent record of the status and condition of ACMs in installation facilities, as well as documenting asbestos management efforts. In addition, the instruction requires installations to develop an Asbestos Operating Plan detailing how the installation accomplishes asbestos-related projects. Asbestos is regulated by the USEPA with the authority promulgated under OSHA, 29 USC § 669 et seq. Section 112 of the CAA regulates emissions of asbestos fibers to ambient air. USEPA policy is to leave asbestos in place if disturbance or removal could pose a health threat.

Lead-Based Paint. Human exposure to lead has been determined to be an adverse health risk by agencies such as OSHA and the USEPA. Sources of exposure to lead are dust, soils, and paint. In 1973, the Consumer Product Safety Commission established a maximum lead content in paint of 0.5 percent by weight in a dry film of newly applied paint. In 1978, under the

Consumer Product Safety Act (Public Law 101-608, as implemented by 16 CFR 1303), the Consumer Product Safety Commission lowered the allowable lead level in paint to 0.06 percent (600 parts per million). The act also restricted the use of LBP in nonindustrial facilities. The DoD implemented a ban of LBP use in 1978; therefore, it is possible that facilities constructed prior to or during 1978 may contain LBP.

Radon. The US Surgeon General defines radon as an invisible, odorless, and tasteless gas, with no immediate health symptoms, that comes from the breakdown of naturally occurring uranium inside the earth (US Surgeon General 2005). Radon that is present in soil can enter a building through small spaces and openings, accumulating in enclosed areas such as basements. No federal or state standards are in place to regulate residential radon exposure at the present time, but guidelines were developed. Although 4.0 picocuries per liter (pCi/L) is considered an “action” limit, any reading over 2 pCi/L qualifies as a “consider action” limit. The USEPA and the US Surgeon General have evaluated the radon potential around the country to organize and assist building code officials in deciding whether radon-resistant features are applicable in new construction. Radon zones can range from 1 (high) to 3 (low).

Polychlorinated Biphenyls. Hill AFB including the LMTF is PCB free.

APPENDIX D-10. DEFINITION OF SOCIOECONOMICS

Socioeconomics is the relationship between economics and social elements, such as population levels and economic activity. Several factors can be used as indicators of economic conditions for a geographic area, such as demographics, median household income, unemployment rates, percentage of families living below the poverty level, employment, and housing data. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

APPENDIX D-11. DEFINITION OF HEALTH AND SAFETY

A safe environment is necessary to prevent or reduce the potential for death, serious injury and illness, or property damage. Safety and human health issues address workers safety and health during construction, as well as employee safety during the daily operations of the facilities. The OSHA’s program purpose is to protect personnel from occupational deaths, injuries, or illnesses; OSHA safety guidance published in the Department of Labor 29 series CFR governs general safety requirements relating to general industry practices (Section 1910), construction (Section 1926), and elements for federal employees (Section 1960). These standards include guidance for entry into areas in which a hazard may exist.

Department of the Air Force Instruction (DAFI) 91-202, *The Department of the Air Force Mishap Prevention Program*, and DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, implement Air Force Policy Directive 91-2, *Safety Programs.* DAFI 91-202 establishes mishap prevention program requirements, assigns responsibilities for program elements, and contains program management information. The purpose of the DAF Mishap Prevention Program is to minimize loss of DAF resources and to protect DAF personnel from

occupational deaths, injuries, or occupational illnesses by managing risks on and off duty. DAFMAN 91-203 consolidates all DAF Occupational Safety and Health standards and defines the Air Force's minimum safety, fire protection, and occupational health standards, and assigns responsibilities to individuals or functions to help Commanders manage their safety and health programs to ensure they comply with OSHA and DAF guidance. These instructions apply to all DAF activities.

APPENDIX D-12. REFERENCES

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APPENDIX E. AIR QUALITY MODELING RESULTS

FORMAT PAGE

ACAM Summary Report for Alternative 1

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

Report generated with ACAM version: 5.0.23a

a. Action Location:
Base: HILL AFB
State: Utah
County(s): Weber; Tooele
Regulatory Area(s): Northern Wasatch Front, UT; Salt Lake City, UT

b. Action Title: Environmental Assessment for a Radiation Facility at the Little Mountain Test Facility, Hill AFB, UT

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 1 / 2026

e. Action Description:

The Proposed Action would construct a new 50,000-square foot facility providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators are currently located at an existing facility at LMTF. Under the Proposed Action, the self-shielded irradiators would be relocated to the new building to centralize testing functions. Both the relocation of the self-shielded irradiators and the new SFXR would be required to support expanded testing requirements. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF.

f. Point of Contact:
Name: Rahul Chettri
Title: NEPA Air Quality Specialist
Organization: Versar Global Solutions
Email: rchettri@versar.com
Phone Number: (757) 557-0810

2. Analysis: Total reasonably foreseeable net change in direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" (highest annual emissions) and "steady state" (no net gain/loss in emission stabilized and the action is fully implemented) emissions. General Conformity under the Clean

Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

All emissions estimates were derived from various sources using the methods, algorithms, and emission factors from the most current *Air Emissions Guide for Air Force Stationary Sources*, *Air Emissions Guide for Air Force Mobile Sources*, and/or *Air Emissions Guide for Air Force Transitory Sources*. For greater details of this analysis, refer to the Detail ACAM Report.

____ applicable
__X__ not applicable

Conformity Analysis Summary:

2026

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Northern Wasatch Front, UT			
VOC	0.727	100	No
NOx	1.257	100	No
CO	1.626		
SOx	0.003		
PM 10	1.073		
PM 2.5	0.046		
Pb	0.000		
NH3	0.004		
Salt Lake City, UT			
VOC	0.785	70	No
NOx	1.742	70	No
CO	2.280		
SOx	0.004	70	No
PM 10	1.357		
PM 2.5	0.065	70	No
Pb	0.000		
NH3	0.005	70	No
Northern Wasatch Front, UT			
VOC	0.058	100	No
NOx	0.486	100	No
CO	0.654		
SOx	0.001		
PM 10	0.284		
PM 2.5	0.019		
Pb	0.000		
NH3	0.001		

2027

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Northern Wasatch Front, UT			

VOC	0.213	100	No
NOx	2.737	100	No
CO	2.836		
SOx	0.035		
PM 10	0.220		
PM 2.5	0.220		
Pb	0.000		
NH3	0.007		
Salt Lake City, UT			
VOC	0.213	70	No
NOx	2.737	70	No
CO	2.836		
SOx	0.035	70	No
PM 10	0.220		
PM 2.5	0.220	70	No
Pb	0.000		
NH3	0.007	70	No
Northern Wasatch Front, UT			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000		
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		

2028 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Northern Wasatch Front, UT			
VOC	0.213	100	No
NOx	2.737	100	No
CO	2.836		
SOx	0.035		
PM 10	0.220		
PM 2.5	0.220		
Pb	0.000		
NH3	0.007		
Salt Lake City, UT			
VOC	0.213	70	No
NOx	2.737	70	No
CO	2.836		
SOx	0.035	70	No
PM 10	0.220		
PM 2.5	0.220	70	No
Pb	0.000		
NH3	0.007	70	No

Northern Wasatch Front, UT			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000		
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		

The Criteria Pollutants (or their precursors) with a General Conformity threshold listed in the table above are pollutants within one or more designated nonattainment or maintenance area/s for the associated National Ambient Air Quality Standard (NAAQS). These pollutants are driving this GCR Applicability Analysis. Pollutants exceeding the GCR thresholds must be further evaluated potentially through a GCR Determination.

The pollutants without a General Conformity threshold are pollutants only within areas designated attainment for the associated NAAQS. These pollutants have an insignificance indicator for VOC, NOx, CO, SOx, PM 10, PM 2.5, and NH3 of 250 ton/yr (Prevention of Significant Deterioration major source threshold) and 25 ton/yr for Pb (GCR de minimis value). Pollutants below their insignificance indicators are at rates so insignificant that they will not cause or contribute to an exceedance of one or more NAAQSs. These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Refer to the *Level II, Air Quality Quantitative Assessment Insignificance Indicators* for further details.

None of the annual net change in estimated emissions associated with this action are above the GCR threshold values established at 40 CFR 93.153 (b); therefore, the proposed Action has an insignificant impact on Air Quality and a General Conformity Determination is not applicable.

Rahul Chettri, NEPA Air Quality Specialist	Jan 04 2025
Name, Title	**Date**

ACAM GHG Report for Alternative 1

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to estimate GHG emissions associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide. This report provides a summary of GHG emissions.

Report generated with ACAM version: 5.0.23a

a. Action Location:
Base: HILL AFB
State: Utah
County(s): Weber; Tooele
Regulatory Area(s): Northern Wasatch Front, UT; Salt Lake City, UT

b. Action Title: Environmental Assessment for a Radiation Facility at the Little Mountain Test Facility, Hill AFB, UT

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 1 / 2026

e. Action Description:

The Proposed Action would construct a new 50,000-square foot facility providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators are currently located at an existing facility at LMTF. Under the Proposed Action, the self-shielded irradiators would be relocated to the new building to centralize testing functions. Both the relocation of the self-shielded irradiators and the new SFXR would be required to support expanded testing requirements. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF.

f. Point of Contact:
Name: Rahul Chettri
Title: NEPA Air Quality Specialist
Organization: Versar Global Solutions
Email: rchettri@versar.com
Phone Number: (757) 557-0810

2. Analysis: Total combined direct and indirect GHG emissions associated with the action were estimated through ACAM on a calendar-year basis from the action start through the expected life cycle of the action. The life cycle for Air Force actions with "steady state" emissions (SS, net gain/loss in emission stabilized and the action is fully implemented) is assumed to be 10 years beyond the SS emissions year or 20 years beyond SS emissions year for aircraft operations related actions.

GHG Emissions Analysis Summary:

GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO2), methane (CH4), and nitrous oxide (NO2). These three GHGs represent more than 97 percent of all U.S. GHG emissions. Emissions of GHGs are typically quantified and regulated in units of CO2 equivalents (CO2e). The CO2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases. All GHG emissions estimates were derived from various emission sources using the methods, algorithms, emission factors, and GWPs from the most current Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and/or Air Emissions Guide for Air Force Transitory Sources.

The Air Force has adopted the Prevention of Significant Deterioration (PSD) threshold for GHG of 75,000 ton per year (ton/year) of CO2e (or 68,039 metric ton per year, mton/year) as an indicator or "threshold of insignificance" for NEPA air quality impacts in all areas. This indicator does not define a significant impact; however, it provides a threshold to identify actions that are insignificant (de minimis, too trivial or minor to merit consideration). Actions with a net change in GHG (CO2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis. Note that actions with a net change in GHG (CO2e) emissions above the insignificance indicator (threshold) are only considered potentially significant and require further assessment to determine if the action poses a significant impact. For further detail on insignificance indicators see Level II, Air Quality Quantitative Assessment, Insignificance Indicators (April 2023).

The following table summarizes the action-related GHG emissions on a calendar-year basis through the projected life cycle of the action.

Action-Related Annual GHG Emissions (mton/year)						
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**	**Threshold**	**Exceedance**
2026	373	0.0147895	0.00657104	376	68,039	No
2027	2,916	0.05658859	0.05467242	2,921	68,039	No
2028 [SS Year]	2,916	0.05658859	0.05467242	2,921	68,039	No
2029	2,916	0.05658859	0.05467242	2,921	68,039	No
2030	2,916	0.05658859	0.05467242	2,921	68,039	No
2031	2,916	0.05658859	0.05467242	2,921	68,039	No
2032	2,916	0.05658859	0.05467242	2,921	68,039	No
2033	2,916	0.05658859	0.05467242	2,921	68,039	No
2034	2,916	0.05658859	0.05467242	2,921	68,039	No
2035	2,916	0.05658859	0.05467242	2,921	68,039	No
2036	2,916	0.05658859	0.05467242	2,921	68,039	No
2037	2,916	0.05658859	0.05467242	2,921	68,039	No
2038	2,916	0.05658859	0.05467242	2,921	68,039	No

The following U.S. and State's GHG emissions estimates (next two tables) are based on a five-year average (2016 through 2020) of individual state-reported GHG emissions (Reference: State Climate Summaries 2022, NOAA National Centers for Environmental Information,

National Oceanic and Atmospheric Administration.
https://statesummaries.ncics.org/downloads/).

State's Annual GHG Emissions (mton/year)				
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**
2026	62,051,616	264,771	11,297	62,327,685
2027	62,051,616	264,771	11,297	62,327,685
2028 [SS Year]	62,051,616	264,771	11,297	62,327,685
2029	62,051,616	264,771	11,297	62,327,685
2030	62,051,616	264,771	11,297	62,327,685
2031	62,051,616	264,771	11,297	62,327,685
2032	62,051,616	264,771	11,297	62,327,685
2033	62,051,616	264,771	11,297	62,327,685
2034	62,051,616	264,771	11,297	62,327,685
2035	62,051,616	264,771	11,297	62,327,685
2036	62,051,616	264,771	11,297	62,327,685
2037	62,051,616	264,771	11,297	62,327,685
2038	62,051,616	264,771	11,297	62,327,685

U.S. Annual GHG Emissions (mton/year)				
YEAR	**CO2**	**CH4**	**N2O**	**CO2e**
2026	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2027	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2028 [SS Year]	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2029	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2030	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2031	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2032	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2033	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2034	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2035	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2036	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2037	5,136,454,179	25,626,912	1,500,708	5,163,581,798
2038	5,136,454,179	25,626,912	1,500,708	5,163,581,798

GHG Relative Significance Assessment:

A Relative Significance Assessment uses the rule of reason and the concept of proportionality along with the consideration of the affected area (global, national, and regional) and the degree (intensity) of the proposed action's effects. The Relative Significance Assessment provides real-world context and allows for a reasoned choice against alternatives through a relative comparison analysis. The analysis weighs each alternative's annual net change in GHG emissions proportionally against (or relative to) global, national, and regional emissions.

The action's surroundings, circumstances, environment, and background (context associated with an action) provide the setting for evaluating the GHG intensity (impact significance). From an air quality perspective, context of an action is the local area's ambient air quality relative to meeting the NAAQSs, expressed as attainment, nonattainment, or maintenance areas (this designation is considered the attainment status). GHGs are non-hazardous to health at normal

ambient concentrations and, at a cumulative global scale, action-related GHG emissions can only potentially cause warming of the climatic system. Therefore, the action-related GHGs generally have an insignificant impact to local air quality.

However, the affected area (context) of GHG is global. Therefore, the intensity or degree of the proposed action's GHG effects are gauged through the quantity of GHG associated with the action as compared to a baseline of the state, U.S., and global GHG inventories. Each action (or alternative) has significance, based on their annual net change in GHG emissions, in relation to or proportionally to the global, national, and regional annual GHG emissions.

To provide real-world context to the GHG effects on a global scale, an action's net change in GHG emissions is compared relative to the state (where action will occur) and U.S. annual emissions. The following table provides a relative comparison of an action's net change in GHG emissions vs. state and U.S. projected GHG emissions for the same time period.

Total GHG Relative Significance (mton)					
		CO2	**CH4**	**N2O**	**CO2e**
2026-2038	State Total	806,671,011	3,442,026	146,867	810,259,903
2026-2038	U.S. Total	66,773,904,327	333,149,852	19,509,199	67,126,563,378
2026-2038	Action	35,368	0.693853	0.66264	35,426
Percent of State Totals		0.00438450%	0.00002016%	0.00045118%	0.00437216%
Percent of U.S. Totals		0.00005297%	0.00000021%	0.00000340%	0.00005277%

From a global context, the action's total GHG percentage of total global GHG for the same time period is: 0.00000707%.*

* Global value based on the U.S. emits 13.4% of all global GHG annual emissions (2018 Emissions Data, Center for Climate and Energy Solutions, accessed 7-6-2023, https://www.c2es.org/content/international-emissions).

Rahul Chettri, NEPA Air Quality Specialist Jan 04 2025

Name, Title **Date**

ACAM Detail Report for Alternative 1

1. General Information

- Action Location

Base: HILL AFB
State: Utah
County(s): Weber; Tooele
Regulatory Area(s): Northern Wasatch Front, UT; Salt Lake City, UT

- Action Title: Environmental Assessment for a Radiation Facility at the Little Mountain Test Facility, Hill AFB, UT

- Project Number/s (if applicable): N/A

- Projected Action Start Date: 1 / 2026

- Action Purpose and Need:

The purpose of the Proposed Action is to support an increase in demand for nuclear hardness simulation testing and planned test equipment upgrades associated with the Sentinel Program. The Sentinel Program is a full recapitalization of the Minuteman III Intercontinental Ballistic Missile (ICBM) weapons system. The Sentinel Program's mission is to deliver the next generation of ICBM nuclear deterrence for the United States of America.

A fully functional and operational facility is needed at LMTF to provide space for the unique test equipment and personnel to meet future nuclear hardness testing mission requirements. A new facility would have a 50-year minimum life-cycle requirement and provide a test and evaluation environment that would meet testing requirements for planned weapons systems, accommodate required staff to operate and maintain the laboratory, and construct the facility consistent with DAF building requirements.

- Action Description:

The Proposed Action would construct a new 50,000-square foot facility providing space for the Advanced Radiation Environment Simulator (ARES) Test Stand, a new Small Flash X-Ray (SFXR), 14-mega-electron volt (MeV) neutron generator, and self-shielded irradiators. The self-shielded irradiators are currently located at an existing facility at LMTF. Under the Proposed Action, the self-shielded irradiators would be relocated to the new building to centralize testing functions. Both the relocation of the self-shielded irradiators and the new SFXR would be required to support expanded testing requirements. The proposed new equipment (ARES, SFXR, and 14 MeV neutron generator) would be specially designed and manufactured for use in the new building at LMTF.

- Point of Contact

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Report generated with ACAM version: 5.0.23a

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	New Facility Administrative Wing
3.	Construction / Demolition	New Facility High Bay Wing
4.	Construction / Demolition	Perimeter Road
5.	Construction / Demolition	Dielectric Oil Storage Tank
6.	Emergency Generator	New Emergency Generator
7.	Heating	Boiler: New Facility Administrative Wing
8.	Heating	Boiler: New Facility High Bay Wing
9.	Personnel	New Civilian Personnel

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: Weber
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: New Facility Administrative Wing

- Activity Description:
Private and administrative Offices; open workstations; meeting room; break room; work room for printing; and IT/telecom support

- Activity Start Date
Start Month: 1
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.171353

Pollutant	Total Emissions (TONs)
PM 10	0.232904

SO_x	0.000925
NO_x	0.445082
CO	0.587000

PM 2.5	0.017653
Pb	0.000000
NH_3	0.000959

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.004228
N_2O	0.001323

Pollutant	Total Emissions (TONs)
CO_2	105.128075
CO_2e	105.628021

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 2
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 10335
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 Criteria Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.31292	0.00490	2.52757	3.39734	0.14041	0.12918
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.28160	0.00487	2.73375	3.50416	0.15811	0.14546
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02153	0.00431	530.81500	532.63663
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.54121	529.35159
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02160	0.00432	532.54993	534.37751
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170

HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: 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

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 813
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 Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.45335	0.00542	3.58824	4.59368	0.11309	0.10404
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	587.87714	589.89459
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				

	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: 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

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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: 3
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 4
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): 10335
Height of Building (ft): 15
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	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	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 Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19758	0.00487	1.83652	1.63713	0.07527	0.06925
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.24594	0.00487	2.34179	3.57902	0.11182	0.10287
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02140	0.00428	527.46069	529.27080
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02138	0.00428	527.09717	528.90603
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor

EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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: 9
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

2.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 10335
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 Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

- Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

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

3. Construction / Demolition

[redacted]

3.1 General Information & Timeline Assumptions

- Activity Location

County: Weber
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: New Facility High Bay Wing

- Activity Description:
Laboratory testing; delivery and receiving areas; materials storage

- Activity Start Date
Start Month: 1
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.546461
SO_x	0.001530
NO_x	0.732723
CO	0.915859

Pollutant	Total Emissions (TONs)
PM 10	0.832497
PM 2.5	0.025274
Pb	0.000000
NH_3	0.002618

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.006675
N_2O	0.004713

Pollutant	Total Emissions (TONs)
CO_2	173.754188
CO_2e	175.325425

3.1 Site Grading Phase

3.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 2
Number of Days: 0

3.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 39665
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

3.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.31292	0.00490	2.52757	3.39734	0.14041	0.12918
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.28160	0.00487	2.73375	3.50416	0.15811	0.14546
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02153	0.00431	530.81500	532.63663

Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02140	0.00428	527.54121	529.35159
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02160	0.00432	532.54993	534.37751
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

3.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: 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

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

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

H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

3.2 Trenching/Excavating Phase

3.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 1

Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

3.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 1593
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

3.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5

Emission Factors	0.45335	0.00542	3.58824	4.59368	0.11309	0.10404
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	587.87714	589.89459
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

3.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: 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

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

3.3 Building Construction Phase

3.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 4
Number of Days: 0

3.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 39665
Height of Building (ft): 30
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

3.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19758	0.00487	1.83652	1.63713	0.07527	0.06925
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.24594	0.00487	2.34179	3.57902	0.11182	0.10287
Generator Sets Composite [HP: 14] [LF: 0.74]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.53947	0.00793	4.32399	2.85973	0.17412	0.16019
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839
Welders Composite [HP: 46] [LF: 0.45]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.46472	0.00735	3.57020	4.49314	0.09550	0.08786

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.46069	529.27080
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.09717	528.90603
Generator Sets Composite [HP: 14] [LF: 0.74]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02305	0.00461	568.32694	570.27730
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

Welders Composite [HP: 46] [LF: 0.45]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02305	0.00461	568.29068	570.24091

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

3.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

3.4 Architectural Coatings Phase

3.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 9

Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

3.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 39665
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

3.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

- Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

3.4.4 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

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location
County: Tooele
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: Perimeter Road

- Activity Description:
Access to the loading dock and around the facility

- Activity Start Date
Start Month: 1
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.057767
SO_x	0.001014
NO_x	0.485671
CO	0.653771

Pollutant	Total Emissions (TONs)
PM 10	0.284003
PM 2.5	0.019361
Pb	0.000000
NH_3	0.000975

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.004573
N_2O	0.001026

Pollutant	Total Emissions (TONs)
CO_2	112.414016
CO_2e	112.833927

4.1 Site Grading Phase

4.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 2
Number of Days: 0

4.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 12200
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

4.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.31292	0.00490	2.52757	3.39734	0.14041	0.12918
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.28160	0.00487	2.73375	3.50416	0.15811	0.14546
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02153	0.00431	530.81500	532.63663
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02140	0.00428	527.54121	529.35159
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02160	0.00432	532.54993	534.37751
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

4.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: 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

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

4.2 Trenching/Excavating Phase

4.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

4.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 2033
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

4.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.45335	0.00542	3.58824	4.59368	0.11309	0.10404
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**

Emission Factors	0.02385	0.00477	587.87714	589.89459
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
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MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
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LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

4.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: 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 * HP * LF * EF_{POL}* 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

4.3 Building Construction Phase

4.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 4
Number of Days: 0

4.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 12200
Height of Building (ft): 1
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	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	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

4.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19758	0.00487	1.83652	1.63713	0.07527	0.06925
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**

Emission Factors	0.24594	0.00487	2.34179	3.57902	0.11182	0.10287
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.46069	529.27080
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.09717	528.90603
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

4.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

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

H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

4.4 Paving Phase

4.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

4.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 12200

- 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
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

4.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.55280	0.00854	4.19778	3.25481	0.16332	0.15025
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.23717	0.00486	2.53335	3.43109	0.12904	0.11872
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.54202	0.00541	3.61396	4.09268	0.15387	0.14156
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.16326	572.11992
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02133	0.00427	525.80405	527.60847
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.91372	588.92786
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643

LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

4.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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 / 2000

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)
2000: Conversion Factor square pounds to TONs (2000 lb / TON)

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location
County: Weber
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: Dielectric Oil Storage Tank

- Activity Description:
Construction of approximately 28,000-gallon aboveground storage tank (AST) for dielectric oil (not fuel) to support the ARES. The AST would be used to support ARES maintenance, as the oil is within the equipment, but is drained into the AST for temporary oil storage during ARES maintenance. The ARES would have a reclamation system, which captures, weighs, filters and reuses the dielectric oil.

- Activity Start Date
Start Month: 1

Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.009564
SO_x	0.000180
NO_x	0.078783
CO	0.123350

Pollutant	Total Emissions (TONs)
PM 10	0.007818
PM 2.5	0.002615
Pb	0.000000
NH_3	0.000219

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000826
N_2O	0.000181

Pollutant	Total Emissions (TONs)
CO_2	20.268478
CO_2e	20.343038

5.1 Trenching/Excavating Phase

5.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

5.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 500
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

5.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.45335	0.00542	3.58824	4.59368	0.11309	0.10404
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	587.87714	589.89459
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940

LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

5.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: 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

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

5.2 Building Construction Phase

5.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

5.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 225
Height of Building (ft): 4
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	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	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

5.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19758	0.00487	1.83652	1.63713	0.07527	0.06925
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.24594	0.00487	2.34179	3.57902	0.11182	0.10287
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]

	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02140	0.00428	527.46069	529.27080
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.09717	528.90603
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

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

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.25401	0.00162	0.12963	3.56962	0.00488	0.00432	0.04940
LDGT	0.21632	0.00200	0.16217	3.12305	0.00571	0.00505	0.04170
HDGV	0.71971	0.00459	0.61638	9.71696	0.02132	0.01886	0.09126
LDDV	0.11512	0.00123	0.15420	5.30664	0.00360	0.00331	0.01643
LDDT	0.17417	0.00140	0.43686	4.63022	0.00572	0.00526	0.01696
HDDV	0.12216	0.00422	2.47287	1.47442	0.04334	0.03987	0.06652
MC	2.70028	0.00195	0.76328	12.25748	0.02150	0.01902	0.05390

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

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01573	0.00484	319.54057	321.37287
LDGT	0.01514	0.00684	395.57871	397.99399
HDGV	0.05225	0.02637	908.57959	917.73333
LDDV	0.05877	0.00066	366.00253	367.66928
LDDT	0.04548	0.00098	413.91024	415.33863
HDDV	0.03195	0.16380	1255.79408	1305.40460
MC	0.10965	0.00302	394.86670	398.50809

5.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
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

6. Emergency Generator

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Weber
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: New Emergency Generator

- Activity Description:
A backup emergency generator and associated fuel tank would support the facility. It would become operational when the facility is constructed and is ready for occupancy.

- Activity Start Date
Start Month: 1
Start Year: 2027

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

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.022320
SO_x	0.018800
NO_x	0.092000
CO	0.061440

Pollutant	Emissions Per Year (TONs)
PM 10	0.020080
PM 2.5	0.020080
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.000370
N_2O	0.000074

Pollutant	Emissions Per Year (TONs)
CO_2	9.200000
CO_2e	10.640000

6.2 Emergency Generator Assumptions

- Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 200
Average Operating Hours Per Year (hours): 80

6.3 Emergency Generator Emission Factor(s)

- Emergency Generators Criteria Pollutant Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251		

- Emergency Generators Greenhouse Gasses Pollutant Emission Factor (lb/hp-hr)

CH_4	N_2O	CO_2	CO_2e
0.000046297	0.000009259	1.15	1.33

6.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year
$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

7. Heating

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Weber
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: Boiler: New Facility Administrative Wing

- Activity Description:
The facility would be constructed with boilers and appropriate heating, ventilation, and air conditioning infrastructure to ensure climate control. They would become operational when the facility is constructed and is ready for occupancy.

- Activity Start Date
Start Month: 1
Start Year: 2027

- Activity End Date
Indefinite: Yes

End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.028810
SO_x	0.003143
NO_x	0.523810
CO	0.440000

Pollutant	Emissions Per Year (TONs)
PM 10	0.039810
PM 2.5	0.039810
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.011838
N_2O	0.011838

Pollutant	Emissions Per Year (TONs)
CO_2	628.670952
CO_2e	629.320476

7.2 Heating Assumptions

- Heating
Heating Calculation Type: Rated Capacity Method

- Rated Capacity Method
Rated Capacity of boiler/furnance (MM Btu): 2.5
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105

- Default Settings Used: No

- Boiler/Furnace Usage
Operating Time Per Year (hours): 4400

7.3 Heating Emission Factor(s)

- Heating Criteria Pollutant Emission Factors (lb/1000000 scf)

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

- Heating Greenhouse Gasses Pollutant Emission Factors (lb/1000000 scf)

CH_4	N_2O	CO_2	CO_2e
2.26	2.26	120019	120143

7.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{RC}= OT * RC / HV / 1000000

FC_{RC}: Fuel Consumption for Rated Capacity Method

OT: Operating Time Per Year (hours)
RC: Rated Capacity of boiler/furnance (MM Btu)
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

8. Heating

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Weber
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: Boiler: New Facility High Bay Wing

- Activity Description:
The facility would be constructed with boilers and appropriate heating, ventilation, and air conditioning infrastructure to ensure climate control. They would become operational when the facility is constructed and is ready for occupancy.

- Activity Start Date
Start Month: 1
Start Year: 2027

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

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.115238
SO_x	0.012571
NO_x	2.095238
CO	1.760000

Pollutant	Emissions Per Year (TONs)
PM 10	0.159238
PM 2.5	0.159238
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.047352
N_2O	0.047352

Pollutant	Emissions Per Year (TONs)
CO_2	2514.683810
CO_2e	2517.281905

8.2 Heating Assumptions

- Heating
Heating Calculation Type: Rated Capacity Method

- Rated Capacity Method
Rated Capacity of boiler/furnance (MM Btu): 10
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 99 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105

- Default Settings Used: No

- Boiler/Furnace Usage
Operating Time Per Year (hours): 4400

8.3 Heating Emission Factor(s)

- Heating Criteria Pollutant Emission Factors (lb/1000000 scf)

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

- Heating Greenhouse Gasses Pollutant Emission Factors (lb/1000000 scf)

CH_4	N_2O	CO_2	CO_2e
2.26	2.26	120019	120143

8.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{RC}= OT * RC / HV / 1000000

FC_{RC}: Fuel Consumption for Rated Capacity Method
OT: Operating Time Per Year (hours)
RC: Rated Capacity of boiler/furnance (MM Btu)
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

9. Personnel

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Weber
Regulatory Area(s): Salt Lake City, UT; Northern Wasatch Front, UT

- Activity Title: New Civilian Personnel

- Activity Description:
The Proposed Action would include an additional 30 personnel who would support testing operations at the proposed radiation facility.

- Activity Start Date
Start Month: 1
Start Year: 2027

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

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.046448
SO_x	0.000314
NO_x	0.025507
CO	0.574404

Pollutant	Emissions Per Year (TONs)
PM 10	0.000963
PM 2.5	0.000852
Pb	0.000000
NH_3	0.007437

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.002817
N_2O	0.001001

Pollutant	Emissions Per Year (TONs)
CO_2	62.068836
CO_2e	62.437410

9.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 0
Civilian Personnel: 30
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week (default)
Civilian Personnel: 5 Days Per Week (default)
Support Contractor Personnel: 5 Days Per Week (default)
Air National Guard (ANG) Personnel: 4 Days Per Week (default)
Reserve Personnel: 4 Days Per Month (default)

9.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

9.4 Personnel Emission Factor(s)

- On Road Vehicle Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.24936	0.00159	0.12063	3.45528	0.00473	0.00418	0.04833
LDGT	0.20730	0.00197	0.14533	2.98598	0.00564	0.00499	0.03983
HDGV	0.68405	0.00461	0.55682	9.13067	0.02047	0.01811	0.08914
LDDV	0.11205	0.00122	0.14824	5.42240	0.00366	0.00337	0.01656
LDDT	0.15007	0.00139	0.41773	4.55445	0.00598	0.00550	0.01682
HDDV	0.11095	0.00414	2.26140	1.42900	0.03701	0.03405	0.06704
MC	2.68684	0.00195	0.76136	12.12701	0.02149	0.01901	0.05425

- On Road Vehicle Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01510	0.00473	314.19624	315.98189
LDGT	0.01417	0.00661	388.71184	391.03390
HDGV	0.04970	0.02538	910.75939	919.55653
LDDV	0.05876	0.00066	363.58124	365.24744
LDDT	0.04471	0.00098	410.67538	412.08423
HDDV	0.03180	0.16495	1234.54522	1284.49372
MC	0.10824	0.00302	394.95865	398.56392

9.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year
$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_{C}: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

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

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